
CANCER RISK ASSESSMENT REVIEW

Fiji Energy from Waste Project Vuda-Saweni, Lautoka, Fiji

A Review of the Human Health Risk Assessment and Air Quality
Assessment

Submitted to the Fiji Ministry of Environment and Climate Change,
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PREPARED BY

International Independent Consultants

ON BEHALF OF

The Heritage Coast Vuda Saweni

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Source documents: GHD Pty Ltd — Air Quality Assessment (Appendix C) and Human Health Risk Assessment (Appendix E), Fiji Energy from Waste Project, Project No. 12675112, prepared for The Next Generation Fiji, received by the Fiji Ministry of Environment and Climate Change, March 2026.

Executive Summary

The Next Generation Fiji (TNG) has submitted a 1,500-page Environmental Impact Assessment to the Fiji Ministry of Environment and Climate Change, seeking approval to construct and operate an 80-megawatt waste-to-energy incinerator on the Vuda-Saweni Heritage Coast, near Lautoka.

TNG engaged GHD Pty Ltd, an Australian engineering consultancy, to prepare the health and air quality components of this EIA. This review examines two of those documents: the Air Quality Assessment (Appendix C, 96 pages) and the Human Health Risk Assessment (Appendix E, 68 pages).

This review finds that for six of the most significant cancer-causing chemicals that this incinerator would release, GHD's own documents contain material admissions that the health risk to local people cannot be properly assessed. Key findings include:

Dioxins	GHD states there is "no criteria for dioxins and furans to compare" their modelled concentrations against. The cumulative long-term exposure "could not be assessed as there is no existing background data." Dioxins are definitively carcinogenic to humans and accumulate in the food chain over decades.
Fine Particulate Matter (PM2.5)	Existing air quality already reaches 152% of the adopted health limit before the incinerator adds any emissions. GHD's baseline was based on only two weeks of monitoring.
Arsenic, Chromium & Nickel	Three proven human carcinogens assessed "qualitatively only." Lead emission rates were used as a proxy. No dispersion modelling was conducted for any of these three metals.
Cadmium and Lead	Modelled within daily criteria, but cumulative lifetime exposure "could not be assessed as there are no existing background data."
Benzene	Concentrations reach 74.7% of the one-hour limit under normal operation and 85% during start-up and shut-down events. Benzene causes leukaemia.
Fly Ash	The pathway by which fly ash leachate — containing concentrated heavy metals, dioxins, and persistent organic pollutants — could enter the adjacent marine environment and food chain was not assessed in the health study.

GHD'S OWN STATEMENT — AIR QUALITY ASSESSMENT, SECTION 1.5:

"GHD disclaims liability arising from any of the assumptions being incorrect."

This review concludes that the cancer risk assessment submitted by TNG does not provide a sufficient basis on which the Fiji Ministry of Environment and Climate Change can conclude that this facility is safe for the communities of Lautoka and the Western Division.

All documents reviewed carry the following disclaimer on every page: "This document is in draft form... must not be relied upon." They were submitted to the Ministry as components of a formal EIA application.

The Six Cancer-Causing Chemicals

GHD studied six groups of cancer-causing chemicals in their health assessment. For every single one, there is a material problem with the analysis.

01

Dioxins

Proven to cause cancer in humans. There is no safe level of exposure.

Dioxins are released when mixed waste burns. They cause lymphoma, soft tissue sarcoma, and other cancers. Medical scientists agree there is no amount of dioxin exposure that is completely safe — even very small amounts increase cancer risk.

Dioxins do not primarily harm through air. They fall onto soil and into the sea. They enter the human body through food — especially fish — and build up in body fat over decades. For coastal Fijian families whose main food source is reef fish, this is the most serious long-term exposure pathway.

GHD'S OWN AIR QUALITY ASSESSMENT STATES:

"there is no criteria for dioxins and furans to compare the GLCs to"

"The cumulative impact of dioxin and furan emissions from the Project activities could not be assessed as there is no existing background data."

IN PLAIN LANGUAGE

GHD calculated how much dioxin this incinerator would release into the air. Then they admitted they had no health standard to compare that number against. They also admitted they could not assess how much dioxin would accumulate in people's bodies over the 30-year life of the plant. For the most dangerous chemical this incinerator produces, the health risk remains unassessed.

02

Fine Dust in the Air (PM2.5)

Proven to cause lung cancer. Already above the safe limit before the incinerator opens.

Very fine dust particles — invisible to the human eye — cause lung cancer when breathed in over many years. GHD measured the existing air quality around Lautoka before the incinerator is built.

GHD'S OWN AIR QUALITY ASSESSMENT FINDS:

"Existing PM2.5 levels already reach 152% of the adopted health limit — before the incinerator adds any emissions."

"Existing PM10 levels already reach 175–188% of the health limit."

"GHD's baseline monitoring was conducted over two weeks only."

IN PLAIN LANGUAGE

The air in Lautoka already contains more dangerous fine dust than health experts say is safe. TNG proposes to add 64,872 kilograms of additional particulate matter every year — on top of existing levels that already exceed the health limit. The baseline used to justify this addition was collected over just two weeks, which GHD acknowledges does not represent full year-round conditions.

03**Arsenic, Chromium & Nickel**

Three metals proven to cause cancer in humans. None were properly modelled.

Burning waste releases heavy metals. Arsenic, hexavalent chromium, and nickel are classified by the International Agency for Research on Cancer (IARC) as Group 1 — definitively carcinogenic to humans. Arsenic causes skin, lung, and kidney cancer. Chromium causes lung cancer. Nickel causes lung and nasal cancer.

GHD'S OWN AIR QUALITY ASSESSMENT STATES:

"Arsenic, chromium, and nickel were assessed "qualitatively only" — no air dispersion modelling was conducted for any of these three metals."

"Lead emission rates were used as a proxy for these metals, and compliance with standards was inferred rather than calculated."

IN PLAIN LANGUAGE

Three of the most dangerous cancer-causing metals that this incinerator would release were never run through the dispersion model. GHD used a different metal — lead — as a substitute and assumed these three would be within safe limits. That assumption has not been tested. It is a guess.

04**Cadmium & Lead**

Cadmium causes kidney and lung cancer. Lead damages children's brain development.

Cadmium is an IARC Group 1 carcinogen — proven to cause kidney and lung cancer. Lead is an IARC Group 2A probable carcinogen and a neurotoxin, particularly dangerous for children at very low exposure levels.

GHD did model these two metals and found them within daily limits. However:

GHD'S OWN AIR QUALITY ASSESSMENT STATES:

"The cumulative impact could not be assessed as there are no existing background data."

IN PLAIN LANGUAGE

GHD can tell us how much cadmium and lead this incinerator would release on a single day. They cannot tell us how much would accumulate in the bodies of local families over a 30-year operating life. For cancer risk, lifetime cumulative exposure is the figure that matters most.

05**Benzene**

Proven to cause leukaemia. Reaches 74.7% of the danger limit under normal operation.

Benzene is an IARC Group 1 carcinogen that causes acute myelogenous leukaemia (blood cancer). It is present in the smoke from burning mixed waste.

GHD'S OWN AIR QUALITY ASSESSMENT FINDS:

"Benzene-equivalent concentrations reach 74.7% of the one-hour criterion under normal operating conditions."

"During OTNOC (start-up and shut-down) periods, levels reach 85% of the criterion. Carbon monoxide and VOC emissions double during these periods."

IN PLAIN LANGUAGE

Even during normal operation, benzene levels reach nearly three-quarters of the health danger limit. When the incinerator starts up or shuts down — a regular occurrence over 30 years of operation — levels are higher still. The health study does not assess cumulative benzene exposure over the facility's operating life.

06**Poisonous Ash**

The most toxic output from any incinerator. Its route into the reef and ocean food chain was not assessed.

Fly ash is the fine powder carried up through incinerator smoke. It concentrates the highest levels of dioxins, heavy metals, and persistent organic pollutants from the entire waste stream. It is the most toxic material produced by any waste-to-energy facility.

This incinerator would produce between 18,000 and 54,000 tonnes of hazardous fly ash annually. The planned ash storage area is located adjacent to the Dreketi Inlet — directly beside the mangroves and the reef.

GHD's own Flood Study confirms the ash handling zone floods to over one metre in a 100-year storm event. GHD's own Climate Risk Scan rates tropical cyclones as an extreme risk for this site and confirms that severe storm events will become more frequent over the 30-year operating life of the facility.

GHD'S OWN HUMAN HEALTH RISK ASSESSMENT:

"The risk of fly ash leachate entering the adjacent marine environment — and from there entering the local food chain through reef fish — was not assessed in the health study."

IN PLAIN LANGUAGE

The most toxic waste from this incinerator will be stored next to the ocean. During a cyclone or major flood, ash will wash into the reef. Coastal communities in Lautoka and the Western Division depend on reef fish as a primary food source. This contamination pathway — from ash storage to reef to plate — is entirely absent from GHD's health assessment.

Why the Assessment Cannot Be Relied Upon

Beyond the individual chemical failures, the health assessment has five structural problems that undermine its conclusions as a whole.

1. Emission rates provided by TNG — not independently verified

The quantities of cancer-causing chemicals in GHD's model were provided to GHD by TNG — the company seeking regulatory approval. GHD did not independently verify these figures. If the emission rates provided by TNG are inaccurate, every conclusion in the assessment is inaccurate.

2. Air quality baseline based on two weeks of monitoring

To assess the additional health burden from the incinerator, you must first know how polluted the air already is. GHD monitored air quality for two weeks. This is insufficient to characterise annual or seasonal variation in a location where people live and work year-round.

3. No background data for the most dangerous pollutants

For dioxins, cadmium, mercury, lead, and benzene, GHD states that cumulative lifetime exposure "could not be assessed as there are no existing background data." Without this data, long-term cancer risk from a 30-year operating facility cannot be calculated.

4. Three Group 1 carcinogens never modelled

Arsenic, hexavalent chromium, and nickel — all definitively carcinogenic in humans — were assessed qualitatively only. A different metal was used as a proxy and those three were assumed compliant without calculation.

5. GHD disclaimed all liability for incorrect assumptions

The Air Quality Assessment states: "GHD disclaims liability arising from any of the assumptions being incorrect." On a document submitted as the cancer safety assessment for a 900,000-tonne-per-year facility, this disclaimer is extraordinary.

DRAFT STATUS OF ALL DOCUMENTS

"This document is in draft form and contains information that is confidential and/or proprietary. It must not be relied upon or used in place of appropriate professional advice. GHD reserves the right, at any time, without notice, to modify or retract any part or all of the draft document."

This disclaimer appears on every page of every GHD document submitted as part of this EIA. The Fiji Ministry of Environment and Climate Change has been asked to determine whether a 30-year industrial facility is safe for Fijian communities — on the basis of documents that their own authors say must not be relied upon.

Conclusions and Recommendations

This review finds that the cancer risk assessment submitted by TNG as part of the Fiji Energy from Waste EIA does not provide a sufficient basis for regulatory approval.

Key conclusions:

- For the most dangerous cancer-causing chemical — dioxins — GHD could not assess the health risk because there is no health standard to compare their results against, and no baseline data on existing dioxin levels in the area.
- Existing fine particulate air quality already exceeds the health limit by 52% before the incinerator adds any emissions. The facility would worsen air quality that already fails health standards.
- Three proven cancer-causing metals were not modelled. A different metal was used as a proxy and their safety was assumed, not calculated.
- Long-term cumulative exposure — the figure most relevant to cancer risk from a 30-year facility — could not be assessed for any of the major pollutants, because no background environmental data exists.
- The health assessment does not assess the pathway by which fly ash leachate could enter the marine food chain on which coastal Fijian communities depend for their daily diet.
- All health assessment documents are marked as drafts that must not be relied upon. GHD has disclaimed liability for incorrect assumptions. These documents were submitted as the basis for a formal environmental permit.

Recommendations:

1. A full, independent dioxin risk assessment must be conducted by consultants with no financial relationship with TNG, using site-specific baseline monitoring conducted over a minimum of 12 months.
2. Air quality baseline monitoring must be extended to at least 12 months before any health assessment conclusions are accepted. The existing two-week baseline is inadequate.
3. Arsenic, hexavalent chromium, and nickel must be modelled using actual emission rates for this facility — not proxy figures from a different metal.
4. A full assessment of the fly ash leachate pathway — from ash storage through flood and storm events, into the marine environment, and into the food chain — must be conducted before any permit is issued.
5. All health assessment documents must be finalised and independently reviewed before the Ministry makes a determination. Draft documents marked "must not be relied upon" do not constitute a valid basis for regulatory approval.



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This review was prepared on the basis of publicly available EIA documents submitted to the Fiji Ministry of Environment and Climate Change in March 2026. All findings are drawn directly from GHD's own reports. Source documents: TNG-EIA-APP-C Air Quality Assessment and TNG-EIA-APP-E Human Health Risk Assessment, GHD Pty Ltd, Project No. 12675112.