

**A STATIONARY VACUUM WASTE MANAGEMENT SYSTEM –
OUTCOMES OF FEASIBILITY STUDY**

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Purpose and background

1. At its June 2011 meeting, Council approved funding for the development of a feasibility study into the possible future installation of a stationary vacuum waste collection system. The purpose of this report is to present the outcomes of the feasibility study. The report examines system installation in William Street and the entire central city.

Key issues

2. Implementation of an underground vacuum waste collection system in the central city whilst technically possible is not recommended. This is due to:
 - 2.1. excessive cost. The feasibility study estimates the cost of installation of a system at \$5.5 million per block or in excess of \$190 million for the whole central city grid. This does not include the cost of a collection station, power system upgrades, detailed engineering design or project management.
 - 2.2. existing underground service network. Investigations have revealed the extent to which the central city is covered by underground services. Whilst trunk and branch line pipes could be placed at a depth that is lower than most services, the collection inlets would be difficult to install. In some cases, negotiations would have to be undertaken to shift services. Because of the density of services, installation would be managed within an uncontrolled environment.
3. The study also examined if it was feasible to install system pipes in William Street as part of the replacement of water main works. The findings of the study indicate that whilst it is technically possible there is limited value in doing so. This is because if Council resolved to install a system at a later date, William Street would be inappropriate as a location for a trunk line or branch line pipe.
4. William Street has a geographical bias towards the west of the central city and servicing the easterly part of the central city would be beyond the recommended pipe distance for a standard system. A branch line in William Street would not be appropriate because branch lines would typically run east to west. This allows collection inlets to be established at the intersection with Melbourne's laneways where the majority of waste is placed for collection.
5. The feasibility study has identified an opportunity at the brownfield site known as E-Gate. At E-Gate, a vacuum waste system could be installed at the same time as other services. Cost could be built into property agreements. The expense and disruption of a retrofit within a built up area would be avoided. The Victorian Government is aware of the benefits of such an installation.
6. The E-Gate installation would provide Council with an opportunity to be involved in testing a system. An allowance could also be made in the E-Gate development for the possible future expansion of the system into Waterfront City and Harbour Esplanade.
7. Council may still wish to plan for the future installation of vacuum waste collection pipes in the central city. This could involve excising easements and underground spaces as opportunities for augmenting existing services arise. A planning scheme amendment could be prepared to facilitate this action.

Recommendation from management

8. That the Future Melbourne Committee:
 - 8.1. note the outcomes of the feasibility study;
 - 8.2. advocate to the Victorian Government in support of the installation of a vacuum waste management system as part of the E-Gate development; and
 - 8.3. note that in 2012 further investigation will be undertaken into a possible planning scheme amendment that would establish underground easements for the preservation of space for underground waste collection infrastructure.

Attachments:

1. Supporting Attachment
2. Additional Commentary

SUPPORTING ATTACHMENT

Legal

1. There are no legal implications in the adoption of this report. Legal advice will be provided as required.

Finance

2. The total cost of the Feasibility Study was \$75,800.

Conflict of interest

3. No member of Council staff, or other person engaged under a contract, involved in advising on or preparing this report has declared a direct or indirect interest in relation to the matter of the report.

Stakeholder consultation

4. As part of the preparation of the feasibility study, discussions were held with City West Water, Major Projects Victoria, Envac and Memios (both vacuum waste technology companies), Telstra and Melbourne Water.

Environmental sustainability

5. Environmental sustainability issues were a primary consideration in developing the Integrated Waste Management Program.
6. A Stationary Vacuum Waste Management System has the potential to reduce the number of greenhouse gas emissions generated from waste collection and disposal.

ADDITIONAL COMMENTARY

1. An underground vacuum waste system is comprised of a collection station and one or more trunk or main pipelines that connect to branch lines and collection inlets. A trunk line has to be large enough to manage the transport of all waste from the branch lines and collection inlets. Collection inlets include an underground chamber with a ladder. This allows system blockages to be cleared.
2. An underground waste collection system works by drawing air through underground transfer pipes and collection inlets (ie. at street level or within buildings). Garbage bags are placed into the collection inlets. These are computer released into the transfer pipe and air is used to push the garbage bags to a collection station. Separate inlet stations allow different classifications of garbage to be collected and separately compacted and disposed of from the collection station.
3. The vast majority of large systems installations across the world have been placed in new land developments or remodelled urban precincts and therefore the design and installation process are simplified and uncompromised by an extensive underground service network.
4. The reliable collection of cardboard boxes and glass through a vacuum waste system has not been resolved. Glass bottles typically break inside the collection pipe and at high transport speeds cause erosion to the inside of pipes (especially on the bends) whilst cardboard boxes have a tendency to block the collection pipes. Further technology development by equipment suppliers would be required to resolve these problems should a system be installed within Melbourne.
5. Completing a system within Melbourne's central city is estimated to involve the installation of nine kilometres of pipe and a minimum of 300 collection inlets.
6. City West Water is laying new pipes in William Street as part of a two staged water main renewal works process. This provides an opportunity for the City of Melbourne to install piping for a waste vacuum system at the same time. Stage Two of this installation is being undertaken by City West Water in winter of 2012.
7. E-Gate encompasses 20 hectares of land in West Melbourne, between North Melbourne Station and Footscray Rd. Land owner VicTrack, is currently using the site for logistics and transport-related purposes, however, the site leases extend to the end of 2014. This provides time for the potential redevelopment of infrastructure and land use.