Improved waste management with the Waste and Litter Management App

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I would like to thank you for the opportunity to speak at this conference today.

I'm Michael Davis, the Regional Waste Coordinator for the Central Australian Remote Waste Management Program in the Northern Territory.

This is Edan Baxter, the Director of Spinifex Valley, a digital technology company based in Alice Springs.

Today we will speak about how the regional councils in Central Australia are creating a healthier environment in remote communities and how we are auditing our deliverables using a Waste and Litter Management App.

Overview

This presentation will discuss the following:

- The Central Australian Remote Waste Management Program
- Developing waste management best practice
- Developing and implementing new procedures, guidelines and plans to improve waste and litter management., and
- Waste and Litter Management App.

The Central Australian Remote Waste Management Working Group

The working group commenced operation in 2012. Members include: Barkly Regional Council, Central Desert Regional Council, MacDonnell Regional Council, NT Department of Environmental Health Branch, Northern Territory Environment Protection Authority (NTEPA), Department of Housing and Community Development, NT Worksafe and the Local Government Association of Northern Territory.

The aim of the group is to work together to discuss regional waste management and environmental health issues, along with developing sustainable and best practice waste management for remote communities in the Central Australia Region.

Central Australia

Community populations in Central Australian start from 100 to 200 people for small communities, with larger communities consisting of approximately 1000 people. Most of the communities have been in existence since the 1950's. Central Australia covers a vast area of approximately 1 million square kilometres.

Developing waste management best practice

As a group, we are trying to develop waste management best Practice! What is waste management best practise?
Well, "environmental sustainability" is met when:

- Resource recovery is maximised and waste to landfill is minimised
- Occupants' service requirements are met satisfactorily, and
- Statutory obligations of any predicted waste stream are met.

Waste management best practice in remote communities is achieving the above, with "what you have" and "where you are", the best you can and constantly striving for improvements.

How are we achieving best practice?

We are working towards achieving best pratice by:

- Upgrading procedures
- Improving staff training
- Updating facilities
- Maximising resource recovery, and
- The completion of waste and litter projects.

Updating Procedures

The group has developed and implemented procedures, guidelines and plans to improve waste and litter management, including:

- Central Australian Landfill Operating Manual
- Environmental Management Plans
- Guidelines for the Closure of Legacy Waste Sites
- Community Litter Action Plans, and
- Asbestos Management Plans.

Providing staff training

Each community has a copy of these documents and training is ongoing. These include:

- Central Australian Landfill Operating Manual
- Environmental Management Plans
- Guidelines for the Closure of Legacy Waste Sites, and
- Community Litter Action Plans.

Updating facilities

We are updating all of our facilities by:

- Fencing around the compound
- Improving signage
- Installing public drop-off bays
- Maximising resource recovery with improved waste separation and better managed facilities with order and clean stockpiles, and
- Restricting access to the council compound and improving efficiencies. The public help with the separation in drop-off bays, and contamination is removed prior to stockpiling.

Including pit design

The trend design has been replaced with the new pit design, which includes:

- Stepped sides for safety
- Bund walls to control ground water
- Ramped entrance for access, and
- Clean fill for cover and capping.

The new design reduces the need to burn the waste to maximise space; it redirects surface water from the pits; and the ample coverage and capping material maximises compaction, reduces odour, vermin and the spread the of disease and provides a better work environment.

Maximising resource recovery

We have erected a standardised landfill signage package at the majority of our landfill sites. We are "maximising resource recovery" by improving the separation of waste when it is received, by:

- Installing public drop-off bays and stockpiling recyclable material
- Installing a standardised signage package including colour, pictures and wording. Replicating the design will spread the message throughout Central Australia of how waste should be dealt with (best practice)
- Using large pictorial and coloured signs for the community public drop-off area, and street design signs are for use in the council compound.

Colour is used to identify waste streams and, matched with the pictures and words, the package helps to teach staff and community members how waste stream are treated, including:

Red:	Waste for land application
Yellow:	Recoverable material
Blues:	Cardboard (at this time burnt, however can be recycled)
Green:	Green waste (at this time burnt, however can be mulched with the purchase of the right equipment).

Waste and litter reduction projects

The group continues to implement projects to improve waste and litter reduction within communities, including the following projects:

- Community Hot Spots (were bins are placed at sites identified around communities as litter hot spots)
- Community Litter Management (where community clean-up days are organised and include community participation)
- Schools education programs (speaking with classes about how we create healthier communities with litter reduction)
- Community litter education programs
- Implementing "Litter Management Plans" designed for each individual community, and
- Tidy Towns participation

Achievements (separation of waste)

We have come a long way in 5 years with receiving and separating waste as it arrives at the landfill. With the introduction of public drop-off bays, recyclables are separated from general waste and diverted from landfill.

Achievements (stockpiling recyclable materials)

Recyclables are now being stockpiled in an orderly manner with minimal contamination and are awaiting removal from the community landfill. There is an income in recoverable material and redirecting waste from landfill (saving of approx. $200 m3), which can be redirected and invested back into waste activities.

Achievements (community litter reduction)

Improvements have been made in litter management within our communities. It must be said that litter management continues to be an issue; however, the "public place bins", the "container deposit scheme", "clean-up days" projects and "Community Litter Management Plans" are all helping to achieve environmental health improvements.

Waste and Litter Management App

In 2015, a waste-auditing tool funded by the NTEPA called the "Waste Management App" was developed by the Centre for Appropriate Technology, Spinifex Valley IT Solutions andthe Central Australian Remote Waste Management Program. The app was designed specifically to aid the Council to maintain its current landfill by helping audit key performance areas. The spoken and pictorial design enables Council to involve staff with low literacy in the waste auditing process.

Stage 1 the initial "Waste Management App" was a basic auditing tool with a very limited reporting function. The app reported on sections of the landfill and its condition by scoring each section with a:

- Green for "good"
- Orange for "OK", and
- Red for "non-existing or in a poor state".

The reporting function of this app provided a screen shot report with no other detail available.

Development of the app

We plan to develop the app further to include:

- litter management
- waste volumes, and
- Site remediation estimating.

Including litter management

Stage 2, to include litter management, is now in operation as of July 2017. It provides a more detailed waste management audit, including:

- An audit for all 13 separate public drop-off bays, and
- A separate council compound audit including fencing, road condition, pits and all stockpiles.

The new litter management function includes:

- Yearly community household bin condition audit
- Waste plant serviceability audit
- Community litter hot spot audit
- Reportable Tidy Towns locations audit in and around the community

The new app provides a detailed report, including:

- Historical information
- Percentage of Green, Orange and Red ratings for each key area and community.

Waste volume

- Stage 3 is currently in the planning stage and will require additional funding to complete.
- The app will audit Environmental Protection Licence reportable information.
- The data will help future planning and budgeting for landfills.

Volumes including the following will be recorded:

- General waste
- Cardboard
- Metals
- Construction demolition waste, and
- Hazardous waste

If funding is available, at this next stage the app will have the ability to include other steams, depending on licensing requirements.

Remediation legacy waste

This is also in the planning stage and will require further funding. This stage will not progress until stage 3 is complete and functioning. It will include functions such as:

- Key stakeholders
- Site history
- Planning and cost estimation for site remediation
- Implementation of closure plan, and
- Post-closure management

Thank you.

For more information

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Glossary

NTEPA Northern Territory Environment Protection Authority