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Secretariat of the Pacific Regional Environment Programme

PacWastePlus
PACIFIC WASTE MANAGEMENT

This initiative is supported by **PacWastePlus**-a 85-month project funded by the European Union (**EU**) and implemented by the Secretariat of the Pacific Regional Environment Programme (**SPREP**) **to sustainably and cost effectively improve regional management of waste and pollution.**

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# Case study
# Asbestos - Nauru

## Issue to be addressed

Asbestos Contaminated Materials are present in many older buildings in Nauru, as well as stockpiles in several locations as documented from studies completed in 2014 and 2015.

When considering the possible activity to be conducted with PacWastePlus support, Nauru's Department of Environment Management and Agriculture determined the removal of existing asbestos containing materials at the Nauru landfill would be the most useful activity, as this would manage a current health risk to workers, and also provide an opportunity for government to confirm the real cost of management of asbestos containing materials through packaging and transporting to New Zealand for landfilling.

The asbestos containing materials were stored in degraded shipping containers near the main access to the landfill, so the task required:

- Emptying the existing five containers of the asbestos containing materials
- Repackaging the materials to international standards to enable shipping to New Zealand
- Loading repackaged materials into new containers
- Performing biohazard controls compliant with shipping internationally
- Fully cleaning / remediating the storage containers, so no residual asbestos fibres remained.
- Shipping the asbestos containing materials to New Zealand, as Nauru does not currently allow asbestos containing materials to be disposed of to local landfill.
- Ensuring controlled landfilling of the transported materials.

# Project Design & Planning

The project involved the removal of asbestos containing materials from five shipping containers stored at the Nauru Landfill.

## Project Design

A virtual Inception Meeting was held on 27 July 2023. The Work Plan was then developed and accepted on 16 October 2023.

As materials were to be transported from Nauru to New Zealand via Fiji, a transboundary movement consent was required under the Basel Convention. The Competent Authorities of Nauru (Export), Fiji (Transit) and New Zealand (Import) were required to approve the movement of the asbestos waste.

To ensure both efficient work and provide ongoing value to Nauru, a local contractor was engaged to provide support (workers to assist with removal and repackaging activities, supply equipment, and local liaison with government and shipping operators). Training of the local staff to international standards (Asbestos removal training to Australian Unit Standard CPCCDE3014A/ New Zealand Unit Standard 29765 (Remove non-friable asbestos) was provided for six local contractor staff workers) along with face fitting testing of Respiratory Personal Protection.

Close contact was maintained throughout the project with the local environmental agency the Department of Environmental Management and Agriculture.

Training of local staff, and respirator face fitting occurred the week of November 19, 2023. Non-friable asbestos removal training was provided to 49 workers engaged on the project, as well as other local contractors, consultants, and government employees. The training was to New Zealand Quality assurance (NZQA) Standard 29765 “Remove Non-Friable Asbestos”.

## Key Information

| | |
|---|---|
| Location | NRC Landfill and Regional Processing Centre– Asbestos Container Storage |
| Type of Asbestos | Chrysotile & Amosite: Stored Non-Friable ACMs - roofing sheets and cladding |
| Volume | Repackaged and shipped for disposal of approximately 4,966m$^2$ of asbestos containing materials to New Zealand for appropriate disposal. |
| Impact | The removal of these five 20 containers from the landfill allowing for an additional 163m$^3$ of space to be used for disposal. It eliminated the risk of potential adverse health effects for approximately 10 NRC landfill workers employed at the NRC Landfill from asbestos containing materials. |
| Cost of project | $US 271,477.00 |


Class photo on day 1 of training

The Contractors developed an Asbestos Removal Control Plan addressing the key elements of asbestos removal proposed. The Asbestos Removal Control Plan identified the specific control measures proposed to ensure workers and other persons are not at risk when asbestos removal work is being conducted. The plan focused on the specific control measures necessary to minimise any risk from exposure to asbestos.

## Key elements included in the Asbestos Removal Control Plan were:

### Identification:

» Details of the asbestos-contaminated materials to be removed.

» Listing of the facilities for abatement (e.g. the facility locations, amount of ACM that shall be removed, asbestos location in the building, and whether it is friable or non-friable).

### Preparation:

» Consultation plans for regulators, owners and potentially affected stakeholders.

» Assigned responsibilities for the removal works (abatement team and Tonga Government officials).

» Program of commencement and completion dates.

» Safety plan (e.g. safe working at heights, manual handling).

» Asbestos removal boundaries, including the type and extent of isolation required and the location of any signs and barriers.

» Control of electrical and lighting installations.

» Personal protective equipment (PPE) to be used (e.g. respiratory protective equipment).

### Workers preparations for ACM removal:

» Training on the Asbestos Removal Control Plan

» Ensure perform work in compliance with best international practices, any direction of Environment officials, and with any local regulatory requirements.

» Act in a safe manner and that any unsafe condition is reported and corrected immediately.

» work with due regard and attention to workplace health and safety issues.

### Decontamination:

» Detailed procedures for the workplace decontamination.

» The decontamination of tools and equipment

» Personal decontamination of non-disposable PPE and RPE

### Disposal Management:

» Confirmation of where the asbestos will be disposed (including assurance the disposal facility is licensed to accept asbestos waste, and they have agreed to accept the material)

» An asbestos management disposal plan to manage risks during transportation.

» Methods for disposing of asbestos abatement waste (e.g. Disposable protective clothing and equipment, structures used to enclose the removal area, etc.)

# Asbestos Abatement Procedures

Abatement procedures were established in the workplan and Asbestos Removal Control Plan developed for the project.

» Contractors arrived in Nauru on 27 November 2023 and deployed to the NRC Landfill to inspect the containers. One was not accessible, but the others were full of packaged ACM. It was noted the packaging was deteriorated and needed to be replaced.

» Replacement containers for the shipping were delivered over several days from 30 November through until 5 December.

» Abatement activities commenced on 6 December 2023, with the construction of the decontamination unit and installation of air monitors prior to any unloading, repackaging, and loading of the new containers.

» Signs & barrier tape were placed around the working areas.

» A “tools, materials & equipment” area was set up on-site for Morecroft to safely store all materials, tools & equipment.

» Carried out all asbestos removal works as ''B'' Class conditions, i.e., removal of non-friable asbestos.

» All PPE & RPE was correctly worn while within localized working areas.

» A four-man team was used to remove Hazmat Bags from old containers and place them in the new containers. If any bags were damaged, then the contents were re-bagged.

» Once each container was full (approximately fourteen bags at one tonne) the container was closed.

» Decanting of containers was done one at a time with a crew of six men.

» Rain caused significant difficulties with managing the resulting mud. The final container was filled on 15 December 2023.

» All containers were confirmed to be appropriately loaded, with the materials firmly strapped down to ensure no movement during transportation, the containers were then wiped down to remove mud and debris to ensure the containers compliant with biohazard controls on international shipping.

» The old containers were then cleaned with High Efficiency Particulate Air (HEPA) equipment, vacuumed out where possible (most were badly rusted.)

» On 18 December 2023 the containers were moved to the Nauru Port.

State of old containers


Building the Decontamination Unit


Emptying old container

Filling new container

Wrapping loads and working in the mud

Filled and secured containers


Container unloading and loading

## Safety Management

Safety Protocols implemented during the abatement works were:

- Creation of Asbestos Removal Control Plan (ARCP) & Notification the works to relevant Nauru Authority before site works initiated
- Sufficient warning signs & barrier tape will be located around working areas before works start and maintained until works completion.
- All Personal Protective Equipment and Respiratory Protective Equipment was checked to ensure correctly worn
- Constructed a decontamination unit at the exit of the work area.
- Training was delivered to all staff working on the abatement job by a British Occupational Hygiene Society (BOHS) trainer, to New Zealand Quality Assurance (NZQA) Standard 29765 to all workers engaged on the activity.
- Prior to works commencing workers were fully acquainted with the Asbestos Removal Control Plan and therefore understood, the full extent, location, and dimensions of asbestos materials to be removed, accessibility to materials, and from the site, all safety requirements, disposal processes.
- Asbestos waste was double wrapped or bagged in 200µm polythene, labelled as 'hazardous asbestos waste', sealed with PVC/cloth tape, and placed in the new containers for shipping.

## Shipment Process

To enable the legal transportation of asbestos containing materials across international boundaries, the following documentation was required to be completed and submitted to the relevant competent authorities in Nauru, Fiji, and New Zealand.

- Dangerous Good Declarations
- Bill of Lading
- Nauru Container Clearance Certificate -Quarantine Division
- Nauru Customs Export Permit
- Fiji Transit Permit (Biosecurity)
- New Zealand Import Declaration Delivery Order
- New Zealand MPI Biosecurity Clearance Certificate


## Disposal Process

The material arrived at the Port in New Zealand on 7 March 2024, and were granted biosecurity clearance on 10 March 2024. The cleared containers were transported to EnviroNZ (landfill) on 11 March 2024, and final asbestos materials removed from the containers and transferred to the care and control of the landfill operators on 14 March 2024. Final landfilling occurred on 18 March 2024.

Removing loads from containers. loads removed and ready for disposal

# Outcomes and Impacts

**4,966m² of ACM removed**

**49 workers trained**

Along with the removal and disposal of 4,966m² of asbestos containing material, 49 local workers and government officials were trained in asbestos abatement work.

Workers were provided with PPE and equipment that they can use in the future for asbestos abatement and disposal activities.

As the asbestos containing materials were relatively well contained at the landfill site, the abatement activities have actively removed possible exposure to the approximate 10 workers at the landfill, however it is noted the containers and packaging were degrading, so without this work the potential exposure risk could have increased to all visitors of the landfill, given the material was stored at the entrance to the landfill.

# Challenges and Lessons Learnt

Key challenges addressed, and lessons learnt from this activity are:

| Challenge | Response | Lesson Learnt |
|---|---|---|
| Transboundary Consent Delays, Including Change to Disposal Company | Transboundary Consent for the movement of asbestos waste back to New Zealand under the Basel Convention, was required.<br><br>The following challenges occurred:<br>• The Competent Authorities were slow in responding.<br>• The Competent Authorities requested hard copies of all documentation.<br>• The original shipping route was changed which required re-starting the process.<br>• The original New Zealand disposal location was changed which required re-starting the process. | SPREP was required to help encourage the Competent Authorities to respond.<br><br>The process was recommenced promptly when notified that the route was changed and also when the disposal company was changed. |
| Difficulties Contacting and Dealing with Nauru Shipping Line (NSL) | NSL is the only shipping line operating from Nauru and act as intermediaries with other shipping lines. Challenges faced included:<br>• Difficult to contact<br>• Supplied confusing information<br>• Shipping schedules unexpectedly changed<br>• NSL wanting to fill the empty containers with cars destined for sale in Nauru and then unexpectedly backing out of this arrangement.<br>• NSL tried multiple times to triple charges despite firm quotation being provided. | SPREP and Nauru Government staff intervened on several occasions, resulting in NSL responding when needed, and also resulted in NSL dropping the excessive additional charges. The considerable efforts of the New Zealand shipping broker were also very helpful.<br><br>Future activities of this nature would benefit from Nauru Government securing the booking with NSL to reduce chance of price gouging. |
| Difficulties Sourcing Containers for Nauru | Four of these containers could be sent directly to Nauru, but one needed to go to the Morecroft facilities in Auckland to be loaded with equipment to be used in the project.<br><br>The main issues were:<br>• Shipping Company refusal to release containers<br>• NSL complications and poor communication over their wish, later retracted to use the empty containers for Nauru goods.<br>• Difficulties in purchasing containers. | These problems were overcome by assistance from Nauru Government and also the considerable efforts of the New Zealand shipping broker.<br><br>Future activities of this nature would benefit from Nauru Government being closely engaged during the booking and shipping confirmation activities. |

| Challenge | Response | Lesson Learnt |
|---|---|---|
| Issues Arising During Work in Nauru | Several issues arose in Nauru, and with the notable one being:<br>• Delay in delivery of the containers.<br>• Delay in Customs Clearance of the container that was filled with equipment for the project.<br>• Heavy rain at the start of the project work, which turned the ground to mud and meant considerable extra work in avoiding contamination of the new containers to avoid biosecurity issues for New Zealand.<br>• Very hot conditions which slowed and even stopped the work on occasions.<br>• The discovery of an unexploded bomb at the Nauru Port, which delayed for a short time the arrival of the new containers, and a day was also lost when the unexploded bomb was driven past the work site to the location where it was to be destroyed. | These problems were overcome by assistance from Nauru Government and also the considerable efforts of the New Zealand shipping broker.<br>Future activities of this nature would benefit from Nauru Government being closely engaged during the booking and shipping confirmation activities.<br>The heat issue was overcome to some extent by providing shade. The problem with the mud was managed by setting up careful procedures with the New Zealand shipping people, and strict implementation of these procedures by the Morecroft Project Manager. To ensure the containers would pass biosecurity inspection. |
| Issues Arising from Shipment Departing Nauru | Delays and problems also occurred with the shipment departing from Nauru. The main issues were:<br>• Bad weather delays<br>• Delay in processing paperwork.<br>• Problems unloading the containers when they arrived in New Zealand due to the difficult packing conditions in Nauru. | Nauru Shipping Lines controls all shipping into and out of Nauru. Close coordination is needed with Nauru Shipping Lines to keep a project on track.<br>Containers must be cleaned inside and out to bioseciurity standards of receival country, before shipment. |
| Issues Unloading the Containers in New Zealand | Difficulties were experienced by the Morecroft crew in unloading the asbestos waste.<br>• The packing of the containers saw the wrapped materials jammed against each other causing minor tears in the polythene<br>• Most parcels were loaded length ways which meant we had to use a strop to move the parcels forward, increasing risk of polythene tears.<br>• The work area was far too small making the process more difficult.<br>• The secluded work area will also mean that we are not having to constantly give way to traffic when operating the machine. | Tears in the polythene which were fixed when the parcels were removed the container, prior to disposal.<br>If all the parcels can be stacked into the containers in the same orientation that would help the unloading process.<br>A larger secluded work area would enable more containers with additional crew and machines to access the area increasing safety and efficiency. |

# Innovation and Excellence

The project was highly successful, and was delivered within the budget and the allocated timeframes. Importantly, there were no complaints from the landfill operator NRC, no accidents or injuries, no detection of airborne asbestos adjacent to the worksite at any stage and high levels of satisfaction with the job.

Numerous difficulties were experienced during the contract, but these were all overcome with cooperation, a creative approach to the work, a good understanding of the issues, and considerable perseverance. There was also considerable assistance from SPREP throughout and locally from the Nauru Government and local contractor CMI.