



KEMPSEY
Shire Council

DIRECTOR SHIRE SERVICES REPORT

8th May 2007

DSS2	ALDAVILLA SEWERAGE SYSTEM
FILE: 223 GTS	{Folio No. *}

SUMMARY:

Council at its Ordinary Meeting of 13th March 2007 resolved that alternative septic systems and non-conventional sewerage system options be further investigated and that the outcome be reported to the May meeting of Council. The results of these investigations are presented below for Council's concurrence before further progressing the project.

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DESCRIPTION:

Septic Systems

Detailed assessments of alternative Sewage Treatment Systems for the identified precinct at Sherwood Rd, Aldavilla, confirm that the inherent nature of the area makes such systems technically and environmentally infeasible and unsustainable.

As far as standard conventional septic tanks and disposal trenching are concerned, there is insufficient land available (including acquisition of land behind the residential premises to accommodate additional disposal area). The land area required for adequate disposal via conventional transpiration beds is around 5,000 sqm.

The Decentralised (Community) Systems alternative would require at least 11 additional treatment tanks at a raw cost of at least \$110,000 plus on-going maintenance, service contracts, electricity costs and gross periodic servicing (such as replacing peat beds). At this location, the subsurface irrigation area required is more than twice that required for conventional transpiration beds. Hence as there was insufficient land for transpiration beds for conventional septic tanks, decentralised systems are also not viable.

Many alternative systems rely on the use of Sand Filters and all domestic wastewater must be pre-treated through a septic tank. Whilst the sand filter provides secondary treatment prior to being disposed of through subsurface irrigation, each property would require about 18 square metres of top surface area and, once again, the subsurface irrigation area required is more than twice that required for conventional transpiration beds. Sand Filter systems have also proved unviable on the basis of the land constraints.

In relation to Greywater Treatment Systems (at about \$10,000-\$15,000 each) up to 300 sqm of area per household would be required to dispose of effluent depending on the amount of re-use.

Site constraints do not allow compliance with the intent and detail of the Department of Energy Utilities and Sustainability Greywater Reuse Guidelines March 2007 irrespective of whether diverted filtered greywater or treated greywater is involved.

Basically, the heavy shallow clays that predominate in the limited area available rule out viable septic alternatives.

Low-Cost, Modified Conventional Gravity System

In terms of technical and environmental feasibility and sustainability, conventional sewerage systems are the only viable alternative but the associated costs have continually brought the financial aspect of triple-bottom-line (TBL) consideration into question.

The Department of Primary Industries and Energy Australian Water Resources Council provided a report in 1988 that discussed low cost sewerage options. Such options would be available to small towns and communities which do not have adequate facilities for the disposal of domestic sewerage and cannot afford the cost of a conventional sewerage reticulation scheme. Such an approach would mean that a larger number of schemes could be funded (including backlog works). Improvements on local health, amenity, utility and environments would result.

Under the prevailing circumstances it would be appropriate to consider the comparatively very small number of dwellings as a one-off special case that could conceivably be serviced by a low-cost, modified-conventional, gravity sewerage system.

Prime considerations that apply to the confined and remote group of dwellings (as compared to a larger serviced zone) include, but are not limited to:

- certainty of product (no liquid trade waste, no illegal discharges)
- controllability -
 - elimination of wet weather inflows to sewerage system
 - detection of abnormal discharges
- rural context -
 - no swimming pool water discharged to sewer
 - reduced impact of surcharges
- flexibility in terms of deadlines and material types

The above considerations would translate to a particular type of cost-saving infrastructure:

- fully sealed house service lines and receival pipes
- less-than-standard depth, larger diameter, pipework including storage capability
- installation of rodding points rather than access chambers
- small pump station (20% of conventional design inflow)

Further cost savings can be achieved through the adoption of tailored procurement and installation strategies. Further savings may also be realised through economies of scale associated with resources utilisations

(timing the project in tandem with the much bigger West Kempsey STW construction)

A detailed survey of the area has confirmed that a gravity system can be provided, draining to a package pump station in The Ponds Way (road reserve). Flow monitoring will provide an investigation alarm if pumps operate for any non-specified lengths of time indicating abnormal discharges.

The pump station would discharge either to the nearby Corrective Services pump station (preferred) or a remote sewer access chamber at West Kempsey. Initial discussion has secured tacit approval for the former option but this is yet to be realised in terms of formal agreement or fee structure. This disposal would be treated as an entirely separate issue to the current operation and/or wholesale acceptance of the Correctional Centre's pump station.

Preliminary costings of the modified conventional gravity system suggest that the project could be completed for around \$500,000 (being \$100K for sewage collection, \$100K for the package pump station and \$300K for delivery to a receiving system).

Previously (DSS10 June 2006) the estimated capital costs of the various sewerage options had been estimated at between \$1.0m and \$2.1m. There are significant potential cost savings with the low-cost modified gravity sewerage system and a connection to existing reticulation that disposes to the West Kempsey Sewerage Treatment Works.

Moving away from conventional solutions as a minimum involves a high degree of advocacy as the gaining of approvals from all quarters is not assured from the outset. Stakeholder concurrence is required from Department of Water and Energy (DWE), Department of Environment and Climate Change (EPA), Department of Commerce (consultants acting for Corrective Services) and within various sections of Council. The property owners would also be kept advised of the project progress (including any Council resolutions) and the Meeting Notes (22/2/07) would be issued with the inclusion of recent investigations.

Considering the compliance obligations placed upon the allotment owners and consequential benefits, the inefficient size of precinct, the degrees of equity with other schemes provided, the remoteness of the area to reticulated sewerage and the affordability of the project, it is considered that it is worth proceeding with the initiative to provide a low cost, modified conventional gravity sewerage system.

REPORT IMPLICATIONS:

- ***Environmental***

Failing septic systems present a considerable environmental concern. The provision of a sewerage service would remove this risk.

- ***Social***

Improved health, utility and amenity

- ***Economic (Financial)***

Cost for the design and investigation are provided by current operational allocations.

Accurate estimates of cost of works are to be determined along with funding arrangements. A current budget allocation (Greenhill / Aldavilla construction project management) of approximately \$250,000 exists. Once project estimates (based on detailed design) are available proposals for project funding will be brought before Council.

- *Policy or Statutory*

Stakeholder concurrence to ensure compliance with all policies and legislation

- *Director's Review*

A low cost modified gravity sewerage system appears to be the most viable and sustainable option to provide a sewerage service to this area.

RECOMMENDATION:

1. That the concept of a modified conventional gravity system be further pursued utilizing in-house resources to obtain necessary approvals and, at the same time, prepare detail designs / estimates by 30th July 2007.
2. That the Director Shire Services be granted delegated authority to carry out any requisite commercial negotiations in relation to land matters (eg easements creations) and sewage receival agreements.

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A P Vermeulen
DIRECTOR SHIRE SERVICES