



# After the mine

Living with  
Rio Tinto's  
deadly legacy

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## About this Report

This report was written by Keren Adams and Hollie Kerwin with research assistance from Theonila Roka Matbob, Nathan Matbob, Dina Hopstad Rui, Luke Fletcher, Christina Hill, Freya Dinshaw and Tess McGuire and editorial assistance from Michelle Bennett.

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## Cover Image:

23-year old Geraldine Damana and her baby Joylin, outside their home inside the Panguna mine pit.

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# Summary



“People from other parts of Bougainville call us ‘bibirua’, the doomed ones.”

Alphonse Mirina, 42,  
Barako village

In December 2019, the people of the small Pacific island of Bougainville voted overwhelmingly to become the world’s newest nation.<sup>1</sup> The referendum on the island’s independence from Papua New Guinea was a peaceful, joyous affair, accompanied in many places by singing and dancing in the streets.

*‘Bougainville is on the verge of freedom!’* declared the President of the region’s autonomous government, Dr John Momis. *‘We are on a mission, and our mission is to liberate Bougainville and enable the people to be free to decide and manage their own affairs’.*<sup>2</sup>

Bougainville’s future, however, remains overshadowed by the disastrous legacy of an Australian mining project.

Between 1972 and 1989, the Panguna mine, developed and majority-owned by Anglo-Australian mining giant Rio Tinto, was one of the world’s largest copper and gold mines. During this period, the company’s subsidiary, Bougainville Copper Limited (BCL) discharged over a billion tonnes of mine waste into local river systems, devastating the environment and the health and livelihoods of local communities.

Anger over these practices and the unequal distribution of the mine’s profits ultimately led to an insurrection by local people in 1989 which forced the mine’s closure and triggered a brutal, decade-long civil war which cost the lives of up to 15,000 people.

In 2016, Rio Tinto divested from the mine and walked away without having contributed to clean-up or rehabilitation.

As a result, Panguna continues to gape like an open wound in the centre of the island. Polluted water from the mine pit flows unabated into local rivers, turning the riverbed and surrounding rocks an unnatural blue. The Jaba-Kawerong river valley downstream of the mine resembles a moonscape, with vast mounds of grey tailings waste and rock stretching almost 40km downstream to the coast.

An estimated 12-14,000 people live downstream of the mine along the Jaba-Kawerong river valley.<sup>3</sup>

This report examines the ongoing impacts of the mine on the human rights of these communities that Rio Tinto has left behind.

The report is based on site visits to 38 villages and 60 in-depth interviews undertaken by the Human Rights Law Centre and local research partners from the Panguna area between September 2019 and February 2020. It also draws on the research and findings of over 300 interviews of mine-affected residents conducted under a research project initiated by the Catholic Diocese of Bougainville between 2017 and 2019, and an extensive desktop review of primary and secondary sources.

Our research concludes that the impacts of the mine and Rio Tinto’s failure to address them have devastated communities and left them in a deteriorating, increasingly dangerous situation.

The contamination of the Kawerong and Jaba rivers by mine waste has severely limited peoples’ access to clean water. Most communities have to pipe drinking water over long distances or rely on rainwater water tanks or creeks which frequently dry up during the dry season. Many families have no option but to continue to use the polluted rivers for bathing and washing, or to cross them to tend crops or go to school. Those interviewed reported serious health impacts as a consequence, including sores and skin diseases, diarrhoea, respiratory problems and pregnancy complications.

The chemical contamination of the rivers is compounded by ongoing erosion from the vast mounds of tailings waste dumped by the company in the Jaba river valley. With each heavy rainfall, huge volumes of tailings sand is washed into the rivers, flooding large tracts of land downstream with polluted mud – displacing villages, contaminating water sources and destroying new areas of forest and agricultural land essential to peoples’ livelihoods.

At such times, river crossings become perilous, with constantly shifting channels and large areas of quicksand. Human Rights Law Centre researchers were told of multiple incidents in which community members, including children, had drowned or sustained serious injuries while attempting to cross the rivers due to the treacherous conditions.

The massive problems left by the mine's operation are now being exacerbated by its crumbling infrastructure. Levees constructed in the 1980s to contain the tailings and divert the rivers are crumbling, hastening erosion into the rivers and raising the prospect of catastrophic collapse. In one area visited, the levee was being undermined by the river, posing a serious risk to nearby villages.

The impacts of the mine continue to infringe nearly all the economic, social and cultural rights of local communities, including their fundamental rights to food, water, health, housing and an adequate standard of living.

Loss of arable and forested land through flooding and tailings deposits has created food shortages and deprived communities of traditional building materials for their homes.

Sacred sites fundamental to communities' connections with the spirits of their ancestors have been destroyed.

Some communities have been displaced entirely and are now living in overcrowded conditions on land belonging to others.

In a bitter twist of irony, the impoverishment caused by the mine's impacts is driving many residents back into the polluted rivers to pan for gold to support themselves and their families, further heightening the risks to their health.

Communities interviewed stressed the need for urgent assistance to help them deal with these overwhelming problems, but neither the Autonomous Bougainville Government (ABG) nor the Government of Papua New Guinea (PNG) alone have the resources or technology to manage the impacts of the mine's tailings or clean up the site. Indeed, post referendum, the ABG and at least some landowner groups see re-opening the mine as one of the only options for funding their future independence from Papua New Guinea.

Rio Tinto holds itself out as a global corporate leader on human rights and the environment and claims to pay particular attention to communities' rights to land, water and cultural heritage. Unless it addresses its legacy at Panguna, however, and contributes to remedying the massive problems it has created, the company will remain in serious violation of its human rights and environmental obligations.

The mine pit.



# Rio Tinto's devastating legacy



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# Recommendations

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## To Rio Tinto and Bougainville Copper Limited

### Listen to communities

Return to Bougainville to hear first-hand from the mine-affected communities about the ongoing problems caused by the mine and the solutions that need the companies' support. Acknowledge responsibility and engage in formal reconciliation with the communities in accordance with Bougainvillean custom.

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### Help develop solutions

Commit to funding an independent environmental and human rights impact assessment of the mine site by a team of qualified local and international experts to map impacts – in particular those posing severe risks to public health and safety – and develop recommendations to address these. Both the assessment and recommendations should be developed in close collaboration with the mine-affected communities and the results made freely and publicly available in a form accessible to all.

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### Contribute to remedy

Contribute to the establishment of a substantial, independently-managed fund to help address the harms caused by the mine and assist long-term rehabilitation efforts in accordance with the recommendations of the assessment. The size of the financial contribution should reflect the central role of Rio Tinto and BCL in creating the destructive impacts caused by the mine and enable effective reparation and remedy.

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## To the Bougainville Government and Government of Papua New Guinea

### Contribute to remedy

Work with landowners, mine-affected communities and Rio Tinto and BCL to develop and help implement the independent environmental and human rights impact assessment and contribute to the establishment of an independently-managed fund as outlined above.

### Assist communities

Develop interim strategies to help mitigate the most immediate and serious risks to communities, such as improvements to water infrastructure and emergency access to safe drinking water in periods of low rainfall, relocation assistance for villages at risk of flooding and levee collapse and improved access to health services in the Panguna area.

### Prevent future harm

Take preventive measures to ensure that any future mining projects are planned and carried out in a way that does not violate the rights of local communities. These measures should include provisions in any future mining legislation and agreements that ensure respect for the free, prior and informed consent of landowners and impacted communities and enshrine robust environmental and health protections at all stages of the mining process.

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## To the Australian Government

### Contribute to remedy

Provide financial support to Bougainville to help address and mitigate the impacts of the mine, including through contributing to the establishment of the independently managed fund outlined above.

### Prevent future harm

Improve oversight, monitoring and access to justice in Australia for communities harmed by the operations or activities of Australian companies overseas, and introduce mandatory human rights and environmental due diligence obligations for large Australian companies and those operating in high risk locations and sectors.

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# Methodology

This report is based on information gathered and interviews undertaken during a number of site visits by Human Rights Law Centre staff and local researchers to Panguna mine-affected communities between September 2019 and February 2020, as well as an extensive desktop review of primary and secondary sources.

Researchers undertook 60 in-depth interviews with people who live and/or work in areas impacted by the mine, including landowners, residents, health care providers and government officials. This included interviews with 29 women and 31 men.

Due to the condition of the roads, researchers were unable to access coastal communities further downstream though it is logical to presume that these areas are similarly affected.

A concerted effort was made to speak to a diverse range of community members in terms of gender, age, location, occupation and role within the community. Group meetings were held in a number of the villages to obtain additional views and input. Interviews were conducted in the language interviewees were most comfortable in (primarily Nasioi (Tok Ples) or Pidgin (Tok Pisin)) and translated into English. All interviewees agreed for the information provided to be used for this report, although some preferred to remain anonymous.

Site visits and interviews were undertaken in four key areas:

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## Special Mine Lease Area

The mountainous area immediately around the open mine pit and where the heavy rock waste from the mine was dumped. Interviews were undertaken with residents of the major villages around the pit, Dapera, Guava, Moroni and Mosinau (each of which have several hundred residents), the smaller villages of Kupe, Kokore and Siku'eta as well as with people living within the pit itself, where approximately 30 to 50 people live in shanty houses to undertake alluvial mining.

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## Upper Tailings

The mountainous area immediately below the pit where run-off from the mine pit flows into the Kawerong river. Interviews were undertaken in Barako, Dutumami, Onove, Sipuru and Enamira villages, each of which have several hundred residents. Enamira comprises a collection of smaller hamlets of between 20 to 50 people each including Kavarongnau, Makosi, Tonanau and Poarunau'. Residents often refer to these hamlets as their 'villages' so this term has been used interchangeably through the report.

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## Middle Tailings

The river valley downstream of the mine where most of the mine tailings waste was dumped and where the Kawerong merges with the Jaba river. Interviews were undertaken with residents of the hamlets of Kenapariko, Konuku, Osiresi, Rerevai, Tamera', Pangkiranaru, Jaba Pump Station, Mepuru, Toku and Mumurinung, which collectively make up Darenai village. These hamlets each have between 25 and 60 residents.

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## Lower Tailings

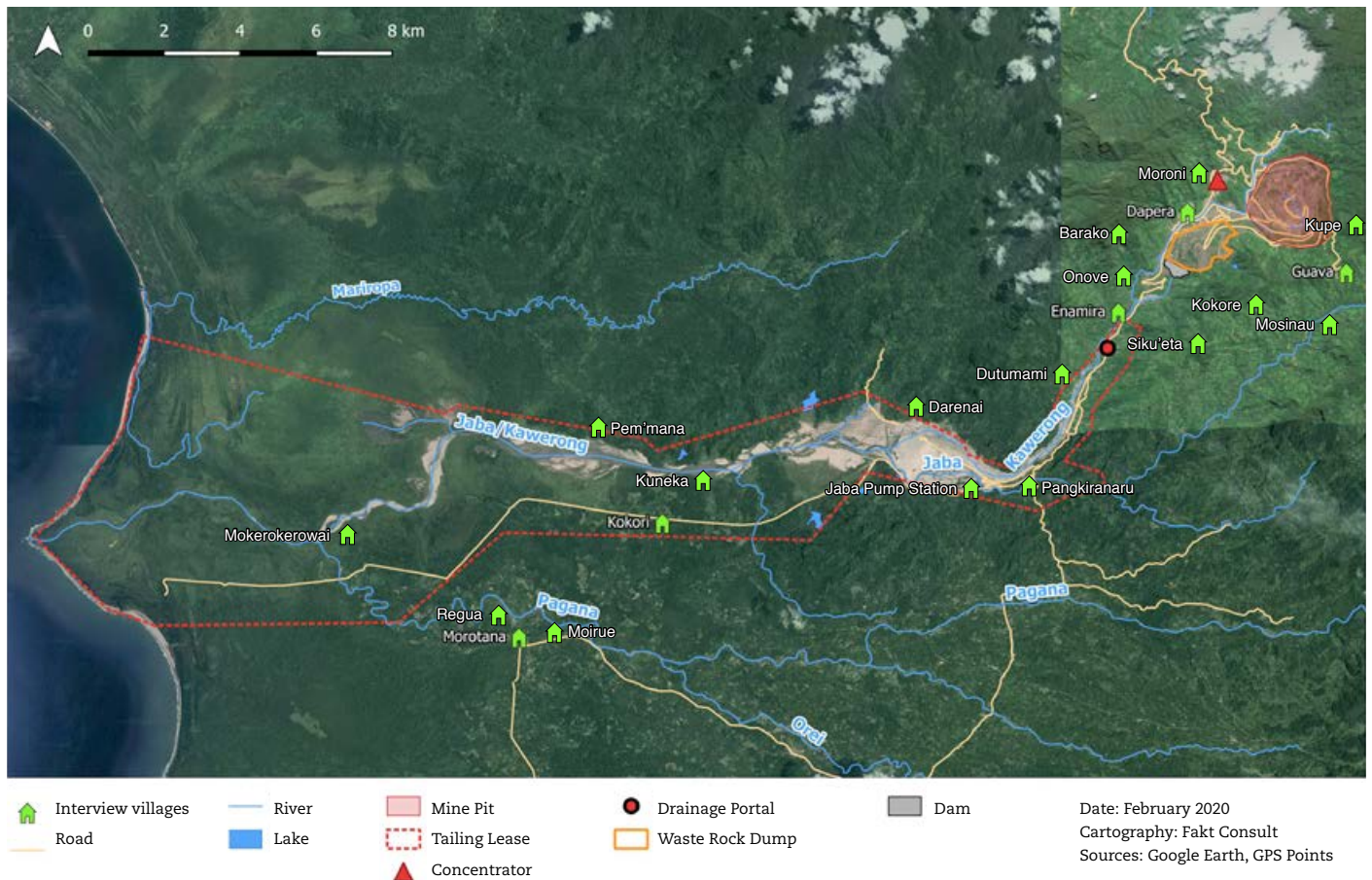
The lowland area between the Middle Tailings and the Empress Augusta Bay, where much of the tailings waste has ended up. Interviews were undertaken with residents of the hamlets of Kokore, Mootori, Maile, Menago and Kobalu 1, which all form part of Kuneka village. These hamlets vary in size with between 30 and 500 residents. Interviews were also taken in Pem'mana village on the other side of the Kawerong river as well as at the Moratona Health Centre and surrounding villages of Mokerokerowai, Regua, No'komo and Moirue. These villages are closer to the Pagara river, which is now also being impacted by overflow and diversion of the Kawerong river due to build-up of the tailings waste.

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This report also draws on the findings of the Panguna Listening Project commissioned by the Catholic Diocese of Bougainville, which undertook story-telling sessions with over 300 residents from mine affected communities between 2017 and 2019. The final report of that project, *We are crying for our land: stories from the Panguna Listening Project*, was published in October 2019.

The Human Rights Law Centre shared preliminary findings and drafts of the report with both Rio Tinto and BCL and invited comment from both companies. HRLC staff met with Rio Tinto to discuss the report. Both companies were also invited to provide a formal written response to the report.

### Interview sites



# Background

“When you take away our land... you cut away the very heart of our existence...”

## Development of the mine

The Panguna mine was developed in the 1960s when Papua New Guinea was still governed by Australia as an External Territory.

In 1964, surveyors from Rio Tinto's predecessor, Conzinc Riotinto of Australia (CRA), discovered a massive gold and copper deposit in the remote mountains of central Bougainville and the company moved quickly to incorporate a new subsidiary, Bougainville Copper Limited (BCL) to exploit the find.

The Australian Colonial Administration, under pressure from the international community to 'prepare' Papua New Guinea economically for independence, viewed the mine as a crucial opportunity to rapidly expand the territory's cash economy and enthusiastically backed the project, ignoring widespread protests from the Nasioi landowners of the area, who had not been consulted and, for the most part, strongly opposed the development.<sup>4</sup>

Opposition to the mine on Bougainville was driven by both lack of consultation and consent and justifiable fears by Bougainvilleans that the wealth of their land would be taken out of Bougainville. For Bougainvilleans, the notion that minerals beneath the surface of the land belonged not to the landowning community but the Crown conflicted fundamentally with their traditional land ownership laws.<sup>5</sup> Moreover, they understood from the outset that the financial rewards promised by the project would not make up for the loss of their land.

As three Bougainvillean students wrote to the Australian Administration at the time:

*Land is our life. Land is our physical life – food and sustenance. Land is our social life; it is marriage; it is status; it is security; it is politics; in fact, it is our only world. When you (the Administration) take away our land, you cut away the very heart of our existence.... For us to be completely landless is a nightmare which no dollar in the pocket or dollar in the bank will allay: we are a threatened people.<sup>6</sup>*

Despite this strong local opposition, the company and the Administration pressed ahead with the project. The Bougainville Copper Agreement signed between BCL and the Administration in 1967<sup>7</sup> provided that less than 1% of royalties from the mine would go to landowners.<sup>8</sup> They would receive compensation for dislocation and damage to their crops or gardens, but not for permanent loss or damage to their land, notwithstanding the fact that much of it would be completely destroyed.<sup>9</sup>

The mine began commercial production in 1972, and became one of the world's biggest open cut copper and gold mines. According to CRA figures, over the 17 years of the mine's operation, it generated a total of K1.7 billion (approximately US\$2 billion) in revenue.<sup>10</sup> Of this, 32.8% went to private shareholders (most notably CRA), 61.5% to the PNG national government (tax and dividends), 4.3% to the North Solomons provincial government (royalties and tax), and just 1.4% to local landowners (royalties and compensation).

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## RESISTING THE MINE: PETER'S STORY



Peter Kobe, originally from Guava village, was just a child when geologists from the company came to start exploration work for the mine:

*It was the first time I had seen a white man. They got us kids to act as 'tour guides' showing their geologists around the old tunnels built by the Germans. We didn't realise they were collecting gold nuggets. It was only later, when they started drilling, that people realised they were going to take our land. My sister Bakemoui and some of the other women lay down where the company was planning to put in markers. She told them if they were going to put markers on her land they could put them through her skin. The company reported her to the colonial administration and they sent in the police to put the women in jail in Kieta.*

## Environmental and social impacts

At the time the Panguna mine was developed, there was no legal requirement for BCL to undertake an Environmental Impact Assessment for the project and none was undertaken by the company.<sup>11</sup>

The environmental protections contained in the Bougainville Copper Agreement were likewise minimal. The 1967 Agreement merely provided that waste from the mine had to be disposed of in a pre-approved area and in a manner *'which is reasonably safe and results in as little damage (having regard always for the need for the Company to carry out its said operations efficiently and economically) as may reasonably be'*.<sup>12</sup>

An additional Agreement signed in 1971 obliged the Company to *'take such action as is necessary to confine flooding, damage or the disposal of tailings'* within the lease area, and to *'use all practicable measures'* to ensure that copper levels within the tailings remained sufficiently low to prevent serious damage to plant or animal life.<sup>13</sup>

Even these minimal requirements appear to have been largely ignored as the mine was developed.

The development of the pit alone required blasting away half a mountainside. Around 220 hectares of tropical rainforest was cleared by poisoning the large trees and spraying the undergrowth with Agent Orange from helicopters. Anything that remained was burned and before the mine even commenced operations, around 18 million cubic metres of this waste had been washed into the Kawerong river.<sup>14</sup>

The most widespread environmental destruction, however, came from the wholesale dumping of vast quantities of waste rock and tailings from the mine directly into the Jaba and Kawerong river system.

Consultants advising BCL on waste disposal options had initially recommended against discharging tailings into the rivers, predicting the massive environmental destruction which eventuated and instead recommending that the waste be piped to the lowlands and stored in a conventional tailings dam.<sup>15</sup> A later version of their report revised down these predicted impacts, however, and presented riverine disposal as the cheapest option.<sup>16</sup>

Throughout the mine's operation, around 150,000 tonnes a day of tailings waste was ultimately disposed of into the rivers – over 1 billion tonnes in total over the life of the mine.<sup>17</sup> The impacts were, in the words of BCL's former managing director, Paul Quodling, *'monumental'*.<sup>18</sup>

The vast quantities of sediment choked the Jaba river system, altering the natural flow of the river and causing an *'overbank'* of 1700 hectares of tailings on either side of the river, killing both agricultural land and large areas of rainforest traditionally used by local communities for hunting and building materials.<sup>19</sup>

Numerous side creeks were blocked up with tailings sludge, destroying water sources used for drinking and washing and creating muddy swampland that was a fertile breeding ground for mosquitoes.<sup>20</sup> Land in flatter areas was flooded and subject to elevated water tables, resulting in further loss of land, bush and bush resources.<sup>21</sup>

Chemical pollution of the rivers with heavy metals such as copper, zinc, cadmium and mercury wiped out the fish populations of not only the Jaba and Kawerong, but also their freshwater tributaries because fish could no longer migrate to the ocean to spawn.<sup>22</sup> Those tailings that were washed downstream ultimately made their way into the Empress Augusta Bay, creating a massive 970-hectare tailings delta extending into the middle of the bay.<sup>23</sup>

The social and cultural impacts which followed were no less devastating. The destruction of their environment denied local people access to cultural, economic and spiritual practices essential to their livelihoods and communities.<sup>24</sup> Traditional sources of water, food and building supplies were destroyed, along with a large number of sacred sites. Whole villages had to be entirely relocated to accommodate the development of the mine or flooding created by the tailings waste, and many others lost large parts of their arable land.<sup>25</sup>

Environmental degradation was accompanied by social disintegration. The development of the mine prompted rapid urbanisation and an unprecedented influx of foreign workers. At its peak, the mine employed some 4,000 workers, the majority of whom were non-Bougainvilleans.<sup>26</sup> Outside workers from elsewhere in PNG frequently brought their *wantoks* (relatives) with them and squatted on land without asking for permission, causing further anger among local landowning clans.<sup>27</sup>

“The impact of the mine has been extreme by any measure...”

The mine also created social inequalities within local Panguna communities, and tensions between those seen to have benefited from the mine and those who had not.<sup>28</sup>

In 1988, faced with rising anger on Bougainville about these impacts, the Papua New Guinea government commissioned an independent environmental and social impact assessment of the mine. While the final 300 page report by the New Zealand Applied Geology Associates (the AGA Report) was dismissed by many landowners at the time as a whitewash,<sup>29</sup> it nonetheless remains the most comprehensive assessment undertaken to date of the scale of destruction caused by the mining operation.

The AGA report found that:

- Approximately 3,000 hectares of the Jaba River valley had been occupied by tailings or flooding caused by deposition of the tailings;
- The forests that once occupied the Jaba River valley were unlikely to ever return;
- The water and fish resources of the Kawerong and Jaba Rivers had been lost probably for at least several generations,

due to the unstable flow of water, high sediment loads and chemical pollution;

- Copper and other heavy metals were likely to continue to leach from the tailings for many years after the mine’s closure;
- The combined loss of land and water resources had destroyed local communities’ ability to sustain themselves from the land as remaining land not already impacted by tailings waste was generally too steep and infertile to support gardens or crops.

The report concluded that:

*The impact of the mine has been extreme by any measure and most of the adverse impacts are long lasting; in some cases permanent.... Overall, the nature and scale of the effects of the tailings disposal are well beyond what the people of the Kawerong and Jaba valleys could have imagined prior to the start of operations and are certainly beyond what BCL predicted and the Administration accepted at the commencement of mining.... While the National Government particularly, and the Company, have enjoyed the benefits, the costs have not been borne by them but by the Nasioi people.<sup>30</sup>*

Crossing the mine tailings wasteland.



Former Bougainville Revolutionary Army militants still guard a check-point into the mine.



Image: Soteras/MISEFOR

## The conflict

The profound socio-cultural disruption and environmental devastation caused by the mine led, in 1988, to a campaign of protest and civil disobedience by landowners – including sit-ins to block access to the mine – and calls for BCL to implement proper environmental controls and pay K10 billion in compensation to landowners.<sup>31</sup>

When these demands were not met, the New Panguna Landowners Association (PLA), led by young leaders like Perpetua Serero and Francis Ona, began a campaign of industrial sabotage, using explosives to attack the power pylons to the mine.<sup>32</sup> Their intention was not to close the mine permanently, but rather to force BCL and the PNG Government to renegotiate the basis for mining at Panguna.<sup>33</sup>

In response, the PNG Government sent in police mobile squads and troops to crush the uprising and secure the mine. They initiated an extensive, bloody campaign of ‘destructions’, during which hundreds of villages around the mine area were looted and burned and their inhabitants forcibly moved into detention camps known as ‘care centres’ run by the military, where torture, rape and extrajudicial killings were recorded.<sup>34</sup>

The conflict rapidly evolved into a complex and bloody civil war. In 1990, the PNG Government, with support from Australia,

instituted a naval blockade of Bougainville, denying Bougainvilleans access to essential goods, including food and medical supplies. The blockade and decade of conflict which followed ultimately claimed the lives of between 10,000 and 15,000 people.<sup>35</sup>

The conflict finally ended in 1998, and peace was formalised in 2001 with the signing of the Bougainville Peace Agreement.

Evidence has subsequently emerged of the key role played by CRA/BCL in instigating the conflict and in providing crucial logistical support for the military operations there. In legal proceedings about the conflict in the US courts, PNG’s former Prime Minister, Sir Michael Somare, testified that when the uprising on Bougainville first began in 1988, the company had threatened to pull all of its financial investments out of PNG unless the government took immediate military action to recapture the mine.<sup>36</sup> The former head of the PNG Armed Forces, Major General Singirok, likewise testified that the company had ordered the PNG military to ‘re-open the mine by any means necessary’.<sup>37</sup>

Internal BCL documents that have subsequently been published show that CRA, through BCL, provided the PNG military with extensive logistical support during the conflict and that BCL executives held regular strategy meetings with the military and senior politicians.<sup>38</sup>

## Rio Tinto's decision to divest

Throughout the conflict and the 18 years that followed, Rio Tinto retained its majority stake in the mine and kept a skeleton staff team in place in Port Moresby.<sup>39</sup>

Between 2013 and 2014, the company held discussions with the ABG and PNG Government and local landowners about potentially re-opening the mine.<sup>40</sup> The ABG and landowners made it clear that addressing the environmental legacy of the mine was an essential precondition to any consideration of its re-opening.<sup>41</sup>

In the context of these discussions, Rio Tinto, via its subsidiary BCL, publicly committed to undertaking remediation and rehabilitation studies and implementing environmental programs at Panguna. The company noted that:

*The abrupt shut down of the Panguna mine in 1989 and the subsequent period of conflict on Bougainville meant there was no opportunity to implement plans for its formal closure. BCL is committed to undertaking appropriate remediation and rehabilitation studies and implementing environmental programs regardless of the future operation of the Panguna mine. (our emphasis).*<sup>42</sup>

A joint committee comprising company, landowner and government representatives developed terms of reference for an independent environmental assessment, advised by the United Nations Environment Program.<sup>43</sup> A number of internationally accredited firms were shortlisted to undertake the assessment and develop recommendations for clean-up,<sup>44</sup> and a separate social audit was initiated to assess social and cultural impacts.<sup>45</sup>

This represented a significant and long overdue step by the company towards addressing the many impacts of the Panguna mine on the environment and on local people. But it was short-lived.

In the midst of these discussions, in August 2014, Rio Tinto abruptly announced it would be undertaking a review of its investment in the mine,<sup>46</sup> causing the environmental and social studies to be put on hold. Eighteen months later, in June 2016, the company divested of its entire 53.8% shareholding in BCL, passing its shares to the ABG and PNG Governments, and walked away from all responsibility to address environmental clean-up or redress.<sup>47</sup>

Rio Tinto's decision to review its investment in the mine appears to have been prompted at least in part by new mining legislation passed by the ABG, which stripped BCL of seven of its exploration and mining leases, leaving it with just one exploration lease over the mine site itself.<sup>48</sup>

The official reason the company ultimately gave to the ABG for its withdrawal was that 'market conditions and competing demands within the company for its limited capital resources' meant that Rio Tinto was not in a position to participate in future mining activity there.<sup>49</sup> In relation to addressing the mine's legacy of environmental devastation, Rio Tinto stated that it believed that 'BCL was fully compliant with all regulatory requirements and applicable standards at the time' and therefore had no further responsibility for addressing these.<sup>50</sup>

Rio Tinto's abandonment of its responsibilities was resoundingly condemned on Bougainville.<sup>51</sup> ABG President Dr John Momis called the decision 'unprincipled, shameful and evil':

*When Rio walks away like this, the resource owners are left high and dry through no fault of their own. They are now going to be left with this hugely destroyed environment. ...It is a major disaster which the people of Bougainville do not deserve.*<sup>52</sup>

Without Rio Tinto's financial backing, the environmental and social assessments had to be abandoned and the impacts of the mine have to this day remained unaddressed. Neither the ABG nor PNG Government alone have the resources to clean up the site, which it has been estimated could cost billions.<sup>53</sup>

Rio Tinto's divestment of its stake in Panguna appears to have been part of a deliberate corporate strategy by Rio Tinto to divest itself of high risk, high liability projects. Shortly after its divestment from Panguna, Rio Tinto also passed on or sold its shares in a number of other controversial projects, including the Pebble Mine in Alaska (2016), Grasberg mine in Papua, Indonesia (2018) and Rossing Uranium mine in Namibia (2019). Rio Tinto's Strategic Report for 2018 states that 'many of these disposals have changed our exposure to environmental, social and governance risks, differentiating our portfolio from those of our industry peers'.<sup>54</sup>



“It is a major disaster which the people of Bougainville do not deserve.”

At the time of writing this report (March 2020), the future of Panguna remains unclear. BCL – now little more than a shell company since Rio Tinto’s divestment – no longer holds an actionable lease in relation to the Panguna mine site. In 2014, the ABG passed legislation converting its lease into a two-year exploration lease, which it subsequently refused to extend, a decision which BCL has appealed to the PNG National Court.<sup>55</sup>

Other Australian companies, including RTG Mining and Caballus Mining, are also vying for the rights to mine the substantial remaining minerals at Panguna.<sup>56</sup> RTG Mining, a small Western Australian gold miner, has signed a joint venture agreement with the Special Mine Lease Osikaiyang Land Owners Association (SMLOLA), but has been roundly condemned as ‘corrupt and disruptive’ by the ABG.<sup>57</sup>

Callabus Mining, run by Western Australian businessman Jeff McGlenn, has meanwhile established a joint venture company with the ABG, but has been rejected by landowner representatives from SMLOLA and other landowner associations as lacking any relevant experience in mine development.<sup>58</sup>

In the meantime, people in the mine-affected communities continue to live with Panguna’s devastating legacy.

Rusting mine buildings.



# Polluted rivers

*“From the dawn of the destruction caused by the mine, chemicals were used in this river.”*

The Kawerong and Jaba Rivers continue to be heavily contaminated by ongoing pollution from the mine pit and the vast quantities of waste tailings left by the mine. At the base of the mine pit, surrounded by steep terraced rock partially reclaimed by jungle, are two large lakes which are a luminous, unnatural greenish-blue.

The water which flows out of the mine pit drainage tunnel and into the Kawerong is the same colour and leaves a blue residue on the rocks in and surrounding the river. A 50-year old woman from Tonanau village showing Human Rights Law Centre researchers around the area noted that *‘from the dawn of the destruction caused by the mine, chemicals were used in this river. The...use of chemicals is evident in all the rocks that have turned blue. God never created a blue rock!’*<sup>59</sup>

The colour of the water is principally the result of contamination from copper, combined with other heavy metals. The AGA Report noted in 1989 that significant amounts of copper as well as smaller quantities of other heavy metals were leaching from the mine and waste rock dumps as a result of acid rock drainage and flowing into the Kawerong River.<sup>60</sup> Acid rock drainage is the outflow of acidic water from a mine site due to the oxidation of metal sulfides in the exposed rock, and often contains high levels of heavy metals such as copper.

Copper pollution from the mine.



Image: Taloi Havini

Polluted water from the mine pit entering the Kawerong river.



Copper is highly toxic to fish, plants and other aquatic life and can be dangerous to human health in higher concentrations.<sup>61</sup> Current copper levels within the Kawerong river are unknown, but studies undertaken during the mine's operation noted that the release of both copper and acid into the rivers was likely to continue for many years and potentially worsen as a result of ongoing acid rock drainage.<sup>62</sup> An environmental study on the mine undertaken in 1973, for example, noted that:

*After the mine has ceased operations, the open pit and waste rock dump will remain as a potential serious source of pollution as a result of erosion and the leaching of soluble oxidation products. This may be particularly heavy in view of the high rainfall in the area. Tailings on the Jaba flood plain may also continue to release metal in solution. A dead mine may remain a very live source of pollution.*<sup>63</sup>

Communities living immediately downstream of the mine report that they avoid contact with the Kawerong river wherever possible, many citing the colour of the water and absence of any fish or other aquatic life in the river downstream of the mine pit as clear signs that the water is unsafe.<sup>64</sup> As Leonard Fong Roka, a 41-year old teacher and journalist from Matosi village, explained, 'Kawerong is really unsafe for any form of activity. There is nil aquatic life out there, so if other creatures can't tolerate it, why should we risk ourselves?'.<sup>65</sup>

Residents report that contact with the water causes an itchy, burning sensation on the skin and the development of other skin and health problems, described further below. Most do not even dare to use the river for washing clothes, as they say their clothing becomes stiff and the material deteriorates after being immersed in the river. Balbina Donoman, 49, from Dutumami village noted that 'the texture of the fabric hardens like wood and then the cloth will turn white and quickly wears down until it breaks apart'.<sup>66</sup> Residents also noted that cans or other metal objects thrown into the river rapidly rust and disintegrate.

Blue residue from mine pollution on rocks in the Kawerong river.



Many residents living further downstream in the Middle Tailings and Lower Tailings, where there are few alternative water sources, reported that although they avoid drinking water from the rivers, they are still obliged to regularly use the rivers for bathing and washing for lack of any close alternative water supply, despite knowing that the rivers are highly contaminated.

Andrew Kukumo, 50, a truck driver who lives next to Jaba Pump Station, explained:

*We use water from Jaba river for washing our clothes and ourselves. We know the river is not good. We get itching on our skin from washing in Jaba most of the time, [but] to get to the nearest spring water, we have to walk about 500 metres upstream and carry it back so we mainly just use that for drinking water.<sup>67</sup>*

In the absence of safe bridges across the rivers, many people described being obliged to cross the rivers on a daily basis to tend food gardens and crops in other areas, collect firewood, visit relatives and access basic services like health services and education.

Large numbers of people also use the rivers for gold panning. The majority of residents interviewed said they pan for gold at least occasionally to supplement their income. During visits to communities along the Kawerong, Human Rights Law Centre researchers saw large groups of people, including children, immersed in water up to their waist in the rivers undertaking panning. Most people interviewed reported that despite knowing the dangers, many families had no other option for making a living, given the destruction of so much arable land by the mine tailings and lack of alternative sources of income.

Caroline Koruanu, 27, from Pangkarinaru village, commented:

*It's a need-driven thing. In most cases there is a land-shortage issue. People have periods of acute need when the financial needs of their families are much higher than what their crops can produce.<sup>68</sup>*

“If I hadn’t done panning, my kids couldn’t have gone to school, and then what sort of future would they have? I did it so they don’t have to.”

Bernard Kurugas, 60, from Kuneka village, likewise commented:

*The reason we are now washing gold is that the effects of the tailings is killing all the sago palms which my family relies on to build our houses, so I now have to find enough money to purchase iron roofing.<sup>69</sup>*

Kevin Paul, 56, from Konuku village, commented:

*Even with panning, we only just make enough to buy food and get by from one week to the next. If I hadn’t done panning, my kids couldn’t have gone to school, and then what sort of future would they have? I did it so they don’t have to.<sup>70</sup>*

Contamination into the rivers from the Panguna mine itself now appears to also be being compounded by stirred-up sediment from small-scale gold panning occurring both downstream and upstream of the mine. A number of residents interviewed noted the recent appearance of new brown sedimentation into the rivers which they described as resulting from this activity.

Communities panning for gold in the Kawerong river.



# Lack of access to clean water

“There’s no such thing as good clean water around here.”

The vast majority of people interviewed reported difficulties accessing clean water for drinking and sanitation due to the ongoing pollution from the mine. In the Middle and Lower Tailings areas in particular, where there are few alternative water sources, lack of access to clean drinking water was a major concern for communities.

In the Middle Tailings area, people generally use a combination of rainwater tanks or water piped a substantial distance from mountain springs, but reported that many of these sources would dry up in the dry season, meaning they either had to travel long distances to get water, buy it or rely on boiling water from potentially contaminated sources. Peter Kobe, Chief of Darenai village, noted:

*Where my family lives, there are forty of us sharing a single hose pipeline from a small creek much higher up the mountain. In rainy season, the pipe often gets damaged and in dry season the creek runs dry. When that happens, we have to either buy water from the shop or drink from coconuts. Almost no-one has water tanks around here.<sup>71</sup>*

Communities also reported that in the dry season, their water sources get contaminated from dust from the vast tailings mounds nearby. Livina Pariu, 65, from Osiresi village observed:

*The sandstorms fill up our water sources with dust and sand...from the tailings wasteland. With wind, the sand will be flying around as a cloud. From the bush you can see it as a cloud. But we still have to drink it. There’s nothing apart from that for us to drink.<sup>72</sup>*

Caroline Koruanu, 27, from Pangkiranaru village, likewise commented:

*We usually pipe water from the mountains very far from the village, but there is still this problem especially during the windy season, there are signs of dust being blown into the water source. Usually we make small dams right at the water course so it’s not enclosed at the source...so we think it gets contamination. We use the Jaba river for washing ourselves and our clothes. When the spring water dries up, especially in the dry season, we use the Jaba river for doing our dishes as well.<sup>73</sup>*

Washing dishes in Jaba river.





“When it rains, we collect rainwater. Other times, we collect water from little holes in the ground. We dig and search.”

Residents in lowland areas further downstream are in an even worse position, as they have no nearby mountain springs and are heavily reliant on nearby creeks and groundwater for fresh water. Those who can afford them have rainwater tanks, but this is very uncommon. Most rely on tiny groundwater pits dug next to creeks.

Lazarus Kaiura, the Chief of Pem’mana, a village of over 100 people in one of the worst affected areas in the Lower Tailings, explained:

*There isn’t any clean drinking water and it’s a major problem for us. When it rains, we collect rainwater. Other times, we collect drinking water from little holes in the ground. We dig and search. Sometimes the water comes out by itself – usually near the contaminated river. But the taste is terrible.<sup>74</sup>*

Dorothy Mekea, the nursing sister in charge of the Morotona Health Centre, which services many of the communities in the Lower Tailings area likewise noted:

*There is no such thing as good clean water around here. Because when people dig pits to access water and when the rain falls it washes all the dirty water into the pit... there are no safety measures of separating the run-off waters not to enter the water pit... And when they dig next to the swampy areas there are water shelves inside. So when the run-off water during the rainy seasons, when they come down they flow on and on then it will find its way into those water pits. The majority of the people here don’t have Tuffa tanks.<sup>75</sup>*

Residents of Pem’mana, Kuneka and Menago villages reported that the recent flooding of large areas of land in the Lower Tailings with tailings sludge has polluted many nearby creeks previously used for both fresh water sources and fishing. Human Rights Law Centre researchers were shown several local creeks where the water was no longer flowing and plants down both banks of the creek were covered with mud residue from a recent flood.

As a result, communities are often having to walk substantial distances to uncontaminated sources or boil contaminated water. Residents of the small hamlets of Menago and nearby Mobigone, for example, now have to walk an hour each way to carry water back to their village from an uncontaminated groundwater spring. In Mokerokerowai village, they have a single water tank shared between 80 people. When it runs dry, residents have to boil water from the Pagara river, which is now contaminated with overflow from the Kawerong.

Communities also believe that the flooding has penetrated and contaminated the groundwater table. Bernadette Komeleko, 55, from Moirue village in the Lower Tailings, stated:

*Since the Kawerong became backed up with tailings sand and the surrounding areas were flooded, the river contaminated the water table we think, because since that happened, the water that comes out of the ground tastes sour and it looks milky. People can no longer grow things like watermelon or cucumber. Also our toilets are affected, because when the people dig pit toilets, they only get a metre down and they hit water.<sup>76</sup>*

Residents in the Special Mine Lease and Upper Tailings areas generally have better access to clean drinking water sources than those further downstream, as they channel water down pipes from nearby mountain springs above the mine site. Even in these areas, however, easy access to this water is still variable between villages and households. Residents commented that during the rainy season, the mountain springs often become muddy and silted up with loose soil and small landslides frequently destroy parts of the pipelines.

Herman Kiaku, a 37-year old small business owner from Enamira village, commented:

*For my family we are a bit lucky that we have gutters on our house and can collect rainwater. We use these during the rainy season when the mountain creeks turn brown. We use them to give water to our chickens too. Last rainy season my gutters were serving two households. We also put all our pots out the front of my house to collect rainwater...The water sources are not well and drinking water is a real need.<sup>77</sup>*

While most of those interviewed tried to avoid drinking from obviously polluted water sources, several people interviewed mentioned that it was common for people to develop bouts of diarrhoea or vomiting from drinking bad water, particularly in the dry season when water is scarce, or after flooding. Almost all those interviewed expressed significant anxiety about not knowing whether their water was safe to drink and the unknown long-term health consequences of drinking it.

Concerns around water insecurity and pollution and the unknown health consequences of the contamination caused by the mine were also key themes across different communities identified by the Panguna Listening Project commissioned by the Catholic Diocese of Bougainville. Their report, *We are Crying for our Land*, noted that ‘concerns about polluted waterways and changed river conditions were key similarities across communities...across all conversations, communities and listeners described a lack of accurate and current information regarding environmental pollution perceived to be causing many concerns and worries’.<sup>78</sup>

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## CARRYING WATER IN OUR BILUMS: ANOLDA'S STORY



Anolda Albert is a 35-year old cocoa farmer from the tiny hamlet of Menago in the Lower Tailings. In 2017, flooding from the Kawerong contaminated the community's only nearby groundwater spring:

*My community's biggest need right now is drinking water. We have only one small water storage tank between the 30 people who live in our village. Usually it only lasts a day after rain. Most days now we have to walk for an hour in each direction through the forest to get to the nearest well. We take containers and carry them back in our bilums.<sup>79</sup>*



# Flooding and land destruction

*“Before the mine, this was a gently flooding river. So deep and gentle and that was her nature. After she was killed and destroyed she became what she is now.”*

The chemical contamination of the rivers is compounded by ongoing erosion from the vast mounds of tailings waste dumped by the company in the Jaba river valley. With each heavy rainfall, huge volumes of tailings sand are washed into the rivers, flooding large tracts of land downstream with polluted mud.

The impacts are felt in particular by communities living in the lowland areas in the Lower Tailings. There, large areas of land previously unaffected (or at least far less affected) by the mine pollution are now being flooded by tailings sludge, which is spreading out and destroying new areas of forest, creeks and wetland areas, contaminating water supplies and periodically flooding villages.

Bernardine Kiraa, Chairperson of the Lower Tailings Landowners' Association, noted that:

*The biggest impact currently experienced in the lower tailings area is the new damage that is being caused by flooding and tailings overflow. There is no control of the tailings waste so it moves downstream and causes the river to go everywhere. The villages along the tailings at Kataure, Meua, Menago, Kobauro were all underwater last year due to flooding. The flooding was really severe for about three weeks but then it went down again. People came back when the land was dry again. Then, in January, Kuneka and Jaba village were both impacted by flooding. Jaba had all their gardens flooded. The elders of the community went to the ABG for food assistance but the government said there was no money to assist them.<sup>80</sup>*

Theonila Roka surveys a forest near Kuneka destroyed by tailings mud.



Residents reported that in 2017, sediment build-up in the Kawerong caused the river to flood and change course, impacting areas of land far from the original course of the river.

Residents from Kobalu 1 hamlet in Kuneka village showed Human Rights Law Centre researchers a large area of nearby forest and wetland known as Konaviru which was destroyed by tailings sludge in January 2019. They had previously used the area as a key fishing and hunting ground as well as for farming tapioca, yams, bananas and cocoa and for collecting sago palm leaves to construct and repair their houses. The entire area now resembles a wasteland, dotted with dying trees.

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## Before

Konawiru wetlands, Lower Tailings, 2015.



Image: Nathan Matbob

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## After

Konawiru wetlands, Lower Tailings, 2019.



*“The whole community here is an anxious community with millions of questions about our safety, our land and how we are going to live because there is no-one to listen to our worries.”*

Residents of Kuneka reported that more and more of the land in their area is being destroyed in this way. They fear that it won't be long before their village and others nearby are completely flooded by the mud and they will be left landless. The flooding has already had a significant impact on peoples' livelihoods, housing and ability to feed themselves and their families. Bernard Kurugas, a 60-year-old farmer from Kuneka, noted that *'the whole community here is an anxious community with millions of questions about our safety, our land and how we are going to live, because there is no-one to listen to our worries'*.<sup>82</sup>

Further downstream, other villages are also being seriously impacted by flooding. As Serah Biuai, 90, from Pem'mana village explained:

*The biggest flood that came recently reached the height of our village. It was monstrous. It destroyed things and carried away with it pots and cups and dishes...It filled up the whole area, pushing the polluted water into our water sources...Before the mine, this river was a gently flooding river. It never made noise. So deep and gentle, that was her nature. After she was killed and destroyed she became what she is now.*<sup>83</sup>

Anolda Albert, 35, from Menago, likewise commented:

*Since 2017 when the Kawerong suddenly changed course, we have been flooded every rainy season. When the river floods, the water is all over the place in the bushes right around our village. It causes our cocoa trees to rot and they don't bear well and it poisons the soil. The plants along the riverbank are all dying.*<sup>84</sup>

## WE WATCHED THE FISH DIE: GEORGE'S STORY



George Posiana is a 44-year old fisherman from Kuneka. In January 2019, he was fishing in the Konaviru wetlands when mud from the mine flooded the area:

*First we heard water coming with a rushing sound. Then, suddenly, we could see mud breaking through the forest. We were terrified. The mud flooded in in tonnes, burying all the fish. We watched the fish die. Over the next few months, the mud filled the entire lake and all the surrounding forest. That lake was the biggest earner for me and my community.*<sup>81</sup>

Bernardine Kiraa mourns the destruction of her clan's land near Motsumili, Lower Tailings.



“The spirits blame us for not protecting them.”

### Loss of sacred sites

The flooding is also destroying communities' sacred sites. Bernardine Kiraa, a landowner from the Mematangha Clan, described how the recent flooding is destroying Motsumili and Madakatsu, two of the final sacred places left to her Clan that were not destroyed during the days of the mine's operation. She said the destruction of this land has had a profound impact on the whole Clan:

*Motsumili is a sacred place. When our elders used to go hunting they would go to make sacrifices there. We believe that when we die our spirits go to that place. When we go there we wash our feet so we are welcomed by the spirits and they won't get sick. That is one of the last sacred places we have – the others are already under water. Most of our elderly aunties, they just go there and cry. They feel sorry for the land that is under water.<sup>85</sup>*

Recent flooding has also partially destroyed another sacred site belonging to the Barapang Clan from Pem'mana and Kempeba villages. Serah Biuai, from Pem'mana village, explained that:

*When our parents used to go to the sacred sites, they would take water from there and introduce the newly born member of the Clan to the spirit world. So that he'll be guided with wisdom. And now it's not happening everywhere. Because of all the destruction, now it's very hard to locate sites responsible for such important ceremonies. People are trying their best to do that in the places where remaining forests are found. It's not really effective because the spirit world is so disturbed and displaced. The spirits are now roaming around and depending on us to help them. But that is not working too well because*

*the human community is suffering at their end with physical hunger.<sup>86</sup>*

Many residents in other areas also spoke of the ongoing sense of collective grief experienced by their communities over the loss of sacred sites that were destroyed during the time of the mine's operation. They described how the destruction of these sacred places has not only deprived communities of important places to undertake customary ceremonies marking births, deaths and important rites of passage, but also a sense of connectedness to their ancestors, land and culture.

Many residents also described the destruction of these sites as an important factor contributing to ongoing health and social problems within their communities. Michael Unoke, from Konuku village, stated that:

*Our grandparents looked after our sites well and now there's nothing left. The foreign sediments have covered the sites and we don't know where the spirits are. They have moved into villages with the people and are causing disharmony in families. The spirits blame us for not protecting them. So even sickness has become common.<sup>87</sup>*

Therese Pokamari, from Enamira, likewise noted that ‘When the spirits' home was disturbed, now Ere is suffering from the aftermath. All the spirits here have become violent. The disorder will continue unless we find a resting home for them’.<sup>88</sup>

These comments echo the findings of the Panguna Listening Project, which found that all communities interviewed described the loss of sacred sites as contributing to the ‘fraying of the social fabric’ within Panguna communities and to a loss of identity and sense of connectedness to the past.<sup>89</sup>

“We want to move back where we belong.”

## Relocation and social tensions created by landlessness

Many residents also mentioned that serious inter-community tensions are being created by the problem of landlessness as a result of the mine waste and flooding. Some villages originally re-located by BCL at the time of the mine's operation have remained on land belonging to other clans and, as populations have grown, this has led to major tensions with landowners. Flooding has also destroyed important land boundaries, leading to tensions between clans.

Dorothy Mekea, from Morotona, explained that:

*When Panguna opened, there were whole communities who were relocated out of their place and who have been squatting ever since on the land of others. Their population has grown but the landowners have put a stop to selling them any more land. So where will they go? They cannot go up towards Panguna. Mining has covered the mountain and there is nowhere to return to. It's a very big problem here. The company is responsible for these people because it displaced them.... People are already getting aggressive because land is short and there's already a shortage of food.<sup>90</sup>*

Andrew Kukomo, who was displaced from his family's original land in the Lower Tailings area due to tailings flooding, likewise noted that:

*We want to move back where we belong. At the moment where we are is not our place, and we feel unwelcome because of the issues of land shortage. I just want to be relocated to a place I can call home.<sup>91</sup>*

Tensions created by forced relocations, both dating from the time of the mine's occupation and more recently, were also themes which emerged through many of the stories recorded by the Panguna Listening Project. One man interviewed from the Middle Tailings area noted that:

*When BCL came and destroyed the land the people had to be relocated to the mountains. Life is hard, it is difficult for the children to have an education. The land that our houses is built on is full of chemical contamination and the posts become rusted from the chemicals and the houses start to lean. Relocation was carried out without proper consultation and was done poorly and the standard of the buildings was very poor. The buildings that were built during relocation are not there today as they were poorly constructed.<sup>92</sup>*

Residents of Kobalu 1 fear they may soon need to relocate due to flooding.





Image: Soteras/MISEREOR



The mine tailings wasteland  
Jaba-Kawerong river valley.

# Treacherous river crossings

*“People carried her out but she later died. My own children still have to go that way to school.”*

The lack of safe roads and bridges along and across the Jaba and Kawerong rivers means that residents of many villages are compelled to cross the rivers daily in order to access basic services, look for firewood, tend to crops or gardens and go to school.

The highly polluted nature of the rivers, combined with the continuous movement of the tailings sands, which also creates areas of quicksand, makes such crossings treacherous, particularly during the rainy season. Residents described how the shifting sands mean that areas that are safe to cross one day become dangerous the next. Livina Pariu, 65, from Osiresi village, observed:

*The new nature of this river as a result of mining is that if you accidentally stand in the flooded sand you will start to sink in...and as you sink the weight of the river will come on top of you and bend you down...if this happens you can never save yourself because there's no way you can support yourself and no trees to help you hold on.<sup>93</sup>*

Jimmy Baito, 50, from Rerevai village, noted:

*Flooding is a very big issue. It creates a lot of problems for us, even the school students as well. When it rains we, the parents, don't sleep because we have to make sure we find ways for them to cross through. And if the children are on this side we tell them to wait here until the flood calms down. We don't have a bridge to cross over.<sup>94</sup>*

Collapsing tyre bridge, Middle Tailings.



Image: Soteras/MISEREOR



The river crossing to Menago village, Lower Tailings, during dry season.



*“The water filled up the mother’s backpack, pulling her under and the baby was washed from her arms.”*

### Deaths due to river crossings

A number of residents reported deaths of community members as a result of river crossings. A 47-year old woman from Rerevai village described how her husband’s 14-year-old sister drowned in 2002 after being swept away while carrying some roofing iron for her school across the river with a group of other children because there was no bridge between their village and the closest school:

*It was rainy season. She was carrying roofing iron with some other students and because the current of the water was strong and they had to cross and the roofing iron got stuck on a branch in the middle of the river and she got pulled under. People carried her out but she later died. My own children still have to go that way to school. It’s the only primary school in the area.<sup>95</sup>*

Jane Era, a local community health worker, described another recent incident in which a young man by the name of Domino Minintora drowned and a 1-year-old baby was swept from his mother’s arms when they attempted to cross the river at a place which had previously been safe to cross:

*The young man had crossed with confidence that the river bed was still stable, only to find that the river had washed away the sand floor, creating a deep channel, and he was submerged in the water and drowned. For the mother and baby it was the same. The water filled up the mother’s backpack, pulling her under and the baby was washed from her arms. Some local people did first aid by pressing on the baby’s tummy and he was able to vomit up the water and he survived.<sup>96</sup>*

Lazarus Kaiura, from Pem’mana village, estimates that at least 10 people from his area have died during attempted river crossings in recent years:

*We have to cross the river every day because our food gardens are on both sides of the river. But during the floods the river is so dangerous – if you go down you will be killed by the river. That’s why you see it’s very hard – during the rainy season sometimes we don’t get food.<sup>97</sup>*

Bridges constructed during the time of the mine’s operation are now either gone or unusable. Many communities find themselves entirely cut off for parts of the rainy season. In other places, communities are reliant on using rusted pipes left from the mining operation as their only route across the rivers. Several residents also reported deaths or injuries to people injuring themselves after falling from pipelines while attempting these crossings. Bonaventure Kenulei, from Maile village, reported that a man called Peter Ibai, from Mesinali village, died in 2010 after slipping from the pipeline and hitting his head on rocks below, and that another man called Sino had died more recently after falling from the rusting tyre bridge created by BCL.<sup>98</sup>

Human Rights Law Centre researchers witnessed children crossing rivers by walking over pipelines during a visit to the site in September 2019.

# Landslides and collapsing levees

*“We know for sure there is a disaster awaiting us when the river breaks through.”*

Risks created by levee instability and landslides from the vast mounds of tailings waste generated by the mine was another issue of major concern for communities. Levees originally built to contain the tailings and to redirect the Kawerong river have collapsed or are in the process of collapsing, putting communities at risk and contributing to the issues of flooding further downstream.

The risks posed by the unstable tailings mounds are particularly acute in the Middle Tailings area, which is the river valley where the Kawerong meets the Jaba river and where the majority of the mine tailings were originally dumped.

The valley resembles a moonscape, with vast accumulated piles of rocky waste and grey sand between steep hills on either side.

Residents reported that small landslides from the uncontained tailings mounds are

commonplace, particularly following earth tremors and after heavy rains. Due to land shortages, people have been compelled to build houses directly on the tailings waste, often directly next to unstable levees and tailings mounds.

Residents of Pangkiranaru village also expressed acute concerns over the instability of the levee which separates the Kawerong river from their village and a number of others. They reported that the levee was originally built to redirect the course of the Kawerong river. Following recent heavy rains, however, the ground next to the levee has collapsed and a large crater has opened up, indicating that the levee is being undermined by the river. At the point of the Human Rights Law Centre's visit to the village in September 2019, water could be seen trickling out the other side of the levee bank next to the village.

Collapsing levee, Middle Tailings.



Caroline Koruanu points out the crater (below) that has recently formed next to the levee that separates the Kawerong river from her village.



At that time, the flow of the Kawerong was low, but residents said they fear that following a period of high rainfall, the river will break through the levee to 'find its original course', causing a disaster for their village and others downstream. Some residents were so concerned about this they said they were preparing to relocate, despite the hardship this would cause. Caroline Koruanu, a 27-year old farmer commented:

*We are planning to move into the mountainous area, because we see that once the river breaks through, it will definitely wash away the area where we are living now.... The biggest concern the community has at the moment is the timing. Is it going to be during the rainy season or the windy season? Or is it going to be in the night-time when we are not prepared? This is our biggest concern because we know for sure that there is a disaster awaiting us when the river breaks through.<sup>99</sup>*

The 'tailings road', originally constructed by BCL over the top of the tailings mounds between the two rivers is also collapsing. Until recently, the road served as the main road connecting villages along the Kawerong-Jaba river valley. Due to the crumbling of the levees, the lower part of the road has now washed away entirely and is unusable and the upper part is also in the process of collapsing. Residents reported that the collapse of the road has also made it difficult for communities downstream to access services such as medical services or to transport food and other goods.

The mine pit itself is also an area of danger. Residents from the Special Mine Lease area reported that there are frequent landslides immediately around and into the pit. Human Rights Law Centre researchers saw evidence of these during the September 2019 visit to the mine pit. Notwithstanding these dangers, a number of families have built shanty houses inside the mine pit itself and are living there in order to make a living from alluvial mining.

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## IT WAS LIKE A TSUNAMI: ANDREW'S STORY



Andrew Kukomo, 50, whose house is only around 100 metres from the nearest large tailings bank near Jaba Pump Station, described how, following an earth tremor in 2018, part of the bank collapsed in a terrifying wave.

*The levee collapsed and it was like a tsunami. I was in shock. The area around my house was completely covered with mud and sand, right up to my door. I'm worried it might happen again because right now the levee is still breaking. I have actually dismantled my permanent house and constructed a traditional hut to live in because I'm worried it will come down again. We think about moving, but nowhere to go.<sup>100</sup>*

# Food shortages

“Before the mining we enjoyed food we grew and good greens.”

Given that most people in the Panguna area have traditionally relied (and in many cases continue to rely) on subsistence farming, fishing and hunting to sustain themselves, the destruction of land and water sources by the tailings (both during the time of the mine’s operation and currently) has had a major impact on food security in the area.

Much of the flat, arable land in the area is now covered in tailings waste, pushing people to cultivate gardens in less fertile land away from the rivers or in the mountains. Some villages, like Dapera which is next to the mine pit, are built completely on rock waste and have almost no arable land. In the Lower Tailings, flooding is causing crops and gardens to rot and contaminating the soil.

Most people interviewed commented on problems of food insecurity and hunger in their villages. As Anna Nongkonang, 70, from Mootori village, commented:

*There’s hardly any food now, nothing. Before the mining we enjoyed food we grew and good greens. But then our flatlands where we used to do gardens before were destroyed. Now we just*

*go to the Kawerong’s river bank to collect any greens we find. When floods come, the sediments completely bury the greens but we still have to collect them anyway. Our main food now is rice from the store. I pan for gold with my grandchildren so we can buy rice.*<sup>101</sup>

Communities described both a decrease in the amount of land available for growing food and the quantity and quality of food their land will yield. As Lazarus Kaiura, 65, from Pem’mana village stated:

*It hurts to recall that before the mine if you make a big garden you are sure to get a big harvest. Nowadays you can make very big gardens but the food you get is almost nothing.*<sup>102</sup>

Livina Pariu, from Osiresi village, likewise observed that ‘the only thing that will grow well now is wild yams. Sweet potatoes, taro and bananas are not doing well at all. All the people in the village are hungry now’.<sup>103</sup>

Michael Unoke, the Chief of Baboku village, commented, ‘We harvest only strings when it’s harvest time – you never find food inside. Our food now is just rice, rice and nothing apart from rice’.<sup>104</sup>

Families living in the mine pit.



“We know the food around here is contaminated... but do we have any other choice?”

Many residents lamented the loss of key sources of protein in their diet due to the destruction of fish in the Jaba and Kawerong rivers and forested land previously used for hunting possums and wild pigs. As Herman Kiaku, from Enamira village, noted:

*There were many fish and other creatures in the river before the mine. Kawerong was our grandparents' dining table. Now there's nothing. Now we just fish for gold.*<sup>105</sup>

Many residents attributed their poor crop yields to contamination of the soil from chemicals from the mine and almost all expressed serious anxieties about the safety of food grown in the area. As Balbina Donoman from Dutumami village explained:

*My conviction is that we are eating contaminated plants and crops and greens but I don't know where else I will obtain food for myself and my family. So I give my confidence to God for safety. I tell God that I must not be harmed by the food because the chemicals in our soil is not the result of my doing.*<sup>106</sup>

Anna Nonkonang, from Mootori village, noted similarly:

*We know the food around here is contaminated. Everything here is polluted. Everything is not good for our body. But do we have any other choice?*<sup>107</sup>

Communities also expressed concerns about the long-term health impacts on themselves and their children of having to now rely much more heavily on processed foods. Therese Pokamari, from Enamira village, observed:

*People who lived before the mine...ate leaves from the bush, protein that was fresh and were nursed and breastfed by mothers who lived this healthy lifestyle [...] The generation after that were instead just exposed to food packed outside and sold here. The "tinned-fish" generation are actually shorter in height and so many kids are skinny. This is the result of people eating lifeless food.*<sup>108</sup>

Local health workers interviewed commented that many people in the area suffer from at least moderate malnutrition and that they also see some cases of serious malnutrition. Dorothy Mekea, the nursing sister in charge of the Morotona Health Centre, noted:

*Before the time of mining, the people in this area ate quality food. But in some areas what was theirs was destroyed by the river pollution... In other cases, the mine destruction took away sources of income – fishing or farming- that enabled them to have a good, varied diet. So now for most they are just back to sweet potatoes and low grade greens.*<sup>109</sup>

Food insecurity was also a major issue that was highlighted by the AGA Report in 1989. While the report did not find evidence at that time to support a direct link between crop failures and chemicals from the mine, they found that the land lost to the mine had put increased pressure on the remaining land available for gardening, reducing its fertility, and that shorter crop-rotations due to reduced landholdings may also have contributed to the spread of crop diseases and nutrient deficiencies in the soil.<sup>110</sup>

## NOTHING GROWS HERE: WENDY'S STORY



Wendy Bowara is a 43-year-old mother of four and a landowner from Dapera, a village of around 300 people close to the mine pit. When she was four years old, her village was relocated by BCL to make way for the mine. The new village was built entirely on backfilled mine waste rock.

*Nothing grows here. The waste rock we live on is several metres deep and there is only a very tiny cover of soil on the top. We continually try to plant things – sweet potato, cassava, taro. The plants will grow but they barely produce any food. The lack of fertile land means most people in this village depend totally on gold panning so they can buy food from the store.*<sup>111</sup>

# Disease and illness

*“We live in the sun on the polluted waste and our life is not good. We will die young.”*

When asked about the general health of their communities, those interviewed said it was very poor and that people often die young.

Anna Nonkonang, from Mootori village, noted that ‘sickness here is an everyday thing. Before the mining there was no sickness. Now all of us here are very weak people’.<sup>112</sup> Christina Donang, 38, from Mepuru village, likewise commented that ‘People are becoming sick every day...We live in the sun on the polluted waste and our life is not good. We will die young’.<sup>113</sup>

Most people interviewed attributed the health problems within their communities directly to exposure to pollution from the mine or to malnutrition caused by the loss of hunting, agriculture and fishing grounds, poor crop yields and associated over-reliance on processed food.

A 46-year-old woman from Rerevai village observed:

*The people of the village, most of the time they have a cough and they will not live very old. I think it is because of the chemicals of the Panguna mine. When the mining was not here, the people ate good food and our crops don’t bear good food any more.*<sup>114</sup>

Anna Akonabo, 86, from Kavarongnau village likewise stated:

*Before the mine, people were never sick...like what I see now. Serious injuries would be caused as a result of people climbing trees and falling down while hunting or people would fall from a breadfruit tree. The company came with not just land destruction but the destruction opened doors to all forms of sickness too. The company shortened the life expectancy of the people by destroying the forest and rivers we feed from. This is my honest response. If you go to all the villages in the mine area I’m the only one left, everyone has died. I was born at the time everything was well.*<sup>115</sup>

Misimu washes gold in the mine pit.



“The river eats our skin.”

### Skin diseases

Communities spoke of a number of specific health problems which they attribute to pollution from the mine. The most commonly reported problem was skin diseases. People described developing strong irritation or itching when they wash or spend any time panning for gold in the polluted rivers. They said that their skin becomes dry and ‘dusty’ and flakes off and that they then develop bloody sores on various parts of their body.

Jimmy Baito, a 50-year old man from Rerevai village, noted:

*For me, after 3 days of gold panning in the river I have to stop working. My physical condition drops and my skin tissues become weak. I get sores very easily, especially on my feet. Also on my hands. It starts by itching and then later a sore will form. It's a similar experience for others who go into the river.... So I rest and work in my garden until I feel recovered and then I can go back in again.<sup>116</sup>*

Residents also reported that when people enter the river with pre-existing cuts or sores, these develop into larger sores or ulcers that take a long time to heal. As one woman from Mootori village put it, ‘the river eats our skin’.<sup>117</sup>

Some people also described the development of small white bumps or spots, or a type of crust or fungal infection on their skin which is very stubborn and comes back even after medical treatment.

As Caroline Koruanu, 27, a farmer from Pangkiranaru village, observed:

*When we wash in the river, our skin feels itchy and when we scratch the skin peels off and that part of the body is covered by blood. The skin disease is very stubborn, even when we go to the extent of taking tablets, sometimes it does down but then it regrows again.<sup>118</sup>*

Skin sores are common among the communities who live along the tailings.





“During the dry season, the dust from the waste pours into homes and all the children will have a cough all throughout.”

### Respiratory problems

Persistent coughs and respiratory problems were other health problems which many residents said were very common in their communities. Some attributed these problems to exposure to the chemicals in the rivers and others to breathing in fumes or dust from the tailings mounds.

Balbina Donomari, 48, from Dutumami village, commented:

*We know from the smell if our children have gone swimming in the Kawerong. Their hair looks glued together and their eyes turn red and they cough. And it continues and turns into a non-stop cough...[that] becomes terribly serious.*<sup>119</sup>

Fidelis Bakasiu, 25, also from Dutumami, observed that ‘When the sun heats the rocks and they get hot, the fumes rise and we breathe in the chemicals.....My mother has breathing problems caused by this’.<sup>120</sup>

Communities in the Middle Tailings area, in particular, noted that respiratory problems in their communities worsen substantially in the dry season, when the wind blows dust off the massive tailings mounds nearby. Hellen Darius, 30, from Darenai village, observed that ‘during the dry season, the wind blows a huge amount of dust off the tailings. And you know this air is pollution but there is no escape from it’.<sup>121</sup>

Paul Watori, 53, from Toku village, likewise noted:

*During the dry season, the dust from the waste pours into homes and all the children will have a cough all throughout. Why? Because the particles have chemicals in them. And we breathe them in during dry times. You can see it clearly when kids have cough.*<sup>122</sup>

Another 50-year-old woman who recently returned to her family’s village in the Middle Tailings area after living elsewhere for several years, commented, ‘When I came back here I developed respiratory complaints almost immediately. Dust wind is common here. I find it hard to breathe’.<sup>123</sup>

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### THE FUMES MAKE US COUGH: MARY’S STORY



Mary Damana, originally from Kokore village, has been living in the mine pit for the past 11 years with her two daughters.

*It is a hard life in the pit but we have to make a living. The heat is very intense off the rocks. It causes fumes to rise off the rocks which make us cough. Many of us get pneumonia. The water is all polluted in here so we have to bring in all our drinking water and food.*<sup>124</sup>

“He was so sick with vomiting and severe diarrhoea that we had to rush him straight to hospital. He had to stay there for almost a month.”

### Gastrointestinal problems

People who frequently bathe or pan in the Kawerong also reported gastrointestinal problems from their contact with the water.

Livina Pariu, 65, from Osiresi village, explained:

*I gave up panning gold because every time I went to the Kawerong I would come home with diarrhoea. Since I gave up I have been much better.<sup>125</sup>*

Many residents noted that children are particularly vulnerable to these problems because it is difficult to stop them from swimming or washing in the rivers and they don't fully understand the risks associated with the water. Andrew Kukumo, a 50-year-old truck driver who lives next to Jaba Pump Station said that his one-year old grandson Joe had recently been hospitalised for a month after swallowing water from Jaba River:

*He was so sick with vomiting and severe diarrhoea that we had to rush him straight to hospital. He had to stay there for almost a month. We were just fortunate that we had a vehicle to get him to the hospital quickly.<sup>126</sup>*

Children regularly swim in the polluted rivers.



“I see pregnant women spending long hours in the river. And I see these women giving birth to babies as small as lizards...”

## Women’s health and pregnancy complications

Some of the most serious health problems mentioned by communities were the impacts on women’s health of exposure to the pollutants in the water and, in particular, complications during and after pregnancy. Caroline Koruanu, 27, from Pangkarinaru village, explained that:

*For mothers especially, whenever they are in the period of pregnancy and they submerge into the water while washing or panning for gold, as a result they give birth to kids who are not healthy. Even women who have had to have caesareans are compelled sometimes to go in the river and... they have problems of pain that can lead to death. I know one woman who worked the whole time in her pregnancy panning for gold and then...she had major complications and had to have a cesarean. After she came back from the hospital she is back in the river panning again. Already she is developing this terrible pain around the cesarean area and now she is back on drug support.*<sup>127</sup>

Therese Pokamari, from Enamira village, observed:

*Health problems are greatly affecting us, the women. Why I say this, it’s us, the women, who bear children.... And in the case of the water I see pregnant women spending long hours in the river. And I see these women giving birth to babies as small as lizards as a result of this and from inhaling chemically mixed air.*

*Many such cases end up in withdrawn pregnancies [miscarriages].*<sup>128</sup>

Bernardine Kiraa, 45, from Moirue village in the Lower Tailings area, reported that there have been a number of young women in her area who are not pregnant but have suffered problems of heavy bleeding after spending time in the rivers panning:

*Women using the rivers face issues with bleeding. Bleeding from their wombs. We had a case recently of one woman who died from this. They can’t be operated on because there are no stores of blood at Morotona hospital.*<sup>129</sup>

Bonaventure Kenulei, from Maile village, also reported:

*We have had several women in our area suffer substantial bleeding from their wombs after spending time in the rivers panning. Two had to go to hospital. One, a lady called Elizabeth, died.*<sup>130</sup>

Several women interviewed noted that women’s health problems are often not widely discussed and that women who develop internal problems as a result of bathing in the rivers frequently keep it to themselves.

Caroline Koruanu panning for gold, Kawerong river.



“Malaria has become big... from all the mosquitos due to the still lakes formed by the waste.”

## Malaria

A number of residents from the Lower Tailings area, also mentioned that the swampland created by the flooding of creeks with tailings waste has given rise to mosquito infestations, which have led to higher rates of malaria in the area. Sarah Biuiyai, 90, from Pem'mana village, for example, commented that 'people here are sick all the time. Malaria has become big... from all the mosquitos due to the still lakes formed by the waste'.<sup>131</sup>

A rise in cases of malaria was also something mentioned by the AGA Report in 1989. The report noted that 'the tailings have dammed most of the tributaries which once flowed into the Jaba River. About 120ha (BCL estimate) of ponds have formed behind the dams providing habitat for mosquitos'.<sup>132</sup> The report recommended that attempts should be made by the company to control malaria by reducing the potential breeding areas for mosquitos and introducing rainbow fish to areas permanently backed-up by tailings deposition.

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Swamps created by tailings waste provide breeding grounds for mosquitos.



“There is no-one to listen to our worries”.

Bernard Kurugas, Kobalu 1.



“I already know the cause of my death.”

### Mental health impacts

In addition to the direct physical impacts of living in such a heavily polluted environment, communities also spoke of the constant anxiety they have from not knowing what the long-term consequences will be of exposure to the pollutants in their water and soil. For instance, Herman Kiaku, a small business owner from Enamira village, stated that:

*Kawerong is really bad. Those of us who go down [there] are not safe. I live with so much worry because I dig Kawerong knowing that my life expectancy on earth is very short. I don't know how other people will say, but for me my greatest burden is my exposure to that river. I already know the cause of my death. If I had washed in the river in its pristine days, then I would be a happy man.<sup>133</sup>*

Balbina Donomari, from Dutumami village, also commented:

*We live in fear...All the rivers are not clean around here. Because they all join to Kawerong and the spirit of death creeps into the remaining waters. And also due to landlessness people are making villages close to the water sources. And it has become hazardous and now we can't drink some of those spring waters.<sup>134</sup>*

“Chest infections are generally mild in other areas, whereas in the Panguna mine affected areas they are severe and chronic...”

## Views of local health professionals

Local health professionals interviewed confirmed that the most common illnesses they treat among communities living along the tailings are fungal diseases (including sores, scabies, ulcers, fungal infections and deep skin cracks), upper respiratory tract infections, diarrhoea and, among women, pregnancy complications. They reported that tuberculosis is also a problem in the area due to the overcrowded, unsanitary conditions in some of the villages.

Jane Era, a community health worker stationed at the Tonanau Aid Post in the Upper Tailings Area, observed that while some of these problems, like scabies, are also common in other parts of Bougainville, the health problems of those living along the tailings appear to be more frequent, severe and difficult to treat. She noted that they are particularly bad among the children and adults of gold panning families who spend large amounts of time in and near the river:

*We have noticed that particular types of health problems are most common among the families living right on and along the tailings, which is what makes me think that some of these problems are linked directly to pollution from the tailings. For the upper respiratory tract infections, we see this most commonly in children. In many cases these children are either diving in the rivers, or living right on top of the tailings and breathing in the fumes that evaporate off them in hot weather.<sup>135</sup>*

Era noted that among ‘gold panning mothers’, some of the pregnancy complications are particularly severe:

*There can also be some unimaginable complications when it comes to delivery. For example, when we check their cervix to see how it will accommodate the delivery, we often find that the cervix is badly infected and inflamed. In this case, when the child passes through the cervix, it can pick up the infection through direct contact and the nurses have to medicate the child at a time when he is just too fragile for it.*

*Some of the babies born are also very weak. Last month, I treated a woman from my own village who I know worked panning for gold in the rivers throughout her pregnancy. When she came here to deliver the baby, although it had a heartbeat, it was too weak to start breathing. I had to deliver mouth-to-mouth for quite some time before the baby began – reluctantly – to breathe.<sup>136</sup>*

Thomas Matali, a medical technician in the pathology department at the Arawa Hospital, likewise noted that:

*People from the mine-affected areas often come in with weight loss and of course skin diseases. When tested, their white blood cell count is often very high, indicating the presence of infection... Pneumonia and respiratory problems are also very common among those who live along the river, which could be due to the left-over materials left behind by the company. Chest infections are generally mild in other areas, whereas in the Panguna mine affected areas they are severe and chronic... Panning mothers can also have problems with anemia which can also gravely affect the unborn. Often babies are born before their time is due.<sup>137</sup>*

Peter Sisia, Director of Rural Health Services in Central Bougainville, noted that the skin problems in the area can be particularly debilitating and make it difficult for people to go about their daily lives:

*When you go around the mine-affected villages along the river, you can see sores on peoples’ legs and very strong types of fungal diseases that eat away at their skin and their flesh as well for some of them. These are among people who are always having to cross the Kawerong with the chemicals that are in it. There are no bridges so people are always crossing it on foot and they develop sores, especially on their feet. It has a big impact on them because when the sores get big, people find it hard to walk, but around here everyone has to walk everywhere. It can be very serious.<sup>138</sup>*

Health professionals noted that in the absence of proper baseline and comparative health studies, linking any of these conditions definitively to particular chemical pollutants from the mine or tailings is difficult, and that some of the illnesses people are experiencing may also be attributable to more indirect impacts, including poverty, malnutrition and overcrowding exacerbated by landlessness as well as lack of access to alternative clean water sources. They noted that alluvial gold mining can also bring its own additional risks, with some patients presenting with serious injuries relating to exposure to dangerous chemicals such as mercury or nitrate used to extract the gold.

## Access to medical treatment

Despite the serious health problems among the population, access to medical services in the Panguna area and downstream is extremely limited. There is a medical centre at Panguna which has five staff, and aid posts at Tonanau and Orami which each have a single health worker. There is also a health centre run by nurses at Morotona. For residents in some areas, in particular in the Lower Tailings, however, these centres can be very difficult to access.

Residents from Pem'mana village in the Lower Tailings, for example, described having to cross the river and walk for three hours to get to the nearest health centre. If they require more serious treatment, the only option is Arawa Hospital, which is several hours away by car and involves crossing several rivers.<sup>139</sup>

Jane Era, community health worker, outside the Tonanau aid post.



# Human rights violations

The unaddressed destruction left by Rio Tinto in Panguna continues to infringe a multitude of established human rights.

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## Impacts on the right to life

At their most serious, the mine's impacts are directly infringing peoples' right to life. The right to life has been described by the United Nations Human Rights Committee (HRC) as '*the supreme right*'.<sup>140</sup>

People living throughout the mine's impact zone report that community members have died, or have been placed in life-threatening situations, as a result of the massive changes which the mine has wrought in their local environment. This report captures multiple stories of children and adults dying in circumstances where they were forced to enter or attempt to cross the contaminated rivers including through shifting tailings sands created by the mine, to access other basic rights, such as water, food and education. In this way, the mine's chemical and tailings dumps have created a series of dangerous gauntlets<sup>141</sup> which communities have to run to carry out daily activities and realise their other fundamental rights.

Further, as the HRC has affirmed, exposure to toxic and dangerous products also '*constitutes a serious threat to the human rights to life and health of individuals*'.<sup>142</sup> This is particularly so, in developing countries that do not have the technologies to process them.<sup>143</sup> As we outline below, for people in Bougainville living, in many cases, literally on top of the mine's waste and bathing in its chemically-polluted rivers, serious questions also arise about the long-term health effects of such exposure and whether it is diminishing the life expectancy of families.

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## Impacts on the right to health

The mine has also had, and continues to have, multiple, intersecting impacts on peoples' rights to health. The right to health arises under the International Covenant on Economic, Social and Cultural Rights (ICESCR),<sup>144</sup> as well as the Universal Declaration of Human Rights,<sup>145</sup> and multiple other international and regional agreements.<sup>146</sup> It expressly extends to cover the social determinants of health such as food, water and housing<sup>147</sup> and to preventing exposure of communities to '*harmful chemicals or other detrimental environmental conditions that... impact on human health*'.<sup>148</sup> As UN experts have noted, safe water and adequate sanitation are essential for the realisation of the right to health.<sup>149</sup>

This report, as well as previous studies on the mine,<sup>150</sup> have recorded consistent accounts by people that they develop sores and ulcers, diarrhoea and vomiting, respiratory problems and pregnancy complications from contact with the water or consumption of fish from the rivers. Local health professionals interviewed for this report noted that these problems are particularly severe and chronic among populations living within the mine's impact zone and it was their shared view that at least some of these problems were directly attributable to direct exposure to the mine waste and pollution.

Malnutrition, caused by the loss of hunting and fishing grounds,<sup>151</sup> and overcrowded, unsanitary living conditions due to displacement of villages compound the direct impacts of the mine on people's health. As was anticipated,<sup>152</sup> the tailings waste has itself also created rolling risks of disease. Sand and mud from the tailings dumps continue to block creeks and tributaries, creating stagnant swamps that breed mosquitoes, increasing the risk of malaria for community members.

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People living within the mine's impact zone experience a deep, justified, concern about the long-term health impacts of exposure to the chemicals leached from the mine waste into their homes, water, gardens and food.<sup>153</sup> The gaping lack of information about the risks and harms caused by the mine also contravene the rights to health of the mine-affected communities.

As the leading UN Special Rapporteur has highlighted, where companies have contaminated water sources, they have a responsibility to publicly communicate information about the risks created by their activities' including, for high risk communities, 'to explain and create awareness about what harm might result'.<sup>154</sup> The AGA Report noted in 1989 that 'the people have a right to know what is being released into their environment'.<sup>155</sup> Instead, in Panguna today, there is only a disturbing absence of information about the health risks created by the mine's pollution and the peoples' rights to know are utterly unmet.

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## Impacts on the right to water

The waste and pollution caused by the mine's operation has also profoundly violated the rights of people to water throughout the impact zone, most acutely in the Middle and Lower Tailings areas.

The right to water is a fundamental right, 'indispensable for leading a life in human dignity'<sup>156</sup> and an essential precondition to the realisation of other human rights. The importance of the right to water and its interdependence with other rights has been recognised in international treaties and instruments,<sup>157</sup> by the UN General Assembly,<sup>158</sup> the Human Rights Council,<sup>159</sup> and by courts in numerous jurisdictions.<sup>160</sup>

The ICESCR recognises the right of all people to 'sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic uses' including for drinking, food preparation, personal sanitation and basic household hygiene.<sup>161</sup> The UN Declaration on the Rights of Indigenous Peoples also recognises the distinct rights of Indigenous peoples over traditionally owned and used rivers and coastal sea resources as a central part of the maintenance of culture and responsibilities to future generations.<sup>162</sup> While it is not a company's obligation to create access to safe water in a community, where their operations adversely affect peoples' existing access to safe water in the sense of polluting, diverting or otherwise depleting it, then it is then their responsibility to remedy these impacts.<sup>163</sup>

Almost all Panguna residents interviewed for this report cited water insecurity and anxieties about the unknown health risks of living near or consuming contaminated water as some of their most fundamental concerns. It is not in dispute that the Kawerong and Jaba rivers – the past primary water sources for several thousand people – remain seriously contaminated as a result of Rio Tinto and BCL's operations. These rivers, previously used variously for drinking, washing, cooking, and cleaning by communities are now, in parts, a threat to life and health and are unusable for basic living needs. Dust from the giant tailings mounds and flooding created by their continuing erosion into the rivers continues to contaminate other fresh-water drinking sources, potentially causing serious illness. For others, accessing safe water for drinking and washing is now only available by travelling long distances. Water tanks are, in the majority of cases, beyond peoples' financial means.

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## Impacts on rights to food, housing and an adequate standard of living

Rights to food and housing are both established components of the right to an adequate standard of living,<sup>164</sup> and are recognised in the ICESCR, the Universal Declaration of Human Rights and reflected in multiple other international law instruments.<sup>165</sup> The right to food guarantees that a person must live in conditions that allow him or her either to produce adequate food or to buy it.<sup>166</sup> As the leading UN body on the right to food, the UN Economic, Social and Cultural Rights Committee has stated: *'the private business sector...should pursue its activities within the framework of a code of conduct conducive to respect of the right to adequate food, agreed upon jointly with the Government and civil society'*.<sup>167</sup> This has been reinforced, repeatedly, by the UN Special Rapporteur on the right to food.<sup>168</sup>

In Bougainville, however, the experiences of people detailed in this report make clear that the mine's activities have undermined their basic access to food, without real redress or a framework for respecting this right. Villages have lost arable land with historic reports that the areas of land suitable for gardening in some villages *'has decreased by as much as 90%'*.<sup>169</sup> Land laid waste by the mine has, as the AGA Report found, *'removed for all time an adequate source of traditional foods for landowners'*.<sup>170</sup> Further, the flooding and mud-flows caused by the erosion of the tailings waste is decimating previously surviving fishing grounds.<sup>171</sup> This ongoing destruction is depriving communities of greater and greater tracts of agricultural land. Crops growing in the existing available land are now also compromised by contamination and diseases born of the unavoidably shorter crop rotations forced on communities as a result of the narrowing margins of land in which to grow their food.<sup>172</sup>

Relocated communities have also highlighted the inappropriateness and inadequacy of housing which people have been pushed towards as the mine and its waste occupies their homelands. As relocated communities have recounted, the poorly constructed relocation housing built by BCL and Rio Tinto are either now uninhabitable, destroyed or unstable as chemical contamination rusts structural posts and their homes start to collapse.<sup>173</sup>

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## Impacts on cultural rights

The mine's impacts have undermined the rights of people in communities throughout the impact zone to take part in their cultural life, and to practice their culture, in breach of multiple, binding human rights instruments. The UN Committee on Economic, Social and Cultural Rights has established, repeatedly,<sup>174</sup> that taking part in cultural life, including accessing cultural sites, participating in ceremonies, and maintaining ways of life, including through food, hunting practices, and farming are each protected cultural practices.

These cultural rights are articulated in the Universal Declaration of Human Rights,<sup>175</sup> the ICESCR,<sup>176</sup> and confirmed in a series of resolutions by the UN General Assembly.<sup>177</sup> The right to take part in culture is also recognised in numerous other UN and international instruments<sup>178</sup> regarding, relevantly, the distinct rights of Indigenous peoples (including in relation to the centrality of rivers and seas to culture, outlined above), women, children, and minorities, as well as by the HRC<sup>179</sup> and the European Court of Human Rights.<sup>180</sup>

For the affected communities, the mine's operations have led to the destruction of cemeteries, consequent disconnection from their ancestors, and continuing destruction of their sacred sites, as flooding and mud flows release torrents of mine waste into their cultural landscapes. In addition, as already detailed above, the mine's direct and daily impacts on food and water, prevent people's access to culturally important food sources, fishing reserves and farming practices.<sup>181</sup> The continuing and vast destruction of the land itself violates Bougainvilleans' cultural identity and practice. As already outlined above in this report, land – both the practice of caring for the land, and using it – are central to Bougainvillean culture. Land is, as Bougainvilleans clearly articulated in opposition to the mine from its outset, *'at the heart of our very existence'*.<sup>182</sup>

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## Impact on the rights of women and girls

Women and girls are disproportionately affected by the unaddressed human rights impacts of the mine. The health of women and girls is distinctly and additionally compromised by the contamination and inaccessibility of safe water sources<sup>183</sup> in breach of their rights to health and water. Compromised sanitation and women's unavoidable exposure to chemically contaminated water has, as the evidence in this report suggests, led to harm to maternal health and increasing pregnancy complications. Further, women and girls' daily lives and privacy are disproportionately affected when access to safe water for sanitation, cooking and cleaning is made harder, or non-existent.

These impacts for women and girls breach the fundamental rights they share with all members of the community, but also infringe the specific rights of rural women conferred under the Convention on the Elimination of Discrimination against Women (CEDAW)<sup>184</sup> 'to enjoy adequate living conditions, particularly in relation to housing, sanitation, ...and water supply rights'. The real world and flow-on effects of these breaches are hard to overstate. As the UN Committee on the Elimination of Discrimination against Women has stated: 'Rural women's and girls' rights to water and sanitation are not only essential rights in themselves, but also are key to the realization of a wide range of other rights, including health, food, education and participation'.<sup>185</sup>

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## Impacts on children's rights

The damage, harm and risks created throughout the mine's impact zone also affect children and their rights in specific and serious ways, contrary to the fundamental rights already detailed above and under the UN Convention on the Rights of Children (CRC) to life, health, education, an adequate standard of living and to enjoy their own culture.<sup>186</sup>

For children living within the mine's impact zone, the contamination and instability of the Kawerong and Jaba rivers raise heightened risks. Children are more likely to swim and bathe in the rivers, more likely to inadvertently drink from them, less likely to understand the risks and consequences of doing so and more likely to become seriously ill as a result. As the stories in this report have highlighted, children are also more likely to drown or sustain serious injuries attempting river crossings in dangerous conditions. The impacts of food and water insecurity on children's long-term health and development are also more serious than for adults.

The mine's impacts have also had serious consequences for children's rights to education and future livelihoods. As a result of land destruction and the impoverishment of communities, many children are now compelled to assist their families panning for gold in the rivers, compromising their education and exposing them to even more serious health risks.

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# Rio Tinto and BCL's obligations

As the companies that developed and operated the mine and major beneficiaries of its profits, Rio Tinto and BCL have clear legal obligations to help remedy their devastating legacy.

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## Obligations to rehabilitate the mine site

It was always the intention that the land impacted by the mine would ultimately be returned to local landowners in usable condition.<sup>187</sup> The agreements which governed the mine set out consecutive requirements that the company mitigate the most destructive and foreseeable consequences of their operations and take steps to ensure the land in question was rehabilitated.

Under the 1971 Disposal of Overburden and Tailings Agreement, BCL agreed that the disposal of its tailings would from 1980 be 'consistent with the objective of re-using any land affected by the tailings disposal'.<sup>188</sup> Further, in the immediate period, the agreement required that the company use 'all practicable measures to ensure that the copper leaching from its tailing dumps would be of sufficiently low level so that 'no serious damage could result...to vegetation or animal life'.<sup>189</sup>

The company was also required to take 'adequate measures' to maintain the integrity of the waste dumps from the dangers of Kawerong river flows<sup>190</sup> and to 'take such action as is necessary to confine flooding, damage or the disposal of tailings within [the lease area]', as well as to immediately re-establish vegetation at each dumping location, as soon as the final top of the dump had been reached.<sup>191</sup>

The 1987 Disposal of Tailings Agreement strengthened these obligations, requiring the company to 'take all reasonable steps necessary to ensure rehabilitation of land and regeneration of vegetation in areas affected by the waste rock and tailings disposal system'.<sup>192</sup> The 1987 Agreement also reflected growing understanding by the PNG Government of the potential public health risks of the mine, imposing obligations on the company to 'take all reasonable steps to ensure that any discharges into the river system...contain no more than a sufficiently low level of copper or other contaminants... to ensure no serious damage is done to the biota or will cause any risk to public health'.<sup>193</sup>

Ultimately, the company failed to meet even the sparse obligations imposed on it under these successive agreements. As noted earlier, the assessment of the AGA Report in 1989 was that fish life in the Jaba and Kawerong rivers had been wiped out entirely, flooding and damage was extensive, and copper was likely to continue to leach from the tailings for many years.

The AGA report also found that the company was doing little to plan for eventual closure and rehabilitation of the mine site, despite its obligations. For example, the 1987 Agreement required the company to put aside large quantities of weathered rock to cap the waste rock dumps in order to ensure ultimate revegetation. The AGA found that the company was not stockpiling suitable weathered rock and advised the AGA that it had no intention of doing so.<sup>194</sup>

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The AGA concluded that:

*The Company urgently needs to undertake serious planning (as distinct from investigations) for mine closure covering rehabilitation of all mine-affected areas, engineering design for long-term stability and revegetation...*<sup>195</sup>

*The landowners, whose lifestyle and culture is intimately tied to their land, have a legitimate expectation that their land, taken by force in many cases, should be returned to them in a 'usable' condition. The growing realisation that that expectation is unlikely to be fulfilled is one of the sources of the present anger and frustration being expressed by the landowners.*<sup>196</sup>

The subsequent forced closure of the mine and the ensuing period of conflict, do not simply release Rio Tinto and BCL from the unmet obligations imposed on them by these Agreements. While Rio Tinto's oft-repeated refrain that it has been unable to access the site since 1989 to determine the nature or extent of any damage may hold true for the duration of the conflict, that conflict ended in 1998, a full 18 years before the company's divestment from the mine. As outlined above, clear invitations were extended by the ABG and landowners to the companies in 2014 to return to their land for the purpose of fulfilling their rehabilitation and clean-up obligations.

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## Obligations to respect human rights and provide remedy for violations

Both companies also have obligations under established international standards, including the United Nations Guiding Principles on Business and Human Rights (UNGPs) and OECD Guidelines for Multinational Enterprises (OECD Guidelines) to both respect the human rights of people affected by their operations<sup>197</sup> and to actively identify and remedy adverse human rights impacts caused or contributed to by their operations.<sup>198</sup> The OECD Guidelines additionally require companies to prevent, mitigate and control serious environmental and health damage from their operations.<sup>199</sup>

The UNGPs note that 'if prioritization is necessary, business enterprises should begin with those human rights impacts that would be most severe, recognizing that a delayed response may affect remediability'.<sup>200</sup> In the case of Panguna, this guidance is acutely relevant given that the unaddressed effects of Rio Tinto and BCL's conduct continue to create new and escalating human rights risks and impacts for communities.

The responsibility of companies to respect human rights exists over and above compliance with any law which might exist in a particular country regarding human rights.<sup>201</sup> The standards apply whether or not the company is part-owned by the State<sup>202</sup> or indeed, whether or not the company has profited from the operation. As a large multinational company, Rio Tinto's responsibilities under the UNGPs are heightened.<sup>203</sup>

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## Commitments by Rio Tinto and BCL to respect human rights

Both Rio Tinto and BCL have publicly committed to complying with these human rights and environmental standards and regularly promote their human rights credentials in their corporate publications. Indeed Rio Tinto holds itself out as a global leader on human rights and environmental standards, unreservedly claiming that:

*We are committed to the protection of human rights across each and every one of our operations and throughout our business. It's not only the right way to do business but is essential to our license to operate.*<sup>204</sup>

In consecutive human rights policies and statements, Rio Tinto has stated that it has voluntarily adopted and works consistently in line with its commitments under both the OECD Guidelines and the UNGPs.<sup>205</sup> These commitments were made well before the company's decision to divest from Panguna.

Further, while Rio Tinto notes that it pays close attention to all internationally-recognised human rights:

*... there are some issues to which we pay particularly close attention because of our geographical and operating footprint. These include: security; land access and resettlement; environment including access to water and sanitation; cultural heritage including the rights of Indigenous peoples...*<sup>206</sup>

The company also expressly states that it 'recognises its obligation to address and remediate any adverse human rights impacts'.<sup>207</sup> Similar statements by Rio form part of its human rights policies,<sup>208</sup> current, public, commitments in relation to the environment<sup>209</sup> and closure of its mines<sup>210</sup> and in its global code of business conduct.<sup>211</sup>

As the subsidiary of Rio Tinto until 2016,<sup>212</sup> BCL adopted Rio Tinto's policies and executed Rio Tinto's operations on the ground in Panguna, including its human rights obligations. Since Rio Tinto divested in 2016, BCL's own policies state that it will 'continually work to mitigate the impacts its activities and products may have on the environment',<sup>213</sup> 'respect the environment and where possible prevent or otherwise minimise, mitigate and remediate harmful effects that operations may have',<sup>214</sup> and that it 'respect[s] human rights, supports the United Nations' Universal Declaration of Human Rights and respects those rights wherever it operate[s]'.<sup>215</sup>

Despite both companies' public statements, the daily reality for communities living, working and raising families throughout the mine's vast impact zone is of a profound lack of redress for the adverse impacts of the mine on their most basic rights.

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## Time for Rio Tinto and BCL to assume responsibility

In accordance with their legal obligations and shareholder commitments, it is time for Rio Tinto and BCL to act and redress the long-running harms which the Panguna mine has imposed on the people and environment in Bougainville. Unless and until Rio Tinto and BCL act to remedy the adverse human rights impacts of their operations in Bougainville, these companies will continue to be defined by their approach to this devastating legacy, and face reputational, financial and legal risks as a consequence.

Clearly the States involved in the mine's creation and operations also have a central role to play in helping to address the Panguna mine's legacy. Papua New Guinea, as the State in control of Bougainville throughout most of the mine's operation, and a major recipient of its financial benefits, has distinct obligations to help provide remedy for these harms. Papua New Guinea is a signatory to all the major human rights conventions cited in this report, and is required by international human rights law<sup>216</sup> to realise, to the maximum extent of its available resources, the rights of people affected by the mine to life, health, water, housing, an adequate standard of living, and to practice their culture.<sup>217</sup>

Australia, too, as the colonial power that approved the mine and established the weak environmental framework in which it operated has, at the very least, strong moral obligations to accept a central role in helping Bougainville to recover from the continuing harms caused by the mine. Finally, as Bougainville continues to move towards formal independence from PNG, the ABG must assume, to the extent of its available resources, a direct role in facilitating its communities' recovery from these harms. This report has made separate recommendations to PNG, Australia and to the ABG which reflect a realistic performance of their distinct responsibilities.

Critically, however, these obligations, do not minimise the corporate responsibility of the mine's operators for the enduring human rights harms caused by their expansive commercial interventions in Panguna.

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# Priority needs identified by communities

People interviewed for this report were clear both about the most urgent needs of their communities arising from the mine's impacts and Rio Tinto and BCL's responsibility to help address them. As Michael Totubo, Chief of the Mematangha Clan, put it:

*BCL and CRA left the Panguna area because of the crisis, but the effects in these areas are still continuing and will never stop unless something is done. We cannot control it with our bare hands. It is very difficult. They must set right the problem they have created. And they must accept it. The mining [site] needs a very big clean-up of the chemicals that they have left here in Panguna.*<sup>218</sup>

This sentiment was widely echoed among all communities interviewed, many of whom expressed deep frustration and anger at what they see as the companies' abandonment of their responsibilities.

People interviewed for this report identified, in particular, the urgent need for the following types of assistance to deal with the most immediate risks to health and safety created by the mine:

- **Assistance accessing clean water** for drinking and sanitation, whether through the provision of water tanks or assistance piping water from uncontaminated sources further away from the rivers;
- **Reinforcement of levees** to contain the Kawerong and tailings and prevent further new damage and flooding, and temporary relocation assistance for villages at immediate risk;
- **Re-construction of bridges** to enable safe passage across the Jaba and Kawerong rivers and access by communities to essential services.

Other priority needs identified included:

- **Water monitoring**, health surveys and studies to give communities full information about both the contaminants in the water, soil and fish populations and the health consequences of exposure to these;
- **Relocation and resettlement assistance** for communities displaced by land destruction and flooding;
- **Better access to medical services** in the area to treat health problems created by the mine;
- **Assistance with the development of alternative sources of livelihood** given the destruction of land and waters previously used for subsistence agriculture, hunting and fishing;
- **Better investment in education** in the area to give children opportunities for alternative future employment and livelihoods;
- **Clean up and rehabilitation** of land, rivers and forests destroyed by the mine;
- **Compensation for permanent damage** to land (both inside and outside the mine lease areas), rivers and sacred sites;
- **Proper GIS mapping** of clan land boundaries especially within areas being destroyed by tailings flow to help prevent land disputes;
- **Food aid**, particularly to areas worst affected by flooding; and
- **A justice and accountability process** to deal with the past and ongoing trauma caused by the legacy of the mine.

This list is undoubtedly not definitive of the needs of all mine-affected communities in the Panguna area. It is, however, indicative of the extremely broad range of serious impacts the mine has had and continues to have on the lives of those living in its wake and the need for urgent action by both Rio Tinto and BCL to help address them.





Bruno Idioai, 63, Makosi village.

# Endnotes

- 1 Almost 98 percent of Bougainvilleans voted for independence from Papua New Guinea. The referendum result is not binding, however, and the PNG parliament will have the final say over the island's independence.
- 2 Stefan Armbruster, 'Bougainville could be the world's newest nation, as Pacific Island goes to polls', *SBS News* (online), 23 November 2019, <<https://www.sbs.com.au/news/bougainville-could-be-the-worlds-newest-nation-as-pacific-island-goes-to-polls>>
- 3 Volker Boege, 'The mine that caused a civil war' in London Mining Network, *Cut and Run: How Britain's top two mining companies have wrecked ecosystems without being held to account* (February 2020), 15. Personal communication by HRLC with various local officials suggests the figure may now be higher than 14,000 but accurate population statistics in Bougainville are difficult to find.
- 4 See W. D. Scott & Co. Pty. Ltd, *A Study of the Impact of the Bougainville Copper Project on the Economy and Society of Papua New Guinea*, (Bougainville Copper Pty Ltd, 1973), 2-1; J. Dove, T. Minting, M. Togolo, 'Mining Bitterness' in Peter G. Sack (ed.), *Problem of choice: land in Papua New Guinea's future* (ANU Press, 1974); Donald Denoon, *Getting under the Skin: the Bougainville Copper Agreement and the creation of the Panguna mine* (Melbourne University Press, 2000); Ciaran O'Faircheallaigh, 'The Bougainville Crisis' (1990) 1:1, *Policy, Organisation and Society*, 30.
- 5 Thomas Koronaro, 'Basic Ideas Behind the Bougainville Revolution' (1992) quoted in Rosemary Gillespie, 'Ecocide, Industrial Chemical Contamination and the Corporate Profit Imperative: the case of Bougainville', *Social Justice: Journal of Crime, Conflict and World Order*, (1996), 111-12.
- 6 Quoted in Dove, above n 4, 182.
- 7 Ogan notes that the process for these negotiations completely excluded landowners. See Eugene Ogan, 'The Bougainville Conflict: perspectives from Nasioi' (1999) *State Society and Governance in Melanesia Discussion Paper*, no. 3, 5.
- 8 The fact that landowners were given any royalties at all under the agreement was attributable only to the efforts of Bougainville Member of the House of Assembly, Paul Lapun. See Terrence Wesley-Smith and Eugene Ogan, 'Copper, Class and Crisis: Changing Relations of Production on Bougainville' (Fall 1992) *The Contemporary Pacific*, 256. The percentage of royalties payable to the Administration (and subsequently the State of PNG) were subsequently renegotiated in 1974, although the percentage of royalties received by landowners remained unchanged.
- 9 Applied Geology Associates (AGA), *Environmental, Socio-economic and Public Health Review of Bougainville Copper Mine, Panguna*, report prepared for the Government of Papua New Guinea (Wellington, 1989). As the report notes (8.1), 'The compensation payments need to be identified for what they are. Most are no more than a redress for immediate loss of produce from the land. Only for some is there an element of compensation for permanent loss. Few, if any...convey a benefit to the recipients in the sense that they profit from the mining'. Compensation payments ultimately ranged from \$103 to \$60,000 annually, with an average payment of \$590. See Joint Standing Committee on Foreign Affairs, Defence and Trade, *Bougainville: the peace process and beyond*, [2.30] <[www.aphref.aph.gov.au\\_house\\_committee\\_jfadt\\_bougainville\\_bv\\_chap%20\(1\).pdf](http://www.aphref.aph.gov.au_house_committee_jfadt_bougainville_bv_chap%20(1).pdf)>. Many landowners refused to accept the compensation payments altogether on the basis that to do so might be interpreted as evidence of their willingness to alienate their land. See Ciaran O'Faircheallaigh, *Mining and Development*, (Beckenham, 1984), 221.
- 10 Conzinc Rio Tinto Australia, 'Bougainville Update: The Economic Impact of Bougainville Copper' (1990) *CRA Gazette*, 25:6 quoted in Jubilee Australia, *Voices of Bougainville: Nikana Kangsi, Nikana Dong (Our Land, Our Future)*, (2014) <<https://www.jubileeaustralia.org/page/reports>>; Paul Quodling, *Bougainville: The mine and the people*, (Centre for Independent Studies, 1991), 34.
- 11 Philip J Hughes and Marjorie Sullivan, 'Environmental Impact Assessment in Papua New Guinea: Lessons for the Wider Pacific Region' (1989) 30(1) *Pacific Viewpoint*, 36. The mine was later explicitly exempted from the PNG Environmental Planning Act 1978, which introduced this requirement for other mining projects in PNG.
- 12 *Mining (Bougainville Copper Agreement) Act Independent State of Papua New Guinea*, Chapter No 196, Cl. 15 in Applied Geology Associates, above n 9, 3.1. The AGA further concluded (5.3.3) that 'it seems unlikely that approval for the present system would have been given at commencement if investigation of the extent and location of tailings deposition made at that time had been more thorough and the present extent of deposition predicted'.
- 13 *Disposal of Overburden and Tailings Agreement* (1971) quoted in Applied Geology Associates, above n 9, 3.3.2. The AGA Report notes (3.3.2) that only in 1987 were stronger environmental protections agreed, requiring the Company to take steps to ensure contaminants in the rivers posed no risk to public health and to '...take all reasonable steps necessary to ensure rehabilitation of land and regeneration of vegetation'.
- 14 MJF Brown, 'A Development Consequence – Disposal of Mining Waste on Bougainville, Papua New Guinea' (1974) 5(2) *Geoforum*, 20.
- 15 Bechtel-WKE, *Proposal for tailings disposal* (1969) BCL Report 022, cited in Applied Geology Associates, above n 9, 3.7. The AGA Report noted that the revisions of the earlier predictions regarding the impacts of riverine tailings disposal were presented, 'without reasoned explanation or justification' in the consultants' second report'.
- 16 Ibid.
- 17 Quodling, above n 10, 29.
- 18 Ibid.
- 19 Brown, above n 14, 25-27. See also Applied Geology Associates, above n 9, 8.3.1.1
- 20 Applied Geology Associates, above n 9, 5.3.2.
- 21 Ibid.
- 22 Brown, above n 14, 25-27.
- 23 Applied Geology Associates, above n 9, 5.5.2 and 8.3.1.2.
- 24 Kristian Lasslett, 'The crisis began in 1886: A long view of Bougainville's decolonisation struggle', in Jubilee Australia Research Centre, *Growing Bougainville's Future: Choices for an island and its peoples* (2018) <<https://www.jubileeaustralia.org/project-info/bougainville-copper-or-cocoa>>.
- 25 Brown, above n 14, 25.
- 26 Kylie McKenna, *Corporate Social Responsibility and Natural Resource Conflict*, (Routledge, 2016), 32-33.
- 27 Ibid, 127.
- 28 Ibid. There were particular tensions regarding the inequitable distribution of compensation payments and royalties from the mine.
- 29 Landowners felt in particular that the report significantly underplayed the direct health impacts of chemicals from the mine on both local populations and also on wildlife, such as the flying fox population, whose numbers had sharply declined. McKenna, above n 26, 143.
- 30 Applied Geology Associates, above n 9, 5.3.5
- 31 Ibid, 1.2.
- 32 McKenna, above n 26, 114.
- 33 John Braithwaite, Hilary Charlesworth, Peter Reddy & Leah Dunn, *Reconciliation and Architectures of Commitment: sequencing peace in Bougainville* (ANU Press, 2010), 23.
- 34 Amnesty International, *Papua New Guinea: Human Rights Violations in Bougainville 1989-1990* (1990); Marilyn Taleo Havini, *A Compilation of Human Rights Abuses Against the People of Bougainville: 1989-1995*, Volumes 1 & 2 (Bougainville Freedom Movement, 1996).
- 35 Rachel Jewkes, Nwabisa Jama-Shai and Yandisa Skiweyiya, 'Enduring impact of conflict on mental health and gender-based violence perpetration in Bougainville, Papua New Guinea: a cross-sectional study' (2017) 12(1) *PLoS ONE* 1.
- 36 Affidavit of Sir Michael Somare in *Sarei et al v Rio Tinto Plc*, quoted in SBS, 'Blood & Treasure', *Dateline*, 26 June 2011 (Brian Thompson) <<https://www.sbs.com.au/news/dateline/story/blood-and-treasure>>.

- 37 Major General Jerry Singarok quoted in SBS, 'Blood & Treasure', *Dateline*, 26 June 2011 (Brian Thompson) <<https://www.sbs.com.au/news/dateline/story/blood-and-treasure>>.
- 38 Bougainville Copper Limited Official A, Personal Communication, 31 May 2006; Bougainville Copper Limited Official B, Personal Communication 7 June 2006; Bougainville Copper Limited Official C, Personal Communication, 26 October 2006, Letter from RJ Cornelius to Colonel Nuia 17 Jan 1990, published in Kristian Lasslett, *State Crime on the Margins of Empire: Rio Tinto, the War on Bougainville and Resistance to Mining* (Pluto Press, 2014).
- 39 BCL's 2013 Annual Report notes that 'given the non-operational status of BCL... the company does not have any employees and instead contracts a management team, including the services of Peter Taylor, from Rio Tinto as chief executive officer, under a service agreement. Peter Taylor is the managing director and is employed by the Rio Tinto Group, which pays his salary and entitlements'. See Bougainville Copper Limited, *Annual Report 2013*, <<http://www.bcl.com.pg/wp-content/uploads/2014/03/Annual-Report-Release-March-141.pdf>>.
- 40 John Momis, 'Deciding the Future of the Panguna Mine' (21 May 2014) <<https://ramumine.wordpress.com/2014/05/21/john-momis-deciding-the-future-of-the-panguna-mine/>>
- 41 Dr John Momis, quoted in McKenna, above n 26, 87.
- 42 Bougainville Copper Limited, 'Studies Will Provide More Information on Panguna' (Media Release, 10 February 2014) <<http://www.bcl.com.pg/studies-will-provide-more-information-on-panguna/>>
- 43 ABC News, 'UNEP to help Bougainville manage clean-up of Panguna mine' (4 September 2013) <<https://www.abc.net.au/news/2013-09-04/an-bougainville-unesp/4935456>>. See also McKenna, above n 23, 158.
- 44 Bougainville Copper Limited, 'Panguna Planning Continues with Appointment of Consultants' (Media Release, 19 August 2014) (<http://www.bcl.com.pg/panguna-planning-continues-with-appointment-of-consultants/>);
- 45 Catherine MacDonald, *Final Report: Bougainville Socioeconomic and Cultural Baseline Desktop Study and Social Mapping and Landowner Identification Desktop Study* (Aug 2015) (on file).
- 46 Rio Tinto, 'Rio Tinto to review options in Bougainville Copper Limited' (Media Release, 18 August 2014) <[http://www.riotinto.com/documents/140818\\_Rio\\_Tinto\\_to\\_review\\_options\\_in\\_Bougainville\\_Copper\\_Limited.pdf](http://www.riotinto.com/documents/140818_Rio_Tinto_to_review_options_in_Bougainville_Copper_Limited.pdf)>.
- 47 Rio Tinto, 'Bougainville Copper Limited shareholding' (Media Release, 30 June 2016) <[https://www.riotinto.com/media/media-releases-237\\_17638.aspx](https://www.riotinto.com/media/media-releases-237_17638.aspx)>.
- 48 Jemima Garrett, 'Rio Tinto subsidiary takes legal advice after being stripped of Bougainville mining licences' ABC News (online) 13 August 2014, <<https://www.abc.net.au/news/2014-08-12/an-rio-tinto-subsi-dary-take-legal-advice-on-bougainville-mine/5666408>>. See also Rio Tinto, 'Rio Tinto to review options in Bougainville Copper Limited (Media Release, 18 August 2014). <[http://www.riotinto.com/documents/140818\\_Rio\\_Tinto\\_to\\_review\\_options\\_in\\_Bougainville\\_Copper\\_Limited.pdf](http://www.riotinto.com/documents/140818_Rio_Tinto_to_review_options_in_Bougainville_Copper_Limited.pdf)>.
- 49 Letter from Rio Tinto Group Executive Joanne Farrell to President Momis dated 5 August 2016, available online at <<https://www.smh.com.au/world/billiondollar-mess-a-major-disaster-the-people-do-not-deserve-to-have-20160817-gquzli.html>>.
- 50 Ibid.
- 51 ABG President John Momis, 'Rio Tinto's decision to divest its BCL shares, and deny responsibility for Panguna mine legacy issues', Statement to the House of Representatives (20 July 2016). <<https://asopa.typepad.com/files/president-momiss-statement-to-bougainville-parliament-on-rio-tinto-decision.pdf>>. See also Autonomous Bougainville Government, 'Resolution by the House relating to Rio Tinto shares and the Panguna mine legacy' (20 July 2016).
- 52 Daniel Flitton, 'Rio Tinto's billion-dollar mess: 'unprincipled, shameful and evil' The *Sydney Morning Herald* (online), 19 August 2016, <<https://www.smh.com.au/world/billiondollar-mess-a-major-disaster-the-people-do-not-deserve-to-have-20160817-gquzli.html>>.
- 53 Ibid.
- 54 Rio Tinto, 2018 *Strategic Report* (February 2019), 8.
- 55 RNZ Pacific, 'BCL takes Bougainville Govt to court over license non-renewal' (online) 16 February 2018. <<https://www.rnz.co.nz/international/pacific-news/350581/bcl-takes-bougainville-govt-to-court-over-license-non-renewal>>.
- 56 Sarah Danckert and Ben Bohane, 'This derelict mine caused a bloody war. Now Aussie companies are fighting over it again', *Sydney Morning Herald* (online) 15 November 2019, <https://www.smh.com.au/world/oceania/this-derelict-mine-caused-a-bloody-war-now-aussie-companies-are-fighting-over-it-again-20191113-p53a8y.html>. See also Kristian Lasslett, 'Profiting from Disaster: The Australian scramble for Bougainville's mineral wealth' (Aug 2019) 161 *Arena*, 23.
- 57 ABG President John Momis, 'ABG President refutes RTG Claims' (Media release), 22 January 2020 <<http://www.abg.gov.pg/index.php/news/read/media-statement-abg-president-refutes-rtg-claims>>.
- 58 Special Mining Lease Osikaiyang Landowners Association, 'Callabus Mining Demands a Monopoly over Bougainville and the Complete Removal of All Rights of Customary Owners with Zero Upfront Investment Whilst Refusing to Identify Who Will Provide the Funds If Any' (Media Release, 1 February 2019), <<https://hotcopper.com.au/threads/caballus-mining-demands-a-monopoly-over-bougainville.462388/>>.
- 59 Interview with resident (name withheld by request), Tonanau, 22 October 2019.
- 60 Applied Geology Associates, above n 9, 5.14.
- 61 Ibid.
- 62 Ibid.
- 63 Brown, above n 14, 27.
- 64 Interview with Leonard Fong Roka, Makosi, 13 September 2019; Interview with Balbina Donomari, Dutumami, 21 October 2019.
- 65 Interview with Leonard Fong Roka, Makosi, 13 September 2019.
- 66 Interview with Balbina Donomari, Dutumami, 21 October 2019.
- 67 Interview with Andrew Kukumo, Jaba Pump Station, 15 September 2019.
- 68 Interview with Caroline Koruanu, Pangkarinaru, 15 September 2019.
- 69 Interview with Bernard Kurugas, Kuneka (Kobalu 1), 14 September 2019.
- 70 Interview with Kevin Paul, Makosi, 14 February 2020.
- 71 Interview with Peter Kobe, Darenai, 15 February 2019.
- 72 Interview with Livina Pariu, Osiresi, 9 November 2019.
- 73 Interview with Caroline Koruanu, Pangkarinaru, 15 September 2019.
- 74 Interview with Lazarus Kaiura, Pem'mana, 17 November 2019.
- 75 Interview with Dorothy Mekea, Morotona Health Centre, 27 October 2019.
- 76 Interview with Bernadette Komeleko, Buka, 12 February 2020.
- 77 Interview with Herman Kiaku, Enamira, 5 November 2019.
- 78 Catholic Diocese of Bougainville, *We are Crying for our Land: Stories from the Panguna Listening Project*, (2019) <[https://www.misereor.org/fileadmin/user\\_upload/misereor\\_org/Publications/englisch/plp-bougainville-stories.p](https://www.misereor.org/fileadmin/user_upload/misereor_org/Publications/englisch/plp-bougainville-stories.p)>, 8-9.
- 79 Interview with Anolda Albert, Menago, 17 February 2020.

- 80 Interview with Bernardine Kira, Moirue, 16 September 2019.
- 81 Interview with George Posiona, Kuneka (Kobalu 1), 14 September 2019.
- 82 Interview with Bernard Kurugas, Kuneka (Kobalu 1), 14 September 2019.
- 83 Interview with Serah Biuai, Pem'mana, 17 November 2019.
- 84 Interview with Anolda Albert, Menago, 17 February 2020.
- 85 Interview with Bernardine Kiraa, Moirue, 16 September 2019.
- 86 Interview with Serah Biuai, Pem'mana, 17 November 2019.
- 87 Interview with Michael Unoke, Konuku, 12 November 2019.
- 88 Interview with Therese Pokamari, Enamira, 20 October 2019.
- 89 Catholic Diocese of Bougainville, *We Are Crying for Our Land*, above n 78, 9.
- 90 Interview with Dorothy Mekea, Morotona Health Centre, 27 October 2019.
- 91 Interview with Andrew Kukumo, Jaba Pump Station, 15 September 2019.
- 92 Interview with 'Michael', quoted in Catholic Diocese of Bougainville, *We are Crying for our Land*, above n 78, 22.
- 93 Interview with Livina Pariu, Osiresi, 9 November 2019.
- 94 Interview with Jimmy Baito, Rerevai, 12 November 2019.
- 95 Interview with resident from Rerevai (name withheld by request), Makosi, 13 September 2019.
- 96 Interview with Jane Era, Tonanau, 15 September 2019.
- 97 Interview with Lazarus Kaiura, Pem'mana, 17 November 2019.
- 98 Interview with Bonaventure Kenulei, Arawa, 15 February 2020.
- 99 Interview with Caroline Koruanu, Pangkarinaru, 15 September 2019.
- 100 Interview with Andrew Kukumo, Jaba Pump Station, 15 September 2019.
- 101 Interview with Anna Nonkonang, Mootori, 14 November 2019.
- 102 Interview with Lazarus Kaiura, Pem'mana, 17 November 2019.
- 103 Interview with Livina Pariu, Osiresi, 9 November 2019.
- 104 Interview with Michael Unoke, Konuku, 12 November 2019.
- 105 Interview with Herman Kiaku, Enamira, 5 November 2019.
- 106 Interview with Balbina Donamari, Dutumami, 21 October 2019.
- 107 Interview with Anna Nonkonang, Mootori, 14 November 2019.
- 108 Interview with Therese Pokamari, Enamira, 20 October 2019.
- 109 Interview with Dorothy Mekea, Morotona Health Centre, 27 October 2019.
- 110 Applied Geology Associates, above n 9, 8.3.5.
- 111 Interview with Wendy Bowara, Dapera, 14 February 2020.
- 112 Interview with Anna Nongkonang, Mootori, 14 November 2019.
- 113 Interview with Christina Donang, Mepuru, 14 November 2019.
- 114 Interview with resident (name withheld by request), Rerevai, 13 November 2019.
- 115 Interview with Anna Akonabo, Kavarongnau, 20 October 2019.
- 116 Interview with Jimmy Baito, Rerevai, 12 November 2019.
- 117 Interview with Anna Nongkonang, Mootori, 14 November 2019.
- 118 Interview with Caroline Koruanu, Pangkarinaru village, 15 September 2019.
- 119 Interview with Balbina Donomari, Dutumami village, 21 October 2019.
- 120 Interview with Fidelis Bakasiu, Dutumami village, 21 October 2019.
- 121 Interview with Hellen Darius, Darenai village, 12 November 2019.
- 122 Interview with Paul Watori, Toku, 12 November 2019.
- 123 Interview with resident (name withheld by request), Tonanau, 22 October 2019.
- 124 Interview with Mary Damana, Panguna Mine Pit, 16 February 2020.
- 125 Interview with Livina Pariu, Osiresi, 9 November 2019.
- 126 Interview with Andrew Kukumo, Jaba Pump Station, 15 September 2019.
- 127 Interview with Caroline Koruanu, Pangkarinaru, 15 September 2019.
- 128 Interview with Therese Pokamari, Enamira, 20 October 2019.
- 129 Interview with Bernardine Kiraa, Moirue, 16 September 2019.
- 130 Interview with Bonaventure Kenulei, Arawa, 15 February 2020.
- 131 Interview with Serah Biuai, Pem'mana, 17 November 2019.
- 132 Applied Geology Associates, above n 9, 8.3.1.1 and 8.4.4.
- 133 Interview with Herman Kiaku, Enamira, 5 November 2019.
- 134 Interview with Balbina Donomari, Dutumami, 21 October 2019.
- 135 Interview with Jane Era, Health Centre, Tonanau, 15 September 2019.
- 136 Ibid.
- 137 Interview with Thomas Matali, Arawa Hospital, 20 December 2019.
- 138 Interview with Peter Sisia, Director of Rural Health Services for Central Bougainville, Arawa, 16 September 2019.
- 139 Interview with Lazarus Kaiura, Pem'mana, 17 November 2019.
- 140 Human Rights Committee, *General Comment No 6: Article 6 (Right to Life)*, 16th sess, UN Doc. HRI/GEN/1/Rev1 (30 April 1982) para 1; Human Rights Committee, *General comment No 36 (2018) on article 6 of the International Covenant on Civil and Political Rights, on the right to life*, 124th sess, UN Doc CCPR/C/GC/36 (30 October 2018) para 2.
- 141 These were already forming and expected to continue forming during the mine's period of operation. See Applied Geology Associates, above n 9, at 8 which states: 'In some areas, especially along the northern bank of the Jaba River, access to villages has been hindered by the deposition of tailing which provide an uncomfortable and sometimes dangerous access to the road for which there is no alternative.'
- 142 Human Rights Committee, *The adverse effects of the movement and dumping of toxic and dangerous products and wastes on the enjoyment of human rights*, 12th sess, UN doc A/HRC/RES/12/18 at 2.
- 143 Commission on Human Rights, *Adverse effects of the illicit movement and dumping of toxic and dangerous products and wastes on the enjoyment of human rights*, 57th sess, UN Doc E/CN.4/RES/2001/35 at 1.
- 144 *International Covenant on Economic, Social and Cultural Rights (ICESCR)*, opened for signature on 16 December 1966, 993 UNTS 3 (signed and entered into force 3 January 1976), art 12.
- 145 *Universal Declaration on Human Rights (UDHR)*, GA Res 217A(III), UNGAOR, 3rd sess, 183rd plen mtg, UN Doc A/810 (10 December 1948), art 25.
- 146 The right to health is recognised by art 5(e) (iv) of the *International Convention on the Elimination of All Forms of Racial Discrimination (CERD)*, opened for signature 7 March 1966, 660 UNTS 195 (entered into force 4 January 1969), by arts 11.1 (f) and 12 of the *Convention on the Elimination of All Forms of Discrimination against Women (CEDAW)*, opened for signature 18 December 1979, 1249 UNTS 13 (entered into force 3 September 1981), and by art 24 of the *Convention on the Rights of the Child (CRC)*, opened for signature 20 November 1989, 1577 UNTS 3 (entered into force 2 September 1990). Several regional human rights instruments also recognise the right to health, such as the *European Social Charter (Revised)*, 3 May 1996, ETS 163 (entered into force 1 July 1999), art 11, the *African Charter on Human and Peoples' Rights*, 27 June 1981, 1520 UNTS 217 (entered into force 20 October 1986), art 16 and the *Additional Protocol to the American Convention on Human Rights in the Area of Economic, Social and Cultural Rights* of 1988, 16 November 1999,

- opened for signature on 17 November 1988, A-52 (entered into force on 16 November 1999), art 10. Similarly, the right to health has been proclaimed in the Vienna Declaration and Programme of Action of 1993, see *Vienna Declaration and Programme of Action*, 12 July 1993, UN Doc A/CONF.157/23.
- 147 See, regarding the right to health as informed by the social determinants of health: Committee on Economic, Social and Cultural Rights, *General Comment 14: The right to the highest attainable standard of health* (CESCR General Comment 14), 22nd session, UN Doc E/C.12/2000/4 (11 August 2000) para 3, UN General Assembly, Report of the Special Rapporteur on the right to health, A/62/214 (8 August 2007) paras 45-48, 50.
- 148 CESCR General Comment 14, UN Doc E/C.12/2000/4 para 11.
- 149 Paul Hunt, *Report of the Special Rapporteur on the right of everyone to the enjoyment of the highest attainable standard of physical and mental health*, UN Doc, A/62/214 (8 August 2007) para 50: 'Safe water and adequate sanitation are two integral and closely related underlying determinants which are essential for the realization of the right to the highest attainable standard of health. Inadequate access to water and sanitation can threaten life, devastate health, destroy opportunities, undermine human dignity and cause deprivation'.
- 150 See Applied Geology Associates, above n 9.
- 151 *Ibid.*, at 2: 'the loss of land and water resource – the National Government... has issued a lease over this land to a private company... laying large areas of land waste, making river water unusable and polluting the coastal waters...' and at 5: 'The water and fish resources of the Kawerong River and the Jaba River below its confluence with the Kawerong, have been lost for probably several generations. The unstable flow of water, high sediment loads and unacceptable water chemistry deter fish from migrating to the upper Jaba River system. There is some hope of recovery for the Pangara River but it will be a long slow process unless an innovative solution, such as diversion directly to the coast, is found'.
- 152 *Ibid.* at 8: 'the tailings and Kawerong River water through which there is little alternative for some to walk are alkaline and abrasive and this may aggravate sores and delay healing'.
- 153 *Ibid.* at 6: 'There is circumstantial evidence implicating the discharge from the Jaba River in the present 'ulcerative' fish disease affecting sea fish of the western and southern coasts of Bougainville. This cannot be proven but there is good reason for suspicion'; Catholic Diocese of Bougainville, *We are crying for our land*, above n 78, 35: 'The waste and contamination of the mine are still down there like the polluted fish. When we eat fish, we don't know the level of contamination in the fish. I want BCL to come back and clean up the mess, not to start any mining again' and at 29: 'We request that people and the food chain be checked by research specialists for heavy metals such as copper, iron, sulphur, mercury etc. We would like to know if they are at normal levels, so many parts per million (PPM) as per FDA Standards (Food and Drug Administration)'; Brown, above n 14, 27.
- 154 Başkut Tuncak, *Report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes*, UN Doc A/HRC/30/40 (8 July 2015) paras 88 and 92.
- 155 Applied Geology Associates, above n 9, 11.
- 156 Committee on Economic, Social and Cultural Rights, *General Comment No 15: The Right to Water*, 29th session, UN Doc E/C.12/2002/11 (20 January 2003) para 1.
- 157 UDHR, art 25(1); ICESCR, *International Covenant on Civil and Political Rights*, opened for signature 16 December 1966, 999 UNTS 171 (entered into force 23 March 1976), CERD, CEDAW, CRC, *Convention on the Rights of Persons with Disabilities (CRPD)*, opened for signature 13 December 2006, 2515 UNTS 3 (entered into force 3 May 2018).
- 158 *The human right to water and sanitation*, GA Res 64/292, UNGAOR, 64th sess, Agenda Item 48, UN Doc A/RES/64/292 (28 July 2010).
- 159 *Human rights and access to safe drinking water and sanitation*, HRC Res 15/9, HRCOR, 15th sess, 31st mtg, Agenda Item 3, UN Doc A/HRC/RES/15/9 (30 September 2010): 'The human right to safe drinking water and sanitation is derived from the right to an adequate standard of living and inextricably related to the right to the highest attainable standard of physical and mental health, as well as the right to life and human dignity'. See also, *Human rights and access to safe drinking water and sanitation*, HRC Res 7/22, HRCOR, 7th session, 41st mtg, UN Doc A/HRC/RES/7/22.
- 160 See, for example, *Attakoya Thangal v Union of India* (1990) I KLT 580; *Commune de Wemmel, Moniteur Belge*, Arrêt no. 36/98 (24/4/98); *Villavechia de Pérez Lasala, Teresa c/ Obras Sanitarias de Mendoza S.E., s'acción de inconstitucionalidad*, 5 February 1990, Case 45525 (Supreme Court of Mendoza); *Social and Economic Rights Action Center and the Center for Economic and Social Rights v Nigeria* (Communication No. 155/96), (2001) AHRLR 60, 27 October 2001.
- 161 Committee on Economic, Social and Cultural Rights, *General Comment 15: The right to water*, 29th sess, UN Doc 12/2002/11(20 January 2013) (CESCR General Comment 15) para 2.
- 162 *United Nations Declaration on the Rights of Indigenous Peoples*, GA Res 61/295, UN GAOR, 61st sess, 107th plen mtg, Supp No 49, UN Doc A/RES/61/295 (13 September 2007), art 25.
- 163 See also Tuncak, above n 154 at [88] and [92].
- 164 Adequate housing as a component of the right to an adequate standard of living, HRC Res, HRCOR, 15th sess, UN Doc A/HRC/RES/15/8 (30 September 2010); Committee on Economic, Social and Cultural Rights, *General Comment 12: the right to adequate food*, 20th sess, UN Doc E/C12/1999/5 (CESCR General Comment 12).
- 165 UDHR, art 25(1); ICESCR, art 11(1).
- 166 Office of the High Commissioner for Human Rights, *The Right to Adequate Food – Fact Sheet 34* (2010) available online at: <www.ohchr.org/Documents/Publications/FactSheet34en.pdf>.
- 167 CESCR General Comment 12, para 20.
- 168 Jean Ziegler, *Report submitted by the Special Rapporteur on the right to food*, UN Doc E/CN.4/2003/54 (10 January 2003), para 32; Jean Ziegler, *Report submitted by the Special Rapporteur on the right to food*, UN Doc UN Commission on Human Rights, UN Doc E/CN.4/2004/10 (9 February 2004) paras 41 to 52. See also Jean Ziegler, *Interim report of Special Rapporteur of the Commission on Human Rights on the right to food*, UN Doc A/60/350 (12 September 2005) para 33.
- 169 Applied Geology Associates, above n 9, 2: 'the land holdings of some villagers have been significantly decreased – the area of land suitable for gardening, owner or customarily used by Dapera and Moroni villages has decreased by perhaps as much as 90%. Other villages have lost arable land.'
- 170 *Ibid.*, 3. See also Catholic Diocese of Bougainville, *We are crying for our land*, above n 78, 22.
- 171 Brown, above n 14, 25: 'the spread of tailings has threatened several villages, deprived the people of both agricultural land and areas of rainforest traditionally important for hunting and building materials, and the people have lost access to fish in the rivers...'. The spread of tailings continues.
- 172 Applied Geology Associates, above n 9, 9.
- 173 Catholic Diocese of Bougainville, *We are crying for our land*, above n 78, 22.
- 174 Committee on Economic, Social and Cultural Rights, *Report on the Seventh Session*, UN Doc E/1993/22 (1993) para 213; Committee on Economic, Social and Cultural Rights, *General Comment 21: Right of everyone to take part in cultural life*, 43rd sess, UN Doc E/C.12/GC/21(21 December 2009), see in particular paras 11 to 13.
- 175 UDHR, art 27(1).
- 176 ICESCR, art 15.
- 177 From GA Res 55/91, UN GAOR, 55th sess, UN Doc A/RES/55/91 (4 December 2000) to GA Res 66/154, UNGAOR, 66th sess, UN Doc A/RES/66/154 (19 December 2011).
- 178 CRC, arts 30 and 31; CRPD, art 30; CERD, art 5(e)(vi); CEDAW, art 13(c).
- 179 See, for example, *Human Rights Committee, Merits, Communication No 197/1985*, UN Doc CCPR/C/33/D/197/1985 (27 July 1988) (Kitok v Sweden).
- 180 *Chapman v United Kingdom* (2001) 33 EHRR 18.

- 181 Applied Geology Associates, above n 9, 3: These include loss of contact/connection with ancestors through destruction of cemeteries, the land they occupied, and the feeling of having betrayed the trust of both past and future generations as a result of ceding the land. Loss of cultural values associated with the traditional lifestyles is another important consideration.
- 182 In Dove, above n 4, 182.
- 183 Committee on the Elimination of Discrimination against Women, *General recommendation No 34 on the rights of rural women* (CEDAW General Recommendation 34), UN Doc CEDAW/C/GC/34, paras 81 to 83.
- 184 CEDAW, art 14(2)(h).
- 185 CEDAW General Recommendation 34, para 81.
- 186 CRC, arts 6, 24, 28, 27, 30.
- 187 *Disposal of Overburden and Tailings Agreement* (1971), above n 13, 7. See also at 5 'As it is the intention that the disposal of tailings be controlled, and tailings be spread in such a way as to enable re-use of the land at the earliest practicable date...'
- 188 Ibid, 7.
- 189 Ibid, 5.
- 190 Ibid, 2.
- 191 Ibid.
- 192 *Disposal of Tailings and Waste Rocks Agreement* (1987), in Applied Geology Associates, above n 9, Appendix V.
- 193 Applied Geology Associates, above n 9, 3.
- 194 Ibid, 8.4.7(1).
- 195 Ibid.
- 196 Ibid, 6.5.3.
- 197 *Guiding Principles on Business and Human Rights: Implementing the United Nations "Protect, Respect and Remedy" Framework* (UNGPs), principle 11; *OECD Guidelines for Multinational Enterprises* (OECD Guidelines), Parts II (A)(2); IV(1).
- 198 UNGPs, principle 22; OECD Guidelines, Parts I(11) and IV(6).
- 199 OECD Guidelines, para 5.
- 200 See, UNGPs, principle 24 and accompanying commentary which provides: 'While business enterprises should address all their adverse human rights impacts, it may not always be possible to address them simultaneously. In the absence of specific legal guidance, if prioritization is necessary business enterprises should begin with those human rights impacts that would be most severe, recognizing that a delayed response may affect remediability.'
- 201 See, UNGPs, principle 11 and accompanying commentary.
- 202 OECD Guidelines for MNEs, Part I (1) and (4).
- 203 See, UNGPs, principle 14 and accompanying commentary which provides: '[t]he means through which a business enterprise meets its responsibility to respect human rights will be proportional to, among other factors, its size'.
- 204 Bruce Harvey quoted in *DIHR helps produce human rights guide for Rio Tinto* (2013) <<https://www.humanrights.dk/news/dihr-helps-produce-human-rights-guide-rio-tinto>>.
- 205 Rio Tinto, *Why human rights matter* (2013) <[https://www.riotinto.com/documents/ReportsPublications/Rio\\_Tinto\\_human\\_rights\\_guide\\_-\\_English\\_version.pdf](https://www.riotinto.com/documents/ReportsPublications/Rio_Tinto_human_rights_guide_-_English_version.pdf)> (January 2013) at 89 (Appendix A) and 90 (Appendix B).
- 206 Rio Tinto, *Annual Report* (2014), 25.
- 207 Rio Tinto, *Why human rights matter* (2013) [https://www.riotinto.com/documents/ReportsPublications/Rio\\_Tinto\\_human\\_rights\\_guide\\_-\\_English\\_version.pdf](https://www.riotinto.com/documents/ReportsPublications/Rio_Tinto_human_rights_guide_-_English_version.pdf) at 82.
- 208 In 2012, 2013 and 2015, Rio Tinto's human rights policy and position statements claimed that: 'Wherever we operate, we engage with communities and seek to understand the social, cultural, environmental and economic implications of our activities, so that we can respond to concerns and work to optimise benefits and reduce negative impacts...'. See Rio Tinto, *Human Rights Policy* (2012); Rio Tinto, *Why human rights matter* (2013); Rio Tinto, *Human Rights Policy* (2015).
- 209 Rio Tinto, *Our commitment: Environment* (2019) <https://www.riotinto.com/ourcommitment/environment-24290.aspx> See, especially 'we seek to avoid, prevent, mitigation and remediate the environmental impacts of our activities'.
- 210 Rio Tinto, *Our commitment: Closure* (2019) <https://www.riotinto.com/ourcommitment/closure-24295.aspx> See, especially 'we are committed to ensuring that we manage our assets and the impacts they have across their full life cycle, including after we have finished'.
- 211 Rio Tinto, *The way we work* (2015) <[https://www.riotinto.com/documents/RT\\_The\\_way\\_we\\_work\\_EN.pdf](https://www.riotinto.com/documents/RT_The_way_we_work_EN.pdf)> at 16: 'We support the United Nations' Universal Declaration of Human Rights and respect those rights wherever we operate. We are committed to operating consistently with the UN Guiding Principles on Business and Human Rights. This means that we need to know what adverse human rights impacts we are causing, contributing to or are directly linked to, and that we manage them'.
- 212 Rio Tinto (formerly CRA) held a 53.6% share of BCL. See, eg, BCL, *Annual Report* (1973) <<http://www.bcl.com.pg/wp-content/uploads/2015/07/BCL-AnnualReport1973.pdf>>.
- 213 BCL, *Environment Policy* (2017) <<http://www.bcl.com.pg/wp-content/uploads/2016/12/Environmental-Policy-21-02-2017v0.pdf>>.
- 214 BCL, *Code of Conduct Policy* (2017) <<http://www.bcl.com.pg/wp-content/uploads/2016/12/Code-Of-Conduct-Policy-21-02-2017v0.pdf>> at 2.
- 215 Ibid at 5.
- 216 As a signatory to each of the treaties we have discussed above.
- 217 ICESCR, art 2.1; Committee on Economic, Social and Cultural Rights, *General Comment 3, The nature of States parties obligations* (CESCR General Comment 3), fifth session, UN Doc (14 December 1990), para. 11. At a minimum, alongside Rio Tinto and BCL's responsibilities, PNG is required to ensure that 'every effort has been made to use all resources that are at its disposition in an effort to... prevent any significant number of individuals being deprived of essential foodstuffs, of essential primary health care, of basic shelter and housing, or of the most basic forms of education': CESCR General Comment 3, para 10.
- 218 Interview with Michael Totobu, Moirue village, 16 September 2019.



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