

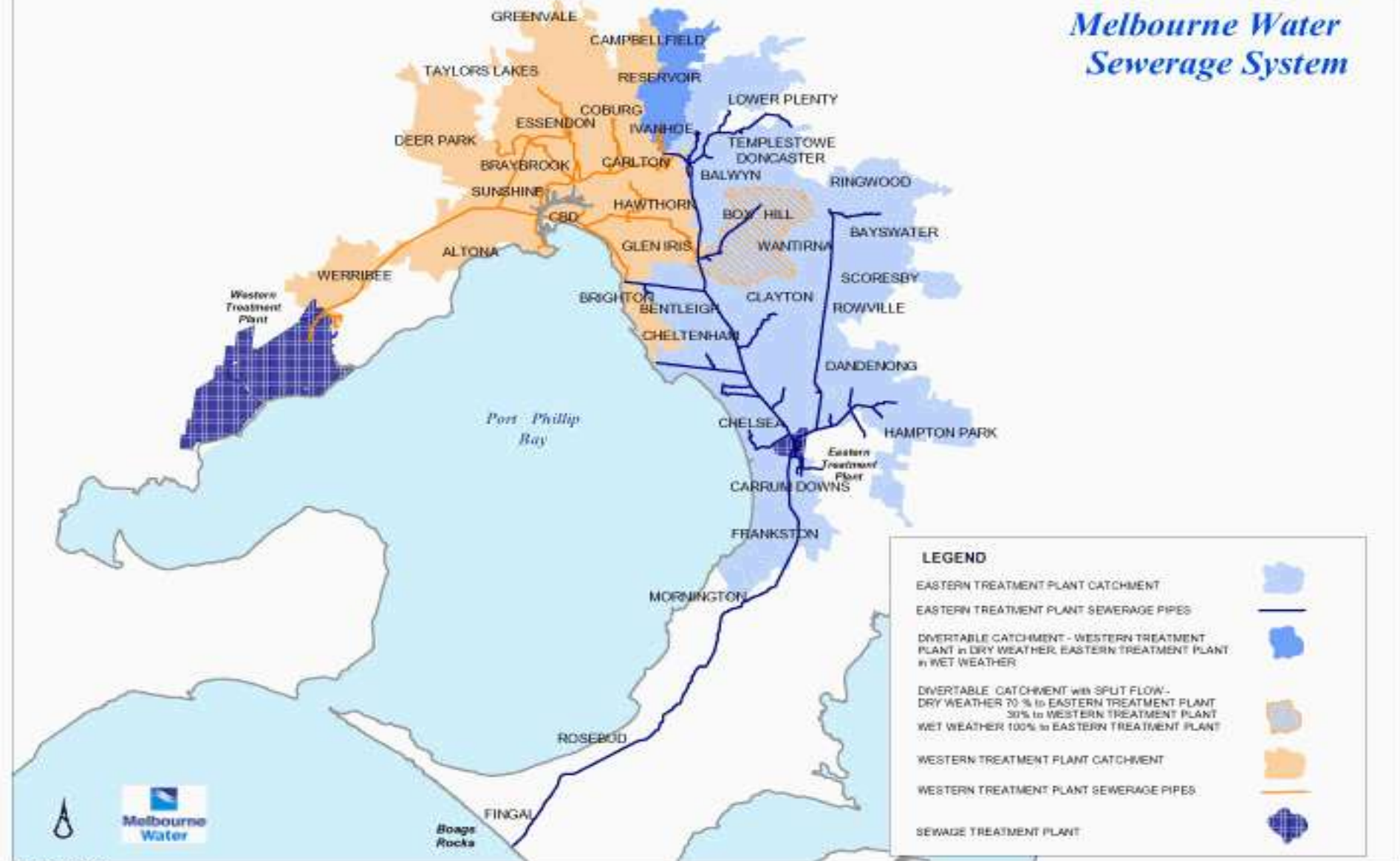


Reuse of Biosolids as a Geotechnical Fill

Karen Campisano

ANZBP Roadshow, Perth October 2010

Melbourne Water Sewerage System



job ref: 20050414

Melbourne Water's 2006 Biosolids Strategy Objectives

Provide a long term, secure and consistent option for biosolids reuse;

Collectively has capacity to use biosolids at a rate in-line with annual production;

Maximise the value of the resource while mitigating environmental impacts due to embodied contaminants;

Have acceptable technological, environmental, social and financial risk profiles;

Deliver the best Triple Bottom Line outcome – cost effective, environmentally and socially sustainable.



Current and Future Plans for MW Biosolids

Progressing opportunity to use WTP Biosolids as a fuel

Clay-rich biosolids stockpiled at the ETP are to be used opportunistically for cost effective geotechnical fill applications (roads)

Investigation of risks associated with land application of biosolids produced annually from ETP

Review of the Strategy for Beneficial Use in 2009 – 10,

Targeted research and development program

Biosolids Characteristics – Eastern Treatment Plant

Stockpiles (1,500,000 dry T)

moderate concentrations of heavy metals
(T1,C2);

clay rich; nutrient poor

Production (28,000 dry T p.a.)

moderate concentrations of
heavy metals (T1,C2);

no clay expected;

improved nutrient content.



USE OF CLAY RICH BIOSOLIDS AS FILL MATERIAL FOR ROAD EMBANKMENT CONSTRUCTION

INTRODUCTION

This technical note provides guidance on the use of Melbourne Water Corporation's clay rich biosolids (biosolids) for use as fill material for road embankment construction. The biosolids are the residual material produced from the primary and secondary sewage treatment process. Melbourne Water Corporation (MWC) produces approximately 25,000 tonnes of biosolids annually at its Eastern Treatment Plant (ETP). At the ETP, the sludge produced during sewage treatment is stored in clay lined sludge drying pans. Clay from the pans is mixed with the sludge during the removal process, producing the biosolids. The biosolids are stockpiled at the ETP and have the potential to be used as a road construction material.

MWC engaged Golder Associates (Golder) in 2006 to

and may have permeability criteria depending on the location of use.

- Type B material: a lesser quality material than Type A, free from organics, CBR values preferably ≥ 2 and has a particle dimension not more than 150 to 400 mm depending on the place of use.
- Type C material: lesser quality material than Type B and shall be capable of spreading in layers of not more than 500mm.

USE OF BIOSOLID AS CONSTRUCTION MATERIAL

Based on the results of field and laboratory testing on samples obtained from the stockpiles of biosolids and a trial embankment constructed with biosolids treated with various percentages of cement, the following design considerations

Diagram of Biosolids Reuse as a Type B Fill in Roads

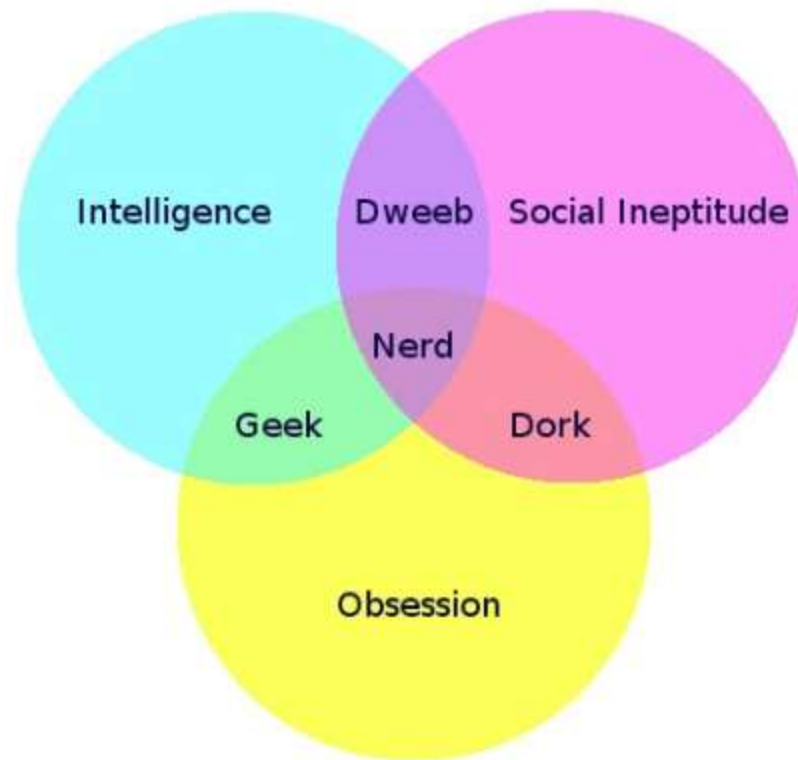
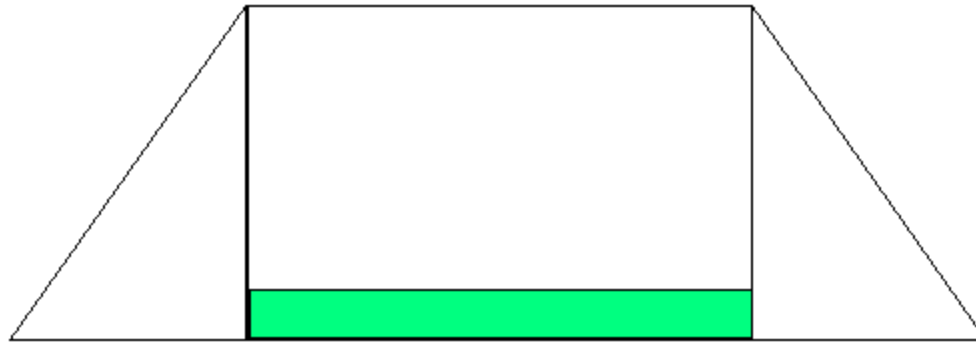


Diagram of Biosolids Reuse as a Type B Fill in Roads



USE OF BIOSOLIDS AS GEOTECHNICAL FILL

Publication 1288 June 2009

Laying the foundations for the road to reuse.....



Trial 1 – Lime Stabilised Cement Blend



Trial 1 - Blending



Trial 1 – Lime and Cement



Trial 1 – Lime and Cement



Trial 2 – Fly Ash Blend



Trial 2 – Fly Ash Blend



Trial 2 – Fly Ash Blend



Trial 2 – Fly Ash Blend



The Mastermind





Questions?