

ENVIRONMENTAL STREAM

SETTLEMENT SHORES – THE DESIGN AND CONSTRUCTION OF RESIDENTIAL DEVELOPMENTS WITHIN A MAJOR FLOODPLAIN

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Settlement Shores is a major residential canal estate located on the lower reaches of the Hastings River at Port Macquarie. This paper reviews chronologically the total process of project development from its conception through the design process, public review procedures to construction management. The review highlights the serious questions of asset maintenance, public risk management and environmental protection that must be addressed by the various tiers of government involved in policy implementation and decision making within major coastal floodplains. Settlement Shores will ultimately house up to 3000 people with resorts, major local retail facilities and public recreational areas. It is concluded that canal developments are feasible while still preserving environmentally significant habitats and important estuarine processes.

IMPLEMENTATION OF STORMWATER MANAGEMENT PLANS – IT COSTS A LOT TO BUILD BAD PRODUCTS

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Since 1997, the preparation of catchment based Stormwater Management Plans has become a mandatory requirement for local councils that administer urban areas of population 1500 or greater in NSW. These Plans, prepared in association with relevant State Government agencies and other significant stormwater managers, address 'environmental protection' as the minimum requirement of the EPA. This paper focuses on stormwater management planning in the South Creek Catchment in western Sydney, including a review of implementation restraints and a summary of value selection methodologies to assist Local Government Engineers and Stormwater Managers with the implementation of structural and non-structural strategies. A precis of case studies is provided outlining the effective implementation of various Stormwater Management Plans in the Greater Metropolitan Region of Sydney.

COMPRESSED NATURAL GAS AS A FUEL FOR LOCAL GOVERNMENT FLEET APPLICATIONS

Paul Andersen, Director Public Works & Services, Waverley Council

For a number of years Waverley Council in Sydney NSW has endeavoured to use environment friendly fuels to power its fleet.

In the late 1990's Waverley's Public Works & Services Department undertook an innovative project to investigate the feasibility of using compressed natural gas (CNG) as a fuel to power heavy vehicles. This pioneering work arose from a perceived need by the elected representatives (Councillors) to contribute to an improvement in the environment, both of the municipality and of the Sydney Metropolitan area. These concerns were driven by the continuing deterioration in air quality within the Sydney basin. A regional organisation of Councils endorsed a strategy for Greenhouse emissions within its boundaries.

The key objectives of the project were to:

- monitor the operational performance of heavy duty CNG powered municipal vehicles
- assess CNG as a fuel for local government & short haul operators – including implications of a natural gas site compression, storage and filling installation and range of use/vehicle fuel storage relationships of CNG powered heavy vehicles

Some of the overriding conclusions that were reached were:

- CNG in trucks can be operationally viable for use by local government
- Significant environmental advantages could be achieved by utilising CNG technology on heavy vehicles
- Cost savings can be achieved, relative to conventional diesel powered trucks.

On the basis of these results, experience to date and an ongoing policy commitment by the Council to improving the environmental performance of its fleet further CNG powered vehicles are being acquired.

In the last two years Waverley and a number of other councils or their contractors have conducted public tenders seeking to move to this emerging technology. However, the results have been disappointing with few, if any, original equipment manufacturers (OEMs) willing to offer products. Dual or Bi Fuel alternatives are satisfying the demand, however problems have emerged.

In light of this dilemma Waverley has adopted an Environmental Management System approach to optimise the environmental performance of its fleet in the short and medium terms, which involves the gradual introduction of natural gas powered vehicles (NGVs) as they emerge. In 2001/02 Waverley will partner with a Japanese manufacturer to field trial a further CNG truck.

The Federal Government, through its Greenhouse Office and The National Transport Council are actively promoting natural gas by offering grants or subsidies for vehicle conversion and refuelling infrastructure.

This paper explains to Local Government public works managers, in their roles as a fleet operators and environmental policy makers, the benefits of CNG.

GREENSPEC FOR RECYCLED MATERIALS

IPWEA Environmental Panel Invited Speakers

- Summary of the specification and how the Greenspec differs to RTA 3051.
- Discussion of different material types in the specification and their uses.
- Case Studies. Randwick City Council - Lenthall St project.
- Usage Notes.
 - preliminary usage notes, to be workshopped to obtain some more feedback on how engineers find using the recycled materials.
 - Include how construction differs from using fine crushed rock, moisture content for workability, types of seal that are suitable and preparation for sealing

COOPERATIVE FACILITATION AND IMPLEMENTATION OF MAJOR TRADE WASTE AGREEMENTS: WAGGA WAGGA CITY COUNCIL

Alf Grigg, Alf Grigg & Associates

Colin Earnshaw, Manager, Waste Management Services, Wagga Wagga City Council

Industrial trade waste often constitutes a significant proportion of total wastewater loadings as received by regional councils and water authorities throughout Australia. Such trade waste loads can be seasonal and variable in terms of total loading and compliance with acceptance standards.

Yet retention and growth of such industries is often a very important component in the economic state and growth of many regional urban centres. Managing and facilitating optimum operational performance and compliance with discharge standards is critical to many wastewater authorities.

This paper provides a review of an innovative approach by Wagga Wagga City Council in which a co-operative-partnership and facilitation program for updating and reviewing trade waste agreements was implemented with major trade waste source companies.

Wagga Wagga City Council provides sewerage services to the greater Wagga Wagga urban area. This service includes the acceptance of trade waste from a diverse range of industrial, community, and public purpose sites. The trade waste industry group is considered critical in the economic life of the urban and greater regional community.

The partnership program to trade waste agreement review, renewal, and implementation in March, 2000, and has, to date achieved substantial improvements in due diligence and contingency management by companies, together with equally significant reductions in peak trade waste loadings and incidences of non-compliance. The program included a review existing production methods, and assisting trade waste source industries in adopting a best practice approach to on-site pre-treatment.

An important innovation of the program involved facilitating source industries in the implementation of a risk management – quality system approach to cleaner production, due diligence and contingency systems. These systems, as promoted by the Department of land and Water Conservation, are beginning to demonstrate the importance of documented management and response systems to all aspects of trade waste operations.

In one instance, a major trade waste generator has implemented a cleaner production that has, as a consequence of improved efficiency in production, contributed to the growth of the business in the face of corporate restructuring. The corporate group has assessed the outcome of reduced trade waste charges from council and improved production as an outstanding and valuable business result.

The events of the partnership co-operation and facilitation program now provide a useful insight and objective lessons into how such major trade waste projects can be best facilitated to the benefit of the company and community. The experience to date demonstrates the value of the role of an external facilitator in achieving improved

outcomes with a trade waste source to the benefit of industry and the greater community.

ENVIRONMENTAL ASSESSMENT UTILISING GROUND PENETRATING RADAR TO ASSESS THE CULTURAL HERITAGE OF A SITE

Melanie Kennedy, Eurobodalla Shire Council

Ever had one of those dream jobs land on your desk? you know the ones- where Council (5 votes to 4) has decided to embark on an ambitious million dollar development adjoining a residential area which incidentally the local residents are vocally opposed to with all sorts of environmental constraints and involves consultation with an array of government agencies (NPWS, Fisheries, DLWC, DPWS, RTA, DET)?

Welcome to the relocation of Bateman's Bay Primary School.

Whilst in theory it was a relatively straightforward matter – moving the Primary School (which was bounded by the two busiest roads in the shire) out of the CBD and to the north where the residential areas are located. In practice it was going to take a lot of consultation, site investigation and sales promotion.

Whilst traditional techniques of identifying subsurface aboriginal sites (such as test pitting) were inappropriate in this particular case, the application of alternate technology (ground penetrating radar) enabled Council to estimate the location, extent, depth and likely composition of any sub surface sites quickly, efficiently and most importantly without impacting the ground surface (and therefore retaining the integrity of any sites identified).

Given all the site constraints and associated difficulties I expected to experience in determining the environmental impact of the proposed works, the ability to utilise innovative technology proved to be a challenging yet satisfying aspect of a very difficult project. Until the next dream job!.....

IMPROVING THE ELECTRICITY SUPPLY RELIABILITY TO SEWERAGE FACILITIES IN DUBBO

***Stewart McLeod, Director Technical Services, Dubbo City Council
Peter Halyburton General Manager, Energy & Management Services
Kevin Rugg, Senior Consultant, Energy & Management Services***

Dubbo City Council's mission statement for its sewerage services is:

“ To provide an environmentally responsible sewerage service which maintains the health of the Dubbo community, is cost effective, customer focussed, and caters for the sustainable growth of the City”.

In fulfilling this objective Dubbo City has adopted a pro-active stance in regard to its environmental responsibilities. In particular, the prevention of sewage discharges from pump stations and treatment plants.

Council commissioned the Public Works Department to undertake an Asset Management Criticality Analysis for its sewerage system. This analysis identified the power supply to the key sewage pump stations and treatment plants as having the greatest risk of failure leading to a discharge of sewage into the environment. Energy & Management Services was commissioned to review practical alternatives to reduce this risk. This study included a survey of 'best practice' within the industry and the history of electricity supply failures in Dubbo.

The survey identified various strategies for managing this risk, however, in most of the organisations surveyed, the number of sites limits the practical application of these strategies to sensitive environmental areas.

Dubbo City Council's approach to sewerage pumping facilities with a limited number of principal pumping stations has enabled a cost effective and practical solution to the issue of reliability of power supplies.

The principal strategies considered were alternative grid supply and standby generation. Initially alternative grid supply from separate zone substations was deemed the most efficient and effective. However, with the advent of Y2K it was considered that the installation of standby generators achieved both the longer-term objectives and allowed precautions to be put in place for the Y2K phenomena. Dubbo City Council is at the forefront of the industry with a comprehensive approach to managing its environmental responsibilities.

IDENTIFICATION OF METHANE HAZARDS NEAR LANDFILLS IN LOW LYING AREAS- IS IT FROM THE LANDFILL, OR FROM NATURAL SOURCES?

David Hojem, Coffey Geosciences
Paul Wise, Wyong Shire Council
Ian Hosking, Coffey Geosciences

During an investigation carried out as part of the planning and design of landfill rehabilitation measures, elevated methane concentrations were found in the soils of a residential subdivision located adjacent to the landfill. Subsequently, further investigations were undertaken to assess the nature and extent of migration of the methane gas in the areas surrounding the landfill site, and to identify sources of methane in the soils and to identify migration pathways.

Possible methane production and migration mechanisms were investigated as follows:

- Migration of methane from the landfill (via the vadose zone);
- Vadose zone migration via the sewer mains, within the sewer or the granular backfill, and storm water pipes;
- Production of methane in the subdivision within natural soil covered with fill, and or within the imported soil fill;
- Migration of methane in groundwater and storage in the soil;
- Production of methane in similar areas outside of the subdivision and remote from the landfill;
- Production of methane from other sources such as in sewer trench backfill, from sewerage in the sewer pipes, leakage of natural gas and methane produced from deep coal seams.

As a result of the investigations, the possible sources of methane were reduced to:

- The landfill which is decomposing anaerobically, and exhibits soil methane concentrations up to 80%;
- The fill in the subdivision is of unknown origin, but contains disseminated organic material and pockets of buried vegetation which could be decomposing and releasing methane;
- The Floodplain Alluvial soils appear to have been deposited in a partially swampy environment, with organic detritus, potentially forming conditions suitable for methane generation

In this particular case it was considered likely that methane beneath the subdivision was being generated in the fill and the natural soils directly below the subdivision and was not derived from the landfill. This assessment has significant implications for land developed by filling low lying organic soils throughout Australia and elsewhere.