Table 3. Ongoing Costs and Savings Arising from De-Amalgamation ($'000)

	Year 1	Year2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Employee savings	112	259	398	408	545	558	729	747	766	785
Additional employee costs (key positions)	271	278	285	292	299	307	314	322	330	338
Additional Governance	0	0	0	0	0	0	0	0	0	0
Travel savings[6]	154	157	160	163	167	170	173	177	180	184
Additional Assurance costs	192	197	202	207	212	217	223	228	234	240
Additional operating grant income (non FAG)	60	60	60	60	60	60	60	60	60	60
Additional FAG income	Waiting for NSW Local Government Grant Commission response									
Savings from eliminating diseconomies of scale	Substantial in the order of 11% but cannot be assured therefore not included									
ANNUAL SAVING	-137	2	132	132	260	265	425	434	442	451
CUMULATIVE SAVING	-137	-135	-4	129	129	654	1,079	1,513	1,955	2,406

(Please note slight rounding error occurs in the table – totals reflect precise costs and savings)

A few more matters should be noted. First, governance costs relate directly to the overall increase in the numbers of Councillors arising from a de-amalgamation. I have conferred with the current Mayor and Deputy Mayor and they both agree that a reduced number of councillors (relative to what existed prior to amalgamation) would be appropriate. Accordingly, I have priced in a total of 5 Councillors for Gundagai and 7 for Cootamundra, using the current minimum rate of Councillor Allowance prescribed for the rural category of councils by the Local Government Remuneration Tribunal, plus overheads. This actually results in a small annual saving (of just under $3,000), but I have not modelled the saving in order to err on the side of caution consistent with my overall approach to this matter. Second, reduction in diseconomies of scale modelled in the data envelopment analysis have not been included as a separate item. Some of these diseconomies have been captured in more specific line items (for example, travel costs). However, there will likely be further diseconomies captured following de-amalgamation that will contribute to outcomes better than those that I project. I took the decision not to include savings from mitigating diseconomies in my calculations because, whilst they are very likely, they cannot be 100% assured. Third, I have only modelled in extra operating grant income relating to the libraries grant. I am aware that Council has effectively missed out on a number (or some portions) of one-off grants (like federal drought assistance), but these cannot be counted on in the future. Moreover, I have focussed on operating grants only, because capital grants are not included in the NSW government preferred operating result figure. Fourth, I have not modelled in the extra Financial Assistance Grant likely to be forthcoming following de-amalgamation. On the 7th February 2006, the responsible Federal Minister proclaimed a variation under

[6] This does not include the value of staff time lost through commuting. When staff are driving between centres they cannot be performing their usual duties, which represents a significant opportunity cost to Council.

subsection 6(4) of the Local Government (Financial Assistance) Act 1995 (CTH) that a new national principle would come into force being that 'the general purpose grant provided to the new body for each of the four years following amalgamation should be the total of the amounts that would have been provided to the former bodies in each of those years if they had remained separate entities'. The reason why this proclamation was made was to re-dress a number of situations whereby FAG grants had altered significantly following amalgamation (which will almost certainly happen any time that councils without identical demographics are amalgamated). I have emailed the NSW Local Government Grants Commission back on the 8th of January (and 18th of February) to ask for: (i) the Local Government Grants Commission report for 2016-17, and (ii) the precise formulas *and* factors used to calculate the grants. I was told there would be no 2016-17 report which seems to be inconsistent with s3(4)(a) of the Act (1995) which states the Parliament's goal to 'increase the transparency and accountability of the States in respect of the allocation of funds under this Act to local governing bodies'. I have pointed out the inconsistency of the approach taken by the NSW Local Government Grants Commission but not received a satisfactory response. Without this degree of detailed information, I have no way of verifying that the proclamation under subsection 6(4) of the Act (1995) has been observed correctly[7], nor can I model by how much the FAG grant would likely be increased following de-amalgamation. It is regrettable for the community of Cootamundra-Gundagai that the NSW Local Governments Grant Commission has not been sufficiently transparent in their operations.

Of interest is the fact that a de-amalgamation is expected to yield a saving of *at least* $2.406 million over ten years. This saving, based on rigorous analysis, stands in contrast to the guestimate that was used to justify the original amalgamation projected saving of $3 million over 20 years. Otherwise stated, what I have shown here is a commensurate saving that occurs in almost half the time as what was assumed might occur from the amalgamation. However, unlike the work that was done in 2016 my calculations are prudent and rigorous.

If a saving of $3 million over 20 years was deemed sufficient cause to bring about an amalgamation, then the same logic must dictate that a saving of $2.4 million over 10 years is even more cause to bring about a de-amalgamation.

I will now proceed to answer a number of questions that are typically posed during de-amalgamation debates regarding how matters should be managed prior to the proclamation and during the transition period.

[7] Although in email correspondence it was confirmed that 'in 16/17 and 17/18 the FAGs were simply aggregated for amalgamated councils and apportioned based on population (ABS) or local road lengths (as reported by councils) where boundary changes occurred…in 2018/19 the FAGs went into a transition towards a revised model.' This seems inconsistent with the aforementioned proclamation and it is very possible that Council has received less FAGs than its entitlement.

How Should the Transition be Managed?

The transition should be managed by a team of executives and political representatives headed by an independent Transition Manager, who understands the council's structure and challenges and has the complete confidence of the community. This person should come from outside of the community and should be appointed for a temporary period of ten weeks.

It is absolutely imperative that the Transition Manager is appointed by the *existing Council* as quickly as possible after the Minister makes her decision known. A big part of the problem that we have been dealing with over the past four years or so, is that the community has felt (with good reason) that they have had little input into the structural decisions which significantly affect their lives. The community, not the Minister, must appoint the Transition Manager, because it is the community who will bear the consequences of the decisions made by this person. There needs to be no room for doubt, this time, that the community has had control over the process and have had a real say over the decisions. The most appropriate way to ensure that this occurs is for the Council to appoint a Transition Manager at a Council Meeting that is open to the public.

The transition team should include the current General Manager, the current Mayor and Deputy Mayor, and the new General Managers of the emerging entities (as soon as they have been appointed[8]). The Transition Manager must have the authority to have the final say on all matters described below. However, the Transition Manager should in all instances first seek a consensus and all members of the transition team should have equal say prior to a decision being made. This is similar to the model that has been used in successful de-amalgamations elsewhere.

The Transition Team and the Transition Manager should be communicating with the Council and public throughout the process. The most expedient way to achieve this Council and public consultation would be for the Transition Team to report to the fortnightly Council workshops. Part of this workshop time should be open to the public, so that interested members of the community have a chance to both hear about the progress being made, as well as raise any questions that they might have.

I have absolutely no doubt that the current senior political figures and executive of Council will work respectfully and co-operatively for both communities. Each person understands that *both* de-amalgamated local governments must thrive and prosper subsequent to de-amalgamation, for the decision to be validated, and will work hard to ensure that this result is the outcome.

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[8] Two General Manager Employment sub-committees should be formed from the body of existing Councillors as soon as the Minister has made her decision to de-amalgamate. The first sub-committee should comprise only Cootamundra Councillors and should be tasked with engaging a new General Manager for Cootamundra. The second sub-committee should be formed from only Gundagai Councillors and should be tasked with engaging a new General Manager for Gundagai. The Transition Manager should observe the engagement process to ensure that it is consistent with the de-amalgamation plan and provide her or his comments, but should not be given a binding say on any appointment.

Who Should Pay?

Principles of natural justice are generally considered to suggest that if one person inflicts damage upon another – whether intentionally or through negligence –then the person responsible for the damage is liable for the rectification of same. For instance, if I crash my vehicle into that of an innocent person going about their lawful business, then I would be responsible for the cost required to bring that person as close as possible back to their position prior to the accident.

This concept is clearly directly applicable to the amalgamation event. The people in Cootamundra and Gundagai did not act to bring about the amalgamation – indeed, many tried to bring facts to bear in the hope that the amalgamation architects would realise that the proposal was a particularly poor idea. However, the NSW government – probably relying heavily on some poor advice from their agents – drove the amalgamation vehicle into the community and, as I have shown, this caused significant financial damage. If we extend the principles of natural justice to this situation then there seems to be a clear case for the NSW government to bear some of the costs required to repair the damage done to the community. Notably, the current NSW government is under different management to the government that inflicted the damage. However, it seems that the current government is conscious of its obligations under principles of natural justice and the community might therefore have some reason to hope that the one-off costs of de-amalgamation might be granted to them (indeed, the one-off costs for de-amalgamation are likely to be far less than the ongoing support required from the NSW government to keep the Cootamundra-Gundagai Regional Council financially sustainable into the future and thus represents a wise investment). Even if one-off costs are covered by the NSW government, it should be noted that the damage that has occurred to the finances of the community over the last few years will still probably have to be repaired through future increases to fees and taxes.

In the past the precedent has been that the break-away community bear the entire cost of de-amalgamation (although in Victoria, in actual fact, the amalgamated entity bore most of the cost prior to de-amalgamation; see Drew and Dollery 2014b; 2015a). It is problematic for entities currently not in existence (Cootamundra council and Gundagai council respectively) to be bound to debts that they have had little say in (see, Drew and Dollery, 2014b). In Queensland, a particular piece of legislation had to be passed to facilitate this outcome, and there were grounds to contest both the morality and legality of doing so (Drew and Dollery, 2014b).

My strong preference (in the event that the NSW government declines to pay the costs of de-amalgamation) would be for the costs that are incurred by Cootamundra-Gundagai Regional Council – as it goes about the tasks that must be executed prior to de-amalgamation – to be borne by Cootamundra-Gundagai Regional Council. Costs that are incurred after amalgamation would also be borne by the Council that incurs the cost. This is clearly the most efficient and practical arrangement, but as I have alluded to earlier, also the arrangement with the least moral hazard.

In Table 4 I have set out the timing and responsibilities for most of the costs (if the state government declines to fund the de-amalgamation). As can be seen, a good

proportion of the costs would be borne by Cootamundra-Gundagai Regional Council, simply because of the fact that they need to be incurred prior to the actual day of de-amalgamation.

Table 4. Apportioning One-Off Costs of De-Amalgamation

Communications and Branding	477	Community communications about actual de-amalgamation born by CGRC, branding cost born by each emerging council
staff expenditure	211	Borne by CGRC for legal and practical reasons
ICT and finance	600	CGRC, but some borne by emergent councils
Governance	108	Borne by council where cost originates, mostly CGRC
Asset Management	18	Borne by CGRC
Legal	177	Borne by all three parties
Plant	0	
Transition Manager	120	$96k CGRC, remainder shared between new entities.
Other	39	Borne by council where cost originates
TOTAL	**1,750**	

I emphasise that my preferred position is that the NSW government pay for the one-off costs. However, if the state government declines to do so, then my calculations demonstrate that there is still a nett benefit for the community even if they bear the cost and my plan in Table 5 is the most economic and morally defensible way of accomplishing what must be done.

How Should Assets be Allocated?

There are three types of assets to consider, which all require different treatment – fixed assets, movable assets and cash and cash equivalents (Drew and Dollery, 2014b).

Fixed assets, such as buildings and sports infrastructure, are the simplest to deal with and should be allocated to the council in whose borders the asset is located.

In Cootamundra-Gundagai the moveable assets have mostly stayed within the pre-amalgamation borders and in most instances it will not be controversial to continue to keep the asset where it is currently located. Assets associated with specific staff (ICT equipment) should travel with the staff. There will inevitably be a small number of assets that do not fall into any category. These assets should be transferred according to the judgement of the independent Transition Manager after consulting with the relevant staff and representatives. I cannot emphasise enough the critical role that an independent Transition Manager will play in a de-amalgamation scenario. Inevitably judgements will need to be made by someone in authority and

hence it is imperative that a truly independent and knowledgeable Transition Manager is appointed.

Cash and cash equivalents should be allocated as part of a division of nett liabilities, as I will detail below.

How Should Staff be assigned?

In most cases staff have remained within the borders of the area that they were located in prior to amalgamation. In a few instances, key staff have been split between the two council chambers, and in other instances new staff have been taken on to fill positions that have become vacant over the last four years or so.

Staff who were located at a particular council chamber prior to and since amalgamation should remain at that location. Staff who have been split between the two locations should be assigned as follows:

For positions that will not be operated as a shared service, the views of the staff member involved should be given the greatest weight, followed by the needs of each emerging entity, followed by the preferences of the new entity management. If a shared consensus cannot be reached, then the Transition Manager's decision must be considered binding.

How Should Liabilities be Allocated?

The objective of the Transition Manager should be to ensure, as far as practical, that both emerging local governments end up with nett current assets and nett non-current assets respectively in proportion to those that existed immediately prior to amalgamation. Clearly liabilities associated with a particular fixed asset should be transferred to the new entity where the asset is located. Similarly, liabilities associated with staff (for example, leave entitlements) must be transferred to the entity where the staff member will be employed. Next, liabilities associated with a particular movable asset should be transferred to the entity where the movable asset will be located. The remainder of the nett current and nett non-current assets should be allocated *separately* such that the new entities are placed as close as possible in the situation that existed immediately prior to amalgamation. In this matter – as in most others – the independent Transition Manager will have a binding say on final allocations.

How Should Natural Attrition be Managed?

The objective of both councils should be to reduce the number of executive positions down to one General Manager and three Directors. There are currently one General Manager, one Deputy General Manager and 10 Director-equivalent positions at Cootamundra-Gundagai Regional Council. These 'legacy costs' of the amalgamation will, unfortunately, continue to weigh on the emerging councils for many years, and have substantially reduced the savings that would otherwise have arisen from de-amalgamation.

After de-amalgamation some changes to the job position of each Director-like position will need to be made to ensure that each emerging organisation has

oversight over all key functional areas of council. This will have to be done in consultation with the affected staff and in cognisance that no changes can be made to salaries. Soon after the de-amalgamation work has been completed the General Manager at each emerging entity should interview all senior staff with a view to understanding their career and retirement plans. At this point a succession plan should be put into place whereby ultimately functions of the departing executives are divided among the Directors who will be staying on. Appropriate plans should then be put into place to ensure that the remaining Directors will have the required skills and knowledge to absorb the function when their colleague ultimately leaves.

It will be tempting to replace positions as executive retire or resign. However, this should be resisted strenuously as many of the savings associated with de-amalgamation are contingent on reducing the numbers of managers over the next decade.

Similarly, the number of FTE that existed immediately prior to amalgamation – 51 at Gundagai and 89 at Cootamundra – should be set as the ceiling for the new de-amalgamated entities. Until numbers have reduced below this ceiling new staff should not be put on, unless there is both (i) a dire need for a certain expertise, *and* (ii) a plan to reduce the FTE by not filling a specifically identified position which will soon be vacated. Ideally this cap should be regulated somehow and perhaps there is a role for the new Councillors to play in approving any proposal to add extra staff to the payroll that would result in the ceiling being breached. At the very least, the General Managers of the emerging councils should be required to complete a new business case to justify positions other than those already modelled in the ongoing costs and savings[9] detailed in Table 3.

I cannot stress strongly enough that strict discipline will be required to manage a successful de-amalgamation. There are always good reasons that can be found for hiring new staff, however if the communities are going to successfully recover from the damage inflicted to them through amalgamation, then these reasons will have to be vigorously resisted. This may mean that service levels might need to be reduced slightly, and that some job descriptions may need to alter, but prudence must win out on every occasion. I have complete faith in the community and the staff that they will be able to make the difficult decisions required to recover.

How Many Councillors Should the New Entities Have?

There are currently nine Councillors, including a Mayor and Deputy Mayor. Prior to amalgamation Cootamundra had nine Councillors and Gundagai had eight. Section 224 of the Local Government Act (1993), states that a council must 'have at least 5 and not more than 15 councillors'. I have discussed the matter with both the current Mayor and Deputy Mayor and propose that a new Cootamundra council should have

[9] In my modelling I have included the salaries and on-costs to recruit a new Chief Financial Officer, increase the rate of pay for the current Human Resource Assistant to the rate for a Human Resource Manager, employ an additional Executive Assistant for the Gundagai General Manager, and convert the existing accounts payable traineeship position at Gundagai to a permanent position. All other non-duplicate positions will be conducted in the same way that they were performed prior to amalgamation.

7 Councillors and a new Gundagai, 5. This is a significant decrease on pre-amalgamation representation, but represents a large improvement on the representation ratios that have occurred over the last four years. Based on the numbers proposed Cootamundra residents would have just over 1,100 people per Councillor, and Gundagai residents just over 750 people per Councillor. This compares favourably to the current representation ratio which is a little less than 1,280 people per Councillor.

Furthermore, I have modelled for the Councillors to be paid at the bottom range of the annual fee guidance provided by the Local Government Remuneration Tribunal. In view of the sacrifices the community will be asked to jointly make and the relatively lower workload after the de-amalgamation has been bedded down, I believe that the lower level of remuneration is warranted.

Who Should Sit on the Inaugural Council?

When the Governor's proclamation is read then the currently elected Councillors should be considered duly elected Councillors of the emergent local governments. Three of the current Cootamundra-Gundagai Councillors hail from Gundagai, and six from Cootamundra. Until the September 2020 local government elections, the existing Mayor should be assume the role of Mayor for Gundagai and the existing Deputy Mayor should assume the role of Mayor of Cootamundra (subject to s294(4) of the Act (1993)). A by-election would be impractical, and depending when a de-amalgamation occurred, unnecessary under the Act (1993).

When Should a De-amalgamation Occur?

This largely depends on when the Boundary Commission produces their report and when the Minister makes her decision. However, it would reduce work considerably if the proclamation was made on the first day of the new financial year (1 July, 2020). Given the large number of tasks that will fall to an inaugural council all efforts should be made to execute the de-amalgamation on this date providing that it falls at least eight weeks away from when the Minister makes her decision known, so that the Transition Team can undertake necessary pre-requisite tasks.

What Should Happen to Service Levels?

A consequence of amalgamation is that service levels tend to be increased to the highest that existed in the constituent councils. This is referred to as service harmonisation, and its neglect in modelling is one reason why amalgamations don't always deliver on the projected savings.

It will be critical that with the establishment of each new entity that service levels are immediately reduced to those that existed prior to May 2016. This is the absolute minimum necessary to ensure that the de-amalgamated entities do deliver on projected savings.

However, it is also important for the de-amalgamated entities to each conduct a service level review with their communities within the first 12 months of operations. If the fiscal damage inflicted by the amalgamation is to be repaired with minimal hardship, then it is imperative that service levels be dropped wherever practical.

Moreover, great care needs to be made with respect to capital spending. Discretionary capital spending needs to be halted and maintenance focussed only on essential infrastructure for the first 5 years, *at least*. One of the unfortunate side-effects of the amalgamation has been the very high levels of discretionary capital spending on community assets that had the characteristics of 'wants', rather than 'needs'. Depreciation and required maintenance on these assets will be a burden on the community for decades. Moreover, this spending has engendered fiscal illusion with the effect being that the community was not always aware of the serious nature of the local government finances. Therefore, capital spending on non-essential infrastructure will need to be put on hold until budget repair has been completed – which could be a decade or so away. Notably, it would be prudent to cease all non-essential capital expenditure on 'wants' even if the de-amalgamation doesn't progress – indeed it would probably be more important to do so under that scenario given the very large gap in revenue adequacy.

What Should Happen to Rates?

In all likelihood there will not be time to develop and put on public display a new rate structure for the new local governments, for the 2020/21 year. To ensure each new entity has sufficient revenue for its first year of operations, rates should default to the pre-amalgamation paths that would have existed had the Cootamundra-Gundagai Regional Council not resolve to harmonise rates in accordance with the Local Government Amendment (Rates – Merged Council Areas) Act 2017, No 8.

However, the new entities should be required by the Minister to resolve and put on public display a new rating structure within nine months of de-amalgamation. Ideally the new structure should be simple and transparent and based on the principles adopted by the former Cootamundra-Gundagai Regional Council – to have just three categories and to minimise rate shock for any one given category.

Moreover, it should be presumed that both councils will submit a Special Rate Variation in November 2020 for the 2020/21 year. Furthermore, it should be presumed that the Boundaries Commission hearing and determination constitutes *prima facie* evidence of four of the five IPART assessment criteria, specifically:

- Community awareness of plans for a SRV
- Demonstrated need for higher increases
- A sustainable financing strategy
- A history of well-documented council productivity improvements

Emergent Councils will still be required to address the criteria that the proposed SRV has a reasonable impact on ratepayers, although the burden should be shifted to ratepayers to prove that a proposal is unreasonable in impact given the financial sustainability position of the emergent councils.

Otherwise stated a SRV should be considered a definite necessity for each emergent council.

Notably if the Minister decides against de-amalgamation it must be acknowledged that the need for a SRV will be even greater. In this instance the Minister would be

well-advised to also direct IPART to adopt the presumptions listed above for the case of Cootamundra-Gundagai Regional Council.

What Should Happen to Fees Already Harmonised?

In all likelihood there will not be time to develop and put on public display a new fee structure for the new local governments for the 2020/21 year. To ensure each new entity has sufficient revenue for its first year of operations, fees that have been harmonised downwards should default to those laid forth in the *2019* Operational Plan increased by 2.6% (some harmonised fees in the 2020 Operation Plan may not provide sufficient revenue for a particular emerging council). Fees that have been increased relative to the levels that previously existed at each Council should continue to be charged as detailed in the 2020 Operational Plan.

Moreover, both emergent councils should be directed by the Minister to ensure that new fees and charges are set for the next operational plan. Furthermore, the Minister should direct councils to ensure that new non-regulated fees and charges at least fully recover the costs and overheads of providing the service wherever possible. As part of the budget repair effort it will be important to review all fees to ensure that the full costs are being recovered (which is often not the case in most NSW local governments). There are also strong moral grounds for ensuring this (and hence reducing cross-subsidisation out of the common tax pool). Notably this exercise would still be required if the council was not de-amalgamated and, because of extant diseconomies of scale, would likely result in higher fees and charges, than might be expected in the de-amalgamation scenario.

Shared service for certain functions?

Previously Gundagai employed consultants or used informal shared service arrangements to meet some specialist skills needs such as town planning, building surveying, IT support, and environmental health. This should continue to be the arrangement going forward in a de-amalgamated Gundagai Shire. The new Council would be advised to give serious thought to engaging specialist skills from Cootamundra Shire when required. Hiring specialist staff from Cootamundra Shire (rather than private consultants or staff from other councils) will increase the overall benefits for the Cootamundra and Gundagai communities, and will likely result in better outcomes given that the staff involved will have a more comprehensive understanding of the operational environment at Gundagai.

What Legislation is required

The Queensland Government established the Local Government (De-amalgamation) Regulation 2013, to regulate its four de-amalgamations. The NSW Government is advised to enact similar legislation with respect to the following sections of the aforementioned regulation which should be changed as follows:

Section or Part	Purpose	Recommendation
Part 2	To establish new elections and term of inaugural council	Assuming a de-amalgamation takes place on the 1st of July section 294 of the existing Act (1993) allows for the Governor to proclaim the two new Mayors nominated by the Council who should be the existing Mayor and Deputy Mayor respectively.
		Current Councillors should be appointed as Councillors to the emerging councils (6 to Cootamundra and 3 to Gundagai). The casual vacancies effectively created (1 at Cootamundra and 2 at Gundagai) do not seem to need to be filled prior to the scheduled September 2020 elections (see Section 292)
		Existing Remuneration Tribunal classification (rural) can be used for the emerging councils.
Part 3	Transfer Manager	This is absolutely critical, however the Transfer Manager should be appointed for 10 weeks, which must extend 2 weeks after the changeover day.
		A clause should be inserted to state that the Transfer Manager should first seek consensus with the Transfer Team before making any decision. However, it needs to be noted in the legislation that the Transfer Manager will have the capacity to make binding decisions even if consensus is not reached.
		A Transfer Team should be specified as being made up of: the current Mayor, the current Deputy Mayor, the current General Manager, the two new General Managers (following appointment)
Division 2	Transfer methodology	This is not ideal. The people in the best position to formulate and execute a transfer methodology are the Transfer Team.
		Potentially the legislation might require the Transfer Manager to present a copy of the transfer methodology to the Minister for her approval. However, it is important not to lock the Transfer Team into a methodology that may ultimately prove insufficiently flexible to respond to the particular situations encountered during the process.
Division 3	Transfer Committee	This should be replaced with the Transfer Team as specified earlier.
		The Transfer Team should be established for a period of up to twelve months. Given that the frequency of meetings is not specified it makes sense to keep the team long enough to deal with problems that might arise at the time that

		the next Operational Plans are being developed.
Division 3, s30	Adjudication by Minister	Won't be required during the term of the Transfer Manager.
Division 4	Local Advisory Committee	Won't be required if recommendations to establish two new Mayors and Councillors are observed.
Division 5	De-amalgamation Costs	This part of the legislation was very problematic. If the NSW Government funds the one-off costs of de-amalgamation then the Division will be redundant. If the NSW Government declines to fund the de-amalgamation, then the clause should state that costs incurred by the Cootamundra-Gundagai Regional Council, should be borne by the Council, and costs incurred by the emerging councils should be borne by the emerging councils.
Part 4	Financial matters	Asset transfer – references to the 'transfer committee' should be replaced with the 'Transfer Manager'.
	Liabilities	As above
	Rates and Charges	In addition to what is already stated there needs to be a clause to clarify that if a council had previously adopted a harmonised rate, then this resolution would be declared void, and the new councils would be required to levy a rate consistent with the Local Government Amendment (rates – Merged Council Areas) Act 2017, No 8 for the first year (only).
	Charges	For charges that have been harmonised downwards it should be declared that fees will default to those laid forth in the 2019 Operational Plan, increased by 2.6%.
	Fees	see above
Part 5	Local Laws and Other Instruments	No major changes appear to be required
Part 5A	Disaster management Matters	Needs to be amended to reflect the situation in NSW
Part 6	Councillors	Needs to specify 5 Councillors for Gundagai and 7 for Cootamundra.
		Needs to reflect the plan for existing Councillors to continue their duties at the respective councils where they are domiciled, until the next Local Government elections.
Division 2	Employees	The new organisational structure should be specified – namely one General Manager and three Directors for each emerging council. Excess Director-like staff should be retained with amended duties.

s55		Allocation of staff must be conducted by the Transition Manager taking into account (i) pre-amalgamated location of staff member, (ii) pre-de-amalgamation location of staff member, (iii) the staff member's preference.
s55		The ideal of returning the Councils as close as possible to their pre-amalgamated FTE staffing (51 for Gundagai and 89 for Cootamundra) should be stated. However, it should be noted that non-contract staff will have their conditions of employment protected, even if this results in staff ceilings being temporarily breached. Notwithstanding the protections for employment and conditions, it should be specifically noted that the new General Managers will have full discretion to re-define employment duties and roles according to operational needs.
s56(4)	Employee conditions	This should be deleted – part of the reason for executing a de-amalgamation is to right an injustice. It is not morally licit to create an injustice to right an injustice.
s56(5)	Retrenchment and redundancy	Should be deleted
Division 3	Major Contracts	the amount in s57(4)(a) should be reduced to $50,000

In addition to the above, any references to continuing local governments should be deleted to reflect the particular scenario of NSW.

Other Criteria for Consideration by Boundaries Commission (Local Government Act (1993) s263(3)).

Community of Interest and Geographic Cohesion

Anyone who has had even a passing acquaintance with Cootamundra and Gundagai cannot help but realise that they are two fundamentally different communities with very little community of interest and little geographic cohesion. As Gundagai submitted to the Boundaries Commission in 2016 the Australian Bureau of Statistics (ABS, 2015) Socio-Economic Index for Area (SEIFA) clearly reflects this difference[10]:

Council	Socio-Economic Rating (State Ranking)	SEIFA (National Ranking)	Largest Industry Employer
Cootamundra	32 (3rd decile)	129 (3rd decile)	Retail Trade
Gundagai	64 (5th decile)	213 (4th decile)	Agriculture, forestry & fishing

As can be seen the two towns were 32 rankings apart on a state-wide comparison, and 84 rankings apart in a national comparison – thus certainly not similar. Moreover, the dominant industries in the respective towns were recognised by the ABS as being different.

The Boundaries Commission Delegate chose to eschew evidence in favour of his personal perception that 'the populations are almost exclusively of Anglo-European origin and share a strong tradition of Christian values and conservative politics' (Turner, 2016, p. 22). By this dubious reasoning Cootamundra or Gundagai might have been just as easily amalgamated with North Sydney, which was also predominately Anglo-European, Christian and vote conservative!

To eschew evidence and then grasp at a ridiculous perceived similarity suggests that there were good grounds for suspecting a misapprehension of bias by the Delegate and a miscarriage of administrative procedure.

The 2020 Boundaries Commission is encouraged to visit both communities and spend sufficient time in each to understand how they operate and the commuting patterns of residents. It will be quite obvious from such a visit that the communities could hardly be more disparate, and that the geography is also plainly different. Moreover, after travelling the Muttama road which links the two towns, it will be clear that there has never been much cause for people to travel between the two communities – for had there been much commuting activity between the towns in the past then the road would have been upgraded substantially many decades ago.

Existing Historical and Traditional Values

The Delegate noted that the two towns are both located on the ancestral lands of the Wiradjuri people. This appears to be correct, but what was overlooked is that the

[10] Since amalgamation the ABS has not compiled statistics for the amalgamated councils, hence my reference to the 2015 data.

Wiradjuri Region was a vast area also encompassing Albury, Bathurst, Orange, Wagga Wagga, Denilliquin and Griffith to name just a few of the towns that share this heritage (Aboriginal Land Council, n.d.). If we were concerned to amalgamate according to this logic, then the resultant council would have encompassed around one fifth of the state of NSW.

Similarly, the Delegate noted that both townships were settled in the early 1800's and were part of the mid-century gold rush. So was Bendigo in Victoria, but it hardly suggests a shared history and values. Most of Southern Australia was settled during this period and the observations made by the Delegate are not salient for decision-making regarding the suitability of local government boundaries.

Indeed, the Delegate failed to recognise the differences in history and values when he conveyed his approval for a proposal that the new local government should be named 'Gundagai Regional Council'. The fact that this name was quickly changed following a post-amalgamation community survey is more evidence that the towns clearly did not feel they shared a common heritage.

Attitude of Residents and Ratepayers

I have already examined the attitude of ratepayers at the time of the first Boundaries Commission in 2016, and it is perfectly clear that the community was not in favour of the proposal. This is likely because the community understood that there was little commonality and a vast distance between the townships, serviced by a pretty ordinary road.

On Monday 9th March, 2020 I conducted a community forum at Cootamundra regarding the response of Council to the Boundaries Commission process. On Tuesday the 10th of March I conducted a similar forum at Gundagai. When interpreting the data which follows it is important to be mindful of a few matters. First, I have been regularly uploading information videos which a number of residents and staff told me they watch avidly – this might mean that people considered themselves already sufficiently informed regarding the Boundaries Commission proposal. Second, as we are all aware the coronavirus scare was in full swing during the week I attended, and many people have clearly decided to avoid public gatherings. Third, there was some confusion in Cootamundra (so I have been reliably informed by two different individuals) regarding the time and place for the forum. Moreover, there is a good deal of cynicism in Cootamundra – many people told me that they weren't bothering to express an opinion 'because it was a waste of time because no-one listened in 2016'. Given that the community went to a lot of trouble to consider a detailed plan for amalgamating with Harden in 2016 – a plan that was approved by various bodies (including IPART) as being fit for the future, only to be summarily dismissed with no reason given – it is probably not surprising that there is a trust deficit with state government in this present instance.

Despite this confusion and trust deficit 70 people registered as attending the Cootamundra forum, and a reliable count was made of 90 attendees (I know for a fact that there are names missing from the registration list of people I met and talked to before and after the event). A simple survey was conducted at the end of the

information and Q & A sessions. A copy of the survey appears in the appendix (this is the example I presented to residents on a PowerPoint presentation). Seventy surveys[11] were received with the following distribution of responses:

Cootamundra – *Were you in favour of the 2016 amalgamation?*

Yes	No	Undecided
6	59	5

Cootamundra – *Do you think de-amalgamation will save money?*

Yes	No	Undecided
54	12	4

Cootamundra – *Are you in favour of a de-amalgamation?*[12]

Yes	No	Undecided
64	3	2

The responses of informed persons give us a good indication of what people in Cootamundra would likely think if they were exposed to relevant information. Indeed it is indicative of the likely conclusions of anyone who approaches the matter purely on the basis of evidence, sans bias or political concerns.

What is particularly interesting about these results is that people who had been in favour of the amalgamation in 2016, have clearly decided it is not working (nor likely to work) in 2020. Moreover, the principle motivation for de-amalgamation is not necessarily financial. Twelve people don't believe the projections of savings (which is hardly surprising given how inaccurate projections have been in the past) – yet only three people are not in favour of a de-amalgamation. It seems very clear to me that the far majority of people at the forum understand that things just aren't working – financially as well as in terms of community cohesion and internal Council culture – and that a change is the only sensible option.

The standard of questions during the Q & A session were very sophisticated and clearly indicated that these residents had been watching the videos, doing their homework, and giving the matter serious consideration over a long period of time. Indeed, these were the opinions of very well informed, intelligent people more than capable of making good decisions about matters that will affect their lives consistent with our principles of local democracy.

The forum at Gundagai was heavily attended, but the physical set-up for the room was not ideal, and there is little doubt that many of the attendees failed to register and failed to submit their survey. Unlike Cootamundra, it was simply impractical to

[11] Copies of the scanned surveys can be obtained from Council.
[12] One response was missing

have tables at the front of the club to register people as they entered, and the numbers which follow must be considered a significant under-estimate.

Gundagai – *Were you in favour of the 2016 amalgamation?*

Yes	No	Undecided
4	253	3

Gundagai – *Do you think de-amalgamation will save money?*

Yes	No	Undecided
241	13	6

Gundagai – *Are you in favour of a de-amalgamation?*

Yes	No	Undecided
256	2	2

Clearly the people at Gundagai want a de-amalgamation and I don't think that this has ever been in doubt (nor was there any reasonable doubt that they didn't want the amalgamation back in 2016). What is interesting is that thirteen people don't think that the de-amalgamation will save money, but the far majority (over 98 percent) want it nevertheless. From the comments made after the presentations it is pretty clear that people are prepared to pay to guarantee more effective and responsive local government into the future for Gundagai.

We also need to be mindful that the decision-making by both communities will have inevitably been clouded by the fact that the real implications of the 2016 amalgamations have largely been hidden from residents due to the Local Government Amendment (Rates – Merged Council Areas) Act 2017 No 8, as well as Administrator and Council inaction on fee harmonisation. In addition, many in the community are still unaware of the pressing need to address substantial operating revenue shortfalls in the order of 2.9 million dollars annually (according to the latest draft of Cootamundra-Gundagai's 2019 Financial Statements). Moreover, Stronger Communities funding (for 'popular' community infrastructure) has been descending on these communities for almost four years now, clearly exacerbating chronic fiscal illusion. However, despite this contextual bias (presenting an unrealistically rosy picture of the current state of affairs) there can be no doubt that the consensus of informed opinions in both Cootamundra and Gundagai is in favour of de-amalgamation.

Whether we take note of these residents really depends on our views about democracy (Dahl, 1990). If you – like Aristotle, the late great Robert A. Dahl, and I – believe that most adults are capable of making good decisions about their futures when appropriately informed, then the survey results elicited from intelligent residents presented with rigorous and reliable evidence will prove compelling for

Boundaries Commission and Ministerial decision making. However, if like Plato you believe that the masses are incapable of competent decision making and need to be ruled by their betters, then these survey results will be disregarded and another decision will be made against the wishes of these people who clearly believe that they have already had their community wealth eroded, community cohesion disrupted and lives adversely affected from being ignored back in 2016.

Requirements in Relation to Elected Representation

I have already detailed the ideal configuration for each emergent council, and the procedure that can be followed to ensure that the community continue to have a voice during the transition period. There is no need to appoint an Administrator, as happened during the amalgamation, and the inadequate performance of the past Administrator confirms that it would not be in the community's interest to do so.

Impact of Proposal on Ability to Provide Adequate, Equitable and Appropriate Services

As things stand it would not be reasonable to conclude that Cootamundra-Gundagai Regional Council is financially sustainable in the long-run. Eliminating the large diseconomies of scale (which unfortunately will take up to a decade to do if we agree that it is not morally licit to force redundancies) will help to ensure that the community can receive adequate, equitable, and appropriate services into the future. However, even with this boundary change there will be a lot of work to do to repair the damage inflicted on the finances of the community. Special Rate Variations are almost certain to be required. The rate system at both councils will need to be simplified and made more transparent consistent with the plan presented to Cootamundra-Gundagai Regional Council in February 2020. Non-regulated fees and charges need to be examined again to ensure that they cover the full cost, plus overheads. Strict discipline will also be required to follow the plan set out in this report and realise the full benefits of a de-amalgamation.

However, not proceeding with the de-amalgamation will require even more extreme measures. Rates will need to be increased even further to make up for the foregone savings of just under half a million dollars per annum which are expected to occur by year 10. Fees and charges will have to be re-assessed and increased. Rates harmonisation – which will bring about high level of rate shock to some residents – will also need to proceed so that the flow of taxation revenue is morally defensible.

As I noted earlier, de-amalgamation is not the whole solution to the financial sustainability problems at Cootamundra-Gundagai – but it is an incredibly important part of the solution. The political certainty that a de-amalgamation brings about will put both councils in a better position to engage with their communities and press forward with essential reforms. It will also lead to much more efficient local government, consistent with the greater community homogeneity achieved, as predicted by the well-known Decentralisation Theorem (Oates, 1972).

Impact of Proposal on Employment of Staff

As I have stated earlier, I do not consider it morally licit to visit a wrong on staff in order to correct a wrong committed to the community in 2016. I have therefore not modelled any redundancies. This, of course, means that the full staff savings won't occur until the seventh year and that the total cumulative savings will be lower than might otherwise have been realised. However, I firmly believe that it is not acceptable to destroy the lives of staff and their dependents, and I know the community agrees with this position. If a de-amalgamation does not proceed, then there will need to be significant additional reductions to employee expenditure in the future (to offset the considerable diseconomies of scale) in order to bring about desperately required budget repair.

Impact of Proposal on Rural Communities

As has been shown over the course of this report the 2016 amalgamation had a devastating impact on the two rural communities. Moreover, to avoid further damage, and even more hardship for residents it is important to execute a de-amalgamation for the new financial year.

As my modelling has confirmed, de-amalgamation will have positive benefits for the community in terms of financial sustainability. However, a de-amalgamation will also help to heal the respective communities and return their dignity[13] which should lay the foundation for a brighter future. Indeed, discussions with senior management and political representatives suggests to me that de-amalgamated councils will have a strong relationship – sharing resources and expertise well into the future – which will maximise the benefits to both communities. As strange as it might seem to some outsiders (especially those from Sydney), a de-amalgamation is likely to ultimately bring these communities together more and heal the obvious rifts that exist at present.

Sub-sections e4 and e5 don't apply

These subsections both start with the words 'in the case of a proposal for amalgamation'. This is not a proposal for an amalgamation, therefore these subsections of the legislation clearly do not apply.

[13] Dignity here refers to the Natural Law position – the ability to choose existential ends without undue interference (see Messner, 1952).

Concluding Remarks

The Cootamundra-Gundagai Regional Council is experiencing chronic fiscal stress, arising from the amalgamation as well as some poor decisions that were made during the administration phase. Indeed, the Council can no longer be considered financially sustainable in the medium or long term. If drastic action is not taken shortly, matters from the last four years will come to a head with serious implications for the community. I emphasise that the current management and councillors are not responsible for the problems that they now face – but they certainly need the help of fair minded people who are courageous enough to honestly consider the robust evidence that has been presented in this report and put the interests of this community first by allowing a de-amalgamation.

Removing political uncertainty will allow the executive the existential space it needs to put in place a number of reforms crucial to the community interest. Even if there was no direct financial benefit to de-amalgamation it would probably be worth executing boundary change to release the Cootamundra-Gundagai Regional Council from political uncertainty and division which constantly impedes the implementation of sound policy.

However, the proposed de-amalgamation will indeed result in significant financial benefits. In ten years, a benefit of *at least* $2.4 million will be delivered to the community contingent on de-amalgamation. Notably this figure is not much less than the supposed savings upon which the original decision to amalgamate was based – although in this latter case it was expected to take over twice the time, and was never likely to actually happen in any case.

If it was reasonable to conduct boundary change in 2016 mostly on the basis of a guesswork report projecting savings of $3 million over 20 years, then it almost obligatory in 2020 to conduct boundary change on a thoroughly researched and robust report projecting savings of $2.4 million over 10 years. The difference is that this time the savings will actually eventuate, and the proposal is consistent with the wishes and best interests of the community.

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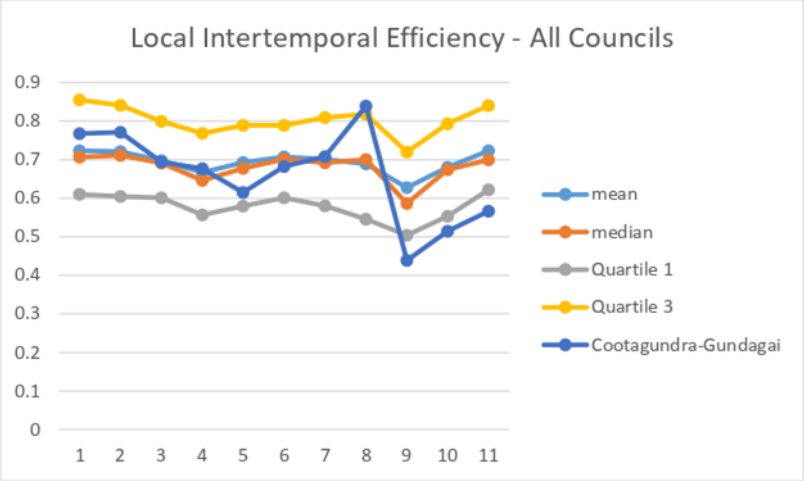
Appendix

Reproduced from Drew (2016) which was submitted to the Boundaries Commission Delegate by Gundagai Shire.

Table 1. Queensland Employee Expense: Mean Annual Change, 2009 to 2015 (standard deviation in parentheses).

Period	Non-Amalgamated Councils	Amalgamated Councils[14]
2009 to 2010	10.272% (14.406)	12.037% (18.550)
2009 to 2011	6.708% (8.780)	9.000% (8.961)
2009 to 2012	6.031% (5.674)	7.795% (6.331)
2009 to 2013	6.033% (5.088)	6.404% (5.369)
2009 to 2014	5.098% (3.564)	6.140% (4.862)
2009 to 2015	3.724% (2.985)	4.997% (4.280)

Source: 2009 data from *Queensland Local Government Comparative Information 2008-09*, Department of Infrastructure and Planning 2010, verified to individual financial statements. All other years from audited financial statements.



[14] Excludes the four de-amalgamated councils from the 2014 financial year onwards.

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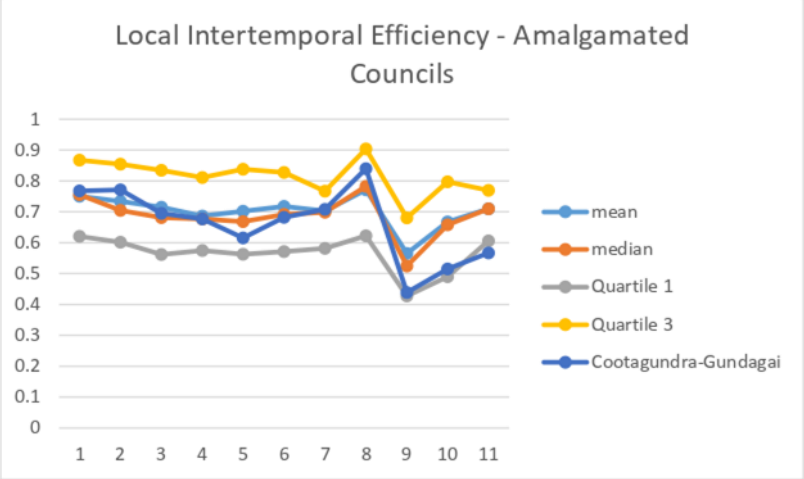

Ratio Definitions

Definitions, Benchmarks, and Weightings of TCorp Financial Sustainability Ratios

Variable	Weighting	Benchmark	Definition
Operating ratio	17.5%	>–4%	(Operating revenue[a] – operating expenses)/operating revenue[a]
Own-source Revenue ratio	17.5%	>60%	Rates, utilities, and charges/total operating revenue[b]
Unrestricted Current ratio	10.0%	>1.50×	Current assets less restrictions/current liabilities less specific purpose liabilities
Interest Cover ratio	2.5%	>4.00×	EBITDA/interest expense
Infrastructure Backlog ratio	10.0%	<0.02×	Estimated cost to bring assets to a satisfactory condition/total infrastructure assets
Debt Service Cover ratio	7.5%	>2.00×	EBITDA/(principal repayments + borrowing costs)
Capital Expenditure ratio	10.0%	>1.10×	Annual capital expenditure/annual depreciation
Cash Expense ratio	10.0%	>3.0 months	(Current cash and equivalents/(total expenses – depreciation – interest costs)) × 12
Buildings and Infrastructure Renewal ratio	7.5%	>1.00×	Asset renewals/depreciation of building and infrastructure assets
Asset Maintenance ratio	7.5%	>1.00×	Actual asset maintenance/required asset maintenance

[a]Revenue excludes capital grants and contributions. [b]Revenue includes capital grants and contributions.

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BOUNDARIES COMMISSION INQUIRY COMMUNITY FORUM

Please complete this survey ***after*** you have listened to the presentation from Prof Drew and heard answers to any questions raised.

It is important Council understands the views of our residents on this matter and we thank you for your time in attending.

1. Were you in favour of the 2016 amalgamation? Please circle your response.

   Yes

   No

   Undecided

2. Do you think a de-amalgamation will save money? Please circle your response.

   Yes

   No

   Undecided

3. Are you in favour of a de-amalgamation? Please circle your response.

   Yes

   No

   Undecided

   Why? (please be brief)

   .....

Dear Mayor McAlister, Deputy Mayor Palmer, and Mr McMurray,

Please find appended my report for Cootamundra-Gundagai Regional Council.

I stand ready to answer any questions that you may have in relation to this report.

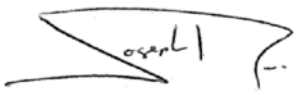
I am also more than happy to provide further evidence to the Boundaries Commission, the Minister for Local Government, the Deputy Premier, or the Premier. Please feel free to pass on my email address (Joseph.Drew@uts.edu.au) and phone number (0416489475) to these parties.

My sole interest in this exercise was to ensure that the community of Cootamundra-Gundagai received the best expert advice possible regarding its financial sustainability position and what might be done to address problems.

It is my firm belief that a de-amalgamation is the best way forward for the community.

If I can do anything to help decision-makers in their efforts to promote the community's interests, then I will certainly do so.

Yours Sincerely



Professor Joseph Drew

A/Prof University of Technology Sydney

Professor (adjunct) Tokyo Metropolitan University.

lgbc

LOCAL GOVERNMENT BOUNDARIES COMMISSION

FREQUENTLY ASKED QUESTIONS

What is the role of the Boundaries Commission?

The Local Government Boundaries Commission is an independent statutory authority which examines and reports on any matter referred to it by the Minister in relation to the boundaries of local government areas. The Boundaries Commission is constituted under section 260 of the Local Government Act.

Who are the members of the Boundaries Commission?

Four commissioners are appointed to the Boundaries Commission by the Governor for a five-year term.

They are Bob Sendt (chairman), Councillor Rick Firman (Temora), Councillor Lesley Furneaux-Cook (Burwood), and Grant Gleeson (Office of Local Government).

Of the four commissioners, one (Bob Sendt) is nominated by the Minister for Local Government, one (Grant Gleeson) is an officer of the Office of Local Government nominated by the agency's Deputy Secretary, and two (Councillors Rick Firman and Lesley Furneaux-Cook) are appointed from a panel comprising members nominated by Local Government NSW.

What proposals are currently being examined by the Boundaries Commission?

On 25 February 2020 Minister for Local Government Shelley Hancock referred to the Commission two elector initiated proposals that would affect boundaries in relation to Snowy Valleys Council and Cootamundra-Gundagai Regional Council.

In relation to Snowy Valleys Council, the proposal seeks to re-establish the area of the former Tumbarumba Shire local government area. It would reduce the local government area of Snowy Valleys Council so that it corresponds to the area of the former Tumut Shire Council.

In relation to Cootamundra-Gundagai Regional Council, the proposal seeks to re-establish the area of the former Gundagai Shire local government area. It would reduce the local government area of Cootamundra-Gundagai Regional Council so that it corresponds to the area of the former Cootamundra Shire Council.

In effect, these proposals seek to reverse the mergers that were put in place in 2016.

These proposals and the Minister's letters referring them to the Commission can be viewed here.

What will the Boundaries Commission take into consideration in their examination of the current proposals?

Section 263(3) of the Local Government Act sets out eleven factors that the Commission is required to have regard to in examining any proposal for changes to local government boundaries. Two of these factors relate only to proposals for merging council areas, so are not relevant to the Commission's current examinations. The remaining factors cover issues such as:

- financial advantages/disadvantages
- the community of interest and geographic cohesion
- attitude of residents and ratepayers
- requirements of the area concerned in relation to elected representation for residents and ratepayers at the local level
- any impact on council operations and staff, and
- any impact on rural communities in the areas concerned.

The Minister has also directed the Commission to hold an inquiry into each proposal. See below for further information on these public hearings.

Can I make a written submission to the Boundaries Commission?

Submissions already made by affected electors and councils to the Minister for Local Government have been provided to the Commission and do not need to be resubmitted.

The Commission has now published public notices in a number of newspapers calling for written submissions from parties affected by the proposals. This provides a further opportunity for parties who did not make a submission to the Minister or who wish to provide supplementary material.

How can I make a written submission?

Written submissions on each proposal should be forwarded to Local Government Boundaries Commission, Executive Officer, Locked Bag 3015, Nowra NSW 2541 or emailed to EO@lgbc.nsw.gov.au.

It would assist the Commission in its deliberations if parties could indicate in their submissions which of the section 263(3) factors they are addressing.

Submissions must be lodged by COB on 24 April 2020.

Will written submissions be made public?

Submissions received by the Commission may be made publicly available at its discretion. If submissions are made public, contact details will be redacted. The name

of the person making the submission may be released unless the person has requested to remain anonymous.

Any submissions received are also subject to the *Government Information (Public Access) Act 2009*.

Can I make an anonymous submission?

The Commission is required to have regard to the views of residents and ratepayers. While this does not preclude other parties from making a submission, any resident or ratepayer making a submission should identify themselves. In respect of anonymous submissions, the Commission may, at its discretion, take all or part of such a submission into account.

Those making a submission can request that their identity remains anonymous.

Will the Boundaries Commission hold public hearings?

The Minister has directed the Commission to hold public hearings as part of the examination process. It is intended that these will be held in Cootamundra, Gundagai, Tumut and Tumbarumba.

Any person who wishes to make an oral submission at the public hearing should notify the Commission in writing by COB on 24 April 2020.

Further information about times, location and procedures for any hearings will be published on the Commission's website at a later date.

How do I make an oral submission at the public hearings?

Persons making submissions should give written notice by COB on 24 April 2020 on whether they wish to speak to their written submission at one of the public hearings to be held by the Commission.

How will the public hearings be conducted?

Public hearings are open to members of the public and media. The Commission will determine how much time each speaker will be allowed so that all who wish to speak are given the chance to do so. Depending on the number of people wishing to speak, the Commission may hold the hearings over a number of consecutive sessions.

Is there protection from defamation at hearings or in written submissions?

Persons making written or oral submissions to the inquiry are not protected from defamation in respect of anything contained in those submissions. They should therefore ensure that they do not make any statement that may give rise to legal action by an aggrieved party.

Can I be represented at hearings?

Section 264 of the Local Government Act provides the circumstances in which a person can be represented in proceedings before the Commission. People who wish to be heard at the public hearings should make themselves aware of the restrictions set out in that section.

Will the hearings be recorded?

Audio recordings and written transcripts will be made of public hearings to assist in the Commission's consideration of the proposals. By making an oral submission to the Commission at a public hearing, the speaker consents to their submission being recorded. Audio recordings will not be made publicly available by the Commission, however recordings and transcripts are subject to the *Government Information (Public Access) Act 2009*.

What happens after the submissions and public hearings?

The Commission will prepare a report for the Minister on each proposal with recommendations as to whether the proposal should be implemented.

What happens to the Boundaries Commission's reports?

Once the Minister receives a report from the Commission, the Minister may recommend to the Governor that the proposal be implemented (with any modifications the Minister decides appropriate) or may decline to do so.

The report will only be published on the Commission's website with the Minister's consent.

How long will the examination by the Boundaries Commission take?

The Act does not provide a timeframe for the process to be undertaken. However the Commission is aware of the need for it to be completed in a reasonable timeframe to provide certainty to councils and residents.

Will COVID-19 impact on the process?

The Commission is monitoring all government requirements in respect of the coronavirus pandemic, particularly in relation to public gatherings. If the Commission subsequently needs to amend any arrangements due to the impact of COVID-19, details will be published on its website.

INVESTMENT REPORT

As at: 29-02-20

Date Invested	Interest Rate	Term Days	Investment Amount	Held With	Interest	Maturity Date
2 Oct 2019	1.75%	181	$2,027,575.34	AMP	$ 2,819.16	31 Mar 2020
21 Jan 2020	1.60%	91	$2,583,572.10	National Australia Bank	$ 3,284.32	21 Apr 2020
28 Jan 2020	1.60%	91	$1,003,989.04	Rural Bank Ltd	$ 1,276.30	28 Apr 2020
28 Jan 2020	1.60%	97	$1,505,983.56	BankVic	$ 1,914.46	4 May 2020
11 Feb 2020	1.80%	182	$3,072,746.34	AMP	$ 4,394.45	11 Aug 2020
19 Feb 2020	1.90%	181	$1,000,000.00	AMP	$ 1,509.59	18 Aug 2020
		AC	$1,139,943.63	Commonwealth Bank	$ 540.98	At Call
		BOS	$2,604,148.71	Commonwealth Bank	$ 1,212.65	At Call
		AC	$48,761.47	National Australia Bank	$ 41.81	At Call
Total			$14,986,720.19			
Matured in Report Month						
22 Oct 2019	2.05%	182	$3,041,654.79	AMP	$ 2,733.32	16 Feb 2020
29 Oct 2019	2.00%	182	$2,027,616.44	AMP	$ 1,999.84	18 Feb 2020
Totals					$ 21,726.89	

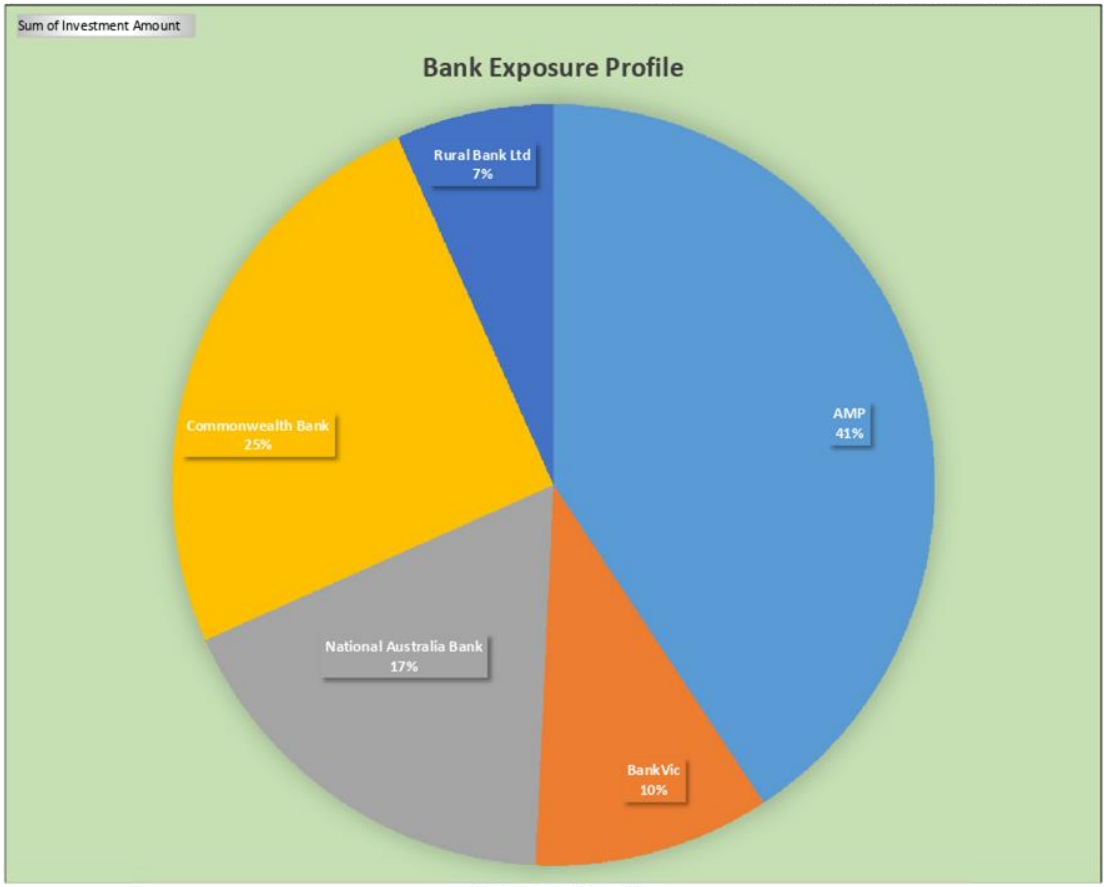
Budgeted Interest for Month	$ 29,126.00
Combined Interest Rate	1.74%
BBSW Benchmark Rate	0.8988%

This report is produced in accordance with
section 625 of the local Government Act 1993
and all Investments have been made in accordance
with the Act, the Regulations and council's investment policy.

Signed

Tim Swan
Responsible Accounting Officer

Investment Report
February 2020

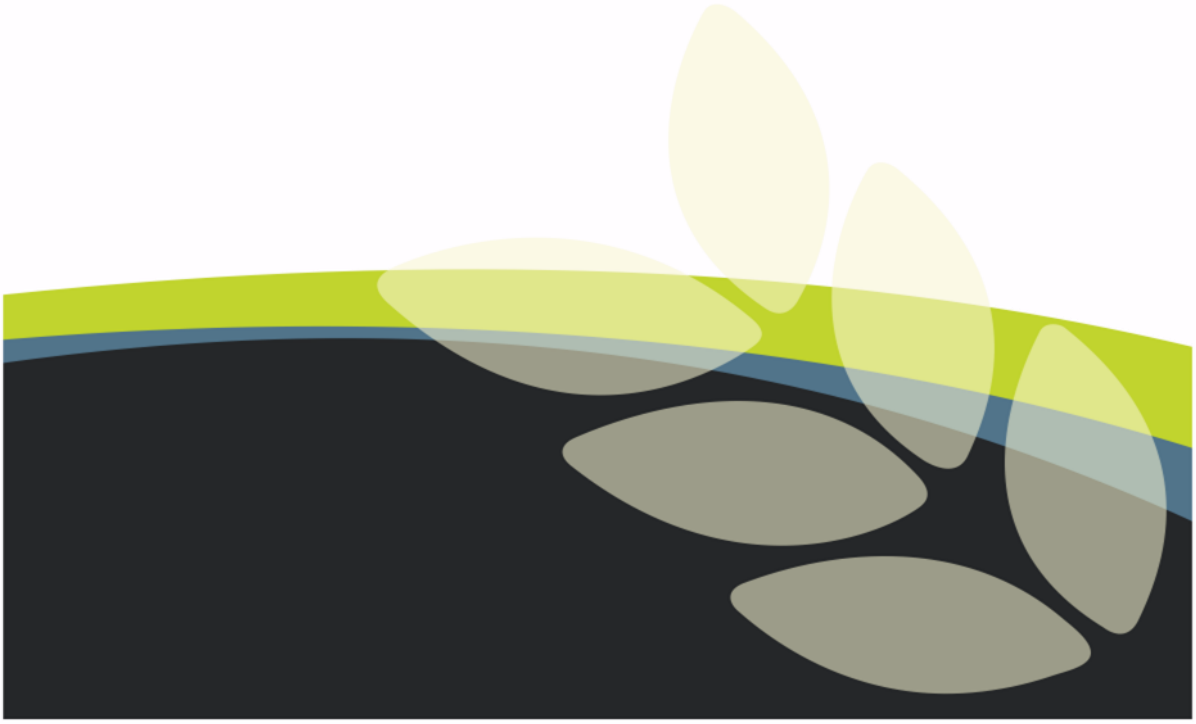


COOTAMUNDRA-GUNDAGAI REGIONAL COUNCIL

February 2020

Financial reporting pack

Monthly operational analysis



Monthly budget variance report
Consolidated
Period ended 29 February

	Year to date actual								
	General	Waste	Water	Sewer	Consolidated total	Consolidated budget	Balance remaining	% of annual budget	Comments
Revenue									
Rates and annual charges	7,363,298	2,092,103	1,186,286	1,511,606	**12,153,292**	13,020,211	866,919	93.34%	
User charges and fees	1,744,628	202,536	2,020,425	414,792	**4,382,381**	8,280,772	3,898,391	52.92%	
Interest and investement revenues	246,849	5,284	18,281	7,895	**278,310**	497,517	219,207	55.94%	
Other revenues	470,275	-	4,576	-	**474,851**	519,740	44,889	91.36%	
Operating grants and contributions	3,308,919	69,406	53,677	51,539	**3,483,541**	8,072,705	4,589,164	43.15%	
Capital grants and contributions	434,180	-	-	-	**434,180**	15,859,165	15,424,985	2.74%	Adjustment planned for March QBR for STP grant income deferral
Internal Plant hire	1,860,046	-	-	-	**1,860,046**	3,420,000	1,559,954	54.39%	
Internal Overheads	-	-	-	-	-	2,278,576	2,278,576	0.00%	
Internal Easements	-	-	-	-	-	1,464,950	1,464,950	0.00%	
Total revenue	**15,428,195**	**2,369,329**	**3,283,245**	**1,985,832**	**23,066,601**	**53,413,636**	**30,347,035**	**43.18%**	
Expenditure									
Employee costs	7,005,773	334,403	434,554	335,295	**8,110,026**	12,279,857	4,169,831	66.04%	
Borrowing costs	46,304	-	-	-	**46,304**	183,823	137,519	25.19%	
Materials and contracts	7,193,488	952,180	1,730,267	252,750	**10,128,686**	12,782,221	2,653,535	79.24%	
Plant hire	1,166,545	132,906	52,183	34,418	**1,386,052**	2,686,202	1,300,150	51.60%	
Other expenses	2,803,537	6,181	106,319	122,698	**3,038,735**	3,588,112	549,377	84.69%	Includes annual expenses such as insurance, rates, subscriptions.
Internal Overheads	-	-	-	-	-	2,278,576	2,278,576	0.00%	
Internal Easements	-	-	-	-	-	1,464,950	1,464,950	0.00%	
Total expenses	**18,215,647**	**1,425,671**	**2,323,323**	**745,161**	**22,709,802**	**35,263,741**	**12,553,939**	**64.40%**	
Net result	**(2,787,453)**	**943,658**	**959,922**	**1,240,671**	**356,798**	**18,149,895**	**17,793,097**		

Business Unit Summary - Operating
Period ended 29 February

	Income					Expenditure				Comments
	Actual	Budget	Variance	%		Actual	Budget	Variance	%	
Development, Building and Compliance	220,709	384,120	**163,411**	57.46%		432,248	1,315,066	**882,818**	32.87%	OK
Regulatory Services	435,503	644,190	**208,687**	67.60%		708,503	1,099,122	**390,619**	64.46%	OK
Community and Culture	206,617	267,041	**60,424**	77.37%		1,124,089	1,392,227	**268,138**	80.74%	PO's raised for full year.
Business Services	22,435	5,780	**(16,655)**	388.15%		1,467,650	2,125,847	**658,197**	69.04%	OK
Finance and Customer Services	9,472,072	16,556,739	**7,084,667**	57.21%		988,756	2,086,194	**1,097,438**	47.40%	OK
Executive Office	(171,623)	10,000	**181,623**	-1716.23%		2,289,139	3,372,456	**1,083,317**	67.88%	Allocations between GM and Deputy changed since budget. Combined exp is OK.
Operations Management	1,453,118	5,568,349	**4,115,231**	26.10%		1,856,051	1,175,322	**(680,729)**	157.92%	Workers comp & Public Liability Insurances for full year.
Facilities	268,375	252,940	**(15,435)**	106.10%		861,572	1,383,492	**521,920**	62.28%	OK
Recreation	293,376	187,392	**(105,984)**	156.56%		1,577,673	1,720,677	**143,004**	91.69%	Expenditure being reviewed.
Technical Services	331,834	515,991	**184,157**	64.31%		1,311,361	2,316,033	**1,004,672**	56.62%	OK
Civil Works	642,010	3,366,180	**2,724,170**	19.07%		2,876,687	5,310,993	**2,434,306**	54.16%	Several major debtor invoices to be processed in March.
Asset Management	2,253,769	3,795,080	**1,541,311**	59.39%		2,721,919	3,300,691	**578,772**	82.47%	Expenditure includes termination paymentthat skews percentage. Plant income a concern.
Waste Services	2,369,329	2,458,338	**89,009**	96.38%		1,425,671	2,092,687	**667,016**	68.13%	Expenditure being reviewed.
Water	3,283,245	4,224,467	**941,222**	77.72%		2,323,323	4,073,219	**1,749,896**	57.04%	OK
Sewer	1,985,832	15,177,029	**13,191,197**	13.08%		745,161	2,499,715	**1,754,554**	29.81%	QBR adjustment required to defer STP grant income.
Total	**23,066,601**	**53,413,636**	**30,347,035**	**43.18%**		**22,709,802**	**35,263,741**	**12,553,939**	**64.40%**	

Capital expenditure

	YTD	Budget	Variance	%	Comments
Capital income					
Proceeds from sale of plant	326,843	696,500	(369,657)	**46.93%**	
Proceeds from sale of property	215,582	-	215,582	**0.00%**	
Sports facilities capital income			-	**0.00%**	
Storwater capital income			-	**0.00%**	
Roads capital income			-	**0.00%**	
Water capital income			-	**0.00%**	
Sewer capital income			-	**0.00%**	
Waste capital income			-	**0.00%**	
Other capital income			-	**0.00%**	
Total Income	542,425	696,500	(154,075)	**77.88%**	
Capital expenditure					
Plant and equipment	1,424,597	2,484,000	(1,059,403)	**57.35%**	
Office equipment	33,197	40,000	(6,803)	**82.99%**	
Buildings	264,889	210,000	54,889	**126.14%**	
Land improvements	49,628	25,000	24,628	**198.51%**	
Major projects	4,844,501	5,920,226	(1,075,725)	**81.83%**	
Roads, bridges and footpaths	2,642,520	4,290,000	(1,647,480)	**61.60%**	
Stormwater drainage	380,543	-	380,543	**0.00%**	
Recreation assets	22,326	-	22,326	**0.00%**	
Parks and Gardens	77,812	-	77,812	**0.00%**	
Waste Services	5,562	-	5,562	**0.00%**	
Water supply network	3,544,896	4,000,000	(455,104)	**88.62%**	
Sewerage network	1,874,467	12,856,000	(10,981,533)	**14.58%**	QBR adjustment likely for March.
Other assets	-	-	-	**0.00%**	
Total Expenses	15,164,937	29,825,226	(14,660,289)	**50.85%**	
Net capital expenditure	14,622,512	29,128,726	(14,506,214)		

NSW GOVERNMENT Public Works Advisory

Stockinbingal Sewerage Scheme

Concept Design Report

Report Number: ISR19178

February 2020

Prepared for:

COOTAMUNDRA-GUNDAGAI REGIONAL COUNCIL

Trim Project No. DIR19/1649
Report Number: ISR19178

Document control

Version	Author(s)	Reviewer	Approved for issue	
			Name	Date
Draft V1	Wayne Kennedy Heleen Lindeque	Brett Douglas	Hendrik van Rhijn	15/01/2020
Final	Heleen Lindeque	Brett Douglas	Brett Douglas	05/02/2020

Executive Summary

General

Stockinbingal is a small town located in the South West Slopes and Riverina regions of New South Wales. Stockinbingal is 388 km south west of Sydney and 102 km north east of Wagga Wagga. The town has a population of approximately 250 at present. A reticulated sewerage system is proposed to replace the existing individual property based on-site wastewater systems.

An options assessment to determine the type of wastewater system (including reticulation and treatment) was completed in March 2019. Following the assessment, Cootamundra-Gundagai Regional Council (CGRC), has endorsed a pressure sewerage collection system with a package type treatment plant as the preferred servicing strategy for Stockinbingal.

Public Works Advisory has been engaged by CGRC to prepare a concept design for the proposed Stockinbingal Sewerage Scheme based on the endorsed servicing strategy.

Serviced Population

A total of 111 properties have been identified for servicing with an additional 16 properties to be considered for servicing.

The properties identified for servicing include:

- 92 residential properties within the village zone boundary (land zoned RU5)
- 6 non-residential properties (2 churches, 1 school, 2 public toilets and a bowling club) within the village zone
- 8 commercial properties (7 shops and one hotel) within the village zone
- 5 properties adjoining the village zone boundary

The additional 16 residential dwellings identified by Council for possible servicing are located to the east of the village. These additional dwellings will be included in the concept level scheme development. The final decision to included or exclude any of these properties will be determined by Cootamundra-Gundagai Regional Council at a later stage.

It is noted that there are a significant number of vacant blocks within the village zone. Our understanding is that there is no driver at this time for infill development to occur. In order to accommodate some infill growth, a high flow scenario will be tested, to determine the ability of the system to accommodate future infill growth.

The average daily wastewater flow for the developed properties within and adjoining the village area is estimated to be 67 kL/day. This includes the non-residential properties such as churches, schools etc. The estimated total daily wastewater flow for the additional 16 properties (with a dwelling) outside the village area is 6 kL/day.

Pressure Sewer System

The proposed Pressure Sewerage System consists of small grinder pumps located on each property which macerates the sewage into a fine slurry and pumps it through a pressurised sewerage network directly or indirectly to a wastewater treatment facility. This system was selected in the Options Study as being the most suitable for Stockinbingal.

STP Options

Several secondary treatment options have been investigated:

- Option 1: Conventional Activated Sludge (CAS) Treatment
- Option 2: Membrane Aerated Biofilm Reactor (MABR)
- Option 3: Membrane Bioreactor (MBR)
- Option 4: Moving Bed Bio Reactor (MBBR)
- Option 5: Intermittently Decanted Extended Aeration (IDEA) reactor

Options 1-4 are for package type systems, whereas Option 5 is for a concrete aeration tank. These options were assessed with Option 5 being the preferred option. Option 5, a concrete IDEA based plant, is recommended for Stockinbingal as it will provide a more permanent solution. This type of STP will also meet the quality requirements, is cost effective to provide and operate, has no propriety equipment and requires a low level of operator skill. The adopted effluent management strategy is to discharge to Dudauman Creek.

STP Design

The pressure sewer modelling results were used as the input to the design flow rate and balancing requirement for the STP. Flow balancing will be used to minimise the size of the treatment plant. The inlet works will be sized for 7.2 L/s, based on the daily peak inflow and the rest of the STP will be designed for a maximum of 1.2 L/s based on the high daily inflow.

As there is not currently a STP, the values in Table S-1 have been assumed, based on typical domestic strength sewage, while the effluent values are based upon typical requirement values from the EPA for modern technology STPs and discharge to inland waterways.

For reuse requirements in the future, additional chlorination and a recycled water management plan will be required to conform with the Australian Recycled Water Guidelines.

Table S-1: Inflow and Effluent Values

Parameter	Inflow values	Effluent Values
Biochemical Oxygen Demand (BOD_5)	325-360 mg/L	10-15 mg/L
Faecal Coliforms		200 CFU/100 mL
pH		
Suspended Solids (SS)	275-300 mg/L	15 -20 mg/L
Ammonia		2-5 mg/L
Total Nitrogen (TN)	60-70 mg/L	10-15 mg/L
Total Phosphorus (TP)	13-15 mg/L	0.5 – 1 mg/L

Proposed New Infrastructure

The new infrastructure to be delivered as part of this proposed scheme includes:

A Pressure Sewerage network consisting of:

- 121 simplex pump units, control/alarm panels and associated electrical/control wiring
- 5 duplex pump units, control panels and associated electrical wiring (Elwood Hall, Bowling Club, School and public toilets)
- 1 quadraplex pump unit, control panel and associated electrical wiring (Commercial Hotel)
- 3,800m of DN40 property discharge pipework from the collection tank to the street network
- Street reticulation network 6,300 m long consisting of DN50-DN125 polyethylene pipes
- Network storage of about 16,500 L
- 4 air valves and vent pipes
- 14 flushing and 11 isolation valves.

A new STP which will include:

- An inlet screen
- A 50kL emergency storage tank
- A concrete IDEA reactor and balance tank
- Alum and caustic dosing facilities
- A UV disinfection unit and an effluent pump to Dudauman Creek (provisional)
- A sludge tank and geobag sludge drying system
- Interconnecting pipework and pumping
- Electrical Switchboard with HMI (Touch Screen)
- Provision for remote monitoring via a telemetry system
- A new power supply
- A containerised amenities building which will include a control room and a laboratory.

Cost Estimate for the Pressure Sewer System

A summary of the Pressure Sewer Network Costs based on the concept design is shown in Table S-2. A detailed costing is provided Appendix F.

For pipe lengths an additional 10% allowance has been made for changes during the detail design and to reflect the level of design (concept design level at this stage). In addition, five air valves and vent shafts have been allowed for, however based on the concept design, no vent shafts are required. These values have been added to the contingency.

Another thing to note, is that the 16 properties outside the village boundary contribute to a significant part of the capital, due to the long reticulation lines. The total cost of expanding the network beyond the village network is around $800,000.

Table S-2: Pressure Sewerage Network – Estimated Cost Summary

	Cost Item	Cost (includes GST)
1.	Site Establishment	
2.	Pressure Units	$1,373,200
3.	Reticulation	$1,365,000
4.	Miscellaneous	$44,000
	Sub Total – Direct Construction Costs	**$2,892,200**
	Contractor Indirect Costs	$144,610
	Total Construction Costs	**$3,036,810**
	Contingency (additional reticulation, air valves and general allowance)	$682,800
	Survey, Investigation, Design and Project Management	$289,220
	Total Estimated Project Cost[1]	**$4,008,830**

Note: 1 – Total Estimated Project Costs do not include client costs such as community consultation and client liaison by the project manager.

Cost Estimate for the STP

The following table shows the cost estimate for a concrete IDEA reactor plant.

Table S-3: STP - Cost Summary

Item No	Description	Cost (includes GST)
1.	Site Establishment	$108,000
2.	Roadworks and Site Drainage	$90,000
3.	Emergency Balance Tank	$25,200
4.	Inlet Works	$90,000
5.	Concrete IDEA reactor and balance tank	$728,471
6.	Sludge Tank	$18,200
7.	Sludge Dewatering	$83,700
8.	Chemical Dosing	$20,000
9.	Disinfection	$30,000
10.	Treated effluent outfall pump	$9,000
11.	Amenities Building	$200,000
12.	Pipework, Valves and Fittings	$72,500
13.	Installation/Testing/Commissioning	$145,000
14.	Electrical Works	$364,100
15.	Potable water connection to STP	$10,000
16.	Miscellaneous	$90,000
	Subtotal	**$2,084,171**
	Project Contingency (20%)	$416,834
	Survey, investigation, design and project management (10%)	$208,417
	Total Estimated Capital Cost	**$2,709,422**

Contents

Tables

Figures

Abbreviations

ARTC	Australian Rail Track Corporation
BWL	bottom water level
CGRG	Cootamundra-Gundagai Regional Council
DPIE Water	Department of Planning, Industry and Environment - Water
EP	equivalent population
ET	equivalent tenement
HMI	Human machine interface
IDEA	Intermittently Decanted Extended Aeration
L/s	litres per second
MABR	membrane aerated biofilm reactor
MBBR	moving bed bioreactor
MBR	membrane bioreactor
OEH	Office of Environment and Heritage, NSW
PLC	programmable logic controller
PSS	Pressure Sewerage System
PWA	Public Works Advisory
REF	Review of Environmental Factors
RL	reduced level
RPZ	reduced pressure zone
SCA	Switchgear and control assembly
STP	sewage treatment plant
T.O.	top of
TWL	top water level
UPS	uninterruptible power supply
WHS	Workplace, Health and Safety

1. Introduction

1.1 General

Stockinbingal is a small town located in the South West Slopes and Riverina regions of New South Wales. Stockinbingal is 388 km south west of Sydney and 102 km north east of Wagga Wagga. The town has a population of approximately 250 at present. The town does not have a reticulated sewerage system and relies on individual property based on-site wastewater management.

A reticulated scheme is proposed. An options assessment to determine the type of wastewater system (including reticulation and treatment) was completed in March 2019. Following the assessment, Cootamundra-Gundagai Regional Council (CGRC), has endorsed a pressure sewerage collection system with a package type treatment plant as the preferred servicing strategy for the Stockinbingal village.

Public Works Advisory has been engaged by CGRC to prepare a concept design for the proposed Stockinbingal Sewerage Scheme based on the endorsed servicing strategy.

This report details the concept design for a Pressure Sewerage System and sewerage treatment plant serving the village of Stockinbingal.

1.2 Purpose of the Report

The purpose of this report is to provide a concept design for the Stockinbingal Pressure Sewerage Scheme that details the proposed scheme including the service area, the properties to be served and the assumptions made in developing the concept.

This report along with the environmental assessment and funding approvals will provide sufficient information for Council to move forward to the design and procurement stage.

1.3 Project Objective and Approach

The objective of the concept design is to provide a reticulated wastewater service to all existing developed properties within the village area as well as about sixteen properties that adjoin the village area (generally to the east of the village area) which will also be considered for servicing. The properties to be serviced are shown in Figure 2-1.

The network layouts have been developed whilst taking the following into consideration:

- Minimising the impacts on the community and the environment.
- Minimising construction, operational and maintenance costs.
- Eliminating and minimising potential wet weather flows.
- Pipe routes will serve the identified properties within and adjoining the properties minimising the total length of pipework wherever possible. Additional network routes will then be developed to serve the potential 16 properties identified.
- Minor deviation of pipe routes may be adopted where it serves additional existing dwellings.
- The number of rail and road crossings will be minimised and located to minimise construction difficulties.
- Crossing of major telecommunications cables will be minimised where possible.

The sizing of the pipework has been determined using the hydraulic criteria detailed in Section 2.2.3. There is often more than one pipe size which meets the criteria, however in order to help cater for future infill growth the largest possible pipe which meets the criteria has been adopted (note this is not expected to have a significant difference to the pipe sizes used).

The potential infill growth is significant compared to the number of current properties. However, significant infill development is unlikely to occur within the next 20 years. As a result, development of a concept which serves both the current properties and potential growth areas is problematic from a technical perspective. The approach undertaken was to identify the scale of the growth areas and allow for the future connection through the sizing of the reticulation network.

The sewage treatment plant (STP) should be robust and allow for sufficient treatment of sewage to enable effluent discharge to the nearby creek.

1.4 Project Scope

The project scope includes the following tasks:

- Developing and documenting a Basis of Design for the sewer network and the STP
- Producing preliminary layouts and determining a preferred system layout
- Network modelling of the preferred layout
- Using the outputs from the network modelling to size the STP
- Refining of the concept sewerage network layout and treatment plant site
- Discussion of key challenges and opportunities
- Compiling a cost estimate for the project.

2. Basis of Design

The Basis of Design (BOD) details the assumptions and parameters adopted during the concept development (e.g. layout development and hydraulic modelling) of the sewerage scheme.

Specifically:

- The properties to be served by the scheme.
- The current population and any planned future growth.
- Current and future wastewater flows.
- Hydraulic parameters and assumptions to be adopted.
- Approach and decisions made during the concept development.

2.1 General

2.1.1 Scheme Service Area

The service area includes the village area of Stockinbingal and 16 adjoining properties that may be included.

The village has a small commercial area on Hibernia and Martin Streets but is otherwise residential. Many properties comprise multiple lots and so there is a potential for infill growth however the likelihood for this to be substantial is low.

A rail corridor bisects the village area with the largest section of the service area (including the commercial area) to the north of the rail line. The major road through the village (Hibernia Street) runs parallel to the railway track through the village area.

Several creeks (Bland, Powder Horn and Dudauman Creeks) run through the village area. The village is flood prone as detailed in Councils Village Strategy Report. Infrastructure will be designed to minimise flood impacts.

2.1.2 Properties Serviced by the Proposed Scheme

A total of 111 properties have been identified for servicing with an additional 16 properties to be considered for servicing.

The properties identified for servicing include:

- 92 residential properties within the village zone boundary (land zoned RU5)
- 6 non-residential properties (2 churches, 1 school, 2 public toilets and a bowling club) within the village zone
- 8 commercial properties (7 shops and one hotel) within the village zone
- 5 properties adjoining the village zone boundary

The additional 16 residential dwellings identified by Council for possible servicing are located to the east of the village. These additional dwellings will be included in the concept level scheme development. The final decision to included or exclude any of these properties will be determined by Cootamundra-Gundagai Regional Council at a later stage.

Note: the GrainCorp facility on Troy St has not been included for servicing at this time.

All residential properties, including the additional properties being considered, are shown in Figure 2-1. It is noted that there are a significant number of vacant blocks within the village zone. Our understanding is that there is no driver at this time for infill development to occur. In order to accommodate some infill growth, a high flow scenario will be tested, to determine the ability of the system to accommodate future infill growth.

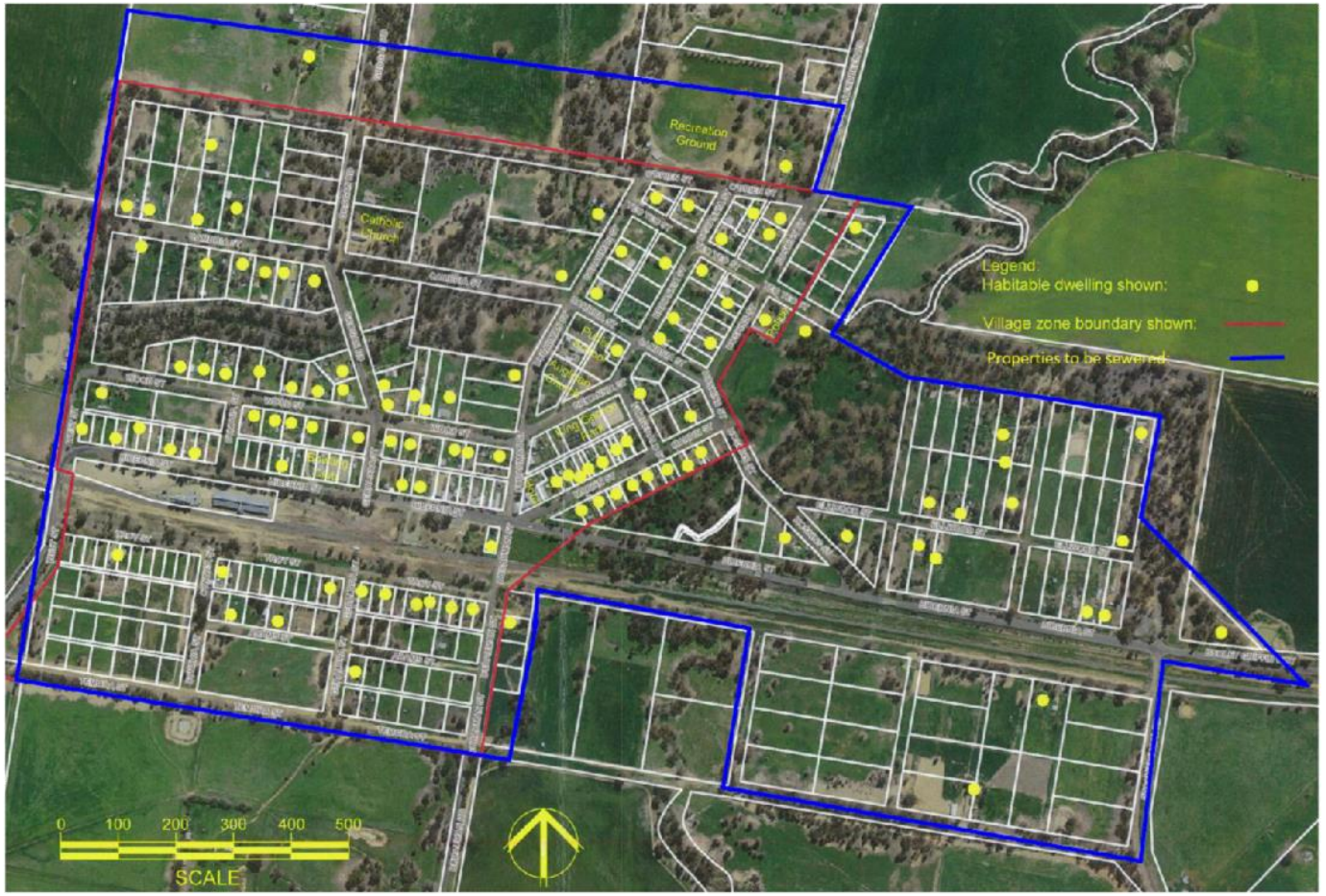


Figure 2-1: Properties to be Served by the Proposed Scheme

2.1.3 Property Zonings

The property zonings for the Stockinbingal village and surrounding area are shown in Figure 2-2. The village area is almost entirely zoned "Village - RU-5", with a park area to the north of the village zoned "Public Recreation - RE1" and the rail corridor through the village zoned "Infrastructure - SP2". The surrounding land is zoned "Primary Production - RU1".

The properties to be serviced are generally residential. Non-residential usage within the village include a small commercial centre, churches, a school and a bowling club.

The detail and location of the properties with a non-residential usage are listed below:

Table 2-1: Non-Residential Properties

Description	Location
Commercial Shops (approximately 6)	24-38 Hibernia Street
Commercial Hotel	32 Martin St (Lot 131 DP750619)
Post Office (Cootamundra Hall)	32 Martin St
St Joseph's Catholic Church	Grogan Rd (Lot 2, DP504837)
St James Anglican Church	Lot 1, Sec 7 DP758928
Stockinbingal Bowling Club	48 Hibernia St
Police Station	6 Hoskins St
GrainCorp Silo	Troy St
Stockinbingal Public School	Britannia St

2.1.4 Future Development Outside the Current Village Boundary

The Council's Village Strategy has identified four potential growth areas. This includes three residential areas and one industrial area. Council has indicated the development timeframe for these areas is beyond 20 years.

The potential residential areas have a combined area of about 55 hectares and based on 8 lots/gross hectares, the total number of potential lots is about 440 lots.

The potential industrial area is about 380 hectares in size. No information regarding the type of industrial business that may operate in the area are known at this time.

These potential development areas have not been included in the scheme concept. These development areas could be included in the future as new sewer catchments. The STP would likely need to be expanded should this development occur.

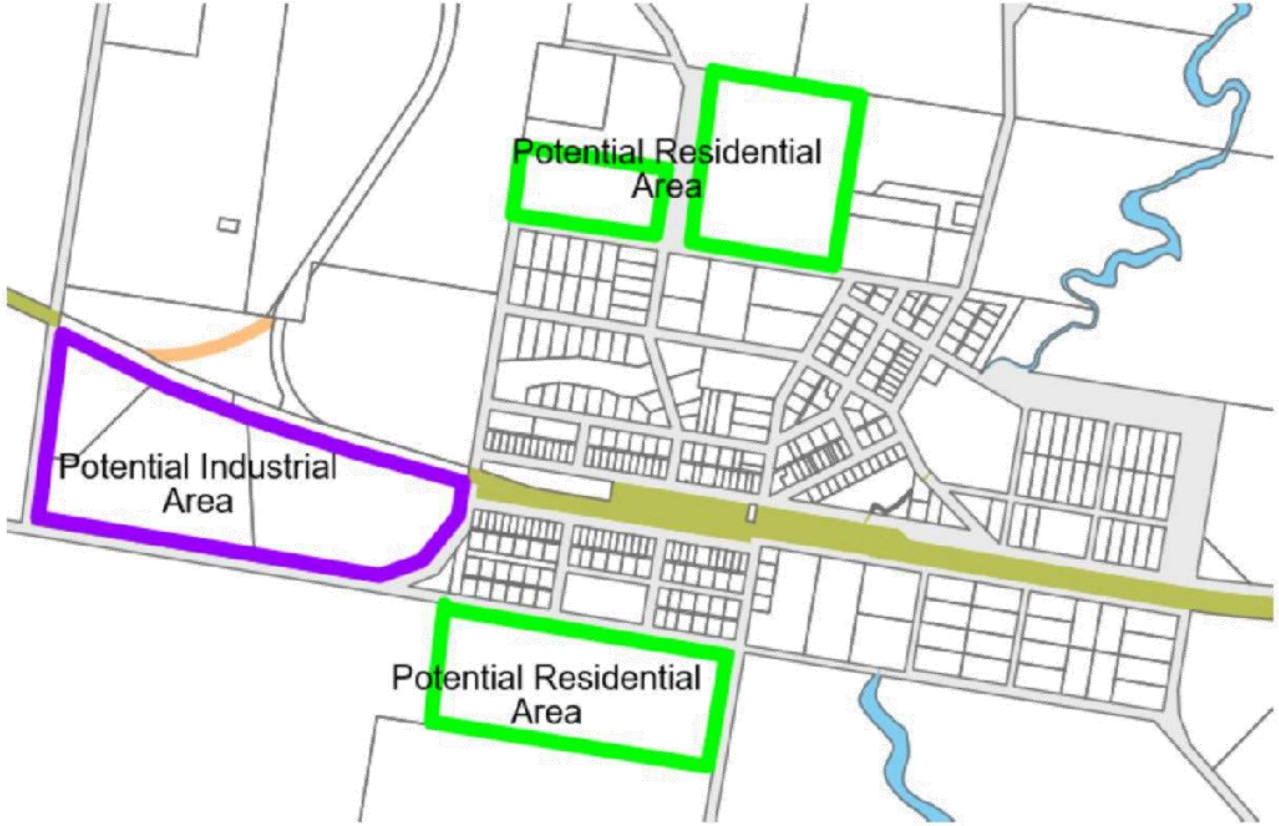


Figure 2-2: Zoning Plan - Stockinbingal

2.1.5 Climate

Mean minimum and maximum ambient temperatures for Cootamundra Airport (20 km from Stockinbingal) based on historical Bureau of Meteorology (BOM) data ranges 1.1 °C (July) and 32.2 °C (January), respectively. The maximum recorded low and high temperatures are -7.8 °C and 43.6 °C respectively.

2.1.6 Flooding

The Stockinbingal Floodplain Risk Management Plan – July 2002 found areas of the proposed wastewater scheme impacted by flooding. The STP site is above the 1 in 100 year flood level, however the 1 in 100 year flood level inundates a considerable area of the Stockinbingal village. A plan showing the 1 in 100 year flood level from the flood study is provided in Appendix E.

Measures to address the impact of flooding on the collection system is discussed in detail later in the report.

2.1.7 Topographical Survey

An engineering survey of the proposed site as part of this investigation was carried out by PWA. The survey identifies the location of existing structures/ facilities, surface levels/ contours and other surface features upon which the concept is developed within this report, and later detailed designs, are to be based. The survey drawings have been added in Appendix A.

2.1.8 Geotechnical Investigation

Based on the published data (Cootamundra 1:250,000, Geological Series Sheet SI/55-11, 2nd Edition, 1996), the Stockinbingal township and proposed STP site are completely located within Quaternary alluvial deposits, comprising gravel, sand, silt and clay.

At the topographic high point at the north-western outer region of the township, the area is underlain by Early Devonian, Lochkovian age igneous rocks of the Stockinbingal and Bethungra Formations comprising rhyolite, rhyodacite and dacite. At the topographic high point at the south-eastern outer region of the township, the area is underlain by Late Ordovician, Bolindian age sedimentary rocks of the Bribbaree Formation comprising siltstone, sandstone, chert and mudstone. Portions of the Bribbaree Formation are largely obscured by Quaternary colluvium and eluvium.

A geotechnical investigation for the reticulation scheme and STP was conducted by PWA as part of this engagement. The main findings are:

- Construction difficulties associated with groundwater are not expected.
- In agreeance with the regional geology map, bedrock was not encountered within any of the boreholes.
- Shallow excavations in soil deposits should be readily achievable using a hydraulic excavator.

2.1.9 Review of Environmental Factors (REF)

A Review of Environmental Factors (REF) is required for the new STP. The REF is currently being undertaken and will review the effect on existing flora and fauna at the STP as well as the reticulation scheme and the effect of noise and odours that will be generated by the treatment process on the environment.

2.1.10 Noise and Odour

The main sources of noise are the mechanical equipment particularly the aeration system and to a lesser extent, other mechanical equipment such as pumps and the mechanical screen. Mechanical equipment will be designed to ensure that noise at the plant's boundaries does not exceed ambient noise levels by 5 dB. The buffer will be approximately 200 m to the nearest residence.

The main source of odour will be the inlet works which will be covered. The buffer will likely prevent odour complaints from neighbours. A noise and odour study is being undertaken for the scheme.

2.1.11 Workplace, Health and Safety

Workplace, Health and Safety (WHS) aspects relating to the proposed works will be in accordance with WHS Act 2011 and WHS Regulation 2017.

Sewage Treatment Plant

WHS requirements for STPs and related infrastructure are predominantly concerned with providing safe access for operators, prevention of injury from slips, trips and falls, procedures and equipment for confined spaces and requirement for handling of hazardous materials.

Handrails, platforms, stairs and/or safety chains are required to provide safe access and working conditions in circumstances where work is at height or there is a potential for falling off or into structures. Appropriate fencing is required around the STP site to prevent unintentional or unauthorised entry.

Design of the proposed plant will incorporate the relevant safety provisions to meet current WHS requirements, including the completion of Safety in Design checklists that outline potential safety issues and how they have been addressed in the plant design.

In addition, an operation and maintenance (O & M) manual will be prepared for Council following construction of the plant. All as built drawings will be included in paper and electronic format; which will form part of the O & M manual. This critical document will provide a detailed guide to plant operation and maintenance requirements. This will also include training provided to the operators and maintenance staff in the operation and maintenance of the new STP.

Pressure Sewer Network

Operation and the maintenance of the pressure reticulation network can be separated into two categories, the on-property assets and the street network.

In regard to the on-property assets, access to private properties is required and private properties are not controlled sites. The risks associated with entry onto private property need to be assessed before access occurs. These risks include slip trips and falls, manual handling of the pump units, physical contact with wastewater as well as potential for electrocution associated with the electrical component of the on-property assets. As these sites also include interaction with property owners there is the potential risk associated with this interaction which may put maintenance staff at risk.

Operation and maintenance of the street network is similar to the requirements of maintaining a water supply network. Risks associated with the street network include, slip, trips and falls, manual handling, potential contact with wastewater and working on roadways.

In order to ensure OH&S risks are addressed appropriately a Risk in Design Workshop should be undertaken during the design stage and a report prepared detailing the steps required to meet legislative requirements.

2.2 Pressure Sewerage System

2.2.1 Relevant Codes and Standards

A number of reference documents have been used in developing this concept design. These documents include:

- Pressure Sewerage Code of Australia WSA 07 – 2007
- AS/NZ4799 Installation of Underground Utility Services and Pipelines within Railway Boundaries
- ARTC - Installation of Utility Services and Pipelines within Railway Boundaries ETG-17-01
- AS3000 National Electrical Installation Standard

2.2.2 Estimated Wastewater Flows

The average daily wastewater flow for the developed properties within and adjoining the village area is estimated to be 67,806 L/day. This includes the non-residential properties such as churches, schools etc. The estimated total daily wastewater flow for the additional 16 properties (with a dwelling) outside the village area is 6,336 L/day.

Estimated wastewater flows are detailed in Table 2-2, Table 2-3 and Table 2-4.

In general, the flows have been based on the existing residential population data for the village, relevant Australian Codes and where appropriate and estimates from water consumption data. An allowance of 180 L/EP/d has been adopted.

A high flow scenario is also shown in Table 2-2 based on 200 L/EP for each existing residential property and an allowance of 20% for infill properties. For non-residential flows, an increase of 20% has been adopted for the sensitivity assessment. For downstream infrastructure, an allowance of 20% on top of the high flow scenario is recommended. This has been used to test the robustness of the concept design and for determining the appropriate flow to the downstream treatment plant.

Table 2-2: Flow Summary

Description	Equivalent Population (EP)	Average Daily Flow (L/day)	Daily Flow - High Flow Scenario (L/day)
Properties within and adjoining the Village Area	213	38,142	51,216
Other Residential Properties Outside the Village Area (up to 16 properties)	35	6,336	8,448
Non-Residential Wastewater Flows (refer to Table 2-4)	N/A	23,328	27,994
Sub total		*67,806*	*87,658*
Allowance for receiving infrastructure – 20%			17,531
Total		**67,806**	**105,189**

Table 2-3: Existing Properties - Residential Wastewater Flows

Description	No of Lots	Density EP/Property	Equivalent Population	Average Daily Flows - based on 180 L/EP/day (L/Day)
Residential Properties within the Village Boundary	92	2.2	202.4	36,432
Residential Properties adjoining the Village Boundary	5	2.2	10.4	1,872
Sub Total				*38,412*
Other Residential Properties Outside the Village Area	16	2.2	35.2	6,336
Total				**44,748**

Note: Population densities are based on the Stockinbingal Village Strategy (202 residents in the 91 residential properties in the urban area).

Table 2-4: Non-Residential Wastewater Flows

Description	Criteria	Students/Occupants	Equivalent Tenement (ET)	Average Daily Flows (L/Day)
Commercial Premises				
6 Small Commercial Properties (24-38 Hibernia Street)	Considered as a Residential Dwelling	N/A	3.5 EP per property	3,780
Commercial Hotel [1]	See Notes		N/A	5,900
Sub Total			*N/A*	*9,680*
Non-Residential Properties (General)				
Stockinbingal Bowling Club [2]	0.25 EP/Occupant	95	23.6	4,248
St Josephs Catholic Church [3]	See Notes		6	1,080
St James Anglican Church [3]	See Notes		6	1,080
Stockinbingal Public School	0.2 EP/Student	27	6	1,080
Stockinbingal Police Station [4]	See Notes	N/A	7	1,260
Post Office (Ellwood Hall) [5]	0.25 EP/Occupant	100	0.25	4,500
2 x Public Toilets	20 people/d x 10 L/use per site			400
Sub Total				*13,648*
Total				**23,328**

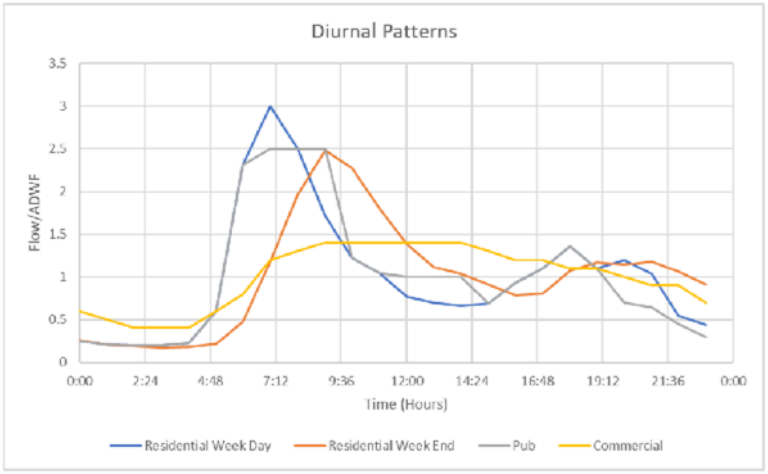
Notes:

1. Wastewater discharges have been based on the general water consumption information with an increase (approx. 25%) to allow for daily variations.
2. Based on water consumption data and assumes water used for non-sanitary use will be offset by liquids consumed and allowing an increase of 50% due to daily variations.
3. The churches do not appear to have any water demand. In order to allow for future toilet facilities a daily flow equivalent to 6 EP @ 180 L/EP/day has been adopted.
4. Based on water consumption data the water usage is approximately double that used by a typical single dwelling (e.g. 3.5 EP@ 180 L/EP/Day) and without further explanation it is considered that an EP of 7 is appropriate.
5. Flows for this property have been based on the use as a hall with potentially 100 occupants.

2.2.3 Pressure Sewerage System Parameters

The following table details the parameters assumed in the development of the concept design and hydraulic model.

Table 2-5: Pressure Sewerage Systems Hydraulic Parameters

Item	Parameter	Commentary
1	EP/Lot	For existing developed properties: 2.2 EP/Property For commercial premises: See below Wastewater flows for non-residential properties are based on EPs as detailed in Table A1 of the Sewerage Code of Australia WSAA 02-2002 or water demand data as appropriate.
2	Wastewater Flows	Wastewater flows per residential property are be based on 180 L/EP/day or available water demands for non-residential properties. The diurnal flow patterns for residential, commercial properties are shown below.  Wastewater network flows for development of concept options and initial pipe sizing are based on the probability method as per WSAA 07 - 2007. For hydraulic modelling appropriate diurnal curves for each property type (residential, commercial) have been adopted. No wet weather allowance is allowed for the peak wastewater flow analysis. It is recommended that an allowance of 20% on a high flow scenario be allowed at downstream infrastructure (refer item 9). Note that mitigation measures to address potential wet weather inflow and infiltration are included later in this report.
3	Flow Velocity	Maximum allowable velocity - 3.5 m/s as per WSAA 07 – 2007 Preferred maximum velocity - 2.5 m/s (Note maximum preferred velocity will be adopted to minimise unnecessary system head loss and power consumption) Minimum velocity - 0.6 m/s as per WSAA 07 – 2007. Note: At the extremities of the system where only one pump is connected the minimum velocity cannot be achieved. In this case a velocity of 0.4 m/s is considered acceptable.

Item	Parameter	Commentary
4	Friction factor	A pipe friction factor of 0.75 has be adopted as per WSAA 07 -2007 A sensitivity assessment using a lower friction factor of 0.6 has been used to examine any potential impacts. As the WSAA - 07 friction factors are considered a conservative (high) friction factor so no high friction factor sensitivity has been undertaken.
5	Pressure Pump Unit	Wastewater modelling is based on E-One Pump units. For residential and typical commercial properties EOne Simplex units (One Extreme Pump) with 2010P collection tanks has been adopted. For schools or other properties where additional storage, pump capacity or reliability is required an EOne Duplex unit (2 Extreme Pumps) with 2010P collection tanks has been adopted. For large wastewater discharge properties such as the bowling club and hotel the need for larger units will be considered at the detailed design stage. Pressure Sewer Pump Units meet the following criteria: ▪ Operational head of 55 m minimum ▪ Operating flow between 0.6-0.9 L/s ▪ High level and pump failure visible and audible alarm ▪ Motor thermal overpressure protection ▪ Power spike and brownout protection ▪ Automatic restart protocol for managing power outage conditions ▪ Remote operational analysis capacity to assess operating hours on a daily basis Note: EOne Extreme pumps require 240 volts at 50 Hz.
6	Pipe Type and Sizes	Polyethylene (PE 100) PN16 (SDR11) cream strip Note: WSAA 07 – 2007 requires a minimum pipe class of PN16. All pipes will be designed in accordance with AS/NZ 2655 Design and Installation of Buried Flexible Pipelines. A check of the maximum system pressure will be undertaken to ensure a PN16 pipe is satisfactory. Given the relatively flat terrain it is expected that a PN16 PE100 pipe should generally be satisfactory. The design of the pipeline under the rail corridor will need to meet the requirements of AS/NZ 4799 Installation of underground utility services and pipelines within railway boundaries and the requirements of the Australian Rail Track Corporation. Pipe sizes chosen in this concept report are available pipe sizes as detailed in Table 10.2 of the Pressure Sewerage Code of Australia WSAA 07 – 2007.
7	Power Outage Recovery	During power outage, the individual property pumps will be unable to function. When power returns the pumps will operate where required and this usually results in a higher than normal operating flow. In order to manage this, a number of alternatives are available including providing a small buffer volume at the receiving sewer/treatment facility or restricting the flow rate to the plant until the system recovers (either through a control valve or staging the pump restart). In order to understand the appropriate method of mitigating this issue a power outage recovery scenario has been modelled. The duration of power outage is based on information from the power supplier.

Item	Parameter	Commentary
8	Air Containment	While pressure sewerage systems are sealed, small amounts of air can find their way into the system. In order to alleviate potential hydraulic issues air needs to be moved through the system or allowed to vent from the system. Calculations in accordance with the Pressure Sewerage Code of Australia WSAA07 have been undertaken to ensure that any air in the system is able to be moved along and out of the system. Where this is not possible suitable vent locations have been included.
9	Sensitivity analysis	Sensitivity analysis has been undertaken to test the system concept. Specifically, a higher flow per EP (200 L/EP) for each existing residential property and an allowance of 20% for infill properties. For non-residential flows, an increase of 20% has been adopted for the sensitivity assessment. For downstream infrastructure, an allowance of 20% on top of the high flow scenario is recommended.

Table 2-6: Concept Design Considerations

Item	Description	Consideration
1	Location of Vent Shafts if required	Where possible vent shafts have been located away from sensitive receivers. Where this is not possible treatment of the air through carbon canisters is recommended.
2	Location of Stop Valves and Flushing Points	Stop Valves and Flushing Points are generally located as prescribed in the Pressure Sewerage Code of Australia WSAA 07. If the number of Stop Valves or Flushing Points appear excessive then the number have been reduced where it does not compromise the operability. This will be done in consultation with Council.
3	Rail Crossings	Discussions with the rail authority have been undertaken to understand their requirements. The concept design considers those requirements and detail an approach to meet them.
	Future adjustment to the rail corridor	It is noted that a future adjustment to the railway alignment through/near the village area may occur as part of the proposed Inland Rail Project. Contact with the relevant rail authority (Australian Rail Track Corporation) has occurred during the concept development to understand possible impacts and any mitigation measures or requirements to be adopted.
4	Potential Flood Impacts	The concept design has considered the flood impacts. Specifically, the 1% AEP flood event. The 1% AEP flood level will be taken from the "Stockinbingal Floodplain Risk Management Plan – July 2002. It should be noted that the flood level varies across the village and is not a single value." To address flooding the following would be undertaken: Pump unit, with a sealed lid with venting and power taken out the side of the tank with the cables to the building. The alarm panel will be mounted at a suitable height above the flood level. All tanks with the pumps will be installed with ballasting at the base to eliminate any chance of floatation.
5	Potential Impacts of Power Outages	The impact of power outages on commercial premises or lengthy power outages are considered later in this report.

2.3 Sewage Treatment Plant

2.3.1 Site Location

The STP will be constructed within Lot 7003 DP94543. The approximate location is outlined in red below.

Figure 2-3: Aerial View of Proposed new Stockinbingal STP Location

2.3.2 Design flows

The plant will be designed for an equivalent population of 450 EP. This is based on:

- Residential EP of 248 as per Table 2-2.
- Estimated industrial EP of 130 based on Table 2-2.
- An allowance for 20% growth in the future.

Therefore, the average dry weather flow (ADWF) will be 0.94 L/s. The pressure sewer modelling results were used to determine the peak inflow values. The methodology of the modelling is further discussed in Section 4.2. Figure 2-4 shows the modelled results based on normal operation. The peak instantaneous flow rate is 6 L/s, however, the peak 30 minute running averaged flow rate is 3 L/s.

The following design values have been adopted:

- Average dry weather flow (ADWF): 0.94 L/s.
- Design dry weather flow (DDWF) for secondary treatment: 3.6 L/s (3 L/s, based on averaged peak inflow plus 20% for future growth).
- The maximum plant inflow and flow requirement for the inlet works: 7.2 L/s (6 L/s based on instantaneous peak inflow plus 20% for future growth).

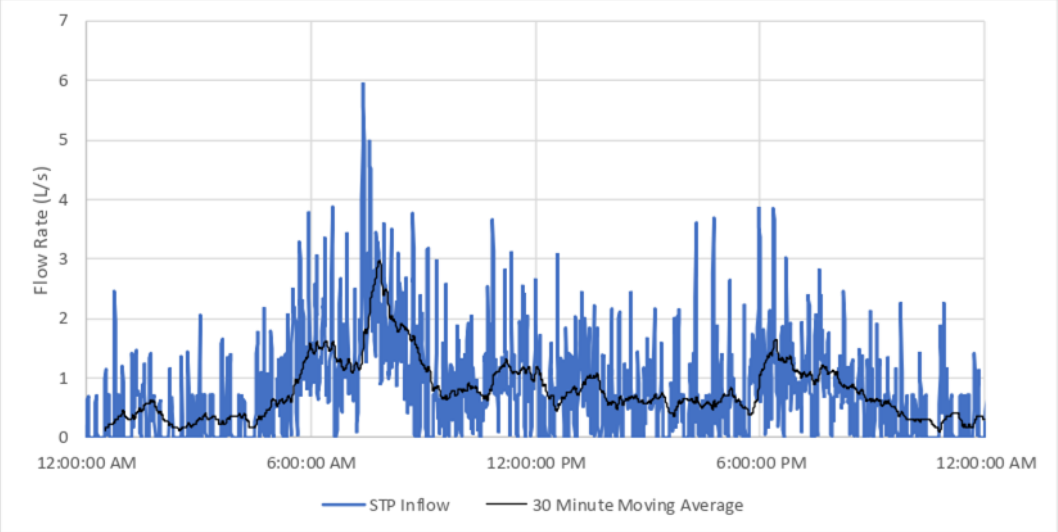


Figure 2-4: 24 hour modelled inflows

2.3.1 Inlet and Outlet Quality

As there is currently no STP the values in Table 2-7 have been assumed based on typical domestic strength sewage, while the effluent values are based upon typical requirement values from the EPA for modern technology STPs.

Table 2-7: Inflow and Effluent Values

Parameter	Inflow values	Effluent Values
Biochemical Oxygen Demand (BOD_5)	325-360 mg/L	10-15 mg/L
Faecal Coliforms		200 CFU/100 mL
pH		
Suspended Solids (SS)	275-300 mg/L	15 -20 mg/L
Ammonia		2-5 mg/L
Total Nitrogen (TN)	60-70 mg/L	10-15 mg/L
Total Phosphorus (TP)	13-15 mg/L	0.5 – 1 mg/L

2.3.2 Electrical Aspects

The main electrical aspect to be considered is a new power supply to the proposed STP site.

Instrumentation, uninterruptible power supply (UPS), programmable logic controllers (PLCs), telemetry and an HMI system will also be incorporated as part of the proposed electrical works. Other local switchgear control assemblies (SCAs) and field switch stands will be provided near minor mechanical plant, including chemical dosing pumps. The STP will have a high level of automation.

Building services such as power, lighting, air conditioning, security systems and smoke detectors will be included as required.

2.3.3 Water Supply to Site

Potable water will need to be supplied to the new STP. Service lines will be extended, from O'Brien Street (Council to confirm), to the new STP for washdown purposes, for the operator amenities and chemical safety shower/eyewash facilities. A new reduced pressure zone (RPZ) device will provide protection of the town supply from backflow contamination from the plant.

2.3.4 Structural Aspects

The structural design of a new treatment facility will be carried out in accordance with relevant Australian standards for steel and concrete structures and take the following into consideration:

- Allow construction to be facilitated to minimise costs.
- Requirements for corrosion protection and subsequent incorporation into the design.
- Buoyancy of structures with respect to groundwater and flood levels identified from investigations (no groundwater expected, based on Geotechnical investigation).

2.3.5 Construction Planning

Section 60 approval will be required from DPIE Water before construction can commence. The concept design report and a draft set of design drawings will have to be submitted to DPIE Water for review and comments as part of the approval process.

The target effluent quality limits will be assessed as part of the REF with DPIE Water for reuse and NSW EPA for discharge.

2.4 Key Challenges and Opportunities

A number of key challenges and opportunities have been identified during the development of the concept design.

Table 2-8 details the key challenges and opportunities identified during development of the concept design and the mitigation measure suggested to address these risks. Where mitigation measures are to be assessed in future stages this has also been identified.

Some of these risks and the mitigation measures are discussed in more detail later in this report. Table 2-8 provides a reference to direct the reader to the location in the report where an item is discussed in more detail.

Table 2-8: Summary of Key Challenges and Opportunities

Item	Challenge and Opportunity	Type of Risk	Action Required	Report Reference
On-property Pressure Sewer System Component				
1	*Flood Risk* During flooding the system can be inundated and there is potential for damage to the control/alarm panel.	Operational	Collection tanks will be sealed with a small one-way valve (duckbill valve) installed or vent pipes connecting to the properties plumbing vent to allow the top part of the tank to vent in properties with ground levels below the 1 in 100 flood level. Control Panels to be located a minimum of 0.5m above the 1in100 year flood level.	See 4.5.1
2	*Local flooding/overland flows* During rain events local overland floodwater flows may enter the collection tanks.	Operational	Collection tanks are not to be located in low points in the property where overland flows may occur. Location of tanks to be determined during the detailed design stage.	See 4.5.1
3	Non-Compliance of Electrical distribution boards	Legal compliance	Audit during the design stage to identify non-compliant electrical distribution boards to be upgraded during the project delivery.	See 4.5.5
4	Power Outage and pump failure causing overflow of the collection tank	Customer impact	The size of the tank is sufficient to store approximately one day's sewage discharge from an average house. Flows to the STP will be larger than normal following a power outage and emergency storage volume at the STP is recommended to allow all of the system to recover as quickly as possible and not compromise the treatment plant operation. Protocols to respond to extremely long power outages (longer than outages recorded) or pump/control failure will need to be put in place to ensure relatively prompt response. It is recommended that large commercial customers be required to provide backup power so that the impact of a power outage on their commercial operation is minimised and the potential for overflows from the tank are minimised.	See 4.4
5	Community education will be required to ensure property owners understand Council and property owners' responsibilities	Customer impact	Information about Pressure Sewerage Systems to be provided to property owners when Council determine to proceed with the scheme.	See 4.5.3 and 4.5.4

Item	Challenge and Opportunity	Type of Risk	Action Required	Report Reference
Reticulation Network Component				
1	Network Main Crossing of Railway	Design	The network will cross the rail corridor at Burley Griffin Way on the Western end of the village. Preliminary discussions with ARTC indicate that the location is suitable however there are some risks which will need to be resolved during the detailed design stage.	See 4.5.2
2	Allowing for Potential Growth	Operational	Infill growth will be catered for within the design and potential small volumes of growth outside the village area. Given the long lead time for growth outside the village area and the scale of growth outside the village area amplification of the system should be deferred until the scale and location of growth is known.	See 4.3
3	Odour and Air Management	Operational	Odour and air management will be addressed by ensuring air flow out of the reticulation network is minimised and odorous issues at the STP are addressed by chemical dosing or filtering of the air.	See 4.2.4
4	Training of Maintenance Staff	Operational	Training of maintenance staff to understand Pressure Sewerage Systems and how to respond to issues will be required. This should occur prior to project commissioning.	See 4.6
Sewerage Treatment Plant				
1	Proposed site location for STP is Crown Lands and part of an Aboriginal Land Claim	Customer impact	Council is working on resolving the land claim.	
2	Power outage recovery will result in larger than normal flows to the STP.	Operational	An emergency storage sufficient to accommodate additional flows shall be provided to allow recovery of the system as soon as possible after a power outage.	See 4.4 and 6.1

3. Pressure Sewerage System Description

Pressure Sewerage Systems consist of small grinder pumps located on each property which macerate the sewage into a fine slurry and pump it through a pressured sewerage network directly or indirectly to a wastewater treatment facility.

3.1 On-Property Infrastructure

The on-property system comprises a control/alarm panel, a collection tank containing the grinder pump, a property discharge line and property boundary assembly. Figure 3-1 provides a cross section of the on-property arrangement.

The house plumbing (customer sanitary drain) discharges to a collection tank. The grinder pump located inside the collection tank then macerates the sewerage and pumps it though a small polyethylene pipeline (property discharge line) to the pressurised street network.

A control/alarm panel is generally located on the dwelling (above the flood level) near the collection tank and is connected to the house's electrical distribution board providing power and control signals to the grinder pump. A property boundary assembly (small plastic valve pit) is located within the property boundary and includes a stop valve and reflux valve are located along the property discharge line and within the property boundary. These valves allow the system within the property to be isolated from the street network if necessary.

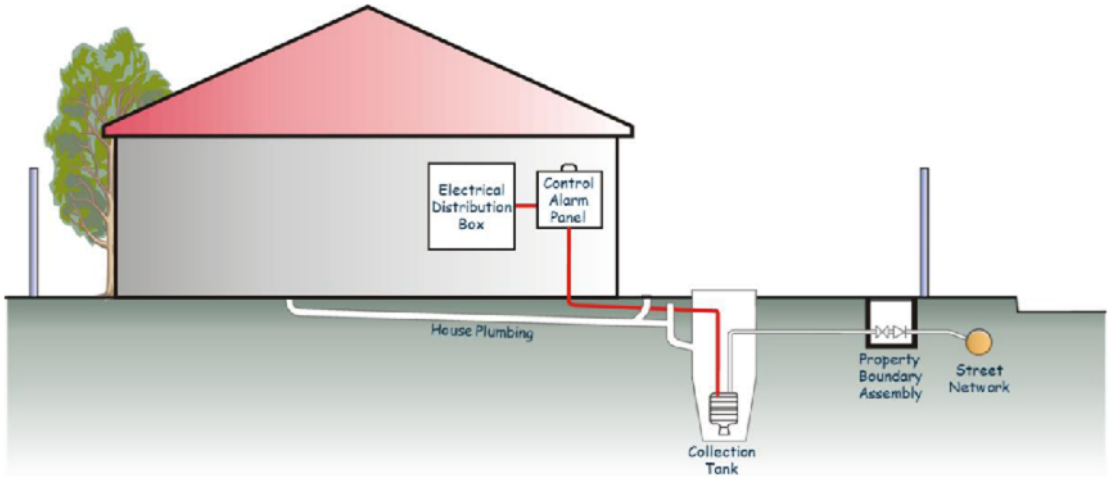


Figure 3-1: On-Property PSS Infrastructure

3.2 Street Network

The street network receives flows from each of the grinder pump units located on the properties served by the wastewater system. These networks are normally pressurised and are designed to transfer flows to a wastewater treatment facility. This may occur directly or via another wastewater system or wastewater pumping station.

Polyethylene pipes are generally used for the street network and are fully welded systems ensuring no ingress of water occurs. These pipes are relatively small compared to a gravity wastewater system and unlike gravity systems are generally laid at a shallower depth.

The infrastructure associated with PSS networks include:

- Isolation and flushing valves
- Vents
- Barometric loops where required
- Chemical dosing facilities where required

Isolation and flushing valves are located throughout the network to allow isolation and/or pipe flushing for maintenance purposes. The surface fittings for these valves are similar to that used in water systems.

While only relatively small amounts of air are able to enter a PSS system the accumulation of air at local high points in the network can be detrimental to the hydraulic performance of the system. In order to mitigate this issue systems are designed wherever possible to move air along and out of the system at the downstream discharge point. However, where this is not possible it may be necessary to provide a vent shaft to allow air to leave the network. The air is released through an air release valve to the vent before it is discharged to the atmosphere. The standard air valve arrangement (see Figure 3-2) shown in the Pressure Sewerage Code of Australia has the air valve located in a pit. Many authorities have adopted an alternative arrangement where the air valve is located in an above ground cubicle. This makes maintenance easier and avoids water building up in the pit. Where possible these vents should be located away from sensitive receivers (e.g. schools, nearby dwellings). Where there are sensitive receivers close to vent locations, local carbon filters can be used to minimise any potential odour issues.

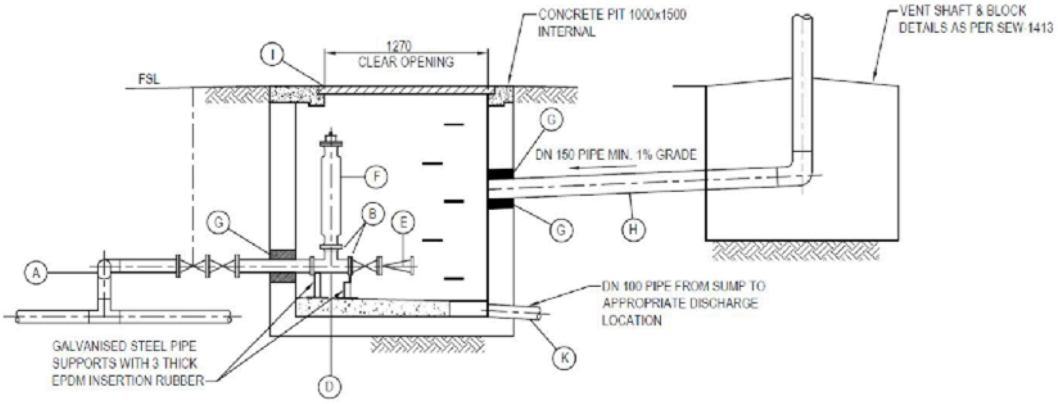


Figure 3-2: Standard Air Valve Arrangement

Barometric loops are required where part of the network is at a higher elevation than any part of the downstream system. The Barometric loop provides a high point in the system ensuring the entire network remains flooded, eliminating the movement of air in and out of the system. Barometric loops are not always required in a pressure sewerage system and the need for these will need to be assessed on a system by system basis.

Chemical dosing facilities are sometimes required where air movement out of the system may cause odour issues. In general PSS systems discharge only small amounts of air from vents within the system and chemical dosing within the network is not required for odour control in the network. However, chemical dosing may be required to address potential odour issues at the receiving infrastructure (pumping stations, gravity networks or sewerage treatment facilities). The need for and type of chemical dosing will need to be examined as part of an overall approach to odour control at the receiving infrastructure.

3.3 Wet Weather Flows

Pressure Sewerage systems remove the potential for infiltration and inflow via the street reticulation system with the only source on inflow being from the house plumbing or the small air vents in the collection tank. It is recommended that no wet weather allowance be included when determining the peak flow in the system.

Pressure Sewerage systems are not generally designed to cater for inflow and infiltration flows from the property plumbing. It is recommended that an audit of the property plumbing be undertaken and that the control panel used in the system has the capacity to identify properties with higher pump operation during rain events. This aids the water authority to identify sources of high inflow which may negatively impact the sewerage system. Identifying and rectifying this issue will reduce the power consumption of the pumps and the cost to the homeowner.

In order to accommodate some infiltration and inflow allowance it is recommended that receiving infrastructure be sized based on the high sensitivity analysis flow plus 20%.

3.4 Power Outages

In Pressure Sewerage Systems the peak flow to the downstream system occurs after a significant power outage. In order to assess the impact of a power outage records from the electricity supplier to the Stockinbingal area were examined and a hydraulic simulation of a power outage situation modelled. This is further discussed in Section 4.4.