SOL-AQUA ENTERPRISES PTY. LTD.

ACN 150 096 325

WYVENHOE DAM to the MURRAY DARLING BASIN WATER TRANSFER PROJECT

An Unsolicited Proposal to
The Federal Government Department of Prime Minister and Cabinet
and the Queensland Government Department of Premier and Cabinet

BUSINESS STRATEGY

February 2012

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PROLOGUE

This report titled Wyvenhoe Dam to Murray Darling Basin Water Transfer Project follows the National and Queensland PPP Guidelines for unsolicited proposals. It is being lodged concurrently with the Federal and Queensland governments by Sol Aqua Enterprises Pty Ltd A copy has been sent to the Chairman of the MDBA, Hon Craig Knowles.

The project involves the construction of 130,000 metres of pipeline from Lake Wyvenhoe to the Condamine River near Clifton and as yet unquantified open channel construction, plus pumping facilities for the pipeline.

This infrastructure could transfer around 500 GL into the MDB in an average rainfall year depending on inflow into the dam. Much higher diversions are possible during an "uncommon event"[heavy continuous rain] which have historically occurred every 3 to 4 years. With global warming these "unusual events" are expected more frequently. The extracted water would then travel by river flow from the Condamine River to the Murray mouth. Small to moderate floods in most cases can be eliminated, and larger events reduced in intensity. Water could be stored in Beardmore Dam near St George, and Menindee Lakes in good rainfall years and transferred into the Balonne or Darling rivers in drought years. This would be subject to the approval of the MDBA and Queensland and NSW governments.

The proponents have had initial discussions with GHD and it is agreed the project warrants further investigation. It is clear that taking water which could cause flooding from Wyvenhoe Dam and delivering it into the MDB, which needs additional environmental water makes sense.

If the project is to be privately funded the financial model will require sales of 100 gigalitres to mining companies and the remaining water to be sold to the MDBA.

No capital contribution from the Queensland Government would be necessary but a desalination plant would be needed within seven years. A royalty of 10% of sales would be payable to the Queensland Government and this would cover around a third of the capital repayment and interest costs of the desalination plant.

Some contribution from the Federal Government could be required from funds allocated for this purpose if the proposed financial model was adopted. Alternatively the Federal or Queensland Government could take over the project in which case the proponents would require a concept and preliminary design fee of 0.5% of project costs.

From the Queensland viewpoint the project would provide the following benefits:

- *A commission on the initial sale of water to the MDBA of 10%. This should reflect the MDBA buying the water at current commercial rates for high security water sales.*
- *Royalties of $35 million per annum from ongoing sales to mining companies and the like.*

- *Queensland acquires an asset at the end of a BOOT arrangement worth arguably $3.5 billion on today's costs.*
- *Savings of in excess of 1.5 billion dollars for dam modifications.*
- *A simple solution to eliminate small to moderate flooding and help to ameliorate larger events.*
- *Provision of environmental water for more than one thousand kilometres of Queensland rivers and wetlands including the Narran Lakes.*
- *Possibly cancelling out the proposed purchase of 95 GL of water from the St George irrigators, again subject to the MDBA who would own the water.*

From the Federal viewpoint the following benefits occur:

- *Sufficient environmental water to meet a substantial proportion of the 1050 GL needed in the basin to keep the Murray mouth open most of the time.*
- *Possible catastrophic flooding which could attract Federal Government grants and subsidies is mitigated but not eliminated.*
- *There is the possibility of maintaining irrigation entitlements in areas where there is genuine community concern about their farming future.*

If the numbers stack up then Queensland has a new valuable asset in the water that would otherwise go out to sea and the Murray Darling Basin has an additional 500 to 700 billion litres of environmental flows per annum to the Menindee Lakes and 400 to 600 billion litres from Menindee to the Great Australian Bight.

The proposal appears to tick all the boxes for an everyone wins situation.

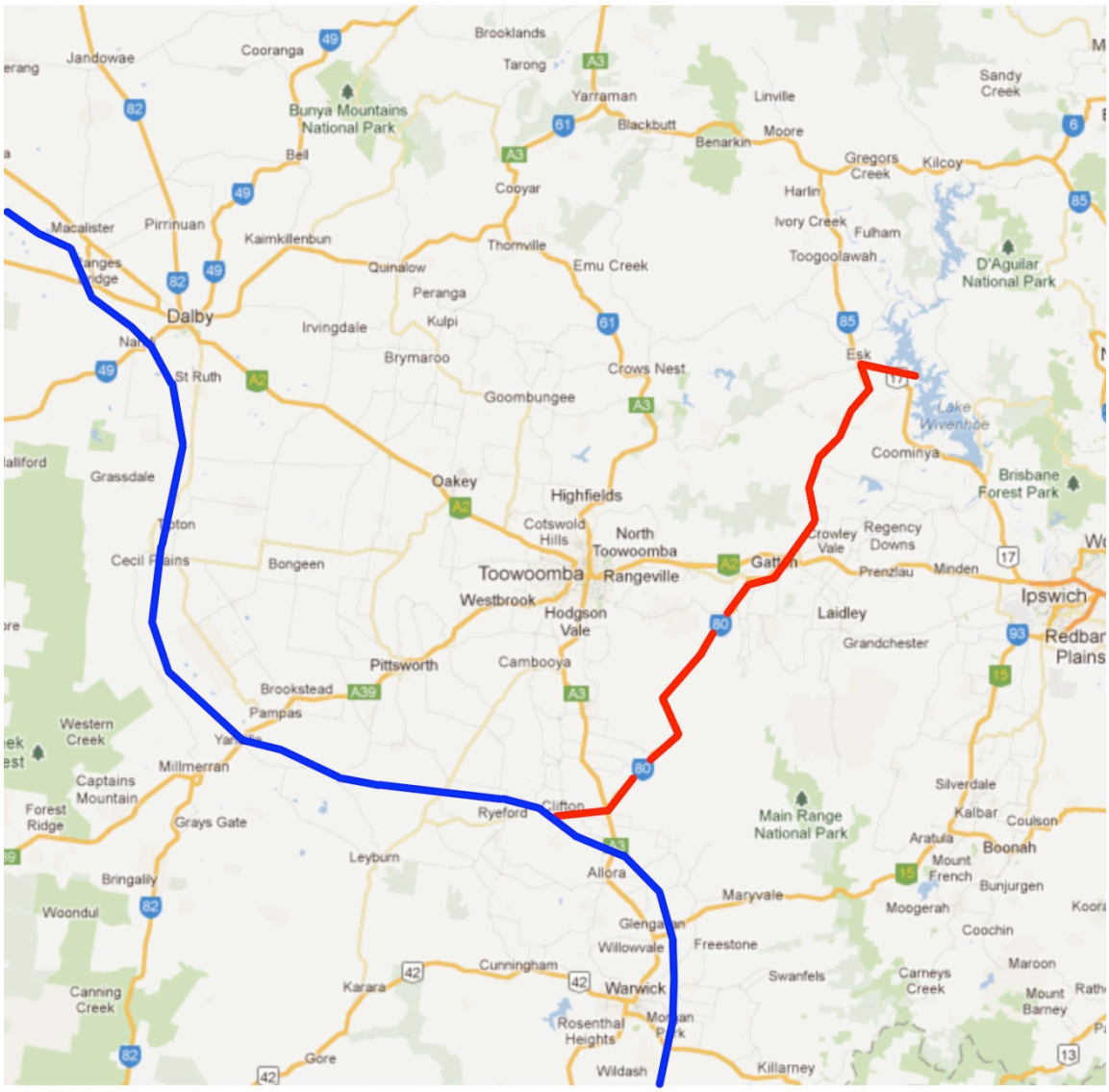

Figure 1 – Wyvenhoe Pipeline to the Condamine River

– Wyvenhoe Pipeline
– Condamine River

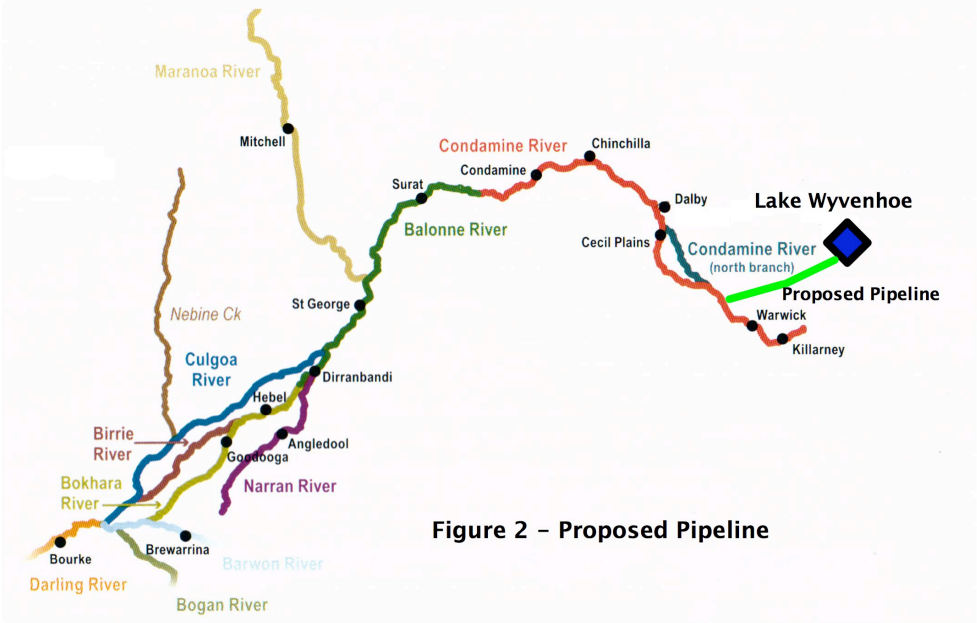

Figure 2 – Proposed Pipeline

1.0 EXECUTIVE SUMMARY

The MDBA publication “Delivering a Healthy Working Basin” states there is currently a shortfall of 1050 gigalitres around the basin allowing for work in the pipeline. This project could supply 40% to 60% of this water in most years if Wyvenhoe Dam was kept at 50% capacity.

The flood situation at Wyvenhoe needs addressing and the recent GHD report includes the possibly of reducing dam storage to 50% which would free up 582 GL per annum in years when the dam filled once. These proposals bring forward the requirement for a 95 GL desalination plant. Royalties of 10% of sales of Wyvenhoe water are suggested and these would cover around a third of the costs of interest and capital repayment of the plant. In addition ownership of the pipeline would be transferred to the Queensland Government at some time in the future if the project is carried out under a BOOT arrangement.

OPERATION: The project broadly requires pumping 3 gigalitres per day from the dam for at least 167 days each year to extract at least 500 GL or 43% of storage capacity. The dam long term storage is around 70% and pumping could commence in mid November so that 38 - 39 days of pumping would have extracted around 116 GL bringing storage temporarily to 40% before the dam’s maximum inflows of January/February occur.
Note: The temporary reduction to 40% would be subject to satisfactory weather forecasts by the Bureau of Meteorology. Pumping would continue through January, February and beyond until the storage level had stabilised at 582 GL [50%]. It is envisaged around 526 GL could be extracted in a normal year under this method of operation. The timetable would be subject to approval by SeqWater.

WATER SUPPLY: Brisbane – Gold Coast currently stores around ten years supply compared to Sydney with 3.9 years storage. The increase in storage at Hinze Dam would appear to cater for the Gold Coast community with no immediate requirement for desalination.

FLOOD MITIGATION: The cheapest way of mitigating the flood problem is to release water into the Brisbane River, under revised dam operating rules, as recommended by GHD. The GHD report investigates reducing dam storage to 50% and this proposal adopts this reduction.
Raising the dam wall involves four years of inconvenience and probably 1.5 billion dollars.

Water released in excess of the environmental requirements of the lower Brisbane River is a wasted resource. The 300 GL recently released and 100 GL which overspilled would have had a substantial value under this proposal.

DESALINATION: The proponents suggest a 95 GL desalination plant will be required within seven years [GHD] and the interest and capital repayments would be around one third covered by royalties from anticipated water sales.

MURRAY DARLING BASIN: “Delivering a Healthy Working Basin” states 1050 GL is required to be sourced to reach a total of 2750 GL which is required to keep the Murray mouth open most of the time. This proposal could see 40% to 60% of this total sourced from Wyvenhoe as a privately funded project, and 50% to 70% as a government funded project where sales to mining interests would not be essential.

TECHNICAL ASPECTS: The preliminary design requires access to three storages:

- Wyvenhoe Dam to access the water.
- Beardmore Dam [which is currently releasing 30 GL due to high inflows], to store water in good rainfall years.
- Menindee Lakes to store water in good rainfall years.

FINANCIAL ASPECTS: If the project is privately funded 100 GL of water will need to be sold to mining companies at a premium price of $3.50 per kilolitre and the remainder to the MDBA at the commercial price for high security water.

If the project is financed by government, these proposed arrangements would be as dictated by government. If government took over the project, Sol Aqua Enterprises Pty Ltd would require a concept and preliminary design fee of 0.5% of project costs.

THE ROUTE: The selected route is Moombra to Esk to Gatton to Mt Whitestone to Hirstglen to Clifton and then to the Condamine River, a total distance of around 130 km, or 130,000 metres.

PIPELINE DESIGN: The pipeline must allow pumping of around 3 GL per day for at least 165 to 170 days per annum. The section from Mt Whitestone to Hirstglen rises 326 metres and would accommodate hydro electricity generation by releasing water stored at Hirstglen back down the pipeline through a turbine – generator set.

The pipeline is envisaged at 3000 mm diameter and made from either Australian steel or ductile iron, as specified at a later date.

LEVELS: The Bureau of Meteorology web site states the following levels of the towns along the route:

- Esk 119
- Gatton 114
- Mt. Whitestone 180
- Hirstglen 506
- Clifton 443

SUMMARY: Substantial water is available in most years. Since 1986 when the dam opened, storage only dropped below 50% once [in early1996] until the 2005 – 2009 drought period. The exercise is to get as much of this water as possible into the MDB as close to the dam as possible. It has been assumed the long term storage of the dam is 70% and in an average rainfall year some 526 GL could be available for extraction. In years where an “uncommon event” occurs more water becomes available. Conversely, in dry years less water becomes available, but this situation could be ameliorated due to desalinated water becoming available.
Note: It has been assumed that inflows are approximately equal to extractions between April and October barring an “uncommon event.

If the numbers stack up then Queensland acquires a valuable asset, flooding at the dam is reduced, and the MDB receives a large percentage of the environmental water it needs in one exercise.

2.0 INTRODUCTION

This report has been produced by Sol Aqua Enterprises Pty Ltd [SAE] as an unsolicited proposal to be submitted jointly to the Federal and Queensland governments for consideration.

The proposal has been developed in accordance with Queensland's "Public Private Partnership Policy – Achieving Value for Money in Public Infrastructure and Service Delivery."

The four objectives are:

- Value for money through appropriate risk sharing.
- Private sector innovation.
- Optimisation of asset utilisation. And
- Integration of "whole of life" management of public infrastructure.

At this stage of the project these items appear achievable.

The PPP Guidance Material Supporting Document has been used as the starting point in the Business Case Development. The proponents are seeking the approval of the Queensland Government to proceed to the next steps in the development of the business case at SAE cost. No funding is sought from the Queensland Government.

The preliminary Business Strategy addresses several of the necessary success factors including:

- Need for the project.
- Value for money.
- Sustainability.
- Management of the Business Case Preparation.

The proponents have formed a joint venture with Evans and Peck to develop the business case to bankable standard. GHD is available to carry out the major consultancy.

3.0 NEED FOR THE PROJECT [SERVICE DELIVERY]

3.1 The Project

The exercise is to take water above the 50% level from Wyvenhoe Dam and deliver it, by pipeline, to the Condamine River near Clifton which lies within the Murray Darling Basin. In so doing the pipeline could assist in eliminating the flood problem for small to moderate floods, and partially mitigate larger floods associated with Wyvenhoe Dam.

Essentially the MDBA's "Plain English Summary" [PES] states 1468 gigalitres needs to be sourced for the environment. "Delivering a Healthy Working Basin" states that this figure could reduce to 1050 GL through additional funded infrastructure and modernised operating rules for rivers and storages. Around 40% to 60% of the 1050 GL can be sourced in Queensland from Wyvenhoe Dam in most years and surplus stored for use in drought years when no extractions would be allowed. The dam has been classified an "Extreme Hazard Dam" by ANCOLD and GHD has recently

reported on improving safety and flood mitigation performance. The GHD report investigates, among other options, lowering the volume of stored water down to 50% of the dam's design storage of 1165 GL. The cost of so doing reflects to the Queensland community, the cost of building a desalination plant to compensate for the lost stored water. At 50% storage a 95 GL plant costing $2.67 billion needs to be operating by 2019.

The proponents suggest a reduction of storage to the 50% of capacity, for which interest and principal repayments [over 50 years] would cost around $103.4 million per annum and royalties proposed from this project should reach $35 million.

3.2 Operation

It is proposed the storage reduction be carried out by pumping at a rate of 3 GL per day commencing mid November each year so that by 1st January, some 116 GL would have been pumped from the dam over 38/39 days. This would reduce storage from around 50% to around 40% and leave space in the dam for the higher Jan/Feb inflows. The temporary reduction to 40% would be subject to satisfactory weather forecasts from the Bureau of Meteorology. Pumping would continue through January, February and beyond until the storage level had stabilised at 582 GL [50%] and at this point pumping would stop. This methodology or any variation requires the approval of SeqWater and the Queensland Government.

Anticipated extractions would thus be:

Nov/Dec	= 116 GL
Jan/Feb 59 days x 3	= 177 GL
Beyond Feb 815 – 582	= 233 GL

Note: These figures total 526 GL and assume the dam remains at 70% full for Jan/Feb. Higher extractions will be available when an "uncommon event" occurs. Conversely in dry years less water would be available.

3.3 Water Supply

Compared to other states, Queensland has substantial water storage per capita. Brisbane-Gold Coast with a population of around 2,500,000 has a storage of 3256 gigalitres for water supply and 1450 gigalitres for flood mitigation [at Wyvenhoe]. Diversions for 2004/2005 were 325 GL [Australian Water Resources], which means this 3256 GL of water supply should represent 10 years supply at the 2004/2005 diversions.

In contrast the Sydney-Illawarra-Blue Mountains with a combined population of 4,800,000 has 2582 GL of storage [SCA], which translates to 3.9 years supply at 2004/2005 diversions of 661 gigalitres.

The storage at Hinze Dam has been doubled to 310 GL recently to the benefit of the Gold Coast community and other proposed infrastructure provides future benefits.

According to Australian Water Resources [AWR] in the 2004/2005 [drought year], Brisbane storages had inflows totalling 1614 GL or 645,600 litres per person, while Sydney 's inflows were 1446 GL or 301,250 litres per person.

Rainfall in the Brisbane catchment is more than 900 mm compared to Sydney's at around 600 mm. Rainfall can vary substantially within both catchments due to the large catchment areas they occupy.

Refer to Figure 3 showing inflows, supply and use.

Nett inflows, water supply and water use in the capital cities in 2004-05

City	Inflows (GL)	Extraction / diversions (GL)	Total urban water supplied(GL)	Population receiving water supply services (000's)	Total connected properties (000's)	Water supplied per total connected properties (kL/property)
Canberra incl. Queanbeyan	236	68	52	363	136	355
Brisbane	1,614	325	255	975	420	419
Hobart	4,632	40	41	188	83	499
Melbourne	1,752	543	431*	3,583	1,533	281
Darwin	795	62	35	101	43	799
Adelaide	214	250	166	1,095	492	336
Sydney	1,446	861	526	4,228	1,685	312
Perth	1,496	411	237	1,484	649	347
Total	12,185	2,560	1,743	12,017	5,041	419

Figure 3 – Showing inflows, supply and use for 2004-05 in Capital Cities

3.4 Flood Mitigation

The January 2011 flood caused loss of life and property and it goes without saying that future floods are to be avoided or their intensity reduced.

GHD has recently reported on lowering the dam storage to 50% and other configurations including raising the dam wall height.

Costs of raising the dam wall two metres are $400,000,000, adjusting the floodgates would cost around $330,000,000 and a further $100,000,000 would need to be spent on other items including fish-ways [GHD]. This totals $830,000,000 and costs would be expected to rise. And an unanswered question remains as to where excess water could be stored in times of flood. GHD estimate this will require 500 to 700 GL and based on current costs of $250/ML this represents a potential cost of $125,000,000 to $175,000,000.
Lowering the storage volume triggers the need to build a desalination plant. At 50% storage a 95 GL plant would be needed by 2019 costing $2.67 billion.

GHD also state that the best value for money is to upgrade dam operating rules, which would maximise the available storage volume.

This proposal avoids the cost and inconvenience of raising the dam wall and associated works. SAE would propose that the Queensland Government via GHD, consider reducing the volume of storage to 50% and in addition incorporate changes to the operational rules. The cost of this is the need for a desalination plant, which would be partly covered from this proposal's royalties and a sales commission for water sold to the MDBA.

3.5 Desalination Plant

It is assumed that reducing dam storage to 50% triggers the requirement to build a 95 GL plant by 2019 at a cost of around $2.67 billion which would entail the following annual payments:

• Capital repayment over 50 years equals	$53,400,000 p.a.
• Interest @ 3% reducible equals	$50,000,000 p.a.
Total	$103,400,000 p.a.

SAE proposes the pipeline company pays a royalty of 10% of sales to the Queensland Government. Sales are anticipated to reach $350 million, and based on mining companies and the like agreeing to pay for water delivered at around $3.50 per kilolitre, royalties to the Queensland Government should reach $35,000,000.

These numbers would be firmed up during the next stage of the development of the business plan.

Water sold to the MDBA would also attract a one off commission of 10% of the price paid for the water. This should be at the current rate for high security water.

3.6 Murray Darling Basin [MDB]

It is assumed the Murray Darling Basin requires 1050 gigalitres per annum of environmental water [“Delivering a Healthy Working Basin”] in order to keep the Murray mouth open in most times, which then allows the river system to flush out the salt build up. It is believed 400 GL to 600 GL of this water can be sourced from Wyvenhoe Dam in most years by reducing the storage to 50% of 1165 GL [582 GL].

This would see up to 582 GL transferred to the MDB every time Wyvenhoe fills. The water would be transferred at various times throughout the year at a maximum rate of 3 GL per day or 125 ML per hour into the Condamine River near Clifton. From here the water would travel by river flow through the Condamine, Balonne and Culgoa rivers into the Barwon River and thence the Darling and Lower Murray.

To achieve relatively unimpeded flow certain sections of the route will require open channels be constructed following the general line of the watercourses. The exact location of these canal sections would be established by the engineers during the next stage of the development of the business plan. The channel sections would require the approval of the MDBA, the Queensland Government, and the NSW Government.

Refer to Figure 4 showing the proposed water distribution around the basin.

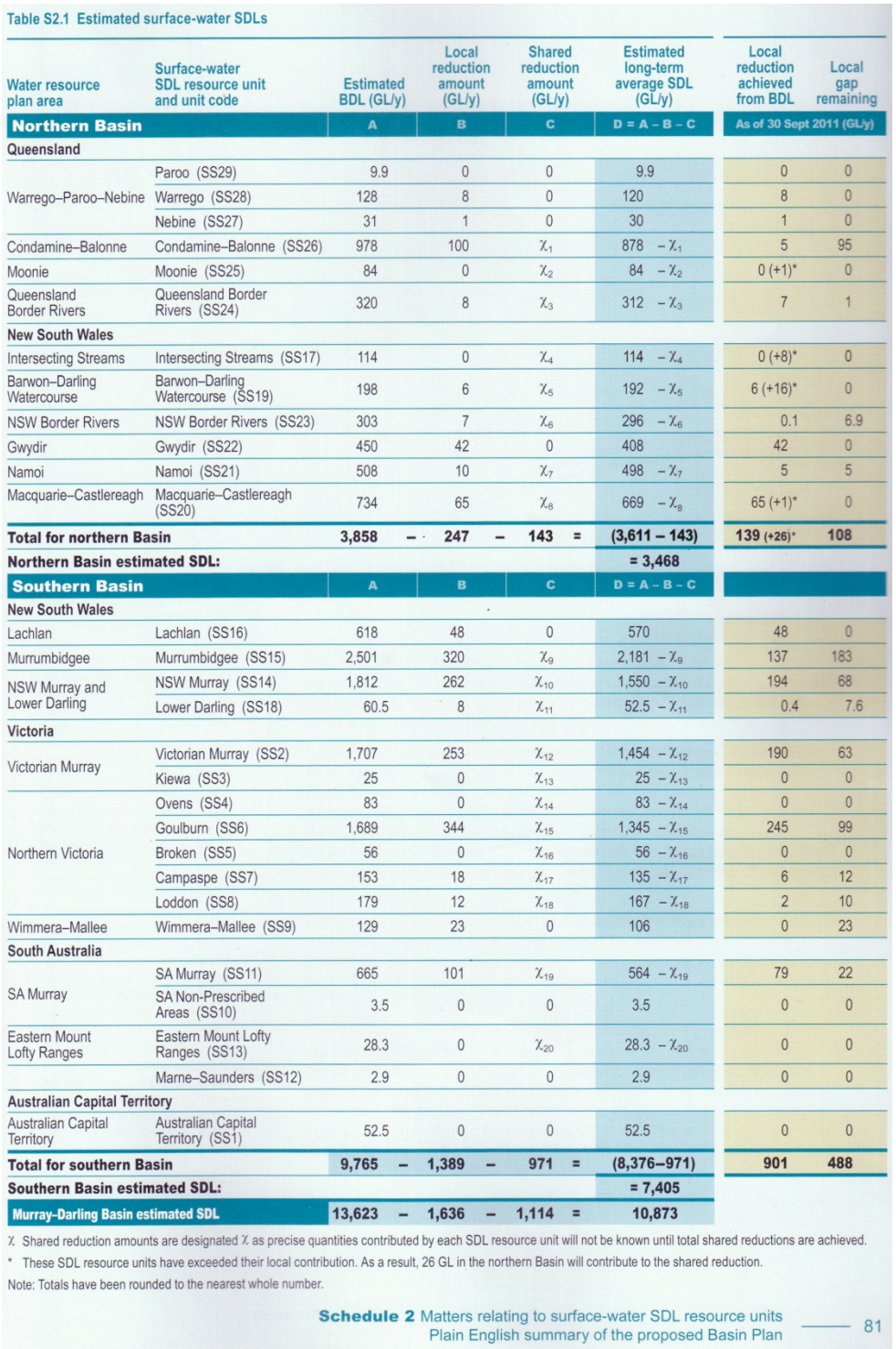

Table S2.1 Estimated surface-water SDLs

Water resource plan area	Surface-water SDL resource unit and unit code	Estimated BDL (GL/y)	Local reduction amount (GL/y)	Shared reduction amount (GL/y)	Estimated long-term average SDL (GL/y)	Local reduction achieved from BDL	Local gap remaining
Northern Basin		A	B	C	D = A – B – C	As of 30 Sept 2011 (GL/y)	
Queensland							
	Paroo (SS29)	9.9	0	0	9.9	0	0
Warrego–Paroo–Nebine	Warrego (SS28)	128	8	0	120	8	0
	Nebine (SS27)	31	1	0	30	1	0
Condamine–Balonne	Condamine–Balonne (SS26)	978	100	χ_1	878 – χ_1	5	95
Moonie	Moonie (SS25)	84	0	χ_2	84 – χ_2	0 (+1)*	0
Queensland Border Rivers	Queensland Border Rivers (SS24)	320	8	χ_3	312 – χ_3	7	1
New South Wales							
Intersecting Streams	Intersecting Streams (SS17)	114	0	χ_4	114 – χ_4	0 (+8)*	0
Barwon–Darling Watercourse	Barwon–Darling Watercourse (SS19)	198	6	χ_5	192 – χ_5	6 (+16)*	0
NSW Border Rivers	NSW Border Rivers (SS23)	303	7	χ_6	296 – χ_6	0.1	6.9
Gwydir	Gwydir (SS22)	450	42	0	408	42	0
Namoi	Namoi (SS21)	508	10	χ_7	498 – χ_7	5	5
Macquarie–Castlereagh	Macquarie–Castlereagh (SS20)	734	65	χ_8	669 – χ_8	65 (+1)*	0
Total for northern Basin		**3,858**	**– 247**	**– 143**	**= (3,611 – 143)**	**139 (+26)***	**108**
Northern Basin estimated SDL:					**= 3,468**		
Southern Basin		A	B	C	D = A – B – C		
New South Wales							
Lachlan	Lachlan (SS16)	618	48	0	570	48	0
Murrumbidgee	Murrumbidgee (SS15)	2,501	320	χ_9	2,181 – χ_9	137	183
NSW Murray and Lower Darling	NSW Murray (SS14)	1,812	262	χ_{10}	1,550 – χ_{10}	194	68
	Lower Darling (SS18)	60.5	8	χ_{11}	52.5 – χ_{11}	0.4	7.6
Victoria							
Victorian Murray	Victorian Murray (SS2)	1,707	253	χ_{12}	1,454 – χ_{12}	190	63
	Kiewa (SS3)	25	0	χ_{13}	25 – χ_{13}	0	0
Northern Victoria	Ovens (SS4)	83	0	χ_{14}	83 – χ_{14}	0	0
	Goulburn (SS6)	1,689	344	χ_{15}	1,345 – χ_{15}	245	99
	Broken (SS5)	56	0	χ_{16}	56 – χ_{16}	0	0
	Campaspe (SS7)	153	18	χ_{17}	135 – χ_{17}	6	12
	Loddon (SS8)	179	12	χ_{18}	167 – χ_{18}	2	10
Wimmera–Mallee	Wimmera–Mallee (SS9)	129	23	0	106	0	23
South Australia							
SA Murray	SA Murray (SS11)	665	101	χ_{19}	564 – χ_{19}	79	22
	SA Non-Prescribed Areas (SS10)	3.5	0	0	3.5	0	0
Eastern Mount Lofty Ranges	Eastern Mount Lofty Ranges (SS13)	28.3	0	χ_{20}	28.3 – χ_{20}	0	0
	Marne–Saunders (SS12)	2.9	0	0	2.9	0	0
Australian Capital Territory							
Australian Capital Territory	Australian Capital Territory (SS1)	52.5	0	0	52.5	0	0
Total for southern Basin		**9,765**	**– 1,389**	**– 971**	**= (8,376–971)**	**901**	**488**
Southern Basin estimated SDL:					**= 7,405**		
Murray–Darling Basin estimated SDL		**13,623**	**– 1,636**	**– 1,114**	**= 10,873**		

χ Shared reduction amounts are designated χ as precise quantities contributed by each SDL resource unit will not be known until total shared reductions are achieved.

* These SDL resource units have exceeded their local contribution. As a result, 26 GL in the northern Basin will contribute to the shared reduction.

Note: Totals have been rounded to the nearest whole number.

Schedule 2 Matters relating to surface-water SDL resource units
Plain English summary of the proposed Basin Plan 81

Figure 4 – Proposed MDB Water Distribution

3.7 Wyvenhoe Dam

Wyvenhoe Dam is a large storage, currently 1165 GL with an additional storage of 1967 GL specifically for flood mitigation. The dam was built for water supply, and flood mitigation and lies east of Highway 17.

It is connected to Somerset Dam and many reports refer to the combined performance of the two dams for both water supply, and flood mitigation.

GHD has recently reported on the flood mitigation aspects of the Wyvenhoe Dam and the proponents have had initial discussions with GHD to establish the practicality of this proposal.

It seems logical to all parties that taking water, which could cause flooding problems from Wyvenhoe Dam and delivering it into the MDB which needs additional environmental water makes sense, particularly when it is at minimal cost to government.

3.8 Technical Aspects

Technically, access to three storages is required in the preliminary design either for extraction of water, or as temporary storage:

- **Wivenhoe Dam**. It is envisaged 500 to 700 GL per annum could become available in all years with pumping capacity of 125 megalitres per hour or 3 GL per day.
- **Beardmore Dam** near St George, which stores 81.7 GL may be needed for temporary storage of water travelling down the Balonne River.
- **Menindee Lakes** would be required for storage, banked in high rainfall years for distribution into the Darling River in drought or low rainfall years.

The exercise is to get 500 – 700 gigalitres of water from Wyvenhoe Dam and transport this water to the Murray Darling Basin near Clifton, and to mining areas in Queensland, NSW and SA. The pipeline route is described in **clause 3.11** and the pipeline design is described in **clause 3.13.**

3.9 The Receiving Waters

The receiving waters are the Condamine, Balonne, Culgoa and Barwon rivers and then the Darling and Lower Murray. Satellite imagery suggests the connections of Balonne to Culgoa, and Culgoa to Barwon will require some civil works by way of open channels to allow a relatively unimpeded flow into the Barwon watercourse. Once in the Barwon the through-flow to the Murray mouth is relatively unimpeded.

3.10 Financial Aspects

It is anticipated the water would be sold to the MDBA and the mining and exploration companies. The preliminary feasibility study requires around 100 gigalitres of sales to the mining companies [and others] for commercial rates of around $3.50 per kilolitre [$3,500,000 per gigalitre].

Water would be offered to the MDBA for the current commercial rate paid for high security water, for actual water delivered into the Condamine River. It is suggested the amount delivered be averaged over the first five years to establish the volume to be paid for.
Note: Recently around 300 GL of virtual high security water was released from Wyvenhoe in order to reduce storage to 75% and another 100 GL has overspilled in the past year. This water had a substantial value had it been piped to Clifton.

3.11 The Route

Three routes were considered:

a) From around Coominya to Blacksoil via Highway 17, and then to Toowoomba, Oakey and Dalby via the Warrego Highway A2.
b) From around Moombra to Esk, Hampton, Goombungee, Ackland, Jondaryan and then to Dalby.
c) From Moombra to Esk, Esk to Gatton via the Esk – Gatton Road, then a short distance west along the Warrego Highway [A2], then through Mount Whitestone and Hirstglen to Clifton via Highway 80, New England Highway [A3], Opportunity Drive, Clark Street and then to the river.

Route c) is the preferred route for the following reasons:

- It follows secondary roads except for a short section of the Warrego Highway.
- It avoids traversing the city of Toowoomba.
- It rises 110 metres less than through Toowoomba.
- More land should be available for locating mini hydro plants.
- At Clifton the water would be discharged into the Condamine River. From this point it has entered the Murray Darling system and the MDBA would assume control of the water. The project will require access to Menindee Lakes and possibly to Beardmore Dam for temporary storage. Additional work will be needed to construct open channels to convey water from the Balonne into the Culgoa watercourse, and from the Culgoa into the Barwon, which travels relatively unimpeded to the Darling near Brewarrina.

Refer to Figure 1 (page 4) which shows the pipeline route.

3.12 Distance [Pipeline Length]

The Esk/Gatton/Clifton route is approximately 130 kilometres, assuming a satisfactory drop off point near the Condamine River bridge at Clifton.

3.13 Pipeline Design

The pipeline is envisaged as a 3000 mm diameter pipeline with pumping capacity of 3 GL per day,or 125 megalitres per hour lifting 326 metres in around 70 km [1:212] between Mt Whitestone and Hirstglen. Water could be pumped up at off peak rates, held in a holding storage and some of the water released back down the pipeline through a turbine to generate hydro electricity during periods of peak demand. The

route has several downhill runs, which may support a mini hydro plant due to the constant volume going through the pipeline for six to eight months of the year.

Pipeline material is envisaged as Australian steel or ductile iron, corrosion proofed internally and externally, and with gasket or welded joints. This is subject to engineering analysis.

3.14 Easements

The pipeline route follows road easements for most of its length and should require minimal acquisition of easements.

3.15 Levels

The following levels have been sourced from the BOM website and indicate the levels of towns along the preferred route.

TOWN	AHD	RISE/FALL	PUMPING
* Esk	119		
* Gatton	114	-5	minimal
* Mt Whitestone	180	66	Yes
* Hirstglen	506	326	Yes
* Clifton	443	-63	minimal

Note: The fall from Hirstglen to Clifton is around 1:400 over 25 km and this section may support a mini hydro plant.

3.16 Summary

Substantial water appears to be available in most years. The exercise is to get it into the MDB as close to the dam as possible. Rainfall records show 2004/2005 was a dry year but Wyvenhoe and Somerset dams received good inflows; Refer to Figure 3 which shows the Brisbane dams had inflows of 1614 GL and diversions of 325 GL. The fact is, this proposal is dependent on rainfall for its performance and this is the nature of the project. There are good storages down the Darling, particularly Menindee Lakes [1794 GL] and these could be used to warehouse water in the good [La Nina] years. And further storage may be available at Beardmore Dam near St. George, which stores 81.8 GL.

The figures have to been calculated taking Wyvenhoe down to 50% full [on the basis the desalination plant could commence in the near future]. The dam should deliver 500 - 700 GL in most years. In fact, Wyvenhoe overspilled for 321 days straight recently under the La Nina influence.

This project would see the MDBA sourcing 40% to 60% of its remaining water needs in one exercise. And it would see the Queensland Government addressing the flooding problem at the dam at a cost of building a desalination plant where around one third of the financing costs would be covered by royalties from annual water sales to mining companies.

Many aspects of the project require further detailed analysis and SAE is offering to fund this work provided the Queensland Government agrees to sell the Wyvenhoe water for a royalty of 10% of the sale price, and the MDBA agrees to support the proposal.

The project may need some financial assistance from the Federal Government from funds allocated for such purposes.

4.0 VALUE FOR MONEY

A detailed cost estimate will be prepared by E & P as part of Stage 3 of the Business Case. Preliminary assessment sees capital funding at around $2.3 billion.

At present the Federal Government through the MDBA is purchasing water entitlements from willing sellers in the MDB under the *Water for the Future policy*.

The government provides regular updates on water prices. Actual water should be classified as “high security” water and the current price per megalitre is $3000 (approx). SAE would offer the MDBA 400 to 600 GL of high security water at the current market price.

A detailed appraisal of the cost and use of Wyvenhoe water would be carried out by E & P within Stage 3 of the Business Case.

An important issue to be resolved is *who would own the pipeline and associated infrastructure*? It could be owned by SAE, the Federal Government or the Queensland Government , or possibly a combination of these.

4.1 Project Funding.

Funding options will need to be developed and examined in detail as part of the studies to develop Stage 4 of the Business Case Options and include:

- A fully privately funded project under BOOT arrangements.
- Commonwealth/Queensland governments and possibly Local Councils funding a pipeline operator for the project.
- The Northern Victoria Irrigation Project saw a partnership between the Victorian Government, the irrigators and Melbourne Water. A similar arrangement could evolve with this project.
- Federal funds are available under the “Sustainable Rural Water Use and Infrastructure” program, and the “Water for the Future” plan.

5.0 SUSTAINABILITY

This proposal aims to meet some of the environmental needs of the Murray Darling Basin and some of the needs of the mining [and other regional] industries along its route between Wyvenhoe Dam and the Great Australian Bight – without compromising the water needs in south east Queensland serviced by the dam.

5.1 Social Impacts

Preliminary assessment indicates the pipeline and its induced river flow can provide greater water security for communities along the route, and hence provide positive social impacts on these settlements.

5.2 Economic Impacts

Again preliminary assessment indicates that the pipeline and the induced river flow will generate positive economic impacts on the towns, cities and industries along the route and to wherever the Wyvenhoe water can be delivered, possibly by further developed infrastructure.

5.3 Environmental Benefits

Preliminary assessment indicates that the project will provide greater water availability and thus enhance the riverine and wetland environments along the pipeline route and its induced river flow.

5.4 Managing Adverse Environmental Impacts

Preliminary assessment indicates that residents upstream and downstream of Wyvenhoe Dam, have been scarred by the 2011 floods and the aftermath. It is not anticipated that the people who count, ie. the people who can be hurt again will object to this proposal, which will assist in flood mitigation and will give the responsible engineers and technical people an additional weapon to prevent a recurrence of January 2011.

6.0 MANAGEMENT OF THE BUSINESS CASE PREPARATION

6.1 Corporate Capability and management of Business Case Preparation.

Evans & Peck is a leader in providing strategic, commercial and contractual advice to many State Governments, State owned corporations and private companies in relation to water and wastewater projects. A Capability Statement will be provided evidencing E & P's wide experience in this area.

E & P has more than 20 years experience in project delivery in Australia and Asia. Leading personnel have been responsible for delivery of major infrastructure and water programs and projects. The firm has the capacity to generate innovative solutions, and optimum value for money in all phases of the program lifecycle, delivering successful outcomes for its clients.

The firm's success comes from an ability to understand the specific needs of its clients and to implement appropriate delivery strategies. For a project of this nature the following would be provided:

- Management by the most experienced and competent personnel.
- Clear and unambiguous documents.
- Timely support from specialists when circumstances demand.
- Managing ongoing communication and liaison between key stakeholders to optimise outcomes and broad support.
- Rigorous risk management.
- Extensive commercial and contractual expertise.

6.2 Project Profile Assessment

A Project Profile Assessment would be completed for the project at an early stage.

7.0 REFERENCES

GHD Report for Investigation of Options to increase the flood mitigation performance of Wyvenhoe Dam 2011

GHD SWP Distribution System; Report on St George Irrigation Area

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PPP Guidance Material

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