

From a Mere Clean-up Contract to Changing Lives - Engaging the Local Stakeholders during the Remediation of Christmas Island, Pacific Ocean

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ABSTRACT

This paper describes the work undertaken by Safety and Ecology Corporation Ltd (SEC) on Kiritimati, formerly known as Christmas Island. The discussion describes the project growing from merely removing the remains of the nuclear testing, to appreciating the sensitivities of its economic impact on the island and developing a programme of redevelopment and community involvement.

The remediation work has had a number of positive effects on the island, notably upgrading the infrastructure and removing more than 23,000 cubic meters of waste material, primarily metal scrap in the form of vehicles, in addition to spent batteries, extensive areas of tar contaminated soils and radioactive luminous vehicle dials.

INTRODUCTION

Kiritimati is the largest coral atoll in the world, with an area of 642 square kilometers located in the Pacific Ocean 233km north of the equator at 2 degrees 3' north. As one of the most remote locations on the planet, the island was selected for the British and US nuclear testing facilities. The British nuclear trials commenced in 1957, with the final American test in 1962. The island continued as a military base until 1964 when operations finally ceased. Although the majority of buildings, plants and equipment were removed, significant quantities of construction plant, vehicles, batteries and drums of bitumen were abandoned (see Figure 1).



Fig. 1. Military waste abandoned in 1964.

In December 2004, SEC was awarded the cleanup contract by the UK's Ministry of Defence (MoD), with site operations commencing in early 2005. The initial part of the work included building accommodations for the workers on site and shipping all major mechanical plant and supplies to the island. Once everything was in place and operations fully mobilised, the recovery and processing of the scrap metal began, as was the identification and remediation of numerous radium vehicle dials. Asbestos surveys were undertaken by a specialist third party contractor before work began, with asbestos-removal operations lasting for eight weeks.

NUCLEAR TESTING PROGRAMME

Following a review of possible test sites for Britain's developing nuclear arsenal, Christmas Island was selected as the preferred test site in 1956 under the codename Operation Grapple. Recording stations were established on Malden and Fanning Islands. During the following two years, approximately 2000 British troops were sent to the Island to reconstruct the wharf and port, resurface the existing main runway of the air field, install hangars, a control tower, and many other facilities. A second sealed runway was also constructed, and more than 80 km of island roads surfaced with asphalt. At the peak of the operational phase of the test programme, the Island was home to over 4,000 personnel.

In 1957, RAF bombers dropped three bombs (in the megaton range) that exploded at 18,000 feet approximately 50 km south of the island. The British trials continued into 1958, with a total of eight detonations. Tests were reinitiated in 1962 by US forces, with a total of 24 detonations in the second series. The signing of the test ban treaty in 1963 effectively banned atmospheric weapons testing and thus ended the trials programme.

Following the departure of the forces in 1964, Operation Hardlook carried out a full investigation into possible radioactive contamination of the Island. No residual contamination was detected, the results of the investigation confirmed by a further examination of the Island in 1975.

The only radioactive material remaining on the Island as a result of the tests were more than 80 radium-226 luminous vehicle dials. SEC's specialist radiation clearance team successfully surveyed, catalogued and removed this residual contamination.

LOCAL COMMUNITY

Christmas Island has been almost continuously occupied since 1882, when the first attempt was made to plant coconuts for copra production commercially. The Island has drawn its workers from Hawaii, Manihiki, Tahiti, Niue, and, since 1941, from the Gilbert and Ellice Islands (Kiribati and Tuvalu). The Island's population is currently estimated at 7,000 people.

For most of the last century, the Island was ruled by the British until the Gilbert Islands became the independent Republic of Kiribati in 1979. Christmas Island is the largest of the 33 islands that make up the Republic, scattered across 5 million square kilometers of open ocean. The Island constitutes nearly half of Kiribati's total land mass, dwarfing the 23 square kilometer island capital of Tarawa.

Colonial rule meant that education was compulsory, with literacy rates today remaining very high. Gilbertese is the main language, however, English is widely spoken, especially in Government circles and is regularly taught in all schools. The traditional way of life is subsistence, the vast majority of the population living off the sea and the land, with little dependence on trade. Family life on the atoll follows the time honoured patterns of Kiribati tribal society, based on respect for the ancestral and the old.

From the outset of the tender process, it was SEC's intention to offer more than a basic clean-up operation to the MoD and the Island's Government. SEC realised the importance of stakeholder involvement/enrichment to the project early on in terms of project risk. Tender visits assessed the condition of the Island, and how the involvement and development of skills amongst the local population could be used. The tender ethos was therefore to ensure that at the end of the contract, the cleanup operations left a beneficial legacy to the island. One such example was SEC's proposal to expand and renovate the existing Captain Cook Hotel, rather than bringing temporary accommodation to the island to house project staff. The proposals were well received by the Government of Kiribati (GoK), because the bungalows were considered a major benefit to the fledging tourist industry when the cleanup work was finished. The bungalows were built using local material in the traditional Island style. Due to the long duration of the contract, the beach side location and design of the bungalows also had a positive benefit upon the morale of the project staff. An extensive support facility was also constructed that housed a kitchen, laundry, gym, and a large game room.

In addition to upgrading the hotel's kitchen, a food hygiene training programme was developed in concert with the hotel's management. This measure was taken to improve the quality of the food and the cleanliness of its preparation. A food hygienist from Hawaii began offering several training courses at the hotel, which resulted in six of the hotel's catering staff successfully receiving an internationally recognized qualification in food hygiene. Following the popularity of the food-hygiene course, an invitation was extended to all restaurant and hotelier staff on the island to undertake the training, which was well attended.

As an additional safeguard, a micro filtration and ozonation water treatment plant was installed to treat all of the hotel's potable water supply.

EMPLOYMENT OF LOCAL LABOUR

A key feature of the contract's execution was the employment of local labour. The services of Island-based Ronton Construction were used for building the hotel extension. Based upon the relationships developed during the construction phase of the contract, Ronton's staff were again used during the clean-up operation. Due to the extensive nature of the site operations, additional drivers and labourers were required. A series of job fairs were held, therefore, explaining the contract operations and services required. Staff from Ronton Construction, fluent in both English and Kiribati, attended these job fairs to help overcome the language barrier. Potential candidates were requested to complete an application form – forms were received from a large percentage of the Island's population. Following a series of informal interviews, 30 Islanders were hired for the duration of the project.

The military had sunk a considerable amount of scrap vehicles to form a jetty for unloading supply ships. Although the jetty had since washed away, the unsightly collection of vehicles remained as a hazard to the adjacent shipping lane. A specialist team of salvage divers from the Island was, therefore, contracted to recover the underwater scrap items.

ENGAGING THE LOCAL COMMUNITY

From the level of attendance at the job fairs, it soon became clear that local interest in the contract scope was high among the Island community. The clean-up work required a high level of diligence from SEC due to the sensitive economic and ecological systems present on the coral atoll; the distribution of the contaminants; and the residents, some of whom had actually formed dwellings from the wastes present on site (see Figure 2).



Fig. 2. Island dwellings were often constructed adjacent to former military fuel tanks.

The radiological and hazardous contamination was an emotive issue to the local population, particularly to residents in close proximity to the waste sites. Consequently, a number of pre-contract stakeholder meetings and workshops were held to allay concerns. To inform the Islanders of the location of the proposed work, a series of radio broadcasts were aired by the Island's radio station. The broadcasts also gave details of progress presentations to be given by SEC project staff in the village halls, or maneabas, where work was to take place (see Figure 3).



Fig. 3. Presentations took place in Island meeting houses called 'maneabas'.

The majority of the waste material had been left in a series of dumps prior to the military's demobilisation from the island. Such dumps were usually on the outskirts of the villages, thus, causing minimal disturbance to the local residents. As a number of such settlements had developed around the waste-storage areas, careful negotiations with the Government of Kiribati and members of the Island population were required to facilitate removal. Several large fuel tanks earmarked for demolition had been converted into pig pens, with other dwellings constructed either from scrap, or close to large items of military waste (see Figure 4).



Fig. 4. Dwellings adjacent to a former asphalt plant.

It was considered essential to keep an ongoing dialogue with the residents who would be mostly affected by the work. Aware of this issue, the MoD had employed a local Liaison Officer from the Government of Kiribati early in the tender process. As work progressed, the Officer became a full-time point of contact between the local population and the project staff. Several visits to each household were made by a member of the contract team, accompanied by the Liaison Officer in the weeks before work commenced in a particular site. SEC also established a Liaison Committee that met on a monthly basis to discuss site issues and progress, with representatives from the local residents, councillors and project staff.

In addition to the presentations in the manaebas, the project staff visited the local schools. Common games on the Island for the children included riding on the rear of passing vehicles, or attempting to touch their tires. Health and safety issues were the principal drivers for such visits, during which general road safety as well as the dangers of mobile plant and hauling operations were clearly explained.

As the project progressed, the site personnel became aware of the lack of resources within the Island's schools. As a result, the many deliveries of heavy equipment to the Island were supplemented with books, stationery supplies and sports goods donated by head office staff.

CONCLUSION

The remediation work has had a number of positive effects on the Island, notably the removal of unsightly and potentially hazardous waste and upgrades to the infrastructure. Large areas of once derelict land on this island paradise have now been returned to beneficial use.

The Island Tribal Council intends to continue the redevelopment of the Island's infrastructure and to promote tourism. The Council is made up of a number of Island Elders, who prior to contract had little say in Island affairs. All decisions relating to the Island were previously made

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in the Tarawa, approximately 3000 kilometers away. As the project progressed, the Council became more vocal and involved in Island operations. Although the Council's involvement sometimes led to slight project delays, the fact that the Island has for the first time its own voice was welcomed by all parties involved. The Council's contributions and interest has now gone beyond the initial cleanup work. Indications of this include upgrading the Island's airport to accommodate large passenger aircraft.