ETIKKRÅDET
STATENS PENSJONSFOND UTLAND

To the Ministry of Finance

21 June 2012

Unofficial English Translation

Recommendation on the exclusion of Volcan Compañia Minera SAA from the Government Pension Fund Global

Content

1 Summary

The Council on Ethics recommends excluding the Peruvian company Volcan Compañia Minera SAA (Volcan) from the Government Pension Fund Global due to an unacceptable risk that the company contributes to severe environmental damage through its mining operations in Cerro de Pasco, Peru.

Volcan is Peru's largest producer of lead and silver, and the country's second-largest producer of zinc. The mine is located in the middle of a city of 70,000 inhabitants. As the mining operation takes place in residential areas of the city, the Council has emphasised the consequences that the mining operation has for human life and health. The Council has focused especially on the risk to children's health resulting from high concentrations of lead in the soil and water.

There have been mining operations in Cerro de Pasco for several centuries. Volcan purchased the mine in 1999, and today the mining complex comprises open-pit and underground mines, two ore processing plants, nearly 30 ore stockpiles, two waste rock dumps and a tailings impoundment. With the exception of the tailings impoundment, all facilities are located in the town, and many are in the immediate vicinity of residential areas. The studies that the Council have considered show that the soil in Cerro de Pasco contains high and to some extent very high concentrations of lead, and that there is significant lead pollution in residential areas. The rivers are also heavily polluted by lead.

The population has been exposed to lead in a variety of ways, and several studies have shown abnormally high concentrations of lead in the blood of children in Cerro de Pasco. Lead is poisonous and can cause serious short-term and long-term health effects. Among other things, lead can affect children's intellectual development even at low concentrations. The World Health Organization considers a concentration of more than 10 µg lead per decilitre of blood to be harmful.

In the studies considered by the Council, nearly 1,300 children in Cerro de Pasco were evaluated in the period between 1999 and 2007. Depending on the neighbourhood, between 50 and 90 percent of the children had high blood lead levels (≥10 µg/dl), and in some cases the level was so high that there was significant risk of the child developing serious and chronic health problems. High blood lead levels occur more frequently near the open pit mines, waste rock dumps and ore stockpiles.

The Council first contacted Volcan in a letter dated 26 May 2010, and has subsequently communicated with the company several times. Volcan has twice been sent draft recommendations, and the company has contributed information and comments on the recommendations. The company's response is detailed in section four of the recommendation.

The Council understands that the fact that the residents of Cerro de Pasco are exposed to lead pollution caused by long-term mining is not disputed. More than half of the children have such elevated blood lead levels that their intelligence and development can be affected. The impact of the elevated lead levels is exacerbated by the children living in households with few means, where the standard of living can further aggravate the children’s and families’ situations. The Council considers it likely that the lead exposure that the children are subject to leads to chronic and serious health problems in children who are already in a vulnerable situation, and that this could continue for generations unless the lead pollution is reduced.

Volcan argues that the company is not responsible for the serious environmental situation in Cerro de Pasco. The company seems to assume that after Volcan acquired the mine in 1999, the mining operation has not contributed to the lead pollution. The Council has not assessed

who has primary responsibility for the current situation. The Council nevertheless considers it likely that activities that include the extraction and processing of lead ore and the storage of ore and waste rock in the middle of the city contribute to the high concentrations of lead. In the opinion of the Council on Ethics, the company does not appear to have conducted sufficient studies to clarify the causes of the high concentrations of lead in rivers and soil that are affected by the mining operation, and it also does not appear that the company has attempted to clarify the extent to which its activities affect children's health. According to accepted international norms such as the standards from the *International Finance Corporation* (IFC), companies have an independent responsibility to prevent or reduce the risk of their activities having negative consequences for the safety and health of the inhabitants.

Volcan has implemented the measures the authorities have ordered, and it cannot be said that the company generally operates in Cerro de Pasco in conflict with its state-issued licences. The company does not see itself as contributing to the pollution as long as it complies with the requirements imposed by the state. The Council understands that Volcan's activities nevertheless can have harmful environmental effects. Among other things there has been shown to be heavy-metal runoff from Volcan's facilities, but the extent to which the diffuse discharges from the facilities are regulated, or how much is captured and processed, is unclear. The same uncertainty applies to discharges to soil. Several measures proposed in impact assessments and other reports to reduce discharges to water largely do not appear to have been implemented.

Volcan has a licence to operate the mine for several more decades. In a city in which residents already suffer from high levels of lead pollution and have done so for many years, all further additions of lead should be limited as much as possible. In the Council's opinion, this requires especial care to be exercised by the company, both as concerns examining the company's contribution to the pollution and to the measures which should be implemented. The lack of knowledge about how the company's activities affect the environment in Cerro de Pasco contributes to increasing the risk of serious health problems among children and the general population.

On the basis of an overall assessment, the Council believes there is an unacceptable risk that Volcan contributes to current and future severe environmental damage through its mining operation in Cerro de Pasco. The Council therefore recommends that the company be excluded from GPFG's investment universe.

2 Introduction

On 10 March 2010, the Council on Ethics decided to evaluate the fund's investment in Volcan[1] against the Guidelines for the Observation and Exclusion of Companies from the GPFG's Investment Universe (the Ethical Guidelines).[2] The background for this was the existence of information suggesting that the mining operation in the Peruvian city of Cerro de Pasco exposes the population to hazardous pollution from lead and other heavy metals. Cerro de Pasco is a city of 70,000 inhabitants and is located approximately 4,000 metres above sea level. The mining operation takes place in the middle of the city.

At the end of 2011, the GPFG owned shares in the company valued at NOK 45 million, corresponding to a holding of 0.22 per cent of the shares in the company.

[1] The company's Issuer Id: 154314
[2] http://www.regjeringen.no/nb/sub/styrer-rad-utvalg/etikkradet/etiske-retningslinjer.html?id=425277.

2.1 What the Council on Ethics has assessed

The Council on Ethics has assessed whether there is an unacceptable risk that Volcan is responsible for severe environmental damage according to Section 2, third paragraph letter b of the Ethical Guidelines.

In previous assessments of severe environmental damage, the Council on Ethics has emphasised whether: [3]

- the damage is significant;
- the environmental damage will have irreversible or long-term negative effects,
- the damage has considerable negative impact on human life and health;
- the damage is a result of breaches of national laws or international standards;
- the company has failed to act in order to prevent the damage;
- the company has implemented adequate measures to rectify the damage;
- it is probable that the company's unacceptable practice will continue.

The mining activity takes place in residential areas of the city, and the Council has therefore emphasised the consequences of the mining activity for human life and health, and particularly for the life and health of children. The Council has focused on lead pollution that can lead to long-term and chronic health problems. As GPFG's Ethical Guidelines apply to existing and future breaches of norms, the Council has assessed whether there is an unacceptable risk that the continued operation of the mine exposes children in Cerro de Pasco to hazardous quantities of lead.

Volcan acquired the mine in Cerro de Pasco in 1999. Much of the pollution is clearly the result of previous mining operations, but Volcan owns and operates the mine today. The Council considers all facilities, ore stockpiles, waste rock dumps and operations that fall within the company's current concession areas to be the company's responsibility.

2.2 Sources

This recommendation is primarily based on information that Volcan has sent to the Council, among other things through its responses to the Council's inquiries. The Council has *inter alia* been given access to the company's environmental monitoring reports and environmental impact assessments.

The Council has also based itself on a study conducted by the United States' *Centers for Disease Control* in 2007 which assessed women and children's exposure to heavy metals in Cerro de Pasco.[4] Both the company and the authorities see this study as the most thorough assessment of the local population's exposure to lead and other heavy metals in Cerro de Pasco.

Further, the Council has communicated with several public agencies in Peru, including *OSINERGMIN* (an agency under the Ministry of Energy and Mines which was responsible for environmental monitoring of mines until 2011), the *Dirección General de Asuntos Ambientales Mineros* (directorate of mining-related environmental issues), *OEFA* (the Ministry of the Environment's organisation for environmental impact assessments and

[3] In previous recommendations, the Council has elaborated on and specified the criteria for severe environmental damage. See for example the recommendations for Freeport McMoRan, Barrick Gold and Vedanta on www.etikkradet.no.

[4] United States Centers for Disease Control (CDC [2007]): *Final report on heavy metals exposures among children and women of childbearing age in three mining communities in Cerro de Pasco, Peru.*

monitoring, which has been responsible for the environmental monitoring of mines since 2011), and *DIRESA-Pasco* (local health authority in the Pasco region).

3 Background

Volcan is Peru's largest producer of lead and silver, and the second-largest producer of zinc.[5] All of the company's mines are located in the central mountain areas of Peru, and the mine in Cerro de Pasco is among the largest. The company is listed on the stock exchanges in Lima, Santiago and Madrid.

3.1 Volcan's activities in Cerro de Pasco

There have been mining operations in Cerro de Pasco since the 1600s. Empresa Minera Paragsha S.A (Empresa Paragsha) began its activities in the city in 1902, and opened the Raul Rojas open-pit mine in 1956. Volcan acquired Empresa Paragsha from the state-owned company Centromin in 1999. Volcan also owns a smaller mine, El Pilar, which borders Raul Rojas.[6]

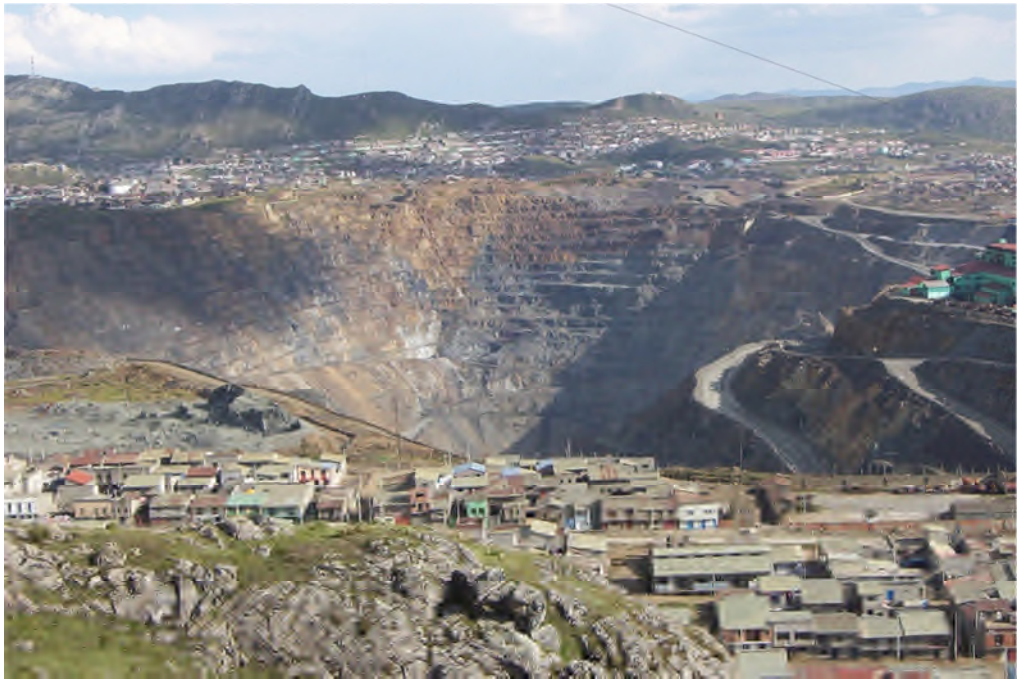

Figure 1: Raul Rojas open-pit mine in Cerro de Pasco. The picture is taken from the north looking south.[7]

[5] Volcan's annual report *Memoria Anual 2010*, available at http://www.bvl.com.pe/eeff/CM0001/20110330195901/MECM00012010AIA01.PDF.
[6] Both are referred to hereafter as 'the open-pit mine'.
[7] The picture was obtained from http://www.editorialvirtual-mapp.com/CERRO-DE-PASCO.html.

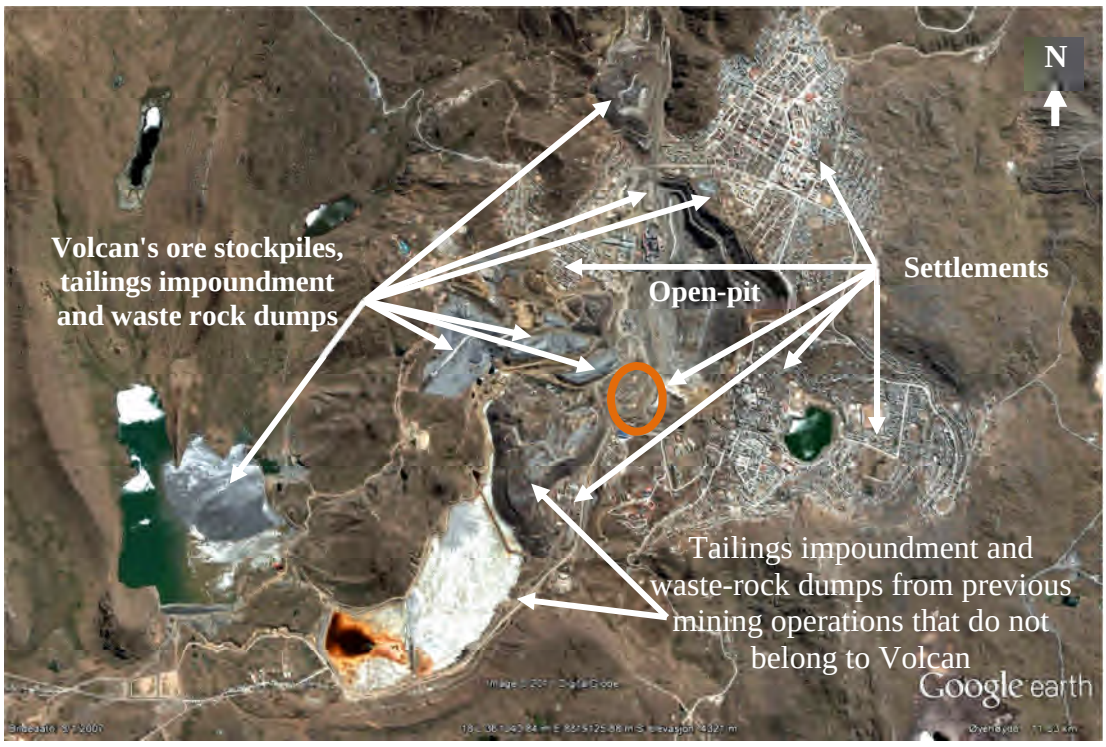

Figure 2: Google Earth satellite image of Cerro de Pasco. The open-pit mine and the company's tailings impoundment, waste rock dumps and ore stockpiles are marked, as are residential areas and dumps that do not belong to Volcan. The Ayapoto neighbourhood, which is mentioned later in this recommendation, is marked with a circle.

In addition to the open-pit mines and underground mines, the mining complex consists of two ore processing plants (Paragsha and San Expedito), nearly 30 ore stockpiles,[8] two waste rock dumps and a tailings impoundment. These facilities are located at various sites in the city (see Figure 2). There is no smelter in Cerro de Pasco.

The lead and zinc ore is crushed, ground, and concentrated in a flotation plant. The concentrates are transported to a loading zone for further freight by train. Tailings from the process are deposited at a separate site west of the city. Tailings are a slurry of finely ground ore, process chemicals and water.

Ore with viable concentrations of gold, copper and silver are stored in ore stockpiles at various sites in the city for future processing. The company plans to build a new processing facility to exploit the ore, and this facility will remove 12 per cent of the ore stockpiles over the course of five years. The company plans to remove the remaining ore stockpiles over a thirteen-year period.[9] To the Council's knowledge, no concrete measures to this end have been implemented yet.

Unviable rock and ore are stored in waste rock dumps in the northern part of the city. Waste-rock and tailings from previous mining operations are stored in an area south-west of the city. These have never been part of Volcan's operations (see Figure 2).

[8] Minera Interandina de Consultores S.R.L. (2007) *Estudio de Impacto Ambiental Ampliación Paragsha - San Expedito*, appendix 4-22: *Ubicación de los stockpiles y botaderos.*
[9] Attachment to Volcan's email to the Council on Ethics, 14 May 2011.

In 2010, Volcan processed approximately four million tonnes of ore annually.[10] The company has informed the Council that for commercial reasons, the open-pit mine has not been in operation since October 2010 Instead, underground mining - where concentrations of silver, lead and zinc are higher - has increased. The company's ore extraction has dropped by 45 per cent in the last year. The company has stated that the open-pit shutdown is temporary, and that it has concrete plans to expand its open-pit mining activities.[11]

3.2 Environmental requirements

In 1993, environmental requirements were imposed on mining operations in Peru through environmental protection regulations for the mining and metal industry.[12] Among other things, the state requires that companies conduct the necessary studies and prepare a plan (known as a PAMA plan) for the measures that must be implemented in order for existing facilities to meet current environmental requirements.[13] Additionally, companies must assess the environmental impact of new projects and identify measures to reduce the environmental impact of these. When the environmental impact assessment has been approved, the company is required to implement the measures.

Centromin created a PAMA for Cerro de Pasco in 1996, and Volcan inherited parts of the plan in 1999. According to Volcan, it has met all its obligations related to this plan.[14] Volcan has also received approval for three impact assessments, which the company is required to implement. These form part of the regulations for the mining operation.[15]

The state imposes requirements on the company's discharge of pollutants, including a requirement that the lead content of the discharge not exceed specific limits. The discharge values are controlled through monitoring programmes that the state approves. The monitoring reports must be sent to the authorities every month. According to the above regulations, a company will by definition not pollute the environment as long as it complies with the discharge limits.[16] The state also imposes requirements to the water quality in the river that is the recipient of the discharge from the mining activities.

Volcan has been fined a number of times for violations of environmental laws. In responding to questions from the Council on Ethics, the company stated in an appendix to its letter dated 12 July 2010 that the state has imposed administrative fines for more than 20 different violations of environmental provisions. These included processing greater amounts of ore

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[10] Volcan 2011: *Análisis y discusión de la gerencia al segundo trimestre del año 2011*, available at http://www.volcan.com.pe/site/inversionistas/Reportes%20de%20Resultados/2T%202011%20Analisis%20de%20la%20Gerencia.pdf.

[11] See footnote 9.

[12] *Reglamento para la proteccion ambiental en la actividad minero-metalurgica*, D.S.Nº 016-93-EM de 28-ABR-93, available at http://intranet2.minem.gob.pe/web/archivos/dgaam/publicaciones/compendio99/016-93_059-93.pdf.

[13] PAMA stands for *Programa de Adecuación y Manejo Medioambiental.*

[14] Volcan's letter to the Council on Ethics, 2 December 2011.

[15] Volcan's letter to the Council on Ethics, 2 December 2011. According to Volcan, the mining operation is regulated by three impact assessments: 1) The expansion of the Paragsha and San Expedito facilities (approved in 2008), 2) The expansion of the Raul Rojas open-pit mine (also known as Plan L, approved in 2011) and 3) The construction of a new facility for the processing of oxidised ore (approved in 2011).

[16] Section 2 (Definitions): '***Contaminación Ambiental***. - *Acción que resulta de la introducción por el hombre, directa o indirectamente en el medio ambiente, de contaminantes, que tanto por su concentración, al superar los niveles máximos permisibles establecidos, como por el tiempo de permanencia, hagan que el medio receptor adquiera características diferentes a las originales, perjudiciales o nocivas a la naturaleza, a la salud y a la propiedad.*' The regulations are available online on: http://intranet2.minem.gob.pe/web/archivos/dgaam/publicaciones/compendio99/016-93_059-93.pdf.

than permitted, building a processing plant without assessing the environmental impact, discharges to water in excess of the limits, and failing to implement measures it had been ordered to complete.[17]

4 Environmental conditions in Cerro de Pasco

Volcan's mining operations occupy a 6.3 km^2 area in and around Cerro de Pasco. About half of this area (3.25 km^2) is located within the town itself.[18] The open-pit mines, processing facilities, ore stockpiles and waste rock dumps are in the immediate vicinity of the areas where people live. Some residential areas, including Ayapoto (see figure 2), are located inside the company's concession. For years settlers have illegally set up their houses within the company's concession areas, also before Volcan acquired the mine. This is still ongoing; since 2006, several hundred people have settled on various ore stockpiles or waste rock dumps in the city, including 450 people in the autumn of 2011. [19]

Long-term mining operations have led to both the water and the soil being significantly polluted by lead and other heavy metals. The population has been exposed to this pollution in various ways, and in recent years several studies have shown abnormally elevated blood lead levels in children in the city (this is discussed further below). Several studies also show that the population is exposed to a number of hazardous compounds of *inter alia* thallium, caesium, antimony, copper and arsenic.

Several attempts have been made since the 1960s to move the population; most recently, in December 2008, the National Congress of Peru decided that the population in Cerro de Pasco should be relocated. [20] To the Council's knowledge, no decision has yet been made about how to finance this, and the moving process is at a standstill.[21] Local authorities are now primarily focused on improving conditions in the city, as they do not believe that the move will ever take place.

4.1 Soil lead concentrations

The Council on Ethics has considered four studies of the lead content of the soil in Cerro de Pasco.[22] The Peruvian Ministry of Health is responsible for three of these while one was

[17] Appendix to Volcan's letter to the Council dated 12 July 2010. Osinergmin publishes some of these cases, see *Resoluciones de Gerencia General-Sanciones*, http://www.osinerg.gob.pe/newweb/pages/GFM/1484.htm.

[18] Volcan's letter to the Council on Ethics, 13 January 2011. The Yanamate Lake and the Ocroyoc tailings impoundment are outside the city and are not included in the figures above.

[19] Volcan (2006), *Informe de Fiscalización Externa de Normas de Protección y Conservación del Ambiente. – Segunda inspección - Invasion del pasivo ambiental "Don Paco"*. See also http://agendapasco.com/2011/10/10/pobladores-invaden-ilegalmente-terrenos-en-la-zona-alta-de-san-juan/.

[20] *Ley N. 29293*: *Ley que declara de necesidad pública e interés nacional la implementación de medidas para lograr el desarrollo urbano sostenible concertado y la reubicación de la ciudad de Cerro de Pasco*. Available at http://www.pcm.gob.pe/InformacionGral/sc/2010/Ley29293/Ley_29293.pdf.

[21] On 29 January 2012, local media reported that the relocation process had stopped. See *Reubicación de Cerro de Pasco sería postergada* in http://peru21.pe/2012/01/29/impresa/reubicacion-cerro-pasco-seria-postergada-2009518.

[22] Dirección Regional de Salud Pasco (DIRESA) 2008: *Resultados de los analisis de suelos – Ciudad de Cerro de Pasco y sus distritos Simon Bolivar, Yanacancha y Chaupimarca*, DIRESA 2007: *Vigilancia sanitaria de suelos superficiales – Champamarca y Quiulacocha*, Centers for Disease Control 2007: *Final Report: Heavy metals exposures among children and women of childbearing age in three mining communities and* Centro Nacional de Salud Ocupacional y Proteccion del Ambiente Para la Salud (CENSOPAS) 2006: *Niveles de plomo en sangre y factores de riesgo asociados a la exposición de este metal en niños de 1 año a 12 años de edad y mujeres en edad fertil, distrito de Yanacancha, Cerro de Pasco - mayo 2006.*

conducted by the US Centers for Disease Control (CDC), a professional agency under the federal Department of Health and Human Services in the USA. [23]

In total, these studies have taken 113 samples of the soil. The tests were taken in homes, school yards, playgrounds, and other areas to which children might have access. More than half of the samples (63 samples) had high concentrations of lead (≥ 1,200 mg lead per kilo of soil), while 12 per cent (14 samples) had concentrations of 5,000 mg/kg or more. [24] By comparison, the Environmental Protection Agency (EPA) in the USA considers concentrations above 400 mg lead/kg soil to be harmful in areas where children play, while Norwegian authorities consider that lead concentrations should exceed 100 mg/kg soil in kindergartens, playgrounds and schools.[25] Only 17 per cent (19 samples) showed lead concentrations below 400 mg/kg.

In the CDC's study, high concentrations of lead occurred more frequently near the open-pit mine and ore stockpiles.[26] The study also showed high concentrations of lead (> 1,200 mg/kg) in 60 per cent (26 of 43) of the homes assessed. The absolute highest concentration (20,000 mg/kg) was found 'in a sample obtained from a dirt path located next to one of the many piles of unprocessed ore found throughout the city.' The CDC concluded that 'The environmental assessment component of this investigation suggests widespread lead contamination throughout all three communities.'[27]

In combination, the four studies show that the soil in Cerro de Pasco contains high and in part very high lead concentrations, and that the lead pollution is also significant in residential areas. Volcan's own environmental impact assessments also show a high lead content in the soil.[28]

4.2 Lead concentrations in water

There are three rivers in the area around Cerro de Pasco that are potentially affected by the mining activities: the Tingo, Ragras and San Juan rivers. The Council has focused on the

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[23] In 2007, the Ministry of Health in Peru contacted the CDC to get help to assess the exposure to lead and other potentially hazardous substances among the population in Cerro de Pasco. The CDC conducted studies in Cerro de Pasco in May to July 2007, including of the presence of lead in the soil. The results are documented in the above-mentioned report. In its letter to the Council on Ethics dated 12 July 2010, Volcan writes that this is the most relevant of the studies that have been conducted.

[24] There is no agreed-to international standard for lead concentrations in soil. The maximum limits for lead in soil therefore vary between countries and types of land use. Stricter limits are commonly imposed on areas that children use as compared to, for example, industrial areas. EPA defines lead contents above 400 mg/kg soil as action level for clean-up in areas where children play. The maximum limit is set to 1,200 mg/kg for other areas where children spend time. In this recommendation, values above this limit are considered high. Peru has no established maximum levels for lead concentrations in soil, but in at least one study that the Council has considered, the health authorities refer to a proposal to establish an upper limit of 140 mg/kg for residential areas and 1,200 mg/kg for industrial areas (DIRESA 2008).

[25] The Norwegian Climate and Pollution Authority: *Anbefalte kvalitetskriterier for jord i barnehager, lekeplasser og skoler basert på helsevurderinger*, available at http://www.klif.no/nyheter/dokumenter/kvalitetskriterier_barnehager.pdf.

[26] Centers for Disease Control 2007: *Final Report: Heavy metals exposures among children and women of childbearing age in three mining communities*, p. 19: 'Although no clear pattern of contamination is evident, small clusters of yard soil samples containing high levels of lead can be seen in proximity to spent ore stockpiles and to the open pit.'

[27] See footnote 26, p.17. The neighbourhoods that are referenced are Ayapato, Chaupimarca, Paragsha. The study found that the pollution was likely caused by a constant source of lead: 'Using a t-test analysis, yard soil sample levels did not vary significantly from soil taken from the dripline ($p > 0.05$), suggesting a consistent source of contamination in these areas that did not originate from the home or roof.'

[28] Minera Interandina de Consultores S.R.L. (2007), p. 213.

Ragras River, which is the recipient of discharges from Volcan's processing facility, underground mine and the treatment plant that treats leachate from dumps and piles, among other things. The river also receives sewage and runoff from two neighbourhoods in Cerro de Pasco. The Ragras River runs into the San Juan River.

According to local health authorities, there water supply in Cerro de Pasco is limited. It is therefore not uncommon for families to use water from rivers and wells for household use.[29] The Council does not know which rivers are used for this purpose.

The state requires that lead concentrations in discharges do not exceed 0.2 mg/litre. Volcan is also required to measure lead concentrations and other pollutants at various points in the rivers, and the lead concentration in these waters must not exceed 0.1 mg/litre.

Volcan has three discharge points to the Ragras River, at which effluents from the mine, the processing facility, ore stockpiles and waste rock dumps are discharged into the river. In its communication with the Council, Volcan asserts that these discharges usually remain within the limits imposed by the state (0.2 mg/litre).[30] This is confirmed by the company's monitoring reports. Volcan has no other direct discharges to the river.[31]

The Council has considered the company's monitoring reports for the Ragras River for the period between January 2009 and March 2011. The results of the measurements show that the water in the Ragras River contains high concentrations of lead, and that these increase downstream from the discharge points. At the measurement station (E-02A), which is the first measurement station downstream of the discharge points, all measurement values exceed the authorities' water quality limits (0.1 mg/litre), and the average lead concentration during the period was 0.885 mg/litre.[32]

Measurements that the authorities conducted in March 2010 immediately downstream from the same measurement station (E-02A) also show very high lead concentrations in the water, with maximum concentrations of 8.0 mg/litre. In 2010, the authorities' measurements showed an average lead concentration at this point in the river of 1.3 mg/litre.[33]

In its communication with the Council, Volcan states that the values registered at the measurement stations downstream from the discharge points cannot be caused by the company's discharges, as Volcan's discharges are within the maximum limits. Volcan therefore believes that the company cannot be held responsible for the high values that are registered downstream of the company's discharge points. The company believes further that runoff and leachate from old dumps that do not belong to Volcan, as well as runoff from other surfaces in the city, are the reason for the high levels of lead in the river. [34]

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[29] *Dirección Ejecutiva de Epidemiología de Pasco 2009*: *Analisis situacional de salud Pasco*, available at http://www.diresapasco.gob.pe/diresajs/epidemiologia/files/ASIS%20PASCO%202009.pdf.

[30] Volcan's letters to the Council on Ethics, 2 December 2011 and 14 January 2011.

[31] Volcan's letter to the Council on Ethics, 14 January 2011.

[32] The company's measurement reports for the period between January 2009 and March 2011. The maximum concentration that was registered at this point was 4.046 mg/litre (September 2009). The minimum concentration was 0.180 mg/litre (December 2010). By comparison, in Norway, fresh water with a lead concentration above 0.005 mg/litre is considered highly polluted; see http://www.klif.no/publikasjoner/vann/1468/ta1468.pdf.

[33] DIRESA - Unidad Ecología y Protección del Ambiente (2010), P*rotección de los recursos hídricos*, available at http://www.diresapasco.gob.pe/diresajs/sama/u_protec_ambiente/Vigil_Recur_Hidricos.pdf.

[34] In its letter to the Council on Ethics dated 2 December 2011, Volcan writes: 'The main impacts on water quality come from abandoned mining sites (Excelsior, Quiulacocha and colonial-age mining sites) and untreated domestic wastewater from the Cerro de Pasco city… It is highly likely that lead in water comes primarily from runoff contaminated with lead that already exists in the environment…'.

In 2005, however, Volcan was fined by Peruvian authorities for having exceeded the maximum limits at a measurement point downstream of the company's operations. In the 2007 appeal case, the authorities confirmed Volcan's responsibility for the values that are measured at the company's measurement stations. The authorities found that the company did not have sufficient proof that the discharges were not caused by the company's activities.[35]

To the Council's knowledge, no systematic investigations have been made with a view to identifying the cause of the high lead concentrations downstream of the company's discharge points in the Ragras River.

A 2006 study that the consultancy firm Ground Water International conducted for Volcan concluded that there is significant runoff of heavy metals from waste-rock dumps and ore stockpiles to the ground water.[36] Some of this drains into the open-pit mine, where the water is pumped and treated, while the rest follows natural drainage routes to the Ragras River.[37] Though the report does not quantify the volume of the discharge, it indicates that diffuse discharges from the mining activities, related to runoff and leachate from the ore stockpiles among other things, likely add a significant amount of lead to the rivers in Cerro de Pasco.

The environmental impact assessments that the company has completed also suggest that the mining activities affect the rivers in ways other than through the three discharge points. In the assessments, the high levels of lead in the rivers are among other things associated with runoff from soil that is polluted from ongoing and previous mining activities.[38] One of the measures recommended in the assessment to reduce the contribution of lead was to remove the topsoil in the area covered by the environmental impact assessment.[39]

4.3 Blood lead levels in children in Cerro de Pasco

Since the mid-1990s, several studies have been conducted that show that residents of Cerro de Pasco have high blood levels of lead and other heavy metals. [40] The Council has considered

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[35] *Resolución de Consejo Directivo Organismo Supervisor de la Inversión en Energía y Minería OSINERGMIN N. 307-2007-OS/CD*, 7 June 2007: 'With regard to monitoring station E-215, the appellant states that discharges from multiple sources are collected here... and that it should not be held responsible for these when it is impossible to identify the sources of the materials that exceed the discharge permit... [Volcan] has not presented the necessary proof to confirm that the company is not the source of the discharges that exceed the discharge permit.'

[36] Ground Water International (2006), *Investigación Hidrogeológica de la Mina Subterránea y de las Facilidades Superficiales de la Unidad Minera Cerro de Pasco*.

[37] Appendix 3-13 in the environmental impact assessment for the expansion of the facilities in Paragsha and San Expedito, Minera Interandina de Consultores S.R.L. (2007).

[38] Minera Interandina de Consultores S.R.L. (2007), p. 199: 'The different tests that have been taken suggest that the TSS [Total Suspended Solids] and Pb in the rivers are caused by runoff of rain water to the main river [Ragras in this recommendation]. Within the project's area of direct influence (*área de influencia directa del proyecto*), an important source of pollutants [to water] appear to be the city's soil (likely due to transport of waste rock) and [dumps and stockpiles].' Further, 'It is necessary to continue and intensify the watering of roads to the waste rock dumps, as it is likely that this is one of the main causes of the high metal content in [the Ragras river]' (p. 213).

[39] Minera Interandina de Consultores S.R.L. (2007), p. 213.

[40] The Council is aware of the following studies from the period between 1996 and 2007: Universidad Nacional Mayor de San Marcos, facultad de Farmacología y Bioquímica, OPS/OMS CICOTOX 1996: *Análisis de dosaje de plomo en las muestras de sangre total: Miraflores y Paragsha – Cerro de Pasco,* Dirección General de Salud Ambiental del Ministerio de Salud (DIRESA) 1999: *Estudio de plomo en sangre en la población seleccionada de Cerro de Pasco,* Astete, Jonh *et al.* 2005: *Determinación de plomo en sangre y factores asociados en niños y mujeres gestantes de las poblaciones de Quiulacocha y Champamarca – Cerro de Pasco,* Instituto Nacional de Salud, Cerro de Pasco, Centro Labor & Ministerio de Salud 2002: *Estudios de plomo y efectos en órganos blancos: Champamarca, Paragsha, Huayllay y Yaulí.* An analysis of the study is available here: http://www.ciudad.org.pe/downloads/boletinesredal/BOLETINREDAL14.doc, Astete, Jonh *et al.* (2006):

four of these studies in greater detail.[41] Three were conducted by the health authorities and the fourth was conducted by the US Centers for Disease Control (CDC) in 2007 as referenced in section 3.1.[42] The Council's assessment is largely based on the latter study in particular.

Lead is poisonous and can cause serious long-term and short-term health effects. Lead is absorbed in animals and humans, and over time high concentrations of lead can accumulate in their bodies. The absorption of lead is often slow and takes place through long-term, chronic exposure. Too much lead in the body can *inter alia* lead to damage to red blood cells and to the nervous system. Brain development in foetuses and small children is especially vulnerable to damage caused by lead. Research shows that lead exposure can affect the intellectual development of children, even in low concentrations. Lead can also affect the ability to have children.[43] Intake of lead can occur through water, food, air, soil and dust.[44] Small children absorb 25-50 percent of the daily intake of lead, compared with 5-10 percent for adults. Nutrition affects how much lead is absorbed. For example, low levels of calcium and iron increase the absorption of lead.[45]

In this recommendation, the Council has especially focused on children as they are a particularly vulnerable group in this context.

The concentration of lead in organisms can be measured in different ways. The most common method is to measure the lead concentration in the blood (blood lead levels, or BLL). According to the World Health Organization (WHO), a concentration above 10 µg lead per decilitre of blood is harmful, but it is also impossible to identify a safe level for children. [46] Research conducted by the WHO and the EU's science committee has shown that levels below 5 µg lead can also harm children's development.[47] Any concentration of lead in the blood can therefore be said to be harmful to children, although not all children react in the same way to high BLLs.

The four studies that the Council has considered cover different neighbourhoods and span several years (1999-2007). The studies provide a picture of the exposure to lead at the time the studies were conducted, but do not provide a basis from which to evaluate the development of BLLs in children in Cerro de Pasco over time. In total, nearly 1,300 children have been examined. Of these, 849 children - 65 per cent - had BLL values above 10 µg. The table below summarises the results of the studies.

Niveles de plomo en sangre y factores de riesgo asociados a la exposición a este metal en niños de 1 año a 12 años de edad y mujeres en edad fertil – Distrito de Yanacancha. Instituto Nacional de Salud, Cerro de Pasco and Centers for Disease Control (CDC (2007), '*Final Report: Heavy metals exposures among children and women of childbearing age in three mining communities*'.

[41] CDC (2007), Astete (2006) (Instituto Nacional de Salud), Astete (2005) (Instituto Nacional de Salud), and DIRESA (1999).

[42] See footnote 23.

[43] http://www.miljostatus.no/Tema/Kjemikalier/Noen-farlige-kjemikalier/Bly/#B.

[44] Scientific Committee on Health and Environmental Risks – SCHER 2011: Lead Standard in Drinking Water. http://ec.europa.eu/health/scientific_committees/environmental_risks/docs/scher_o_128.pdf

[45] US Agency for Toxic Substances and Disease Registry, http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=22.

[46] The WHO and the US Centers for Disease Control (CDC) guidelines for blood lead levels is 10 µg lead per decilitre of blood http://www.inchem.org/documents/ehc/ehc/ehc165.htm. Peruvian health authorities also use this limit (see the health authorities' *Resolución Ministerial Nº 511-2007/MINSA*, available at ftp://ftp2.minsa.gob.pe/normaslegales/2007/RM511-2007.pdf).

[47] WHO *Issue Brief Series – Lead:* http://www.who.int/heca/infomaterials/lead.pdf ; WHO (2010) *Childhood Lead Poisoning*, http://www.who.int/ceh/publications/leadguidance.pdf and Scientific Committee on Health and Environmental Risks – SCHER 2011: *Lead Standard in Drinking Water*. http://ec.europa.eu/health/scientific_committees/environmental_risks/docs/scher_o_128.pdf.

Table 1: Summary of results from studies of children's BLL in Cerro de Pasco.[48]

Studies	Number and age of children tested	BLL average (µg/dl)	BLL range (µg/dl)	Number of children with BLL above 10 µg/dl (%)	Comments
CDC (2007)	163 children between 1-12 years of age	10.5	3.6-64.0	53	Children and women of childbearing age in three neighbourhoods around the open-pit mine were tested. The highest values were found in the Ayapoto neighbourhood, where nearly 90 per cent of the children had BLLs above 10 µg/dl, and the average BLL was 15.6 µg/dl. Ayapoto is located near the open-pit mine and next to a waste rock dump.
Instituto Nacional de Salud – Cerro de Pasco (2006)	338 children between 1-12 years of age	13.2	3.33-71.24	51.8	Children in one district were surveyed. The highest values were found in areas near the open-pit mine, and this was also where the lead concentrations in the soil were highest.
Instituto Nacional de Salud – Cerro de Pasco (2005)	236 children between 1-10 years of age	15.79	6.17-34.53	85	The study covers two smaller settlements on the outskirts of the city. All children between one and ten years of age living in the area covered by the study were tested. The percentage of children with BLL above 10 µg/dl was highest in the neighbourhood closest to old dumps.
DIRESA (1999)	545 children, age not reported	15.1	Not reported	68	The study does not identify where the tests were conducted.

All studies show that between 50 and 90 percent of the children – depending on the neighbourhood – had elevated blood lead levels (≥10 µg/dl). In some cases, the concentrations were so high that there was significant risk that the children develop serious and chronic health problems. The studies also indicate that higher values are more common near mining facilities such as the open-pit mine, waste rock dumps and ore stockpiles.[49] The Ayapoto neighbourhood, which is located within the company's concession, appears to be especially vulnerable to high BLLs.[50]

[48] See footnote 40.
[49] See for example the discussion in CDC (2007) and tables 38-41, as well as the conclusion in *Instituto Nacional de Salud – Cerro de Pasco* (2006).
[50] See especially the conclusion in CDC (2007), p. 23.

The Council's focus on lead notwithstanding, it is worth mentioning that the CDC found that children also had high concentrations of other metals. Ninety per cent of the children had high concentrations of at least one metal in their blood.[51] CDC concludes that 'The findings from the analyses of 14 metals in blood, serum, and urine collected from participants [in the study area] indicate a high level of metal intoxication.'[52]

5 Information from Volcan

5.1 The Council's communication with Volcan

The Council first contacted Volcan in a letter dated 26 May 2010 inquiring about the mining operation and the environmental conditions in Cerro de Pasco. Since then, the company has received two drafts of the Council's recommendation, in October 2010 and in September 2011. In every instance, Volcan has provided extensive replies to the Council's questions and detailed comments on the draft recommendations. In March 2011, a video conference was held between Volcan and members of the Council and Secretariat.

As a result of the company's comments, this recommendation differs in some aspects from the drafts submitted to the company.

5.2 The company's measures to improve the environmental conditions in Cerro de Pasco

Volcan stresses that the company's activities comply with the government's requirements and notes that the company has fulfilled all its obligations in accordance with the action plan for the mining facility (the PAMA plan, see section 3.2). Additionally, the company is working to implement measures required by the environmental impact assessments for new facilities, and Volcan believes this will change their operations: 'Volcan has recently obtained three EIA approvals… which optimize the environmental management operations in Cerro de Pasco. Today virtually all of the direct area of influence of the mining operations in Cerro de Pasco is covered by approved EIA measures. Coupled with the annual recertification of the ISO 14001, Volcan believes that the plans and operations that have been recently approved will represent concrete changes compared to the way the operation of Cerro de Pasco was being conducted before (i.e. solely under the guidelines of the PAMA).'[53]

Volcan states that it has an environmental management system that is certified according to the international environmental management standard ISO 14001. This means that the company has an environmental management system that makes it possible to identify how the company affects the environment and systematically reduce the environmental impact. The standard is a procedural standard and does not define levels of pollution or specific measures. It is up to the company to identify relevant problems and define goals and measures, and the company itself defines how ambitious environmental goals and measures should be. [54]

[51] In the study, high concentrations are understood as those 'Greater than the 95th percentile intervals as reported in the Third National Report on Human Exposure to Environmental Chemicals. Values reflect weighted analyses.' CDC (2007), p. 36. Other important metals mentioned in the study include caesium, thallium, antimony, cobalt, molybdenum, cadmium, tungsten and mercury, but arsenic was also found in high concentrations.
[52] CDC (2007), p. 22.
[53] Volcan's letter to the Council on Ethics, 2 December 2011.
[54] http://www.iso.org/iso/iso_14000_essentials.

The Council has especially requested information concerning the measures the company has implemented in order to reduce residents' and children's lead exposure. The company states that all transport vehicles to and from the mine are to be covered, and that the tires are to be washed before vehicles leave the area of the mine in order to prevent the spreading of polluted soil. Wherever possible, ore is not to be transported through residential areas, and the roads are to be watered to prevent dust problems within the company's facilities. According to the company, other measures are addressed through the environmental management system, such as measures that keep mining operations and residential areas separate.[55] This is not specified further.

Volcan has also informed the Council that it has been buying up houses in the city's most vulnerable areas since 2005.[56] These are primarily areas that will be located within the planned expansion of the open-pit mine, and which the Council assumes must be removed in any case.[57] The company also believes that the planned processing plant that will exploit the ore stockpiles will have a positive effect on the environmental situation in the city.

Volcan states that the company conducts health campaigns in risk areas. The most recent campaign that the Council is aware of ran in the Ayapoto neighbourhood in March 2011. It focused on teaching families about better nutrition and hygiene in order to reduce the absorption of lead. Additionally, Volcan has entered an agreement to purchase services from a 'lead contamination mitigation specialized group' in the Pasco region. Among other things, the group is to prevent and measure children and women's lead exposure in mining areas in the Pasco region; monitor cases of unacceptable concentrations of heavy metals and identify sources of pollution. In cooperation with local health authorities it is to develop strategies to reduce pollution that children are exposed to, conduct social programming and implement awareness campaigns. Volcan has not specified what this actually entails for the company or for Cerro de Pasco and has not given a timeframe for this work.

The Council has also asked whether the company has implemented or planned studies to survey the sources of lead pollution in water and soil. In its response, Volcan refers to a collaboration with local health authorities that has been ongoing since 2003: 'In Cerro de Pasco the Regional Directorate of Health (DIRESA, as per the Spanish acronym) established the "Multi-disciplinary Technical Committee for Lead in Blood related Issues" in August 2003, and the company has been actively involved from the beginning supporting diagnostic studies to obtain technical information and develop intervention programs to minimize the impact on the health of vulnerable populations.' Volcan does not elaborate on whether this collaboration has resulted in new knowledge about the issues mentioned here. At the same time, in its last letter to the Council, Volcan states that it is currently considering a new project 'to enhance the understanding of the complex picture of contamination in the area', including 'To conduct a study of soil (together with CDC or others), including natural background values, sources of dust migrations, migration patterns as well as historical migration and its influence on soil values found.'[58]

5.3 Volcan’s response to the Council

The company's responsibility for the environmental conditions in Cerro de Pasco

Volcan's main argument has consistently been that the company cannot be blamed for the serious environmental situation in Cerro de Pasco. The company does not deny the

[55] Volcan's letter to the Council on Ethics, 12 July 2010.
[56] Volcan's letter to the Council on Ethics, 13 January 2011.
[57] Attachment to Volcan's email to the Council on Ethics, 14 May 2011.
[58] Volcan's letter to the Council on Ethics, 02 December 2011.

environmental situation in the city, but believes that there is no basis to claim that these are caused by Volcan's activities. The company believes that the environmental situation is largely a result of previous mining activities (prior to Volcan's acquisition of the mine) as well as a number of other issues outside the company's control. 'While the Council has correctly identified the overall environmental situation and its health impacts in Cerro de Pasco, we will emphasize that this, to a large extent, is due to a number of different factors. This encompasses poor planning and operations of the mining operations by past owners (including Centromin) insufficient management by municipalities and governmental bodies as well as events and factors well beyond the ordinary control and management objectives of a mining company.'[59]

In subsequent correspondence, the company has pointed to the following factors among others as determinants of the environmental situation: [60]

- A naturally high lead-content in the rock, which is a prerequisite for viable deposits of lead.
- Runoff from old waste rock dumps that Volcan is not responsible for.
- Other pollution from previous mining that contributes to the pollution of soil and water.
- Poor city planning and a failure to take existing mining operations sufficiently into account in the approval of new residential areas.
- The use of materials with high lead content in homes.
- Lack of action on the part of the authorities to prevent unauthorised persons from accessing the company's concession.
- Lack of action on the part of the authorities to improve nutrition and hygiene in families in order to reduce the absorption of lead in children.

Volcan is therefore of the opinion that if the company is excluded from the fund it will be held responsible for issues that primarily are caused by previous mining companies and local authorities: 'Through centuries, and especially the last 60 years, a number of severe mistakes, failures and omissions from former stakeholders are registered. If Volcan were to be held responsible for this, including clean-up and relocation of the urban settlement, Volcan would obviously not have acquired the operation in the first place, and neither would others.' [61] Furthermore: 'COE [the Council on Ethics] must be able to provide sufficient proof of causation in order to defend its allegations against the company. The burden of proof is left with COE and any effort to turn it on the company is declined.'

Volcan also notes that the company does not feel responsible for issues that were not addressed in the action plan (PAMA) when the company acquired the mining operation: 'Judging from the PAMA projects that were transferred to Volcan through the acquisition of Empresa Minera Paragsha, it can be seen that ”persistent high lead in blood levels” was not addressed in the PAMA project. Most probably the PAMA was not designed to tackle that issue. Therefore, we fail to see how Volcan may be held responsible for not addressing unidentified underlying conditions when the privatization took place.'

The company points out that there is a need to know more about background values of lead in Cerro de Pasco, alternative sources of exposure, the spread of lead particles in the air, and the effect of previous mining operations on the current environmental situation in the city. As such studies do not exist, the company believes that it is impossible to conclude that Volcan's

[59] Volcan's letter to the Council on Ethics, 14 January 2011.
[60] Volcan's letters to the Council on Ethics 10 July 2010, 14 January 2011, and email dated 14 May 2011.
[61] See footnote 58.

activities affect the environmental situation in the city.[62] Volcan also emphasises that as long as its activities are conducted in compliance with the requirements imposed by the state, the company cannot be accused of contributing to the severe environmental situation in the city.

High blood lead level in children

Volcan believes that the high blood lead levels among children in Cerro de Pasco is caused by multiple factors, including undernutrition and anaemia, poverty and low educational levels among the population. These are also factors that can exacerbate the effects of high blood lead levels: 'There is an evident contaminating factor in the environment, but at the same time, all "favourable" conditions (anaemia, malnutrition, unbalanced food intake, deficient sanitary infrastructure, among others) for the contamination effect to be magnified are present.' [63]

The company believes that these conditions should be included in the assessment of the company's responsibility. Further, the company notes that only ten per cent of the children in the CDC study had BLLs above 19 µg/dl.

The company believes that the core of the problem is that people have been allowed to settle in the close vicinity of the mining operation. Volcan writes that 'Not surprisingly, the BBL is highest for people living in the mineral rich neighbourhood of the mine. The results underline the need for relocation of the inhabitants. Again, the root of the problem is the urban settlement in the close vicinity of the mining operations.'

With regard to the Ayapoto neighbourhood, which is located next to the open-pit mine and where particularly high BLLs have been documented, Volcan emphasises that:

'The mentioned studies indicated that the highest levels of heavy metals were found in soil located in the Ayapoto zone. The Council on Ethics indicates that this level would be associated with the proximity of the urban area to ore stockpiles. It should be mentioned that:

- Ayapoto is also located near to the ore (pit zone) suggesting that the quantity of heavy metals in soils may be indicative of the natural background concentrations
- Ayapoto is also located near to the state-owned waste rock deposit Excelsior (an abandoned mine site)
- The Ayapoto zone was an industrial mining area that was illegally occupied by settlers at the time the mine was operated by the state-owned company Centromin. Later the state declared this zone to be an urban area without evaluating whether it was a habitable zone.'[64]

The company concludes that it is impossible to determine whether its activities are the cause of the high lead-content of the soil without first conducting a study of 'the multiple possible local dust and metal sources (different anthropogenic and natural sources, partly historic contamination).'

The Council's methods

Volcan strongly rejects the Council's methods and conclusions.[65] The company believes that the Council has not proven sufficiently that there is a causal relation between the environmental conditions in Cerro de Pasco and Volcan's activities. 'Volcan firmly believes that the documentation of [the Council] as to Volcan's contribution to the overall

[62] Volcan's letter to the Council on Ethics, 13 January 2011.
[63] See footnote 62.
[64] Volcan's letter to the Council on Ethics, 13 January 2011.
[65] Volcan's letter to the Council on Ethics, 2 December 2011.

environmental situation in the area is clearly overstated. The major issue is the question of causation; to what extent does Volcan contribute to the environmental situation in the area in question in violation of regulations and conditions imposed on its operations. Volcan believes that [the Council's] empirical documentation is clearly insufficient.'

6 The Council on Ethics' assessment

In this recommendation, the Council has not focused on the effects on the external environment. Rather, it has assessed whether there is an unacceptable risk that the company's activities subjects people, particularly children, in Cerro de Pasco to hazardous exposures to lead.

The Council understands that there is no disagreement on whether long-term mining activities in Cerro de Pasco have led to very high concentrations of lead in soil and water which expose residents to very high lead values. More than half of the children have high and to some extent very high concentrations of lead in their blood. The concentrations are at such a level that they can affect children's intelligence and development. Such damage is chronic, irreversible, and can have consequences for the rest of their life. The effects are exacerbated by the children largely living in poor households with limited opportunities for treatment or monitoring. Unsatisfactory sanitation, the absence of safe drinking water and poor nutrition can further worsen the children's and families' situation. As the mining facility can continue to pollute even after the mining operation has closed, it is likely that new generations of children will be exposed to the same health hazards unless the pollution is reduced. The Council therefore believes that the environmental damage in Cerro de Pasco is serious, will have long-term effects, and that it is likely that the lead exposure that the children are subject to will lead to chronic and serious health problems in a group that is already vulnerable.

In all its communication with the Council, Volcan has asserted that it is not responsible for the serious environmental situation in Cerro de Pasco. The company believes that the lead-pollution is primarily caused by old mining operations, the absence of follow-up measures on the part of the state, and high natural background values of lead. Volcan seems to assume that after it acquired the mine in 1999, the mining operation has not contributed to the serious environmental situation in the city.

It is necessary to emphasise that the Council's mandate is to consider future risk, based on available information. The Council does not need to prove that there is a direct causal relationship between the company's operations and the environmental situation. It is sufficient that the Council assess the risk that the company contributes to the hazardous exposure to lead to which residents are subjected.

The Council on Ethics has not assessed who is responsible for the current situation, but finds it likely that a business that includes mining operations and the processing of lead ore – and that has ore stockpiles and waste rock dumps in the middle of the city – is likely to contribute to the high concentrations of lead. The high lead values measured in the rivers in Cerro de Pasco may indicate that leachate and runoff from Volcan's ore stockpiles and waste rock dumps and runoff from soil contribute to the pollution. Several of the company's environmental impact assessments and other studies that have been conducted also suggest that this may be the case. Runoff of heavy metals from waste rock dumps and ore stockpiles, among other things, is considered to be one of the most serious environmental problems of mining operations worldwide.

In the opinion of the Council on Ethics, the company does not appear to have conducted sufficient studies to clarify the causes of the high concentrations of lead in rivers and soil that

are affected by the mining operation, and it also does not appear that the company has attempted to clarify the extent to which its activities affect children's health. Given that a long-term exposure to lead, even at low concentrations, can lead to serious health problems, the Council would expect a mining company in this situation to do more to clarify the consequences of its activities. According to internationally accepted norms such as the standards from the International Finance Corporation (IFC),[66] companies have an independent responsibility to prevent or reduce the risk of their activities having negative consequences on the safety and health of local inhabitants. Among other things, this means that companies must identify risks and impacts, as well as measures that can prevent and reduce these.

Volcan has implemented the measures which the authorities have ordered, and it cannot be said that the company generally operates in Cerro de Pasco in a manner which conflicts with its state-issued licences. The company does not see itself as contributing to pollution as long as its activities comply with the authorities' requirements. The Council understands that Volcan's activities nevertheless can have harmful environmental effects. For example, heavy metal runoff has been documented from Volcan's ore stockpiles and waste rock dumps, but the extent to which diffuse discharges from these facilities are regulated is not clear. The same uncertainty applies to discharges to soil. Several measures proposed in impact assessments and other reports to reduce discharges to water and soil appear largely to not have been implemented. The company is planning measures, for example removing ore stockpiles, which in the long term can contribute to reduce the exposure to lead. However, the Council is unaware of any concrete schedule for when all the ore stockpiles will be removed. The Council has noted that the environmental authorities have fined the company repeatedly for issues in Cerro de Pasco and elsewhere, but this has not been emphasised in this assessment.

Volcan has a licence to operate the mine for several more decades. In a city where residents already suffer from high levels of lead pollution, and have done so for many years, further increase of lead should be limited to the greatest extent possible. In the Council's view, this requires that the company exercise special care as concerns both evaluating the company's contribution to pollution, and which measures should be implemented. The absence of knowledge about how the company's activities affect the environment in Cerro de Pasco contributes to increase the risk of serious health problems among children and the population more broadly.

On the basis of an overall assessment, the Council believes there is an unacceptable risk that Volcan contributes to current and future severe environmental damage through its mining operation in Cerro de Pasco.

[66] IFCs *Environmental and Social Performance Standards* cover eight areas that companies should take into account, including: PS1: Social environmental assessment and management system, PS3: Pollution prevention and abatement, PS4: Community health, safety and security. Companies that apply for financing from IFC must fulfil these criteria. Among other things, IFC's Performance standard 4 states that: 'Performance Standard 4 recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts. While acknowledging the public authorities' role in promoting the health, safety, and security of the public, this Performance Standard addresses the client's responsibility to avoid or minimize the risks and impacts to community health, safety, and security that may arise from project related-activities, with particular attention to vulnerable groups.' To the Council's knowledge, Volcan has not applied for financing from IFC, but the Council nevertheless considers this to be a generally accepted indication of how companies ought to behave. IFC's *Sustainability framework:* http://www1.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/IFC+Sustainability+Framework.

7 Recommendation

The Council on Ethics recommends that the company Volcan Compañia Minera SAA be excluded from the investment universe of the Government Pension Fund Global due to an unacceptable risk that the company contributes to severe environmental damage.

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Ola Mestad Chair	Dag Olav Hessen	Ylva Lindberg	Gro Nystuen	Bente Rathe
(signed)	(signed)	(signed)	(signed)	(signed)