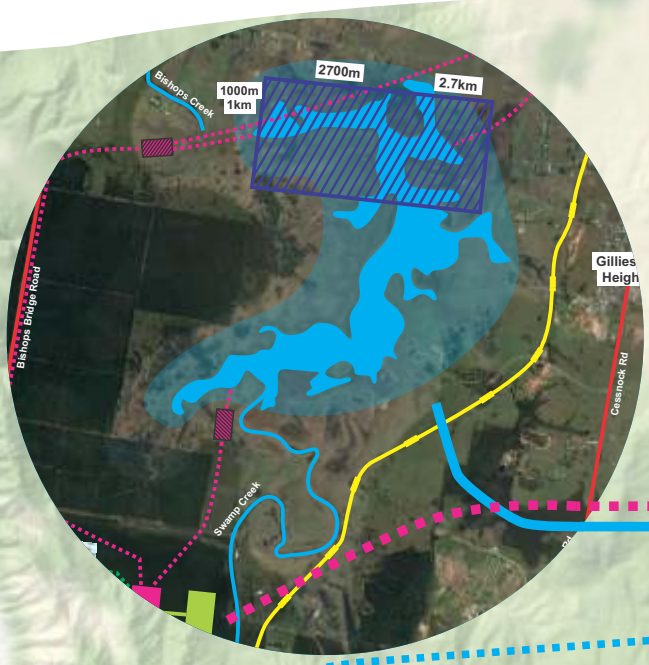
UWR

Hunter Hydrogen Water Scheme

EVERY DROP COUNTS!

SCHEME 1



VISION

A water Scheme to place the Hunter as the Leading Clean Energy Power House of NSW

A Flood Mitigation Plan to reduce flooding in Maitland and Dungog

- Kurri Lateral Pipeline Route
- Proposed Duel Purpose Water Pipelines.
- Bloomfield Mine Closure Final Void, possible water storage option
- Proposed HDPE Pipe making facility

Presented By: Joe Taranto

Hunter Hydrogen Water Scheme
www.waterforthebasin.com
waterforthebasin@outlook.com.au

Hunter Hydrogen Water Scheme

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SCHEME 1

INDEX

SCHEME 1

"This optimum Sustainable Water Recycling Project, I believe with a passion, is the most viable solution to provide water for Hydrogen Production.

Formally "The Hunter Bayswater Recycling Water Scheme," a water option for the "Lower Hunter Water Plan," it is now changed direction to support water for Hydrogen Production and Agriculture.

There is enough water to support the Newcastle Energy Precinct and The Hunter Power Site for the production of green Hydrogen and green Ammonia, it also provides a Job Creation Plan."

EXECUTIVE SUMMARY

The Hunter has the potential to be a competitive clean energy powerhouse.

The viability of water for hydrogen production is the key.

Pipelines to move water is critical infrastructure required to achieve the above.

Substantial International Engineering firms have become interested in the proposal and have cooperated with the proponents by providing advice and a cost estimates for a Preliminary Cost Analysis for a 22 km HDPE sub - sea pipeline system to transfer

48 ML/day.

The “Hunter Hydrogen Water Scheme” herein described proposes to provide highly treated waste water via a pipeline system, pumps, and reservoirs, from the Burwood WWTP and other WWTP for green hydrogen and green ammonia production.

There is enough water for Hydrogen production to support both the Newcastle Energy Precinct and the proposed production of hydrogen next to the Hunter Power Project site.

It is proposed that a HDPE pipe making facility be constructed on the North Channel Hunter River in the Tomago area to manufacture HDPE pipes one meter in diameter and up to 600 meters in length directly onto the river, this is critical infrastructure required for the viability of Hydrogen in the Hunter.

One HDPE pipe-making machine could provide the 22kms of sub - sea pipeline needed from the Burwood WWTP to Ironbark Creek, construction time, between 5 to 6 months.

It is also envisaged that the on land **Duel Purpose** water pipeline from Ironbark Creek follows the Kurri Lateral pipeline route to the proposed reservoir near the Hunter Power Project,

(less impact on the environment).

There is also a future water storage option with the closure of the Bloomfield Mine.

The Final Void and the volumes of water it could store may be beneficial to all concerned.

The proposed water pipeline from the Burwood WWTP to the Hunter Power Project passes the Bloomfield Mine site.

EXECUTIVE SUMMARY

Manufacturing hydrogen on site to increase levels to 30% or even higher as an additional fuel source for the gas fired power plant is more cost effective than replacing the whole Kurri Lateral pipeline that can only accommodate a 10% mix.

It is also proposed that the CSIRO could design a reservoir utilising part of the Wentworth Swamp to increase water volumes for storage to support hydrogen production.

The costs to expand the volumes of water that is high lighted on the Schematic map could be significantly reduced by utilising the site as a training facility for people to gin skills to obtain certificates in operating machinery, trucks, and earth moving and mining equipment, thus enabling them to enter into the workforce.

I have researched the Department of Mines Geological Survey Mineral Resources No. 37 regarding the depth of the coal seam of mines that are in close proximity to the proposal which they are more than 500' (feet) to coal.

I believe there is no concerns about excavation of a few meters, please note by utilising levee banks as part of the water storage area would result in cost savings.

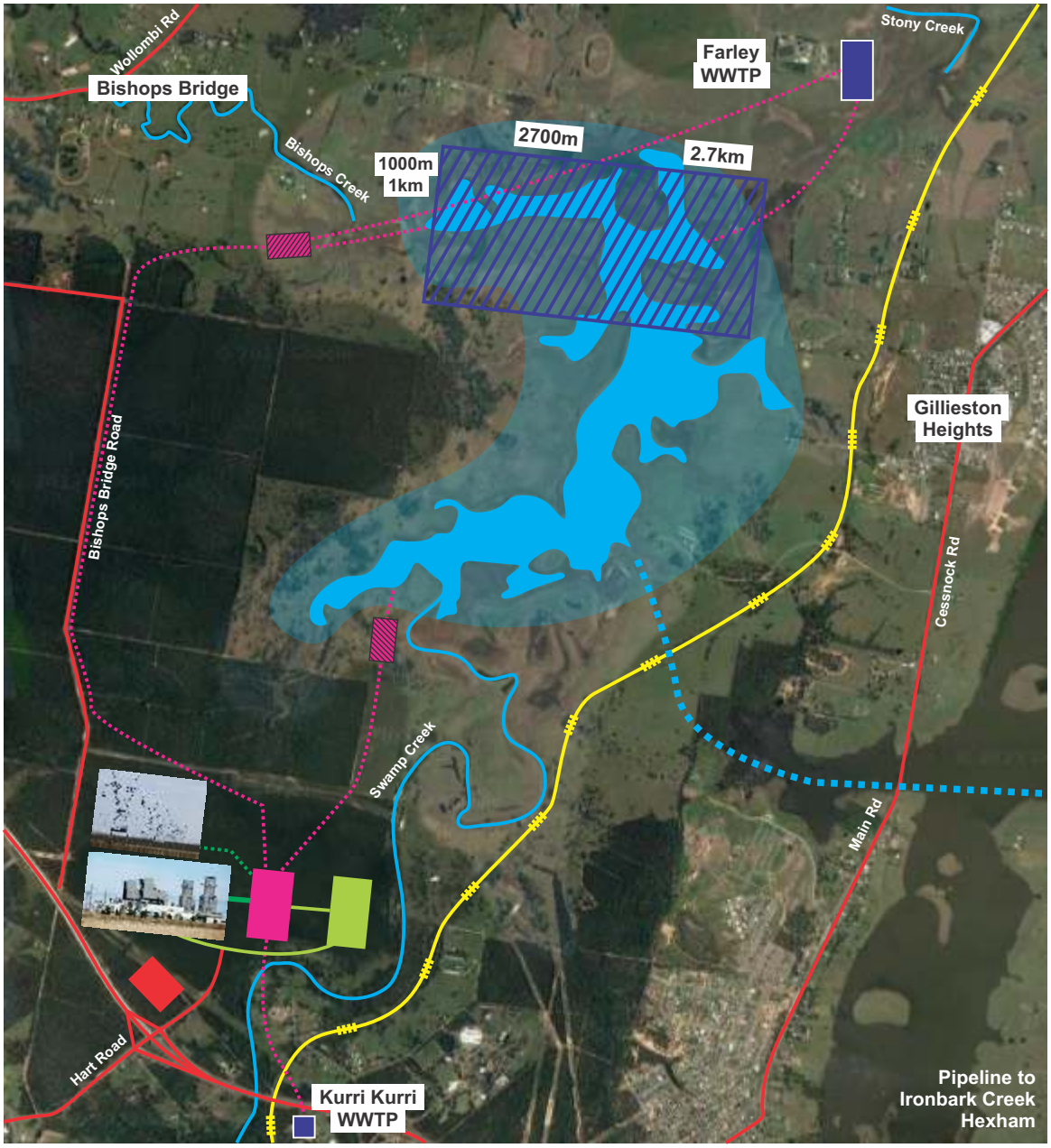
There is also a job creation plan next to the Hunter Power Project site.

A sustainable plan to attract investment into a renewable energy transition and supports **“The Future Made in Australia”** initiative.

Hunter Hydrogen Water Scheme

UWR

Swamp Creek has a catchment area of approximately 81sq km. So primarily the shallow Wentworth Swamps is used for flood mitigation and to support conservation.
The Wentworth Swamp is part of the Wallis and Swamp – Fishery Creek catchment area of 400 sq km, please note, the Grahamstown dam is an off stream dam that pumps water from the Williams River. I believe that the CSIRO could design a reservoir to take full advantage of this catchment area to support Hydrogen and Agriculture.



- Waste Water Treatment Plants x2
- Proposed Hydrogen Electrolyser
- Green Hydrogen or Green Ammonia - For export and to use on site.
- Final Water Treatment Plant (2 Options) (Similar to the Grayhamstown Water Treatment Plant)
- Proposed Lake (Size, Depth & Volumes yet to be determined)

Kurri Kurri Peaking Plant

Renewable energy from the grid.

- Proposed Water Pipeline to Electrolysis Plant
- Proposed 33km Pipeline to Ironbark Creek Hexham
- Rail Infrastructure already in place
- Green Ammonia pipeline as an additional fuel blend to burn with customised turbines to run on green ammonia
- Energy to Electrolyser
- Renewable energy from the grid to the electrolyser.
- Retained 11 ML flood storage area
- Proposed excavation 2.7km x 1km width Depth 9 meters = 24,300 ML

Please Note: Chichester Dam = 18,356 ML

Hunter Hydrogen Water Scheme

EVERY DROP COUNTS!

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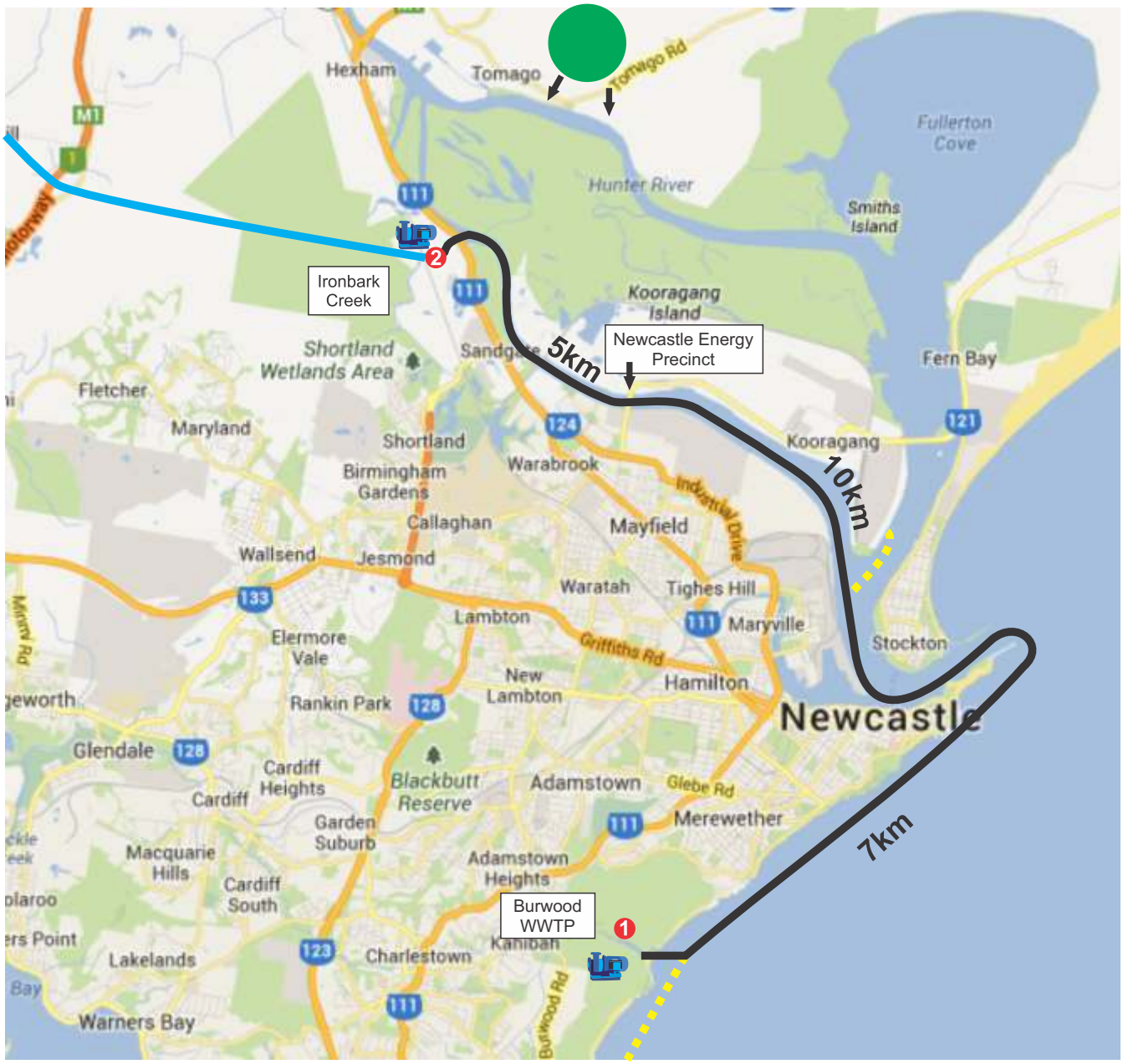
SCHEME 1



2 potential Reservoir sites if needed

Proposed HDPE Pipe-making facility areas with access to the North Channel Hunter River

2 Pump Station

HDPE sub sea pipe line

Water pipeline to follow the Kurri Lateral pipeline route

Additional 14km HDPE Pipeline from the Belmont WWTP to connect to the Burwood WWTP to obtain extra 30ML/day

UWR

A Job Creation Opportunity Exists at the Hunter Power Site

Facts ;

In 2012 with the closure of the Kurri smelter there was a loss of 450 jobs.

This property was acquired in 2012 by developers, they had plans for a mixed use urban development with over 2000 new residential home sites and a major industrial and business land subdivision.

Today it is the Hunter Power Project site, Snowy Hydro is a Government – owned firm.

The Power Station is almost completed, when operational it will only support a small workforce.

There is a system that supports the Albanese Labor Governments " Future Made in Australia plans and supports fast tracking the transition to renewable energy that will create hundreds of jobs to this site.

In the mid seventies Maitland City Council offered industrial land in Rutherford for $1 dollar per acre provided a business could be established in a specific time frame, this was a huge success.

Given that the Power Station Site is Government owned, this is an opportunity to offer the same system as above, land at $1 per acre for industries that are associated with renewable energy infrastructure, Wind Turbines, Solar Panels, Battery components, Infrastructure that supports the grid and even an electrolyser facility similar to Gladstone facility in Queensland, this one being built here in the Hunter, this would also attract the automotive industries that seek to manufacture engines and components for hydrogen and EV Trucks and Cars. This would be a second Energy Precinct for the Hunter.

I believe this would be an opportunity to attract the attention of the manufacturing industry of sustainable construction electric and hybrid machinery to showcase their product in the new Green Wave of Earth Moving Machinery.

It also provides a training school needed to train a large workforce to obtain the critical mineral reserves in Australia to support the transition to green energy.

It is envisaged that making hydrogen on site near the Hunter Power Project by a water supply pipeline and a purpose built reservoir designed by the CSIRO Australian Water Resource Assessment Team is the only viable solution to increase hydrogen percentages levels as a additional fuel for the Gas Fired Power Station and to honour Labors Commitment of a 30% hydrogen mix and increase volumes as technology improves.

To replace the Kurri Lateral Pipeline with a pipeline that could increase the volumes of hydrogen levels is a waste of money and makes no sense.

It is also envisaged that next to the Hunter Express Way on Hart Road is an opportunity exists to support a Hydrogen fuelling Station and a EV Charging Station for trucks and cars.

Seeking support from ARENA to commission the CSIRO to conduct a Water Resource Assessment for a Hydrogen Production proposal that supports both the Newcastle Energy Precinct and the Hunter Power Project Site.

An article was written in the Newcastle Herald by Matthew Kelly

(published 15 August 2023) "The thirsty work of making green Hydrogen."

Mr. Cleary (Hunter Water) stated the cost of building a dedicated pipeline from the Burwood WWTP to Kooragang Island would run into hundreds of millions of dollars.

Also stated, One solution would be to construct a desalination plant on Walsh Point in Newcastle Harbour. A 2020 desktop geotechnical report for the project, which could produce 160 megalitres of water a day, estimated it could cost up to $500 million and take about three years to build.

Please Note: this report states 160 megalitres per day, which is more than 5 times larger in water volumes than the $530 million Belmont Desalination that provides only 30 megalitres of water a day and costs less? If the report is true then there is some major price gouging being passed on to the community.

I also read another article in the Newcastle Herald by Matthew Kelly (published 28 September 2023) " Minister optimistic the water needs of green hydrogen production can be met." , in this article the dedicated pipeline from the treatment plant to Kooragang Island could reach $1 billion, Penny Sharpe attended this press conference.

These statements regarding the cost of a dedicated pipeline to the Burwood WWTP of hundreds of millions of dollars or could reach $1 billion dollars is misleading.

Facts, the 80 km HDPE sub – sea water pipeline section from Turkey to Cyprus and finished in 2014, the costs were approx. $ 348 million US dollars or $ 522 million Australian Dollars.

Please note the ocean depth of up to 1400 meters required a suspended pipeline,tethered to float at 250 meters below sea level and the pipeline is 1600 mm in diameter.

My proposal of a sub – sea HDPE pipeline is only 22 km in length approx. one quarter ¼ of the distance of the Turkey to Cyprus project, lays flat on the sub – sea floor and the volumes of water for the transfer from the Burwood WWTP requires only a 1000 mm in diameter HDPE pipeline.

For viable hydrogen production and just as important as transmission lines the opportunity and economic benefit exists for starting a new industry manufacturing HDPE pipelines on industrial land next to the Hunter River, either on the South Channel Hunter River or the North Channel Hunter River, not just for the transfer of water from the Burwood WWTP but for many other future water projects around Australia, as there are no other Large Diameter HDPE Manufacturing Industries in the Southern Hemisphere.

This could be funded by the $15 billion National Reconstruction fund.

Please refer to page 11, this is a quote from Zhou Maozhen , eagleco 001.

The costs of the HDPE pipe machine to manufacture 1 meter in diameter is USD 750,000 or approx. $ 1,124,581 Australian Dollars.

Please note the Pipe weight of the DN 1000, SDR 17 (10 BAR) 166 KG/m and the cost of the HDPE is USD $1900 per ton.

Lets assume that it is $ 2000 US ton, that's approximately $ 3000 Australian dollars.

166 kg X 6 lineal meters = 996 KG, therefore this equals approx. $ 500 per meter.

So $ 500 x 22,000 m of HDPE pipeline or (22 km) = $ 11,000,000 million.

I know the quote for the HDPE Pipe making machine needs to be updated to 2024.

But the quote to provide the pipe material for manufacturing (High-Density Polyethylene) has actually gone down in price due to oversupply conditions.

Below is the current costs for (High-Density Polyethylene) due to oversupply conditions.

Certainly! Let's take a look at the HDPE price trends for May 2024 and the outlook across different regions:

1. North America: The HDPE price remains unchanged at US$0.86/KG.

2. Europe: Prices have decreased by 4.9%, with HDPE priced at US$1.36/KG.

3. Africa: Prices have increased by 2.7%, reaching US$1.16/KG.

4. Northeast Asia: HDPE prices remain steady at US$1.13/KG.

5. Southeast Asia: Prices have risen by 3%, with HDPE priced at US$1.02/KG.

6. South America: Prices have declined by 4.6%, reaching US$1.25/KG.

7. Middle East: Prices increased by 1%, with HDPE priced at US$0.98/KG.

8. India : HDPE prices remain unchanged atUS$1.12/KG1

Additionally, the global HDPE market faced a downturn in April 2024 due to oversupply conditions, leading to subdued demand from downstream sectors. Buyers anticipate lower prices in May and June, which may result in possible discounts later in April2. Keep an eye on market developments and regional factors to make informed decision Remember that HDPE (High-Density Polyethylene) is widely used in various applications due to its strength, durability, and resistance to impact and chemicals. If you have any further questions, feel free to ask! ?

The below calculations show the current cost of the High-Density Polyethylene material to manufacture the 22 km of pipeline needed in this proposal.

A metric ton = 1000 kg, therefore if we take the highest price from the chart above which is Europe at US $1.36/ kg = US $ 1,360 per ton, that = $ 2,065 Australian Dollars per ton.

Pipe weight, 166 kg X 6 lineal meters = 996 KG, $ 2,065 divided by 6 this equals approx. $ 344 per meter. So $ 344 x 22,000 m of HDPE pipeline or (22 km) = $ 7,568,000

Concrete collars (Indomer) size, costs and intervals need to be determined.

High-Density Polyethylene Material = $ 7 million 568 thousand dollars.

Information regarding Power Requirements and capital cost of Pump Stations , Hydraulic Model etc, from W3Plus Consulting, please note part of this information is relevant to the 22km proposed sub- sea HDPE Pipeline the on land pipeline calculations needs to be reworked as the distance to the Hunter Power Project Site is approx. one third of the distance to the 2013 Hunter Bayswater Recycling Water Scheme.

Cost of Industrial Land next to the Hunter River ? Makai Ocean Engineering, Quote for a Preliminary Cost Analysis needs to be updated etc.

I believe the information above is a strong foundation for the CSIRO to conduct a Water Resource Assessment to determine a true cost estimate.

The production rate from the HDPE Pipe making machine is 120 meters to 150 meters per day.

It would take approximately 5 to 6 months to manufacture the 22km of pipeline needed.

Long length of HDPE pipelines, 500meters or more means less joins and is the most cost – effective way above all other installation of pipelines.

Please examine the estimated costs above and consider the following, the statement regarding the highly misleading costs of a dedicated pipeline to the Burwood WWTP would cost hundreds of millions of dollars or $1 billion, warrants that water for the viability for hydrogen production and fast tracked needs the decision to be independent and placed into the hands of the CSIRO to conduct a Water Resource Assessment.

The costs to maintain a pipeline and associated energy costs with pumping is minuscule compared to to the high energy Desalination option.

Zhou Maozhen
29/05/2013

To: universalwaterrecycling

From:**eagleco001** (eagleco001@gmail.com) This sender is in your contact list.
Sent: Wednesday, 29 May 2013 2:46:29 PM
To: universalwaterrecycling (universalwaterrecycling@hotmail.com)
Dear Joe Taranto,
How are you?
Now I give your approximate information.
Machine output: 1500-2000kg/h
Installed power: 1100KVA
Dimension: about 70 meters long and 6 meters wide, 4 meters high.

I want to know the pressure of the pipe. This will be related to the machine design, also the price. So now i only can give you approximate price, it is about 1.7 to 1.9 million.
For this kind of pipe production, the factory must be close to the project site, or near the see or river. To do this way, it can produce longer pipe as we want such as 500m or more, this can save the connection time and reduce the installation cost.
Please feel free to contact me, if you need any information or question.

Dear Joe Taranto ,
How are you?
The detailed information for HDPE pipe machine is in attachment, please check it.
Regarding the pipe cost, it depends on the water pressure. As my calculation, if the pipe diameter is DN1000, SDR17(10BAR). The pipe weight is 166kg/m. The production is about 120meters to 150meters per day. Now the HDPE is USD 1900 per ton.
The 800-1200 HDPE pipe machine is about USD 750,000.

Best regards!
Sincerely yours,
Zhou Maozhen

2013-06-13
Eagle Extrusion Technology Co.
Add: No.16, Quanzhou Nan Lu, Jiaozhou City, Qingdao, China

HDPE Pipe Making Machines

The proposed HDPE Pipe making facility to manufacture the 22km of pipeline for this proposal is only part of the plan to provide water security to the Hunter.

Facts,

Hunter Water is determined and totally focused on fast tracking the $ 530 million Belmont Desalination Plant.

They have shown no interest or plans or documentation in harvesting the 48 ML/ day of highly treated waste water from the Burwood WWTP.

These volumes represent one Chichester Dam in volumes per year wasted into the ocean.

Not content with these volumes being wasted they now plan to reduce the water by 10% in Grahamstown Dam to 90% by their risk assessment results.

Also stated that Dam upgrades are complex, and will take some time to be scoped, planned ,approved and delivered. Indicatively, were planning to have the upgrades completed in 5 to 10 years.

Grahamstown Dam volumes 182,305 ML , reducing it by 10 % = 18,230 ML.

Please note Chichester Dam volumes = 18,365 ML.

Hunter Water is now planning to waste almost One Chichester Dam in volumes of a potable grade of water into the ocean, and a time frame of 5 to 10 years, taking a water storage volumes the size of Chichester Dam out of the Lower Hunter storage supply and this long length time frame is shameful.

Hunter Water promotes smart water choices, water conservation etc, this latest proposal makes a mockery of what they preach.

In our current economic times people are struggling with energy bills and the cost of living pressures and now with Hunter Waters Desalination obsession, their annual residential customer bills will increase by $75 to $120.

The entire water planning for the Lower Hunter should be placed into the hands of a totally independent body such as the CSIRO.

The “so called Independent” Chair of Hunter Water, Mr Greg Martin was formally the Chairman of the Sydney Desalination Plant.

For water security in the Hunter there is no need to build the $530 million dollar 30 ML/ day Belmont Desalination Plant

The reason being the proposed HDPE Pipe manufacturing facility which is Critical Infrastructure to provide a 22 km pipe line to obtain water from the Burwood WWTP is only **Stage One,**

Stage Two, requires an additional two Pipe making machines to manufacture 66 km to 75 km of one meter in diameter HDPE pipes, 600 to 700 meters in length, fed directly on to the river.

We need to partner and to encourage a firm such as Pipelife who have the experience in the manufacturing and installation and transport of HDPE Pipelines is required, please examine their website, especially “WORLD RECORD LONGEST LLLD TOW”. Please examine the map on the following page of this proposal, this provides the proposed pipeline route.

The Hunter has an Inter – Regional water sharing agreement with the Central Coast, my proposal will link three seperate regions to the Sydney Desalination Plant, North Sydney, The Central Coast and the Hunter by providing a 66 km to 75 km HDPE Pipeline.

It is envisaged that the overall cost is a feasible option and the mutual benefits would provide water security to these three regions, it would be affordable in a cost sharing funding agreement from each region for the manufacturing and installation of just 25 km per region for a one meter in diameter HDPE pipeline.

Question.

Why build a $ 530 million 30 ML/ day Desalination Plant at Belmont the Central Coast Water Security Plan also has a future water option of a plan for a Desalination Plant at Toukley, lets assume this would be another $500 million (total 1 $billion) alternatively this proposal will give affordable Water Security to North Sydney, the Hunter and the Central Coast by a pipeline system to gain access and to optimise the existing large scale $1.8 Billion Sydney Desalination Plant and if needed can provide 45 ML/ day to all regions listed ?

The Bathymetry Grid map of the ocean floor is shallow from 30 to 60 meters. Also it is envisaged that provisions can be put in place along this proposed pipeline to transfer potable grade water from our region to either the North or South of Sydney, this may be needed in the future as a water source to allow time for the removal of debris and sediment and the filtration of Warragamba Dam. Power Requirement for this water transfer and the Modelled Hydraulic Elements are far less as there is hardly any elevation and the pipeline length in this scenario is around 50 km shorter. (Please refer to this information by W3 Plus Consulting on the following pages after the map).

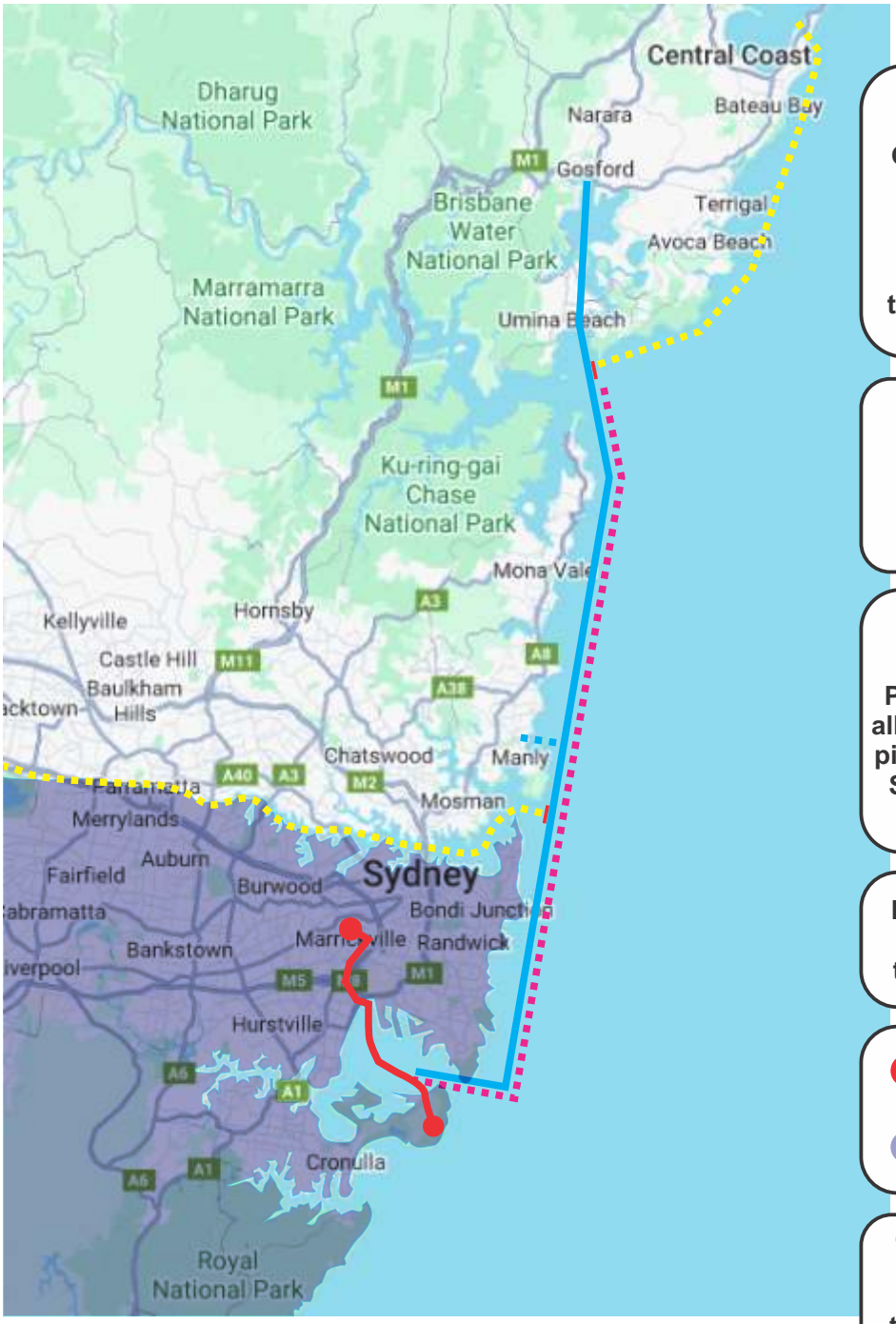
Hunter Hydrogen Water Scheme

EVERY DROP COUNTS!

UWR

SCHEME 1

Inter-Regional Water Sharing Proposal – Sydney, North Sydney, Central Coast and the Hunter.



OPTION 1

Gosford to the Sydney Desalination Plant 75km HDPE Pipeline.

HDPE Pipeline to join to the Manly Warringah Water Pipeline

OPTION 2

Umina to the Sydney Desalination Plant 66km HDPE Pipeline.

OPTION 3

Pipeline connections to allow for future additional pipeline to accommodate Scheme 3. Please refer to Pages 16 and 17.

HDPE Pipeline 1 meter in diameter, water transfer 45ML per day.

Sydney Desalination Plant

Sydney Desalination Expansion

"The Desalination Plant only services South Sydney, a connection to the Manly - Warringah Water Supply Pipeline."

Manly Warringah Water Supply Pipeline

Please note the purple shaded area shows that the Sydney Desalination Plant only services South Sydney. The red pipeline map on previous page shown stretches 18km from the plant at Kurnell on the coast of Sydney's south to connect into the cities major water main at the inner suburban at Erskineville. The proposed HDPE pipeline is the only viable route to transfer water to North Sydney from the Sydney Desalination Plant. The most viable option to join this proposed pipeline to the Manly - Warringah. Water Supply is cost effective without going under house's streets etc.

At the northern end of Manly Beach a 1 meter in diameter HDPE pipeline buried beneath the sand, the route from there would be under Bridge road, under the Manly Lagoon and follow Manly Creek, either in it or beside it this would place it on the doorstep to join the Manly – Warringah Water Supply pipeline. Please note this is a duel purpose pipeline, Warragamba's Dam provides more than 80% of Sydney's water.

By utilising the existing pipeline infrastructure from the Manly - Warringah Water Supply can provide water for two options.

1. Can provide water viably from the Sydney Desalination Plant to the North shore.
2. During off-peak times from 10 pm to 5 am water from Warragamba Dam can be transferred to the Central Coast and stored in the Mangrove Creek Dam via this proposed pipeline.
3. An inter - regional water storage security plan that benefits, Sydney, the Central Coast and the Hunter.
4. This would create a buffer in Warragamba's Dam and result in a flood mitigation system to protect the communities in the Hawkesbury and Nepean River Systems.

Hunter Hydrogen Water Scheme

EVERY DROP COUNTS!

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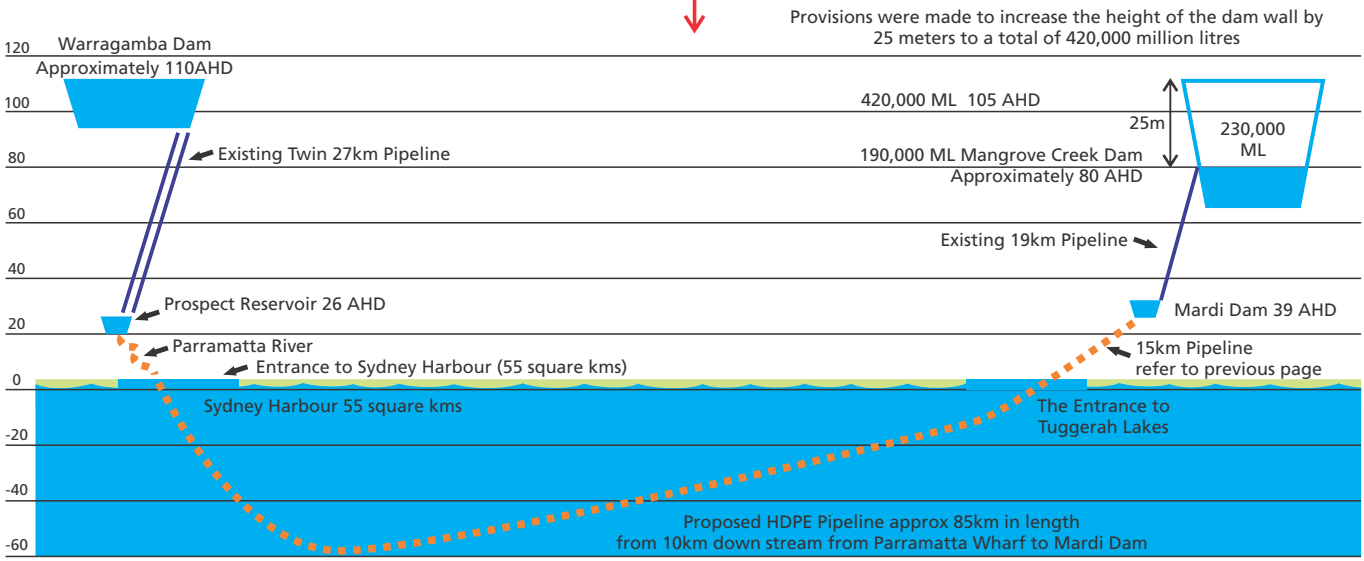
SCHEME 1

The accuracy of a water level is based upon Pascal's Law "Water seeks its own level"

Aristotle wrote and articulated that the water level in two Basins connected by a pipe must be the same



Facts on the above joining of Warragamba Dam to Mangrove Creek Dam by a single pipeline would result in an inter-regional water sharing proposal between Sydney, the Central Coast and the Hunter.

Provisions are already in place to raise the Dam wall by 25 meters.

This will increase the volumes by 230,000 ML.

Please note Chichester Dam Volumes = 18,356 ML

This increase represents 12.5 Chichester Dam in volumes.

Mangrove Creek Dam has a small catchment area of 101 square kms the pipeline joining will provide access to Warragamba Dams catchment of 9,050 square km.

Turkey laid a 80 km sub-sea HDPE to provide water to Cyprus with ocean depths in some areas more than a km, our ocean depths shallow around 30 meters to 60 meters.

The advantages of this water sharing proposal by a single pipeline joining Sydney to the Central Coast which has a pipeline to the Hunter offers real water security and would save the NSW Government and the NSW taxpayer wasting $ 200 million because the Belmont Desalination Plant would not be needed, in a severe drought water from the Sydney Desalination Plant can provide water to the Central Coast and the Hunter via this pipeline.

This Booklet is Scheme One, it has been updated over the years, but there are pages there from 2013 that is relevant today, as it was then.

Regarding the Lower Hunter Water Plan, In 2012 an Independent Advisory Panel was nominated, They also called for stakeholders and stated that all water projects were to be put on the table, and workshop meetings for those interested to attend, which I attended.

I sent copies of the Scheme 1 booklets to Cathy Cole, Project Manager of the Lower Hunter Water Plan to be passed on to the members of the Independent Advisory Panel and the Chair in early November 2013.

Please note that Darren Cleary was the Chief Operating Officer playing a significant role in the development of the Lower Hunter Water Plan.

Please read Cathy Coles response letter page 20 sent on the 18th of December 2013, the sections that is highlighted and the date clearly shows the length that Hunter Water will go to damage and block competitors and to keep it off the table and from view of the Independent Advisory Panel.

I tried to contact members of the Independent Advisory Panel in early 2014, unfortunately they have all signed confidentiality agreements and could not comment.

Please read 3 copies of my Record of Registration Business names pages 21, 22 and 23.

Please read pages 26 to 42, W3 Plus Consulting, Origin Energy, Makai Ocean Engineering and Global Pipes.

Please note these companies are large corporations and their correspondence has been to “Universal Water Recycling “ and to The Hunter Bayswater Recycling Water Scheme.

To obtain this information from some of these consultants costs thousands of dollars and many hours of correspondence.

Now there's another Independent Advisory Panel for the Lower Hunter Water Security Plan and the Greater Sydney Water Strategy has been established, who have also signed confidentiality agreements.

Unfortunately Universal Water Recycling and the Hunter Hydrogen Water Scheme water proposals will be kept from the view of this panel because it is not a Hunter Water's preferred option to improve water security in the region.

I can provide more documentation to prove Hunter Water's business behaviour in blocking competitors, one example is that none of my water proposals has ever been on the table to be viewed by an independent Water Advisory Panel.

Please also note on my website www.waterforthebasin.com , Scheme One, page 8 shows another example of damaging competition by misleading and exaggerating the costs of a dedicated HDPE pipeline.

The Competition and consumer Act 2010 bans business behaviour that damage competition.

For over a decade I have wrote to Hunter Water seeking funding on numerous occasions for Makai Ocean Engineering to conduct a preliminary cost analysis of this pipeline route and to many NSW Ministers, all have show no interest in recycling 45 ML/ day of water from the Burwood WWTP.

I have written many letters to Ministers on both sides of the house and could not understand why they were not interested in supporting a project that ticks all the boxes regarding Climate Change, a sustainable water option for Green Hydrogen Production, manufacturing and supports the future made in Australia initiative.

Please read the following pages 24 and 25 which is a flyer and further information on the pages that follow.

This flyer was sent to IPART " please read Preamble , Chapter 3, Requirements of this code 3.1 Acting in the public interest, and prioritise the public interest over all other interests, including their own." Also please read, 3.2 Proper exercise of power.

This flyer was also sent to the Treasurer and the State and Federal Energy and Water Ministers.

I know the Hunter Water Corporation is a commercial trading enterprise that is wholly owned by the NSW State Government, I believe that 99% of the population would assume that this would provide a dividend to the Hunter Water Corporation and the rest would go to state revenue to support hospitals, infrastructure, etc.

This may not be the case, the share holder Ministers, The Hon. Daniel Mookhey MLC, TREASURER, and The Hon Courtney Houssos MLC, Minister for Finance.

Also please read the Constitution of Hunter Water Australia PTY LTD, Shares held by Eligible Ministers, transfer of shares, transfer of assets, rights, a subset of stakeholders etc, please also read, " Hunter Water Statement of Corporate intent 2022 to 2023 and read the Shareholders Agreement " regarding the Eligible Shareholders and all other members associated with the Hunter Water Corporation.

The $ 330 million cost blow out of the Belmont Desalination Plant from $200 million to $530 million will add further to the cost of living crisis for the community which also adds to inflation, but it would be a windfall to all the eligible Shareholders Ministers and all others associated with the Hunter Water Corporation.

Until there is a total independent body involved in the decision making of water projects in NSW such as the CSIRO and a Independent Panel of Water experts, without the signing of confidentiality agreements and everything is transparent, community involvement etc, the cost of water will rise with the building of more unnecessary Desalination Plants and the missed opportunity that only HDPE Pipelines can offer.

NSW GOVERNMENT | Metropolitan Water Directorate

A unit of the Department of Finance and Services

(117 Bull St, Newcastle West NSW 2302)
Tel: 02 4908 4926 Fax: 02 4908 4954
TTY: 1300 301 181 ABN: 81 913 830 179
www.services.nsw.gov.au

Ref: D/13/3189

Mr Joe Taranto
Director
Universal Water Recycling
37 Moon Mountain Drive
MT VIEW NSW 2325

Dear Mr Taranto,

Thank you for your letter and enclosed project outline named 'The Hunter Bayswater Recycling Water Scheme'.

I apologise for the delay in responding, but the Metropolitan Water Directorate has taken time to give due consideration to your reworked proposal. Despite your change to look at using treated effluent from the lower Hunter instead of from Sydney, we still do not consider your proposal to be a viable scheme that would meet the lower Hunter's water security needs at least cost to the community. As previously advised, the primary focus of the Lower Hunter Water Plan will be on measures to improve drought security at an affordable cost. Your proposal would have a considerably higher cost than the six potential portfolios discussed at the community and stakeholder workshops in September 2013.

The Metropolitan Water Directorate is not able to support your request for funding to further develop your proposal with investigations into a subsea pipeline, nor do we have a source of funding for such investigations.

I would also like to thank you for your email on 16 December 2013 acknowledging the misunderstanding in your submission and 'Attachment 3' to your email dated 13 December 2013. These incorrectly stated that a permanent emergency desalination plant is under consideration for the Lower Hunter Water Plan. As explained in my email on 13 December 2013, a permanent emergency desalination plant is not included in any of the portfolios under consideration for the plan. Although one of the six potential portfolios outlined in the discussion paper released in August 2013 included the option of small, portable, temporary desalination units, this is very different from a 40 ML/day emergency desalination plant referred to in your proposal. This was also explained at the workshop that you attended on 5 September 2013. Since the questions on page 18 of your proposal were not relevant to the plan, they were not discussed at the workshop.

The Independent Water Advisory Panel was appointed to provide strategic advice to the responsible Minister on water planning for greater Sydney and the lower Hunter. The terms of reference do not provide for considering individual representations from stakeholders, and the Panel has previously confirmed that the Metropolitan Water Directorate should manage liaison on such representations. Nevertheless, I will ensure the Chair is advised of your request.

Yours sincerely,

Cathy Cole

Cathy Cole
Project Manager, Lower Hunter Water Plan

18-12-2013

LOWER HUNTER Water PLAN

Page 1 of 1

ASIC
Australian Securities & Investments Commission

Record of Registration for Business Name

Business name information for:

The Hunter Bayswater Recycling Water Scheme

This Record of Registration contains information recorded on the Australian Securities and Investments Commission's (ASIC) register under section 33(8) of the Business Names Registration Act 2011.

Date: 3 September 2013
Next renewal date: 3 September 2025

Record of registration issued by the Australian Securities and Investments Commission on 12 September 2022

Registry
Officer
Registry Services
On behalf of Australian Securities and Investments Commission

RECORD OF REGISTRATION

ASIC
Australian Securities & Investments Commission

Record of Registration for Business Name

Business name information for:

UNIVERSAL WATER RECYCLING

This Record of Registration contains information recorded on the Australian Securities and Investments Commission's (ASIC) register under section 33(8) of the Business Names Registration Act 2011.

Date: 22 November 2006
Next renewal date: 22 November 2027

Record of registration issued by the Australian Securities and Investments Commission on 24 October 2024

Registry
Officer
Registry Services
On behalf of Australian Securities and Investments Commission

RECORD OF REGISTRATION

ASIC
Australian Securities & Investments Commission

Record of Registration for Business Name

Business name information for:

HUNTER HYDROGEN WATER SCHEME

This Record of Registration contains information recorded on the Australian Securities and Investments Commission's (ASIC) register under section 33(8) of the Business Names Registration Act 2011.

Date: 5 July 2024
Next renewal date: 5 July 2027

Record of registration issued by the Australian Securities and Investments Commission on 5 July 2024

Registry
Officer
Registry Services
On behalf of Australian Securities and Investments Commission

RECORD OF REGISTRATION

UWR

Hunter Hydrogen Water Scheme

EVERY DROP COUNTS!

SCHEME 1

THE NSW GOVT SHOULD NOT SPEND ANOTHER CENT UNTIL SCHEME (Opt 2) HAS BEEN COSTED!

OVER $1BILLION SAVINGS TO THE TAXPAYER

OPTION 2

- THE MOST VIABLE!
- THE MOST COST EFFECTIVE!
- MAKE THE HUNTER THE LEADING CLEAN ENERGY POWER HOUSE OF NSW

OPTION 2

- WILL HOLD AT LEAST THE SAME VOLUME OF WATER AS CHICHESTER DAM

OPTION 2

- CRITICAL INFRASTRUCTURE PROPOSED HDPE PIPEMAKING FACILITY WITH ACCESS TO THE NORTH CHANNEL HUNTER RIVER

UWR

Hunter Hydrogen Water Scheme

EVERY DROP COUNTS!

SCHEME 1

FACTS!

OPTION 1 - HUNTER WATER DESALINATION SCHEME
OPTION 2 - HUNTER HYDROGEN WATER SCHEME

OPTION 1
HUNTER WATER DESALINATION SCHEME

ESTIMATED COSTS

DOMESTIC WATER SECURITY

$530 million
30mL/day Belmont Desalination Plant

$500 million estimated
30mL/day Toukley Desalination Plant

HYDROGEN PRODUCTION

$500 million
Proposed 160mL/day Walsh Point Desalination Plant

OPTION 1
TOTAL ESTIMATED COST
$1.5 Billion +

OPTION 2
HUNTER HYDROGEN WATER SCHEME

ESTIMATED COSTS

DOMESTIC WATER SECURITY
Requires a HDPE Pipe Manufacturing Industry to be established next to the Hunter River near Hexham.
Manufacture and install less than 70km of 1m diam HDPE pipeline and two pumping stations. ***NO NEED to build the Belmont and Toukley Desalination Plants.***

HYDROGEN PRODUCTION
Manufacture & install 22km of 1m dia HDPE pipeline + supply and install approx 30km of 1m dia pipeline, on land.

OPTION 2
TOTAL ESTIMATED COST
LESS THAN $0.5 Billion

QUESTION?

WHY DOESN'T THE NSW GOVERNMENT WANT TO COST SCHEME (Opt 2) SAVING THE NSW TAXPAYER OVER $1 BILLION?

Joseph Taranto, 68 Keelendi Rd, Bellbird Heights NSW 2325
M: 0414 917 970 | W: www.waterforthebasin.com | E: waterforthebasin@outlook.com.au

UWR

W3Plus Consulting

ACN 134 199 705

3 October 2013

Revision 0

W3 Plus Consulting
world wide water plus

Certified System
Quality
ISO 9001
SAI GLOBAL

Contents

List of Tables

List of Figures

1 Background

W3Plus consulting were requested by Mr. Joe Taranto of Universal Water Recycling, to provide indicative capital costs and energy requirements for pumping stations on the proposed Hunter Bayswater Recycling Scheme, a water recycling transfer project for the Lower Hunter Water Plan.

The project is to transfer 45 ML/day of treated waste water from the Burwood Wastewater Treatment Plant (WWTP) to the Bayswater Power Station. From the WWTP, the transfer pipeline runs below the seawater for 20km, before surfacing at Ironbark Creek and continuing for 100km and rising 120m to the Bayswater Power Station. A recycled water storage is proposed for the new town of Huntlee located between Ironbark Creek and the Bayswater Power Station.

2 Hydraulic Model

In order to calculate energy requirements, W3Plus constructed an hydraulic model using Bentley WaterGEMS v8i software.

The model was based on the available information, which included the pipeline lengths and level listed previously, the use of DN1000 PE100 PN8 pipe for the subsea section and DN1000 PN16 GRP pipe for the terrestrial section between Ironbark Creek and the Bayswater Power Station. These pressure ratings would need to be reassessed once the natural surface profile is available, the number of pump stations and sites for these pump stations are selected. Three pump stations were included in this model, and are positioned at the WWTP storage, Ironbark Creek, and halfway between Ironbark Creek and the Bayswater Power Station. The natural surface profile was assumed to be a consistent grade over 100km from Ironbark Creek to the Bayswater Power Station.

Elements of the hydraulic model are shown in Figure 1.

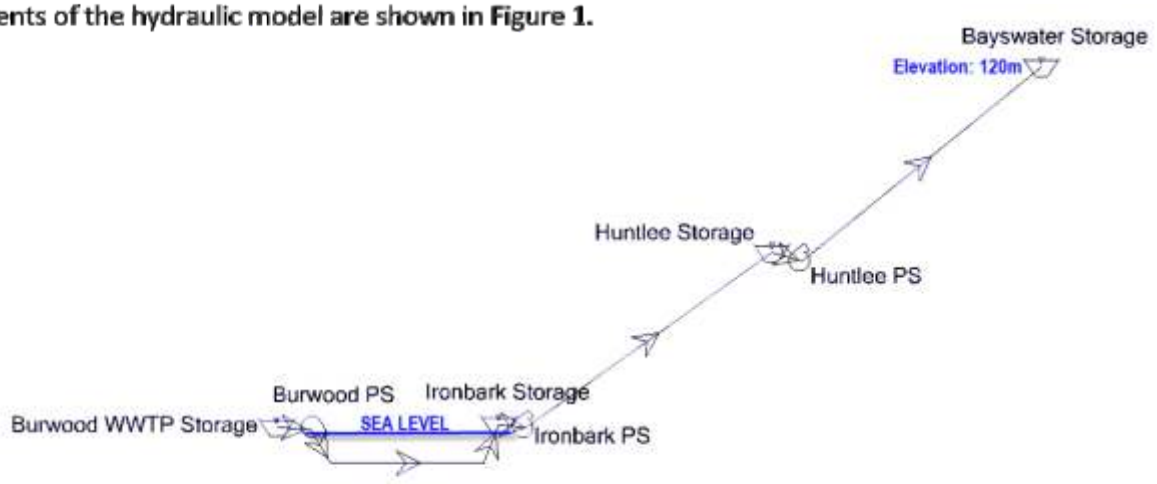


Figure 1: Modelled Hydraulic Elements of the Hunter Bayswater Recycling Water Scheme

2.1 Modelled Scenarios

The system is required to deliver 45 ML/day. This requirement was modelled using three specific flow rates:

- 565 L/s over 22 hours for a maximum flow velocity of 0.9 m/s in the subsea section
- 623 L/s over 20 hours for a maximum flow velocity of 1.0 m/s in the subsea section
- 942 L/s over 13.3 hours for a maximum flow velocity of 1.5 m/s in the subsea section

22 hours is generally considered the maximum design pumping period to allow for scheduled and emergency maintenance. Higher flow rates, over shorter pumping periods, will incur higher frictional headlosses but may be able to take advantage of reduced off-peak power supply rates.

2.1 Results

Headloss results in the pipeline for the three modelled flow rates are shown in Table 1, and pump duties and power requirements are shown in Table 2.

Error! Reference source not found., **Error! Reference source not found.** and **Error! Reference source not found.** show the modelled natural surface profile and hydraulic grade and resulting from the flow rates of 565, 623 and 942 L/s respectively.

Table 1: Pipeline Headloss for the Three Flow Scenarios

Pipeline Segment	Pipe Description	565 L/s		623 L/s		942 L/s	
		Headloss Gradient (m/m)	Headloss over Segment (m)	Headloss Gradient (m/m)	Headloss over Segment (m)	Headloss Gradient (m/m)	Headloss over Segment (m)
20km subsea Burwood WWTP to Ironbark Creek	DN1000 PE100 PN8	0.0007	15	0.0009	18	0.0019	40
50km Ironbark Creek to Huntlee	DN1000 PN16 GRP	0.0005	24	0.0007	29	0.0012	60
50km Huntlee to Bayswater Power Station	DN1000 PN16 GRP	0.0005	24	0.0007	29	0.0012	60
Total (120km)			63		76		160

Table 2: Required Pressure and Power Requirements for the Three Flow Scenarios

Pump Station	Req. Head (m) @ 565 L/s	Req. Head (m) @ 623 L/s	Req. Head (m) @ 942 L/s
Burwood WWTP	15	18	40
Ironbark Creek	84	89	120
Huntlee	84	89	120

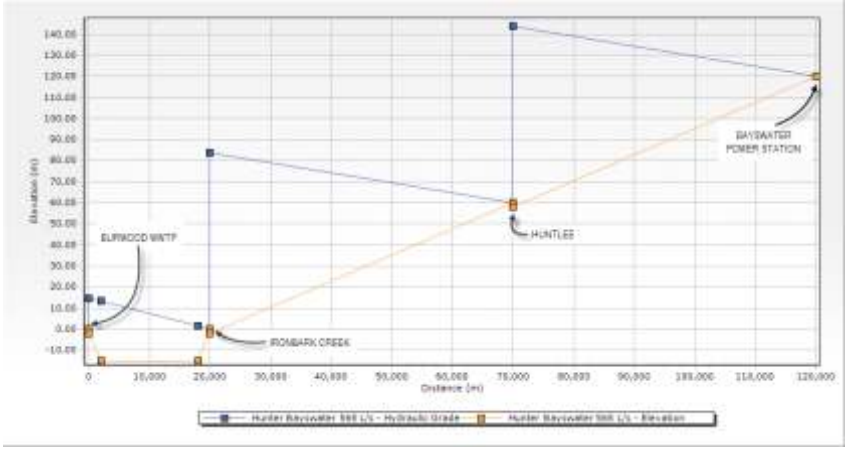


Figure 1: Pipeline Profile and Hydraulic Grade Line at 565 L/s.

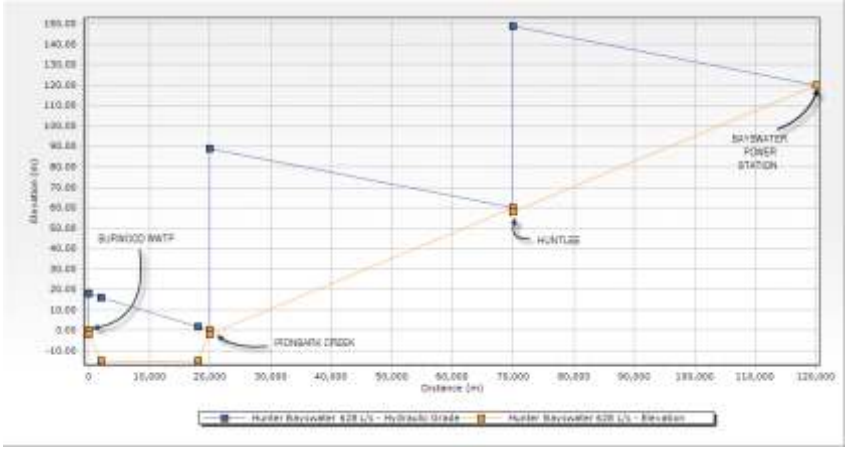


Figure 2: Pipeline Profile and Hydraulic Grade Line at 628 L/s.

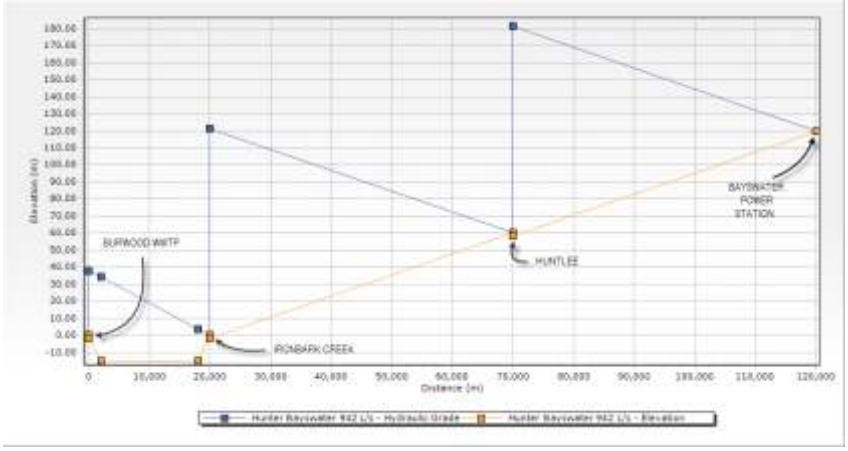


Figure 1: Pipeline Profile and Hydraulic Grade Line at 942 L/s.

3 Power Requirements and Capital Costs of Pump Stations

The costs quoted in this section are based on other investigations completed by W3Plus consulting and have not considered any site-specific elements of this scheme. As the natural surface profile between the Burwood WWTP and the Bayswater Power Station has not yet been supplied, at this point it is also uncertain as to whether three pumps stations is the optimal number.

The accuracies of the capital cost estimates are considered to be in the order of 30%.

Table 1: Pump Station Power Requirement and Capital Cost for Peak Flow of 565 L/s

Pump Station	Flow (L/s)	Head (m)	Power Requirement (kW)	Pumping Hours per Day (h)	Energy Consumed per Day (kWh/d)	Capital Cost of Pump Station
Burwood WWTP	565	15	132	22	2900	$ 0.9 mil
Ironbark Creek	565	84	738	22	16242	$ 2.2 mil
Huntlee	565	84	738	22	16242	$ 2.2 mil

Table 2: Pump Station Power Requirement and Capital Cost for Peak Flow of 623 L/s

Pump Station	Flow (L/s)	Head (m)	Power Requirement (kW)	Pumping Hours per Day (h)	Electrical Energy Consumed per Day (kWh/d)	Capital Cost of Pump Station
Burwood WWTP	623	18	174	20	3489	$ 1.2 mil
Ironbark Creek	623	89	863	20	17250	$ 2.7 mil
Huntlee	623	89	863	20	17250	$ 2.7 mil

Table 3: Pump Station Power Requirement and Capital Cost for Peak Flow of 942 L/s

Pump Station	Flow (L/s)	Head (m)	Power Requirement (kW)	Pumping Hours per Day (h)	Electrical Energy Consumed per Day (kWh/d)	Capital Cost of Pump Station
Burwood WWTP	942	40	586	13.3	7796	$ 4.1 mil
Ironbark Creek	942	120	1758	13.3	23387	$ 5.4 mil
Huntlee	942	120	1758	13.3	23387	$ 5.4 mil

4 Disclaimer

These information and results featured in this report is reflective of the limited information upon which modelling, calculations and estimations were based. Further details regarding the pipeline alignment and an accurate natural surface profile will be required prior to the development of a concept and functional design, and for the system's costs and benefits to be more accurately estimated and optimised.

UWR

Energy Costs

This is based on the following;

- Carbon is repealed 1 July 2014, therefore Cal 14 price as half current carbon cost
- Network charges equivalent to black energy charges
- Regulatory, metering and environmental charges equivalent to 20% of black energy charge
- This is an annual forecast for 2014

Standard Pricing (periods may be selected individually)					Standard Retail Rates ($/MWh)		
From	To	MWh	Peak	Shoulder	Off Peak		
01-January-2014	31-December-2014	19,918	$ 75.64	$ 75.64	$ 39.93		
			5%		95%		
		ENERGY	$ 75,330.05		$ 755,580.16	$ 830,910.21	
Carbon = $20/MWH		CARBON (MWh*carbon assumption)	$ 199,180.47			$ 199,180.47	
Assuming ½ yr carbon, 2014 cost is ($/MWh)	$ 10.00	NETWORK	$ 830,910.21			$ 830,910.21	
		(equivalent to energy)					
		ENVIRO, REGULATORY, etc	$ 166,182.04			$ 166,182.04	
		(equivalent to 20% of energy)					
						$ 2,027,182.94	

From:**McKell, James** (James.McKell@originenergy.com.au)
Sent: Friday, 25 October 2013 11:42:37 AM
To: Joe (universalwaterrecycling@hotmail.com)
Hi Joe,

We've run some indicatives, and I've put together a forecast for your reference.

This is based on the following;

Carbon is repealed 1 July 2014, therefore Cal 14 price as half current carbon cost

Network charges equivalent to black energy charges

Regulatory, metering and environmental charges equivalent to 20% of black energy charge

This is an annual forecast for 2014

Table 3: Pump Station Power Requirement and Capital Cost for Peak Flow of 942 L/s

Pump Station	Flow (L/s)	Head (m)	Power Requirement (kW)	Pumping Hours per Day (h)	Electrical Energy Consumed per Day (kWh/d)	Capital Cost of Pump Station
Burwood WWTP	942	40	586	13.3	7796	$ 4.1 mil
Ironbark Creek	942	120	1758	13.3	23387	$ 5.4 mil
Huntlee	942	120	1758	13.3	23387	$ 5.4 mil

The quote from Origin Energy on the opposite page is based on the above Table.
Electrical Energy consumed per day in kWh/Day 7796+ 23387 + 23387 = 54,570
54,570 kWh per day x 365 days = 19,918 MWH per annum. 1000 kWh = 1 MWH
19,918 MWH as shown on the opposite page per annum costs $2,027,182

1000 litres = 1 kilo litre 1000 kilo litres = 1 Megalitre

THBRWS transfers 45 ML/ day x 365 days = 16,425 ML transferred per annum
At a cost of $ 2,027,182. $125 per ML x 16,425 ML = $2053125
$125 per megalitres divided by 1000 kilo litres = $0.12.5 cents per kilo litre
THBRWS costs 12.5 cents per kilo litre to transfer water from the Burwood Treatment Plant to the Bayswater Power Station.

A PROPOSAL FOR

A PRELIMINARY COST ANALYSIS

FOR A

FRESHWATER TRANSMISSION SUBMARINE PIPELINE

FOR THE

HUNTER BAYSWATER RECYCLING WATER SCHEME

Prepared For

UNIVERSAL WATER RECYCLING

Attn: Joe Taranto
37 Moon Mountain Drive
Mt View NSW 2325
AUSTRALIA

Prepared By

MAKAI OCEAN ENGINEERING, INC.

PO Box 1206, Kailua, Hawaii 96734

Signature and Date of Corporate Official:

Printed Name: Jose Andres Title: President

Signature: Jose Andres Digitally signed by Jose Andres DN: cn=Jose Andres, o=Makai Ocean Engineering, ou, email=jose.andres@makai.com, c=US Date: 2013.10.23 10:39:47 -10'00' Date: Oct. 23, 2013

October 21, 2013

INTRODUCTION

Makai Ocean Engineering, Inc. ("Makai") has been in contact with Mr. Joe Taranto ("Client") of Universal Water Recycling during the months of June to October, 2013. Mr. Taranto provided a request for proposal for a preliminary cost analysis, dated August 8, 2013. This proposal is a response to that request.

The Client is in the planning phase of a treated wastewater recycling system in the Hunter Valley, New South Wales, Australia. This project will exchange 45,000,000 liters of treated wastewater per day to the Bayswater power station and draw 45,000,000 liters per day of potable grade water from the Hunter River near Braxton. There is to be a 22-kilometer long subsea high density polyethylene (HDPE) pipe originating at the Burwood Waste Water Treatment Plant (located on the coast in Newcastle), extending into the ocean, traveling up the Hunter River to Ironbark Creek, and terminating at an onshore location on the bank of the Ironbark Creek ("Ironbark Creek end").

The Client has requested that Makai restrict this proposal to the engineering works associated with the subsea HDPE pipeline that connects the Burwood Waste Water Treatment Plant with the Ironbark Creek end.

PURPOSE OF STUDY

The purpose of the proposed study is to provide the Client with a description of the engineering and construction work required for this subsea pipeline, including an estimate of the requirements, schedule, and cost.

Statement of Work

Makai will perform the following work:

- A discussion of the general requirements of submarine pipeline projects such as this. This will include a description of:
    - The typical consultants required to complete the work
    - The information required by Makai to complete a final design
- A preliminary project development schedule for the subsea pipeline design, fabrication, and installation
- A conceptual design and sizing of the system components including the pumps, pump station, HDPE pipeline and the shore crossing and anchoring required.
- A preliminary cost estimate of the engineering and construction pipeline

Important Assumptions

In order to perform the above work, Makai must make some important assumptions, as follows:

- Makai's work will be restricted to the technical/engineering/construction aspects of this pipeline. Makai does not know the specific Australian laws (environmental or other) that may apply to this job, and thus we will not consider the effect that any laws or regulations may have on the cost, schedule, or feasibility of this project.
- Construction and labor costs will be based on Hawaii costs, and other relevant Makai projects.

Client Supplied Information

Makai assumes that the Client will supply certain necessary information to Makai. If the client does not have this information available, Makai will collect the best publically available information. However, the quality and level of certainty of Makai's cost estimates will depend largely on the quality of data provided by the client. In order for Makai to perform this work, we assume that the Client will provide requested information in a timely manner.

Makai assumes that the Client will provide the following information to Makai:

REQUIRED:

- HDPE Pipeline parameters required:
  - Flow rate: Makai will assume a flow rate of 45,000,000 liters per day of water thru this pipeline, unless otherwise instructed
  - Design life
- Offshore information required:
  - Bathymetry charts along the intended pipe route
  - Maps identifying any regulated or restricted areas where the pipeline may not be laid
- Onshore information required:
  - Maps identifying pipeline landing sites
  - Maps identifying pump station location

OPTIONAL:
Makai recognizes that much of this information may not be readily available, but the following information would be very helpful for this work.

- Offshore information:
  - Historical wave data for the area
  - Historical seasonal storm data for the area
  - Information about the condition of the seabed along the pipe route (rock, reef, sand, silt, depth, stability, etc.)

    - Maps identifying marine uses and activities in the areas along the pipeline route (fishing, anchoring, quantity and type of vessel traffic)
- Onshore information:
    - Restrictions on certain pipeline shore crossing methods (exposed pipeline, trenching, tunneling).

Note on Costs:

Makai will size and price out the cost of a freshwater transmission subsea pipeline system. The cost will be based upon Hawaii costs, which we will assume will be similar to costs in Australia. Any site-specific adjustment of Makai's cost estimates to match the actual costs at the site shall be done by the Client.

Deliverables

Makai will provide a Final Report that includes:

- A discussion of the general requirements of submarine pipeline projects such as this. This will include a description of:
    - The typical consultants required to complete the work
    - The information required by Makai to complete a final design
- A preliminary project development schedule for the subsea pipeline design, fabrication, and installation
- A conceptual design and sizing of the system components including the pumps, pump station, HDPE pipeline and the shore crossing and anchoring required.
- A preliminary cost estimate of the engineering and construction pipeline
- Recommendations on how to proceed with the next phase of development. These recommendations will also include requirements for further data collection and how to gather these data. In particular, data requirements will include information on collection of detailed bathymetry survey data, bottom roughness and currents in the area.

BACKGROUND: MAKAI OCEAN ENGINEERING, INC.

Makai Ocean Engineering has been in business for over 30 years providing ocean engineering services on deep water systems, naval architecture, aquaculture, pipelines, OTEC, cable laying control systems, and underwater vehicles. The most critical technical aspect of a seawater air conditioning is the cold water intake pipeline. Makai has been designing and working with deep water pipelines since 1979, starting with the design and installation of the 2,000' deep Mini-OTEC demonstration. Since that time, Makai has designed numerous deepwater down-the-slope pipelines, four of which have been installed at Keahole Point, Hawaii, and has been involved in a variety of large diameter OTEC pipeline design studies and research programs. One of these pipelines is 40" diameter, deployed to a depth of 2,200'. It currently provides air conditioning for the administration

building and the research laboratory at the Natural Energy Laboratory of Hawaii (NELH) and is the major source of water for the cold water aquaculture projects located there. If this particular pipeline was solely dedicated to providing air conditioning, it could provide cooling for approximately 5000 hotel rooms.

Another Makai pipeline at NELHA is a 55" diameter pipeline installed to a depth of 3,000'. This is the largest and deepest pipeline of its type in the world. This project was selected by the American Society of Civil Engineers as a 2003 Merit Finalist, one of six most outstanding Civil Engineering Projects of 2002.

Other Makai SWAC Projects:

- Makai engineered and designed a 63" diameter HDPE pipeline, 2 miles in length, for Cornell University. This pipeline provides cold water from Lake Cayuga to air condition the entire Cornell campus.
- In a similar project, Makai designed 3 each 63" diameter pipelines, each 18,000 feet long, for the Toronto, Canada. Cold water from Lake Ontario is now being used to cool downtown Toronto buildings and for high quality drinking water.
- A SWAC project completed by Makai in 2006 was for the InterContinental Resort and Thalasso Spa, Bora Bora. We engineered and designed a 400 mm HDPE intake pipeline which was deployed down a very steep submarine slope to a depth of 900m. The SWAC system is currently in operation.
- Currently, Makai is designing a seawater air conditioning system for downtown Honolulu. When completed, total project cost will be approximately $250 million.
- Makai completed a SWAC intake and return seawater pipeline design for a project in the Piscadera region of Curacao. This project to connect a series of hotels via cold seawater district cooling system is currently on hold due to the financial failure of the developer in the 2008 financial crisis.
- Other technical feasibility and economic studies on seawater air conditioning systems have been conducted by Makai include: Tumon Bay in Guam, the University of California San Diego, the Caribbean, the Philippines and Hawaii. In addition, Makai has made several technical presentations on seawater air conditioning at national conferences and has written several feature articles in marine technical journals.

For further details on Makai Ocean Engineering, please visit our webpage at www.makai.com.

PERSONNEL

The lead engineers Makai Ocean Engineering proposes to use for this work are the same engineers who have worked on our recent and past deep seawater intake pipeline designs. These engineers are familiar with both US and international standards. Newer members of Makai's pipeline design group will be used to provide analysis and support on the various tasks associated with this work.

The following are the key individuals that will work on this project:

- Dale Jensen, P.E., Ocean Engineer with 30 years experience at Makai in pipeline design including several intake and outfall pipelines in various locations around the Pacific. Mr. Jensen will lead Makai's team.
- Nick Reese, an MS Mechanical Engineer, is an expert in finite element analysis and has been a primary design analyst on several large diameter HDPE pipeline projects. Mr. Reese will provide route analysis and will lay out the required pipe anchoring scheme.
- Greg Rocheleau, an MS Oceanographer and BS Chemical Engineer, is an expert in 3-dimensional structural analysis of pipeline systems using ORCAFLEX software. He has experience in ocean hydrodynamic modeling of submerged pipelines using SWAN software. As an oceanographer, he will lead Makai's group in specification of metocean and bathymetric requirements to pipe analysis.

COST

USD $38,000 to complete this work.

SCHEDULE

Three months from the first payment are required to complete this work. Our earliest starting date would be January 1, 2014.

COST PROPOSAL

1. **Payment Schedule:**

   Notice to Proceed = $15,000

   Monthly Invoices (2 each) = $9,500

   Upon Acceptance of Final Deliverables = $4,000

2. **Rates:** The employee rates used to arrive at the quoted lump sum price are effective until April 1, 2014. If the work is contracted after that time, Makai reserves the right to re-bid the work and include any changes in our billable rates.
3. **Limitation of Professional Liability:** Makai is insured with general professional liability insurance to cover against damages due to our errors or omissions in design work. Makai also includes a Limitation of Liability clause in all our Owner-Engineer Agreements for deep water pipeline work. This clause protects Makai from being sued for full project responsibility due to an accident or installation failure which might lead to costs out of proportion with the fees we have received for our services.
4. **Exemption from Hawaii General Excise Tax:** The State of Hawaii currently waives 4.712% excise tax requirements for professional services exported from the State. Appropriate documentation will be required from the client to qualify

for this exemption. In the event that Makai is required pay this tax, for lack of documentation, our fee shall increase accordingly.

5. **Standard Makai Agreement:** Makai has supplied a copy of Makai's standard engineering form agreement that we use for projects of this nature and request that this be used to form the contractual basis for this feasibility study.

6. **Electronic Transfer of Funds:** Makai assumes that payments will be by electronic transfer of funds. Instructions for electronic transfer of funds are as follows:

   Account Number: 0010019036
   Bank: Bank of Hawaii
   Address: 636 Kailua Road, Kailua Hawaii 96734 USA
   ABA Routing Number 121301028
   SWIFT Code BOHIUS77

This proposal agreed upon by:

Makai Ocean Engineering, Inc	Universal Water Recycling
Jose Andres Digitally signed by Jose Andres DN: cn=Jose Andres, o=Makai Ocean Engineering, ou, email=jose.andres@makai.com, c=US Date: 2013.10.23 10:40:14 -10'00'	
Jose Andres President	Joe Taranto Director
Date: Oct. 23, 2013	Date:

UWR

Global Pipe Australia
Terrain Pipeline Section for
"The Hunter Bayswater Recycling Water Scheme"

Client name:	Universal Water Recycling		Project name:	Hunter Bayswater Recycling		Product	FPI Fiberstrong		
Contact name:	Joe Taranto		Authority			Type	Pressure Water		
Type	Size	Outside Diameter	Length	Joint Type	Stiffness	Pressure	Quantity (m)	Price (m)	Price subtotal
Pipe	1000	1026	11.85	Coupling	10,000	PN16	100,000.00	$ 699.70	$ 69,970,304.48
								Total ex GST	$ 69,970,304.48

Aaron Mackley
Global Pipe Australia Pty Ltd
Tel (03) 9305 0600
Fax (03) 9305 0611
Mobile 0401 157 336
Website www.globalpipe.com.au


CAT

Chichester Dam

A Gravity Dam

Chichester Dam 156.2 meters (AHD) Australian Height Datum. or 156 .2 meters above sea level.

The Dam holds 18,356 megalitres of water, with a 90 kilometres long gravitation main transporting water from the Dam to the major city reservoirs in Maitland, Cessnock and Newcastle.

The 1989 earthquake 5.6 on the Richer scale killed 13 people and billions of dollars in damages, the epicentre was at Boolaroo, just 25 km from Grahamstown Dam, no damage was reported, please note the Muswellbrook earthquake 4.7 on the Richer Scale and a 103 km from Grahamstown Dam.
Please note Grahamstown Dam volumes 183,305 ML, lowering it to 90% represents one Chichester Dam in volumes wasted, then Hunter Water decided to reduce it to 82%, almost another Chichester Dam in volumes wasted.

Now they are running an advertising campaign, “Every day is a good to save water.”
They have also stated it will take 5 to 10 years to rectify any problems with the Grahamstown Dam Wall.

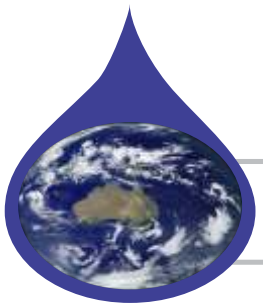
UWR

The Hunter Bayswater Recycling Water Scheme
Intellectual Property Matters

I recommend that the Federal Minister for Environment and Water, the NSW Minister for Finance and Services, the Metropolitan Water Directorate and the Independent Panel conduct a comprehensive feasibility study of this proposal before proceeding. In my view, the study will conclude that the project will provide a viable new water source for the Lower Hunter Water Plan and is of national importance.

However, I require that should the feasibility study be conducted, the parties agree to provide me with a copy as soon as reasonably practicable.

All parties who use my work in conducting any studies, planning, or in connection with any other purpose whatsoever, acknowledge that all intellectual property contained in this document is owned by Joseph Taranto. All parties who have access to this intellectual property acknowledge and agree that the information contained herein shall not be used without the consent of the intellectual property owner. The parties with access to the intellectual property contained herein acknowledge and agree that a commercial intellectual property arrangement must be entered into with the intellectual property owner prior to any party using any of the information contained herein. The parties, and all parties who review this document acknowledge and expressly agree that Joseph Taranto retains ownership of its Intellectual Property Rights in the information contained herein until such time as any assignment of Intellectual Property takes place.



UWR

Hunter Hydrogen Water Scheme

EVERY DROP COUNTS!

SCHEME 1

A proposal to provide a major long term secure water source to support further investment into the Hunter Hydrogen Hub.

RE : " A water proposal to draw attention to stakeholders and investors and to seek their support to encourage the NSW and Federal Governments to conduct a proof of concept (POC) study to construct a Water Electrolysis Plant and a Haber - Bosch based process plant for green ammonia production next to the Hunter Power Project site at Kurri Kurri."

This proposal addresses the following:

1) It is a solution to supply a secure long term water source for hydrogen production and to supply it as an additional fuel source to the 660 MW Peaking Plant, it also provides hydrogen to produce green ammonia for export.

2) This water transfer proposal utilises water from three separate waste water sewage treatment plants and harvests and filters storm water runoff from Kurri Kurri , Farley, Rutherford , Gillieston Heights, Heddon Greta and Cliftleigh, it also captures and stores water from the catchment areas of Swamp Creek, Stony Creek and Bishops Creek.

3) In the long term as technology improves it is envisaged this proposal will accomplish and provide hydrogen being the total fuel supply to a hydrogen- fired power plant at Kurri Kurri and be a major energy provider for NSW.

4) It will also be an economic benefit for NSW and the Hunter by being a major green ammonia manufacturer for Australian Industries and export.

The Hunter Power Project at Kurri Kurri is under construction to help provide for the loss of base load capacity with the closure of the Liddell power station this year.

The following proposal can provide 45 ML/d of secondary treated recycled waste water from a secure water source that is unaffected by drought to the Power Project Site.

This proposal titled "The Hunter Bayswater Recycling Water Scheme," was first submitted in November 2013 as a water option for consideration for the Lower Hunter Water Plan.

The project was a water exchange system (fit for purpose) providing the power station and the mining sector with secondary treated waste water in exchange for the potable grade water they are drawing from the Hunter River.

This proposed water project has now changed direction, focussing on hydrogen production, by supplying 45 ML/d of secondary treated waste water from the Burwood Treatment Plant to the Hunter Power Project site at Kurri Kurri.

The advantages are as follows;

Regarding the proposed on-land pipeline required for this new water transfer proposal.

The onland pipeline length is approximately one third of the distance then the previous (THBRWS) plan.

This new proposal requires approximately 20km of on land pipeline, please refer to cover page.

The energy requirements and transfer costs in brief are on page 15, they are cost effective and therefore this new proposal onland pipeline length which would now be reduced by two thirds, providing further cost reductions, furthermore it would only require two pumping stations, one being at the Burwood Treatment Plant and the other at Ironbark Creek.

For further information regarding power requirements and capital costs for pumping stations please refer to pages 24 to 29.

The site of the 660 MW Peaking Plant being constructed has major infrastructure already in-place Power Grid infrastructure, Rail Infrastructure that can transport green ammonia to the port of Newcastle and it is next to the Hunter Expressway.

The proposed Hydrogen Production Project would require a water storage solution.

There are four options;

Option 1

A number of concrete reservoirs could be constructed next to the Hunter Power Project Site, which may even include an 80 ML Tank similar to the Ellenbrook Concrete Tank in Western Australia.

Advantages

Containment of water
Level sites are all that is needed.

Disadvantages

Costs is more expensive than the building of a dam.
Limited to a water supply of 45 ML/ day

Option 2

The construction of a dam at an appropriate location near Swamp Creek next to the 660 MW Peaking Plants site, similar to the nearby Richmond Vale Colliery Dam.

Advantages

Lower costs, more water storage volumes.
The proposed dam site can be built next to swamp creek.
Additional water can be drawn from this creek and passed through a water treatment plant and added to the dams storage volumes.

Alternatively the dam can be built on Swamp Creek with provisions put in place before water reaches the dam by channelling this water through several wetlands and over different grades of gravel, river sand and through Gambians, running water exposed to sunlight dose not have travel far to be suitable for most purposes.

The location of this dam is close to the peaking power site and would require a minimal amount of pipe-works.

Disadvantages

This proposed site may have some contamination from water runoff from the previous Aluminium Smelter Site.

This may require some funding for excavation and removal costs of contaminates to a suitable location, the Bloomfield Colliery on Buchanan Road may have room to incorporate this fill at one of their opencut mining sites, it is only a short distance to transfer these contaminants along with suitable top soil from the construction of the proposed dam to bury and rehabilitate a section of their mine site that does not impede on their coal production.

Option 3

Utilising water from the Kurri Waste Water Treatment Plant.
This plant currently treats 3.9 megalitres per day, some of this water is recycled, the Kurri Kurri TAFE College extracts up to 400 kilolitres per day and the Kurri Golf Club 370 kilolitres.
This effluent reuse is primarily for irrigation, demands can be much lower during winter months due to increased rainfall.

This sewage treatment plant has recently had an upgrade.
It is proposed that this plant could be increased to draw more water into its system from storm water runoff from Kurri Kurri that flows along swamp Creek.

This additional water can be treated to a suitable grade for Hydrogen production.

Advantages

The Kurri Kurri waste water treatment is close to the Peaking Power Plant.
Water treated to a suitable grade for hydrogen production can be pumped via a pipeline directly to the proposed Electrolysis Plant.

Alternatively it can be pumped to the proposed dam reservoir mentioned in option 2.
A new water customer for Hunter Water.
A step to increase Hunter Water Recycling volumes.

Volumes of approximately 3 ML/ day of treated water at present could provide water to the Electrolysis Plant with the potential to increase the water supply by drawing and treating more water from Swamp Creek.

Disadvantages

None foreseen if pumped via a pipeline directly to the proposed electrolysis plant.

If pumped to the proposed dam reservoir please refer to disadvantages in option 2.

Option 4

Additional water to increase hydrogen production could be obtained from the 7.2 ML /day Farley WWTP, obtainable water volumes will only increase in this major growth area.

The plant already treats part of its water to a grade for reuse to the nearby suburb of Gillieston Heights to homes for duel reticulation, the remainder of this water is discharged into Fishery Creek which flows into Wallis Creek and eventually into the Hunter River.

It is proposed that the Farley Plant could be further upgraded to treat the majority of its water to a suitable grade for reuse.

Rather than discharging this valuable resource into Fishery Creek it is envisaged to divert this water to this proposal for hydrogen production.

The Wentworth swamps is a natural basin, it covers a vast area, it is shallow and prone to evaporation, when full its water flows into Fishery Creek and eventually ends in the Hunter River.

If we look at what was achieved in the past, Lake Liddell was extended in 1960 to accommodate more water for the Power Station, Grahamstown Dam is a major off – stream earthfill Embankment Dam and was completed in 1965.

It is envisaged by following what has been achieved in the past and with a positive Yes We Can attitude, we can transform Wentworth Swamps into a lake for a water storage containment, utilising filtered storm water run off and secodary treated waste water from the expanding new housing developments in the Rutherford, Farley, Gillieston Heights, Cliftleigh, Heddon Greta and surrounding areas to be transferred into the proposed water storage reservoir.

Water would also be available from the catchment areas of Swamp Creek, Bishops Creek and Stony Creek.

Additional water can even be pumped from Wallis Creek to the proposed lake when flow rates permit.

Advantages

The proposed large lake would provide the following,

A secure long term water source for hydrogen production.

To be in position when technology improves to increase the percentage of hydrogen as a fuel in the power station and in the long term it is envisaged to be totally powered by hydrogen.

Yes We Can, A HDPE Pipe manufacturing industry can be established here in the Hunter, please download Scheme 1, the location of the proposed facility is on the front cover further information is on pages 9, 10, 11 and 12.

We need to partner up with an offshore HDPE Pipe manufacturer, either AGRU America, South Carolina or Pipelife Norway, **please watch this 3-minute video on YouTube**,

"**World Record for the longest LLLD pipe tow**".

A Flood Mitigation Plan to reduce flooding in the Maitland region

Please examine the front cover, the blue line pipeline option is for Scheme 1, providing water to the Kurri Power Project to manufacture green hydrogen or green ammonia on site, because the pipeline is unsustainable, due to how hydrogen can easily defuse through metal surfaces, (pipeline embrittlement). **Question,** what plans are in place for the Government to honour its pledge to reduce emissions from the Hunter Power Project by adding a hydrogen mixed blend of 30%?

So, at present the shallow Wentworth Swamp is used for Flood Mitigation and supports conversation, over the decades with the build-up of sediments from each flood has reduced the depth and capacity volumes, and with all the new housing developments and roads in the surrounding area exacerbated water runoff.

This proposed approximately 20km **Duel Purpose Pipeline** can transfer can transfer flood waters from the Wentworth Swamps and Wallis Creek to the Hunter River at Ironbark Creek, also passing an optional water storage area that could be used for flood mitigation to fill the final Void.

A 20km 1-meter Diameter HDPE pipeline can transfer 45 to 50 ML/day, a 1.6 meter in diameter can transfer 142 ML/day, (please refer to Scheme 2 page 14 regarding volumes per pipeline).

The dotted blue line is from Scheme 2; this is a Duel purpose pipeline that is 2 meters in diameter and can transfer 222 ML per day.

So, in the event of another flood these proposed duel purpose pipelines can transfer in volumes from Wentworth Swamps and Wallis Creek either 272 to 364 ML/day into the Hunter River via Ironbark Creek.

A Flood Mitigation Plan for Sydney to reduce flooding in the Hawksbury and Nepean River systems

Please note if Sydney had a major rain event similar to what Taree has recently experienced it would be a major disaster, Warragamba Dam has a catchment of 9.051 square km.

The Dam which is almost full has no buffer to protect the communities in the Hawksbury and Nepean's River systems.

I am sending this information to the Ministers on all sides of politics to encourage collaboration to contact local Councils and the Bureau of Meteorology members and experts in flood events to run a scenario of the damage that would occur if Western Sydney experienced a similar above weather event that has cost millions of dollars in damages.

The most common-sense approach is to lower the dam volumes to create a buffer, there is a system to transfer this water without wasting it via a duel-purpose HDPE sub-sea pipeline either at one meter in diameter that can transfer 50 ML/day or at 1.6 diameter that can transfer 142 ML/day.

This proposed pipeline can be connected to the Manly Warringah Water Supply Pipeline and transferred to the Central Coast and stored in Mangrove Creek Dam with a small catchment of 101 square km, this is an interregional water sharing plan, please view pages 15, 16 and 17 in Scheme 1.

RE; "Flood Mitigation Proposal to reduce flooding in the township of Dungog and the Williams River.

Chichester Dam water levels can be lowered during and before a major rain event is imminent. I am hopeful that this proposal would result in the collaboration between Councils, Governments and the Bureau of Metrology to consider all options to provide the necessary infrastructure needed to reduce the impact to the communities, farmers, thus also reducing the associated damage clean- up costs of future flood events.

This flood mitigation proposal, I will explain it to you in layman's terms,

"The Bathtub Effect,"

If you came home and your bathtub was overflowing, you would do two things, one, turn the tap off and two pull the plug.

If we look at Chichester Dam as a bathtub that is overflowing, **one**, you can't turn the tap off because you have many km of tributary streams and saturated grounds with continual run off, and **two**, Chichester Dam has no plug.

Please note, that we can install a plug system to lower Chichester Dam.
The Chichester Gravity Trunk main pipeline that servicers Newcastle, Maitland and the Lower Hunter.

This pipeline crosses Ironbark Creek, with approximately just 550 meters of pipeline the **same** diameter of 900mm to match the Chichester Trunk Pipeline, we can divert this water to enter into Ironbark Creek east of the Hexham Flood Gates and enter just before Ironbark Creek Bridge, please refer to the map on the following page.
Please note that during flood events water to provide Newcastle can be obtained from the interregional water sharing pipeline from the Central Coast, Maitland, Cessnock etc can utilise existing reservoirs.

The drainage rate in volumes would range from 65 ML/day or 65 thousand tons per day to 90 ML/day or 90 thousand tons per day, flowing into the South Channel Hunter River.
Please also note that this would also reduce flooding in the area where the interaction between the Williams River and the Hunter River meet.

RE; “Flood Mitigation Proposal to reduce flooding in the township of Dungog and the Williams River.

Proposed 550 meter pipeline diversion

Distance Measurement 525.88m

Chichester Gravity Trunk Pipeline