

IN THE HIGH COURT OF SOUTH AFRICA
GAUTENG LOCAL DIVISION, JOHANNESBURG

Case No: **2020 / 32777**

In the matter between:

[REDACTED]

First Applicant

[REDACTED]

Second Applicant

[REDACTED]

Third Applicant

[REDACTED]

Fourth Applicant

[REDACTED]

Fifth Applicant

[REDACTED]

Sixth Applicant

[REDACTED]

Seventh Applicant

[REDACTED]

Eighth Applicant

[REDACTED]

Ninth Applicant

[REDACTED]

Tenth Applicant

[REDACTED]

Eleventh Applicant

[REDACTED]

Twelfth Applicant

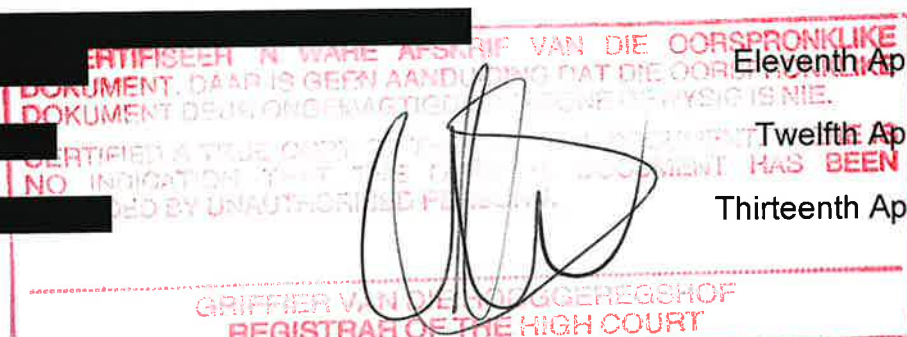
[REDACTED]

Thirteenth Applicant

and

ANGLO AMERICAN SOUTH AFRICA LIMITED

Respondent



NOTICE OF MOTION



KINDLY TAKE NOTICE that the Applicants will make application on a date to be determined by the Registrar for an order in the following terms:

1 The following classes are certified

1.1 The class of **children**, comprising:

- 1.1.1 Children under the age of 18 on the date that the certification application was launched;
- 1.1.2 Who reside in the Kabwe District, Central Province, Zambia;
- 1.1.3 In the case of children over the age of seven, have lived in the Kabwe District for at least two years between the ages of zero and seven; and
- 1.1.4 Who have suffered injury as a result of exposure to lead.

1.2 The class of **women of child-bearing age**, comprising:

- 1.2.1 Women over the age of 18 and under the age of 50 on the date that the certification application was launched;
- 1.2.2 Who reside in the Kabwe District, Central Province, Zambia;
- 1.2.3 Have lived in the Kabwe District for at least two years between the ages of zero and seven;
- 1.2.4 Have been pregnant or are capable of falling pregnant; and
- 1.2.5 Have suffered injury as a result of exposure to lead.

- 2 The Applicants are granted leave to act as class representatives on behalf of these classes defined in paragraph 1 in a class action against the Respondent.
- 3 The Applicants' attorneys, Mbuyisa Moleele Attorneys, are certified as the legal representatives of the members of the classes for the conduct of the class action.
- 4 It is directed that the following steps shall be taken to give notice of the class action to members of the classes substantially in accordance with the notice attached as **Annexure A**.
 - 4.1 The Applicants' legal representatives shall forthwith publish the notice as follows—
 - 4.1.1 as an advertisement in the national and local **Zambian** newspapers listed in **Annexure B** hereto. The notice shall be published in each such newspaper once per week for a period of four weeks;
 - 4.1.2 as a radio announcement substantially in the form of **Annexure C**, broadcast on each of the **Zambian** radio stations listed in **Annexure B** and in the languages stipulated therein. Such broadcasts are to be made twice daily on alternate days for a period of four weeks;
 - 4.1.3 on notice boards located at the churches listed in **Annexure D**.
- 5 It is ordered that the members of the classes will be bound by the judgment or judgments in the first stage of the class action against the Respondent, unless

they give written notice to the Applicants' attorneys by not later than six weeks from the date of this notice that they wish to be excluded as members of any of the classes in the class action against the Respondent.

- 6 Upon conclusion of the first stage of the class action, the members of the classes must give written notice to the Applicants' attorneys by a date to be determined by the court that they wish to opt in and be included as members of the class in the second stage of the class action. Only members who give such notice timeously will have the benefit of and be bound by the judgments in the second stage of the class action as against the Respondent.
- 7 The Respondent is directed to pay the costs of publicising the notice as set out in paragraph **Error! Reference source not found.** above.
- 8 The costs of this application are to be paid by the Respondent.
- 9 The parties are granted leave to approach this court, on the same papers duly supplemented, for an order varying or amplifying the provisions of this order pertaining to notice and the costs associated with notice, in the event that this is considered necessary by any party.
- 10 Further and / or alternative relief.

TAKE NOTICE FURTHER that the affidavit of **SONIA ZANELE MBUYISA**, together with the accompanying affidavits and annexures, will be used in support of this application.

TAKE NOTICE FURTHER that the affidavit of **SONIA ZANELE MBUYISA**, together with the accompanying affidavits and annexures, will be used in support of this application.

TAKE NOTICE FURTHER that the Applicants have appointed the offices of their attorneys, as set out below, as the address at which they will accept service of all process in these proceedings.

TAKE NOTICE FURTHER that if you intend opposing this application, you are required to:

- (a) Notify the Applicants' attorneys of your intention to oppose in writing no later than five days after service of this application.
- (b) Appoint an address that complies with the requirements of rule 6(5)(b) at which you will accept notice and service of all documents in these proceedings.
- (c) File your answering affidavit, if any, within fifteen days of filing your notice of opposition.

SIGNED AT JOHANNESBURG on this 19th day of October 2020.

Mr. M.R. MOGOTSI

Attorney with a right of appearance in the High Court.

MBUYISA MOLEELE ATTORNEYS

Applicants' attorneys

5th Floor, JCCI House

27 Owl Street
Milpark, Johannesburg
0670705130
Email: zanele@mbmlaw.co.za

TO:
THE REGISTRAR OF THE
ABOVE HONOURABLE COURT
JOHANNESBURG

AND TO:

ANGLO-AMERICAN SOUTH AFRICA LTD
44 Main Street
Johannesburg
2001

IN THE HIGH COURT OF SOUTH AFRICA
GAUTENG LOCAL DIVISION, JOHANNESBURG

Case No: 2020/32777

In the matter between:

[REDACTED]

First Applicant

[REDACTED]

Second Applicant

[REDACTED]

Third Applicant

[REDACTED]

Fourth Applicant

[REDACTED]

Fifth Applicant

[REDACTED]

Sixth Applicant

[REDACTED]

Seventh Applicant

[REDACTED]

Eighth Applicant

[REDACTED]

Ninth Applicant

[REDACTED]

Tenth Applicant

[REDACTED]

Eleventh Applicant

[REDACTED]

Twelfth Applicant

[REDACTED]

Thirteenth Applicant

and

ANGLO AMERICAN SOUTH AFRICA LIMITED

Respondent

FOUNDING AFFIDAVIT

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Table of Contents

I	THE PARTIES	5
A	The Applicants.....	5
B	The Respondent.....	10
II	INTRODUCTION AND OVERVIEW OF THE APPLICANTS' CASE.....	11
A	The nature of this certification application	16
B	The evidence.....	17
C	The structure of this affidavit	18
D	Terms and abbreviations	19
III	LEAD AND ITS HARMFUL EFFECTS.....	22
IV	LEAD POLLUTION IN KABWE.....	29
A	Kabwe	29
B	The Broken Hill Mine	30
C	The mechanisms of contamination in Kabwe	33
D	The nature and extent of lead poisoning in Kabwe.....	35
V	ANGLO'S STRUCTURE AND INVOLVEMENT IN THE BROKEN HILL MINE	38
A	1925 to 1937	41
B	1937 to 1964	43
C	1964 to 1974	47
D	1974 to 1994	51
E	Summary.....	52
VI	ANGLO'S ACKNOWLEDGEMENT OF ITS DUTIES TO THE HOST COMMUNITIES WHERE ITS GROUP MINED.....	53
VII	ANGLO'S KNOWLEDGE OF THE DANGERS OF LEAD POLLUTION	57
A	Knowledge of the risks of lead exposure.....	57
B	Knowledge of the specific risks of lead pollution in Kabwe.....	69
C	Knowledge of the risks to future generations	80
D	Summary	82
VIII	ANGLO'S KNOWLEDGE OF THE MEASURES REQUIRED TO PREVENT AND ADDRESS LEAD POLLUTION.....	83
IX	ANGLO'S DUTY OF CARE	88
X	ANGLO'S BREACH OF ITS DUTY OF CARE	91
XI	CAUSATION AND ACTIONABLE HARM	92
A	The sources of lead pollution.....	92
B	Lead-induced injury and actionable harm.....	96
XII	THE APPLICANTS HAVE SUFFERED HARM FROM EXPOSURE TO LEAD	99

S.M.

A

XIII THE BASIS FOR CERTIFYING THE CLASS ACTION	108
A The existence of a class identifiable by objective criteria	108
B A cause of action raising a triable issue	110
C The right to relief depends upon the determination of issues of fact, or law, or both, common to all members of the class.....	111
D The relief sought, and damages claimed, flow from the cause of action and are ascertainable and capable of determination	112
E There is an appropriate procedure for allocating the damages to members of the class.....	114
F The proposed representatives are suitable to be permitted to conduct the action and represent the class.....	115
Adequacy of the proposed class representatives	116
The adequacy of the legal representatives to act for the class.....	117
The cost of the litigation.....	121
Proposed funding arrangements for court approval	122
G The appropriateness of a class action as the means for determining the claims of class members.....	124
XIV PROPOSED PROCEDURE FOR THE NOTIFICATION OF THE CLASS.....	131
XV CONCLUSION.....	134

XVI APPLICANTS SUPPORTING AFFIDAVITS

- A. Affidavit of [REDACTED]
- B. Affidavit of [REDACTED]
- C. Affidavit of [REDACTED]
- D. Affidavit of [REDACTED]
- E. Affidavit of [REDACTED]
- F. Affidavit of [REDACTED]
- G. Affidavit of [REDACTED]
- H. Affidavit of [REDACTED]
- I. Affidavit of [REDACTED]
- J. Affidavit of [REDACTED]
- K. Affidavit of [REDACTED]
- L. Affidavit of [REDACTED]

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M. Affidavit of [REDACTED]

XVII EXPERT AFFIDAVITS AND REPORTS

- A. Affidavit and expert reports of Professor P Dargan, Consultant Physician and Professor of Clinical Toxicology
- B. Affidavit and expert reports of Professor C Adnams, Professor Emeritus of Intellectual Disability
- C. Affidavit and expert report of Professor R Harrison, Queen Elizabeth II Birmingham Centenary Professor of Environmental Health
- D. Affidavit and expert report of Professor M Taylor, Professor of Environmental Science
- E. Affidavit and expert report of Professor E Betterton, University Distinguished Professor and Head of Department of Hydrology and Atmospheric Sciences
- F. Affidavit and expert report of Professor M Thompson, Professor of Biostatistics
- G. Affidavit of Mr M Mwenye SC, Senior Counsel admitted to the Zambian Bar and a Solicitor of England and Wales
- H. Affidavit of Mr Richard Hermer QC

XVIII CONFIRMATORY AND OTHER AFFIDAVITS

- A. Affidavit of Dr B Kgarebe, National Institute for Occupational Health, Johannesburg
- B. Affidavit of Dr K Channa, Lancet Laboratories, Johannesburg
- C. Affidavit of B Mwimba, Lancet Laboratories, Lusaka
- D. Affidavit of Mr G Jere
- E. Affidavit of Ms L Moyo
- F. Affidavit of Mr R Hanna
- G. Affidavit of Mr R Meeran

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I, the undersigned,

SONIA ZANELE MBUYISA

state under oath:

- 1 I am an admitted attorney of the High Court of South Africa and the Applicants' attorney of record in this application.
- 2 The facts stated in this affidavit are within my personal knowledge, unless otherwise stated, and are true and correct, to the best of my knowledge and belief.
- 3 Where I address the applicable law, I do so on the advice of counsel, which advice I accept.

I THE PARTIES

A The Applicants

- 4 The Applicants are proposed representative plaintiffs in a proposed class action against Anglo American South Africa Limited ("Anglo").
- 5 The **First Applicant** is [REDACTED], acting in her representative capacity as the mother of [REDACTED], aged 3 years old.
 - 5.1 Ms [REDACTED] is a [REDACTED] at the [REDACTED] in Kabwe, with Zambian National Registration Card number [REDACTED]
 - 5.2 Her daughter, [REDACTED], was born on [REDACTED] and is the holder of a Children's Clinic Card number [REDACTED].
 - 5.3 Ms [REDACTED] and [REDACTED] reside at [REDACTED], Kabwe, Zambia.

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[Signature]

6 The **Second Applicant** is [REDACTED], acting in her representative capacity as the mother of [REDACTED] aged 3 years old.

6.1 Ms [REDACTED] is a clothes vendor in Kabwe, with Zambian National registration Card number [REDACTED].

6.2 Her son, [REDACTED], was born on [REDACTED] and is the holder of a Children's Clinic Card number [REDACTED].

6.3 Ms [REDACTED] and [REDACTED] reside at [REDACTED], Kabwe, Zambia.

7 The **Third Applicant** is [REDACTED], acting in her representative capacity as the mother of [REDACTED] aged 2 years old.

7.1 Ms [REDACTED] is currently unemployed in Kabwe, with Zambian National registration Card number [REDACTED].

7.2 Her son, [REDACTED], was born [REDACTED] and is the holder of a Children's Clinic Card number [REDACTED].

7.3 Ms [REDACTED] and [REDACTED] reside at [REDACTED], Kabwe, Zambia.

8 The **Fourth Applicant** is [REDACTED], acting in her representative capacity as the mother of [REDACTED] aged 2 years old.

8.1 Ms [REDACTED] is currently unemployed in Kabwe, with Zambian National registration card number [REDACTED].

8.2 Her son, [REDACTED], was born on [REDACTED] and is the holder of a Children's Clinic Card number [REDACTED].

8.3 Ms [REDACTED] and [REDACTED] reside at [REDACTED], Kabwe, Zambia

9 The **Fifth Applicant** is [REDACTED], acting in her representative capacity as the mother of [REDACTED] aged 10 years old.

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- 9.1 Ms [REDACTED] is currently unemployed in Kabwe, with Zambian National registration number [REDACTED].
- 9.2 Her son, [REDACTED], was born on [REDACTED] and is a holder of a Children's Clinic Card number [REDACTED].
- 9.3 Ms [REDACTED] and [REDACTED] reside at [REDACTED], Kabwe, Zambia.
- 10 The **Sixth Applicant** is [REDACTED], acting in her representative capacity as the mother of [REDACTED] aged 6 years old.
- 10.1 Ms [REDACTED] is currently unemployed in Kabwe, with Zambian National registration number [REDACTED].
- 10.2 Her son, [REDACTED], was born on [REDACTED] and is a holder of a Children's Clinic Card number [REDACTED].
- 10.3 Ms [REDACTED] and [REDACTED] reside at [REDACTED] Kabwe, Zambia.
- 11 The **Seventh Applicant** is [REDACTED], acting in his representative capacity as the father of [REDACTED] aged 10 years old.
- 11.1 Mr [REDACTED] is a [REDACTED] in Kabwe, with Zambian National registration number [REDACTED].
- 11.2 His son, [REDACTED], was born on [REDACTED] and is a holder of a Children's Clinic Card number [REDACTED].
- 11.3 Mr [REDACTED] and [REDACTED] reside at [REDACTED], Kabwe, Zambia.
- 12 The **Eighth Applicant** is [REDACTED], acting in her representative capacity as the mother of [REDACTED] aged 5 years old.

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- 12.1 Ms [REDACTED] is currently unemployed in Kabwe, with Zambian National registration [REDACTED].
- 12.2 Her son, [REDACTED], was born [REDACTED] and is a holder of a Children's Clinic Card number [REDACTED].
- 12.3 Ms [REDACTED] and [REDACTED] reside at [REDACTED], Kabwe, Zambia.
- 13 The **Ninth Applicant** is [REDACTED], acting in her representative capacity as the mother of [REDACTED] aged 4 years old.
- 13.1 Ms [REDACTED] is a small shop owner in Kabwe, with Zambian National registration number [REDACTED].
- 13.2 Her son, [REDACTED], was born on [REDACTED] and is a holder of a Children's Clinic Card number [REDACTED].
- 13.3 Ms [REDACTED] and [REDACTED] reside at [REDACTED], Kabwe, Zambia.
- 14 The **Tenth Applicant** is [REDACTED], acting in her representative capacity as the mother of [REDACTED] aged 7 years old.
- 14.1 Ms [REDACTED] is a student at [REDACTED] College in Kabwe, with Zambian National registration number [REDACTED].
- 14.2 Her daughter, [REDACTED], was born on [REDACTED] and is a holder of a Children's Clinic Card number [REDACTED].
- 14.3 Ms [REDACTED] and [REDACTED] reside at [REDACTED], Kabwe, Zambia.
- 15 The **Eleventh Applicant** is [REDACTED], acting in her representative capacity as the mother of [REDACTED] aged 2 years old.

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- 15.1 Mr [REDACTED] is currently unemployed in Kabwe, with Zambian National registration number [REDACTED].
- 15.2 His son, [REDACTED], was born on [REDACTED] and is a holder of a Birth record number [REDACTED].
- 15.3 Mr [REDACTED] and [REDACTED] reside at [REDACTED], Kabwe, Zambia.
- 16 The **Twelfth Applicant** is [REDACTED], aged 17 years old, assisted in these proceedings by her mother, [REDACTED].
- 16.1 Ms [REDACTED] is currently unemployed in Kabwe, with Zambian National registration number [REDACTED].
- 16.2 [REDACTED] was born on [REDACTED] and is a holder of a Children's Clinic Card number [REDACTED].
- 16.3 Ms [REDACTED] and [REDACTED] reside at [REDACTED], Kabwe, Zambia.
- 17 The **Thirteenth Applicant** is [REDACTED], a 21-year-old adult woman, employed as an agent by [REDACTED].
- 17.1 Ms [REDACTED] is a holder of a Zambian National registration number [REDACTED].
- 17.2 Ms [REDACTED] resides at [REDACTED], Kabwe, Zambia.
- 18 The Applicants bring this certification application in their capacity as the proposed representatives of the classes sought to be certified, of which they are also members, in their own interests, and in the interests of the members of the class generally.
- 19 The names and identifying information of the Applicants have been redacted in the version of the papers that will be placed in the Court file and uploaded to Caselines. The unredacted version of the papers will be served on Anglo and

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will be made available to the judges allocated to hear this matter. This redaction is necessary to protect the children and young adults and to prevent their confidential medical information from being freely distributed in public. Anglo will be invited to agree to a suitable anonymity and confidentiality regime, failing which the Applicants will approach this Court for appropriate relief to protect the Applicants for the duration of these certification proceedings and beyond.

B The Respondent

- 20 The **Respondent** is **Anglo American South Africa Limited** ("Anglo"), a company incorporated according to the company laws of the Republic of South Africa, with registration number 1917/005309/07 and having its registered office, alternatively its principal place of business within the jurisdiction of this Court, at 44 Main Street, Johannesburg, South Africa. I refer to the South African company search against the Respondent dated 16 October 2020, of which I attach a copy of the results of the search, marked "**ZMX**".
- 21 Anglo was incorporated in 1917 and was formerly known as "*Anglo American Corporation of South Africa Ltd*".
- 22 Anglo was the parent company and head office of the Anglo American Group ("Anglo Group") until 1998.

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II INTRODUCTION AND OVERVIEW OF THE APPLICANTS' CASE

- 23 This is an application to certify a class action. The purpose of the class action is to claim damages from Anglo on behalf of two classes who currently reside in the Kabwe District of Zambia and have suffered injury as a result of exposure to lead: a) children, and b) women of child-bearing age.
- 24 I attach, marked "ZMX1", a copy of a set of draft particulars of claim which outline the nature of the claims and the proposed class definitions in greater detail. As will appear more fully below, reliance is placed on expert affidavits, spanning a variety of disciplines, and supporting affidavits. All such affidavits are to be regarded as incorporated into this affidavit in their entirety.
- 25 The town of Kabwe, previously known as "Broken Hill", has some of the highest levels of lead pollution in the world.
- 25.1 Generations of children in the town have been exposed to dangerous levels of lead, causing severe health problems including brain damage, developmental disabilities, anaemia, organ damage, reduced life expectancy and risk of death.
- 25.2 Women and girls of child-bearing age also face severe risks during pregnancy as a result of lead exposure, including increased risk of hypertension, pre-term delivery, miscarriages, and increased risk of giving birth to children with congenital abnormalities and adversely affected neurodevelopment.
- 25.3 The poorest children and women, living in some of the most deprived communities in the district, continue to suffer the greatest harm.
- 26 The source of this lead pollution is the Broken Hill Mine ("the Mine") later known as the Kabwe Mine, which operated in the town from 1906 to 1994. Fumes and dust from the Mine, smelter and Mine dumps settled in the town's soil, vegetation, and waterways. Once it is deposited in the soil, lead is generally immobile and does not break down, posing a long-term danger which may last for centuries.

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This has produced a continuing environmental disaster in Kabwe, more than 25 years after the Mine closed its doors.

- 27 Between 1925 and 1974, Anglo was the parent company and head office of the Anglo Group that operated, managed, and advised the Mine. Anglo was the *de facto* controlling entity of the operations of the group and provided management, technical engineering direction and advice, and medical oversight in relation to the Mine operations, including specific direction and advice on health and safety measures and the control of lead pollution. Its involvement is described more fully in Section V below.
- 28 Anglo's involvement coincided with the highest levels of lead production at the Mine. Over the period from 1925 to 1974:
 - 28.1 Approximately 66% of the lead produced over the lifetime of the Mine was produced;
 - 28.2 significant quantities of lead were emitted from the Mine; and
 - 28.3 a broadly commensurate percentage of the total lead pollution currently present in the Kabwe environment was generated by the Mine.
- 29 At all material times, Anglo knew or ought reasonably to have known of the risks of lead pollution from the Mine and the measures that were required to prevent and address this pollution. The toxic effects of lead have been known since Roman times. Industrial health and safety legislation has paid particular attention to lead since the 19th century. The harmful effects of lead mining and smelting on downwind local communities were self-evident and had been documented as early as 1893 in the Report of the New South Wales Commission of Inquiry into lead poisoning at the Broken Hill mines in Australia - the very place after which the Mine was named. This report ("the 1893 Broken Hill Report") is attached as Annexure "ZMX2" and is discussed in greater detail below.

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- 30 Anglo also had ample time and resources to investigate the extent of lead pollution in Kabwe and the impact on residents' health, if these harmful effects were ever in any doubt. The 1893 Broken Hill Report shows that it was already relatively simple to perform these investigations in the late 19th century. The ease with which these investigations could have been done is demonstrated by the research of Dr A.R.L. Clark of the London School of Hygiene and Tropical Medicine in the early 1970s, discussed in greater detail below and attached as Annexure "ZMX3". Clark single-handedly took air, soil and water samples in the Kabwe area and measured the blood lead levels of residents. Clark's investigation revealed extensive lead contamination and adverse health effects. On the available evidence, Anglo and the Mine had made no prior attempt to conduct such monitoring and testing, despite their knowledge and resources. They preferred to turn a blind eye to the massive environmental health hazard that the Mine was creating.
- 31 By virtue of its involvement in the Mine's affairs and its knowledge of the harms, among a range of other factors described in further detail below, Anglo assumed a duty of care to protect existing and future generations of residents of Kabwe against the risks of lead pollution arising from the Mine's operations.
- 32 In breach of this duty, Anglo failed to take reasonable steps to investigate, prevent, and address the lead pollution. At the very least, Anglo was under a duty to cease operations at the Mine to the extent that these reasonable measures could not be effectively implemented. Anglo has also taken no measures to remediate the ongoing harm. The breach is self-evident from the scale of the lead pollution in the area, which remains among the worst in the world.
- 33 Anglo's actions both caused and materially contributed to the ongoing harm suffered by children and women of child-bearing age in the Kabwe District as a result of exposure to lead pollution deposited in the vicinity of the Mine during the period 1925 to 1974.

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- 34 Anglo's actions also caused and materially contributed to the ongoing harm suffered by children and women of child-bearing age in the Kabwe District as a result of exposure to lead pollution deposited in the vicinity of the Mine during the period from 1974 to 1994 when the Mine was finally closed. If Anglo had behaved responsibly towards the residents of Kabwe, during its period in control of the Mine, the Mine that it handed over in 1974 would have been appropriately designed, managed and operated in the relevant period to minimise the risk of lead pollution to the Kabwe communities in the immediate vicinity of the Mine. But the Mine handed over by Anglo in 1974 was not appropriately designed, managed and operated to minimise the risk of lead pollution to the Kabwe communities in the immediate vicinity of the Mine. As a result, it continued to subject these communities to lead pollution during the years 1974 to 1994 –
- 34.1 when 22% of the lead produced over the lifetime of the Mine was produced; and
- 34.2 a broadly commensurate percentage of the total lead pollution currently present in the Kabwe environment was generated by the Mine.
- 35 The scale of the harm generated by Anglo is reflected in the size of the classes sought to be certified. The public environmental health disaster left behind by Anglo means that there are more than 100,000 children and women of childbearing age in Kabwe who are likely to have suffered lead poisoning as a result of lead pollution caused by Anglo in Kabwe. The quantification of the size of the classes is discussed in detail below with reference to the expert affidavit and report of Professor Mary Lou Thompson filed with this founding affidavit.
- 36 For all of this, Anglo ought to be held liable for damages in a class action.
- 37 The crisis in Kabwe stands at odds with the Anglo Group's longstanding public commitments to the protection of communities in which it operated, which date back to its founding in 1917. In 1954, Sir Ernest Oppenheimer, the Founder and Chairman of Anglo, publicly said the following of the Anglo Group:

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"The aim of this Group is, and will remain, to earn profits for our shareholders, but to do so in such a way as to make a real and lasting contribution to the communities in which we operate".

- 38 To this day, the Anglo Group continues to repeat these statements and commitments, as appears from its webpage "100 Years of Anglo American", a printout of which is attached as **ZMX4**. It has also publicly committed itself to the UN Guiding Principles on Business and Human Rights which provide, in principle 22, that:

"Where business enterprises identify that they have caused or contributed to adverse impacts, they should provide for or cooperate in their remediation through legitimate processes."

- 39 The Anglo Group's own Human Rights Policy, attached as **ZMX5**, acknowledges these duties and undertakes that "[w]here we have caused or contributed to adverse human rights impacts we will contribute to their remediation as appropriate."

- 40 In a recent speech by the current CEO of Anglo plc, Mr Mark Cutifani, attached as **ZMX6**, he stated:

"[W]e are acutely aware of the deep and lasting effects of our history as an industry. I would even go as far as arguing that we are one of the very few industries that has had to reckon with the legacies of our past in a real and progressive way. While our progress is encouraging, we are still not where we need to be."

- 41 Given these public commitments and undertakings, we trust that Anglo will not oppose the certification of this class action and will take urgent steps to assist the affected children and women in Kabwe.

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A *The nature of this certification application*

42. In this application, all that the Applicants seek is certification of their class action, that is, judicial permission to proceed by way of class action against Anglo.
- 43 This Court is not asked to determine the merits of the claim against Anglo, nor is this Court asked to prescribe precisely how the class action should be heard, managed and decided once it is under way. Those matters are for the judges to whom the case management of this matter and the trial will be assigned.
- 44 At this stage of the proceedings, the Applicants seek an order:
- 44.1 Certifying a class action;
 - 44.2 Appointing the Applicants as representatives of the class;
 - 44.3 Appointing Mbuyisa Moleele Attorneys ("Mbuyisa Moleele") as the legal representatives of the class; and
 - 44.4 Giving appropriate directions in relation to the procedure for the notification and identification of members of the class.
- 45 The proposed class action will proceed in two phases:
- 45.1 In the first phase, questions of fact and law that are common to all class members will be decided on an opt-out basis. This will not fully determine the merits of the class members' individual claims, but it will go a considerable way to resolving their claims.
 - 45.2 In the second phase, class members will come forward on an opt-in basis to prove their individual claims, including proof of individual harm and quantum, after the common issues have been determined.

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B The evidence

46 In preparing this application, we have consulted with various experts who are well recognised in their field and are likely to be called as expert witnesses at trial. Their expert reports and accompanying affidavits will be filed with this application. They are:

- 46.1 Professor Paul Dargan, Consultant Physician and Professor of Clinical Toxicology, Guy's & St Thomas' NHS Foundation Trust, Professor of Clinical Toxicology, King's College London;
- 46.2 Professor Colleen Adnams, Professor Emeritus of Intellectual Disability, Department of Psychiatry and Mental Health, University of Cape Town;
- 46.3 Professor Roy Harrison, Queen Elizabeth II Birmingham Centenary Professor of Environmental Health at the School of Geography, Earth and Environmental Sciences, University of Birmingham;
- 46.4 Professor Mark Patrick Taylor, Professor of Environmental Science, Faculty of Science and Engineering, Macquarie University, Sydney;
- 46.5 Professor Eric Betterton, University Distinguished Professor and Head of Department of Hydrology and Atmospheric Sciences, University of Arizona;
- 46.6 Professor Mary Lou Thompson, Professor of Biostatistics, University of Washington, Seattle;
- 46.7 Mr Musa Mwenye SC, Senior Counsel admitted to the Zambian Bar and a Solicitor of England and Wales, who has provided his expert opinion on the relevant Zambian law;
- 46.8 Mr Richard Hermer QC, Queen's Counsel called to the Inner Bar of the Courts of England and Wales, practicing from Matrix Chambers, Gray's Inn, London, who has provided an expert opinion on relevant English law.

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- 47 Due to the constraints of the Covid-19 pandemic, the affidavits prepared by experts working in other countries have been prepared and sworn in accordance with the legal requirements of their countries, but have not yet been authenticated under Rule 63(2) of the Uniform Rules of Court. Fully authenticated affidavits will be filed in due course, once circumstances permit the experts to travel to South African embassies and consulates or to make other appropriate arrangements for authentication.
- 48 Similarly, the Applicants have also been unable to authenticate their supporting affidavits due to the lockdown conditions in Zambia and the difficulties of arranging travel to the South African High Commission in Lusaka. Their fully authenticated affidavits will also be filed in due course. We submit that any delays in authentication will cause no conceivable prejudice to Anglo.
- 49 The events addressed in this proposed class action span more than 100 years. As a result, the Applicants have relied on archival material, reports, contemporaneous correspondence, theses, and documents prepared by authors who have long since died or are otherwise untraceable. To the extent that this constitutes hearsay evidence, the Applicants request leave to introduce this evidence, in the interests of justice, under section 3(1)(c) of the Law of Evidence Act 45 of 1988. Much of this evidence is uniquely within Anglo's knowledge or will be confirmed by further documentation held in its private corporate archives. The pre-trial discovery process will no doubt bolster the existing documentation and will cast further light on Anglo's role.

C The structure of this affidavit

50 In this affidavit, I address the following themes:

50.1 Lead and its harmful effects;

50.2 The history of Kabwe and the nature and scale of lead pollution in the town;

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- 50.3 Anglo's structure and its involvement in the Mine operations;
- 50.4 Anglo's public recognition of its duties to the host communities in which its mines operated;
- 50.5 Anglo's knowledge of the risks associated with exposure to lead pollution;
- 50.6 Anglo's knowledge of the measures to be taken and failure to prevent exposure to lead pollution;
- 50.7 Anglo's duty of care;
- 50.8 Anglo's negligent breach of its duty of care;
- 50.9 Causation and actionable harm;
- 50.10 The Applicants' circumstances and individual claims;
- 50.11 The basis for certifying the class action against Anglo;
- 50.12 The proposed procedure for the notification of the class and conduct of the class action litigation.

D Terms and abbreviations

- 51 I will make use of a number of abbreviations and technical terms in this affidavit. For ease of reference, the primary terms and acronyms include the following:

51.1 As defined above, "*Anglo*" refers to the Respondent, Anglo American South Africa Limited, previously known as the Anglo American Corporation of South Africa Ltd.

51.2 "AACCA" refers to Anglo American Corporation (Central Africa) Limited.

51.3 The "*Anglo Group*" refers to the Respondent, its subsidiaries (past or present), and any other company which acted in concert with the companies

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in the Anglo Group and which had available to it the benefit of the financial, commercial and technical services of such companies as a group.

51.4 "BLLs" refer to blood lead levels.

51.5 The "CDC" refers to the United States Centers for Disease Control and Prevention.

51.6 "Lead" refers to the element and all compounds of lead.

51.7 "Lead pollution" refers to lead that is released into the environment as a result of human activity, in the form of dust, smoke, fumes, water-borne particles, waste rock, tailings, slag, dross and all other lead-bearing waste material.

51.8 The "MCMMA" refers to the Managerial, Consultancy and Metal Marketing Agreement concluded on or about 26 June 1970 by the Zambian government and the Anglo Group.

51.9 The "Mine" refers to the Broken Hill Lead and Zinc Mine in Kabwe, Zambia and its operations. The Mine was also called "the Kabwe Mine" after 1966.

51.10 The "Mine operations" or "the operations" include mining, blasting, sintering, crushing, smelting, waste disposal, and all activities connected to these processes, conducted at or in the vicinity of the Mine's premises in the Kabwe District, Zambia.

51.11 "NCCM" refers to Nchanga Consolidated Copper Mines.

51.12 "RAAL" refers to Rhodesian Anglo American Limited.

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51.13 The “*RBHDC*” refers to the Rhodesian Broken Hill Development Corporation.

51.14 The “*relevant period*” refers to the period between or about 1925 to 1974.

51.15 The “*WHO*” refers to the World Health Organization, of which South Africa is a founding member.

51.16 The “*ZBHDC*” refers to the Zambian Broken Hill Development Corporation.

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III LEAD AND ITS HARMFUL EFFECTS

- 52 Lead (chemical symbol "Pb") is highly toxic to human beings, acting as a cumulative poison.
- 53 Humans have mined and smelted lead for thousands of years. It is found in varying concentrations throughout the earth's crust, most commonly in the lead ore "galena", consisting of mineralised lead sulphide (PbS) mixed with other compounds.¹
- 54 Due to its relative abundance, malleability and durability, lead has been used for a wide range of purposes throughout human history, including plumbing, ammunition, paint, and, for much of the 20th century, as an additive to petrol.
- 55 The qualities that make lead a useful material also make it a dangerous, long-lasting pollutant. Lead is heavy, stable, and does not easily corrode. Once it is released into the environment and deposited into soil and dust it generally remains in place, does not degrade, and accumulates over time.
- 56 One of the most important factors in the transportation and deposition of lead in the environment, is wind. In Kabwe, a flat area with low-lying koppies, wind blows unimpeded by mountains, allowing contaminants produced by mining and smelting operations to be carried directly into nearby communities. As explained by Prof Harrison, lead is not destructible once deposited, but can be dispersed in the environment, where it remains in the upper levels of the soil. Lead particles require a minimum wind speed to become airborne and are dependent on other factors including particle size. However, once airborne they are carried with the prevailing winds and deposited in the environment. Lead fume which escapes during the smelting process is particularly prone to wind dispersal as it is not constrained by the need for a threshold velocity to become airborne, as Professor Betterton observes.

¹ At Kabwe, the ore deposits consisted of a mixture of galena, carbonates, silicates and other elements.

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- 57 The toxic effects of lead on the human body are described in detail in the affidavit of toxicologist, Professor Paul Dargan, to which I make further reference throughout this affidavit. They are also discussed in a 2010 World Health Organisation ("WHO") report on '*Childhood Lead Poisoning*', to which Prof Dargan contributed as a member of the Working Group. An extract of the 2010 WHO report is attached marked **ZMX7**.
- 58 Lead enters the body when ingested or inhaled. Once it is in the body, it may be absorbed into the blood and then deposited in organs and bones. In this way, lead can accumulate in the body over time.
- 59 As explained by Prof Dargan, ingestion is the most important pathway for exposure in children. Young children are particularly affected by lead, due to their habit of hand-to-mouth and object-to-mouth contact as well as crawling and poor hand-washing, their greater rates of absorption of lead, and because their brains and bodies are still developing. Prof Dargan notes that for children with iron and/ or calcium deficiency, a condition common in low-income countries, such as Zambia, lead absorption can be even greater.
- 60 Women of child-bearing age are also at risk during pregnancy and are likely to transmit lead to their unborn children. These risks are also addressed in Prof Dargan's affidavit. Elevated maternal blood lead concentrations can lead to gestational hypertension and preeclampsia and an increased risk of loss of pregnancy. Ante-natal lead exposure has also been shown to be linked with neuro-developmental problems in children. Lead stored in a mother's bones may also be released into the bloodstream during pregnancy, exposing mothers and unborn children to greater risks.
- 61 Blood lead levels ("BLLs") are the most widely used measure of lead exposure, assessed through a simple and relatively inexpensive blood test.
- 61.1 A person's BLL is measured as micrograms of lead per decilitre of blood (microg/dL), expressed as µg/dL.

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- 61.2 BLLs are generally reflective of more recent or ongoing exposure to lead. Lead typically has a half-life of approximately 28 days in the bloodstream, after which it is either excreted or absorbed into the bones and soft tissue.
- 61.3 Once absorbed into the bones or soft tissue, lead will continue to be released into bloodstream over many years, albeit at lower concentrations than at the time of initial exposure. Lead remobilisation from bones into the bloodstream is a particular risk during pregnancy.
- 62 The scientific consensus is that there is no safe level of lead in the blood. Even at very low BLLs, lead causes neurodevelopmental and clinical and sub-clinical effects, some of which are irreversible. Chronic exposure has an exacerbating effect. According to the United States Centers for Disease Control and Prevention ("CDC"), a BLL of 5 µg/dL is the reference level above which public health actions and medical monitoring should be initiated. If elevated BLLs are not reduced, children face the risk of life-long, irreversible damage and exacerbation of harm they have already suffered. A copy of the CDC's recommendations is attached, marked **ZMX8**. The CDC's work accurately reflects the weight of current medical opinion on the subject and is to be considered authoritative.
- 63 Table 1 below, from a 2015 WHO report entitled "*Lead exposure in African children*", summarises the adverse health effects associated with different BLLs. The WHO is the specialised agency of the United Nations responsible for international public health, of which South Africa is a founding member. Its reports and studies on the subject are also to be considered authoritative. Relevant extracts from the WHO's 2015 report are attached, marked **ZMX9**.

Table 1 – Clinical effects associated with specific blood lead concentrations

Clinical effects in children	Blood lead in µg/dL
Death	> 100

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Severe brain damage (encephalopathy) Kidney damage Severe anaemia	100
Severe stomach cramps	50
Damage to haemopoiesis (decreased haemoglobin synthesis)	40
Reduced vitamin D metabolism	30
Increased risk of hypertension in adulthood Impaired nerve function – increased nerve conduction velocity	20
Increased level of erythrocyte protoporphyrin Decreased vitamin D metabolism Decreased calcium homeostasis Developmental toxicity Hearing impairment Decreased growth (including puberty) Impaired peripheral nerve function Transplacental transfer Reduced IQ Behaviour problems	20-10

- 64 Table 2 below, from the expert affidavit of Prof Dargan, provides an additional summary of the thresholds for clinical effects of lead poisoning, associated with BLLs.

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Table 2 – Thresholds for Clinical Effects of Lead Poisoning

Blood Lead Concentration	Clinical Feature
< 5 microg/dL [no lower threshold]	Neurodevelopmental effects in children: detriments in language development, arithmetic and reading scores, short-term memory, lower class standing and academic achievement, higher school dropout rates, and lower intelligence as measured by IQ.
Maternal blood lead < 5 microg/dL [no lower threshold]	Neurodevelopmental adverse effects in the offspring
Maternal blood lead < 5 microg/dL	Gestational Hypertension
< 5 – 10 microg/dL	Hypertension, ischaemic heart disease, cardiovascular and all-cause mortality
Maternal blood lead > 5 microg/dL	Preeclampsia
> 5 – 10 microg/dL	Delinquency, crime
> (5 –)10 microg/dL	Attention-deficit hyperactivity disorder, problematic behaviours with poor social and emotional functioning in children
5-25 microg/dL	Effects on enzymes in red blood cells that are used to make haemoglobin

Maternal blood lead > (10 –) 30 microg/dL	Spontaneous abortion and pregnancy loss
> 25 – 45 microg/dL	Chronic Kidney Disease
> 40 microg/dL	Dementia Male infertility
> 45 – 65 microg/dL	Gastrointestinal symptoms including nausea and vomiting, anorexia, weight loss, constipation Peripheral neuropathy Anaemia Visual effects
> 50 – 75 microg/dL	Abnormal liver function tests
>80 microg/dL	Encephalopathy and increased risk of mortality Greater risk at blood lead concentration > 100–120 microg/dL
>80 – 100 microg/dL	Colic, severe constipation

- 65 The CDC's recommendations for children, a copy of which was previously attached and marked **ZMX8**, recommends, *inter alia*, that regular blood lead testing is required from levels of 5 µg/d and above, that a child's environment is investigated for sources of lead exposure if the child has a BLL in the range of 10-19µg/dL, and that lead hazard reduction and abdominal x-rays are required from 20-44µg/dL, among other required interventions. Chelation therapy is recommended for BLLs from 45µg/dL and above.

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- 66 Chelation therapy is a medical treatment using various chemical agents to draw heavy metals out of the body. The treatment regime will depend on the blood lead concentration, the patient's symptoms and the environmental lead burden. Side effects can include low white blood count and cutaneous reactions, making ongoing medical monitoring necessary to check how the body is handling the treatment.

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IV LEAD POLLUTION IN KABWE

A Kabwe

- 67 Kabwe is the fourth largest city in Zambia and is home to over 225,000 residents. It is the capital of the Central Province and the seat of the Kabwe District.²



- 68 Kabwe was once the site of the continent's largest lead mine and smelting operation. Rich deposits of lead and zinc were discovered there in 1902, in what was then Northern Rhodesia. I refer to the expert reports of Prof Betterton, Prof Harrison and Prof Taylor who describe in detail the geological features of Kabwe and general behaviour and properties of lead in this environment.
- 69 Until Zambian independence, Kabwe was named "Broken Hill" after the Australian lead mining town of the same name. As is discussed in detail below, even before the start of the 20th Century, the 1893 Broken Hill Report had identified

² Source: Human Rights Watch report "*We Have to Be Worried*", 2019, at p. v, a copy of which is attached and marked **ZMX10**.

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lead mining and smelting in Broken Hill, Australia as the cause of lead poisoning in the surrounding community.

- 70 Given the strong associations between Broken Hill in Australian and Broken Hill in Zambia, the Mine's owners and operators could have been in little doubt about the impact of lead pollution on surrounding populations and the need to investigate and monitor these impacts.

B The Broken Hill Mine

- 71 The Broken Hill Mine was established in Kabwe in 1904, under the ownership of the Rhodesian Broken Hill Development Company Limited³ ("RBHDC"). The Mine commenced production in 1906, but did not start producing finished lead until 1915, and operated for almost 90 years until it was closed in 1994. During the lifetime of its operations it produced many tens of thousands of tonnes of lead and zinc. It was the only lead Mine and smelter in the town.
- 72 The Mine's operations and methods changed over time. The Mine's Manager in 1970, Mr B. Barlin, provided a detailed description of the Mine's processes from its inception in 1904 to 1970 in a book chapter titled "*The Evolution of Lead Smelting Practice at Zambia Broken Hill Development Company, Kabwe, Zambia*". A copy of this chapter is attached, marked **ZMX11**. These processes are further summarised in the 1975 dissertation by A.R.L. Clark, attached as **ZMX3**, and are detailed in the expert report of Prof Betterton. In simplified terms, the Mine's processes, which all caused the emission of lead-containing dust and/ or fumes, involved the following:
- 72.1 Lead-bearing ore, containing compounds of lead, zinc and other elements, was mined from the earth with machines.
- 72.2 The ore was crushed in the primary and secondary crusher and concentrated to remove waste matter.

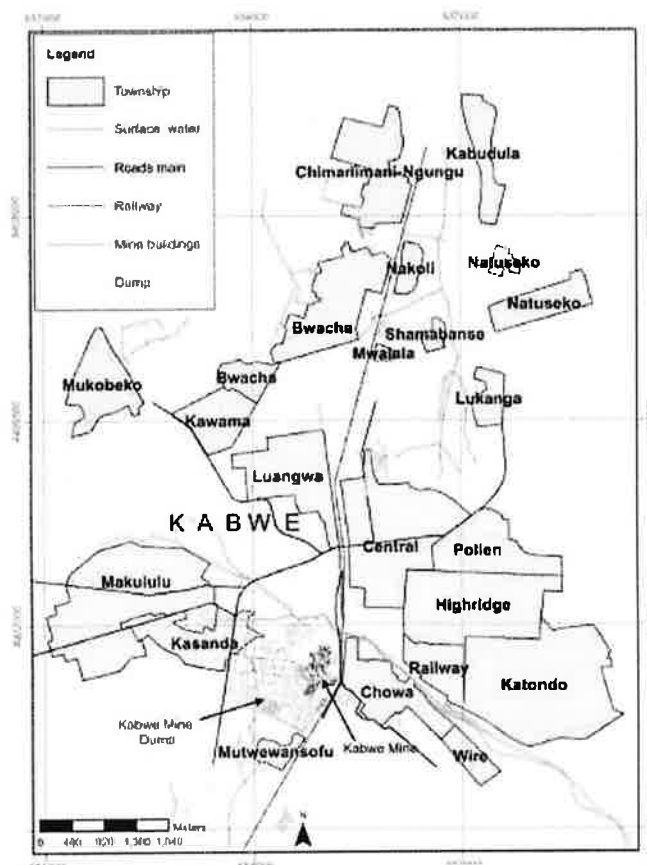
³ In 1964, the company changed its name to the Zambian Broken Hill Development Corporation ("ZBHDC")

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- 72.3 The concentrated ore was passed through a sinter, which burnt off sulphides, producing lead oxide and zinc oxide and sulphuric acid.
- 72.4 The oxides were passed through a crusher.
- 72.5 The crushed oxides were then passed through a smelter, resulting in liquid lead and lead vapour which were purified in large kettles and tapped off at the base of the furnace.
- 72.6 Lead-bearing waste rock, tailings, slag and dross from these processes were deposited on mine dumps at or in the vicinity of the Mine premises.
- 72.7 Lead-contaminated water and sludge were also discharged into the Mine canal.
- 73 All of these operations were conducted within or in the vicinity of the Mine premises, located in close proximity to residential areas. The following map shows the location of the Mine in relation to the present-day town:⁴

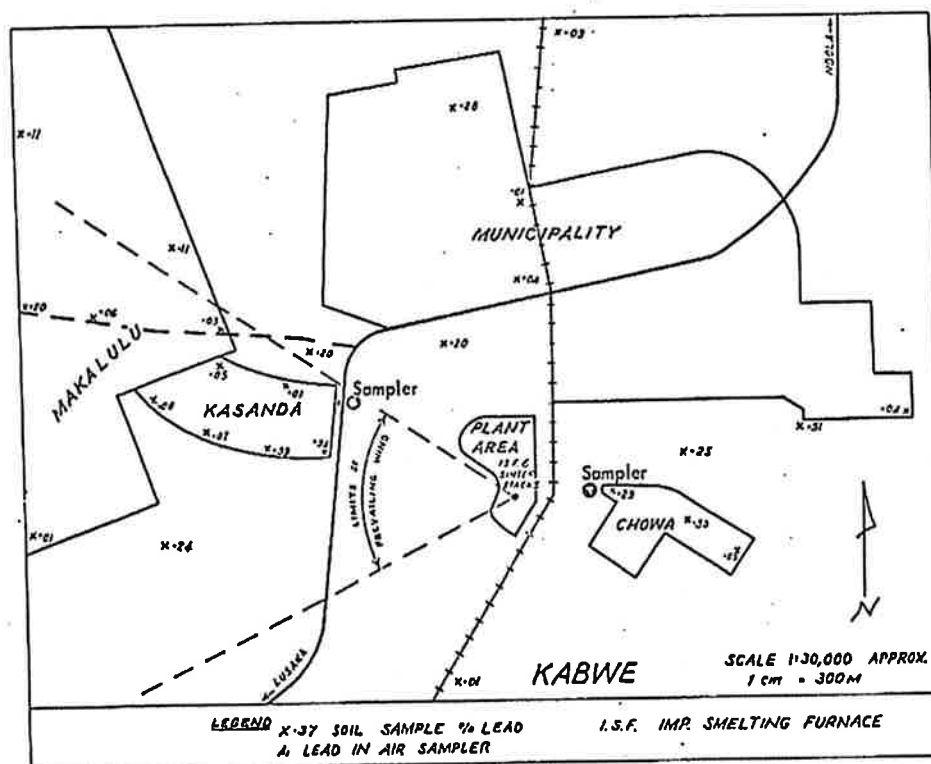
⁴ Source: Joseph Makumba/ZCCM-IH, reproduced in Human Rights Watch report "*We Have to Be Worried*", 2019, at p. vi, a copy of which is attached and marked **ZMX12**.

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- 74 Over the course of the 20th century, the Mine's owners, assisted by Anglo, developed townships and staff quarters around the Mine. Black residents were confined to the most undesirable areas, to the west of the Mine, downwind of the Mine dumps and the smelter. For example, a map contained in the Rhodesian Broken Hill Development Company's 1929 annual report shows that the so-called "Native Compound Area" was developed directly adjacent to the Mine dumps. A copy is attached as **ZMX13**.
- 75 By the early 1970s, there were sizeable communities of poor, black residents and mineworkers living in the townships of Kasanda and Makululu, downwind of the Mine. A map produced by A.R.L. Clark in 1975 shows the layout of the town at the time. The direction of prevailing windborne Mine dust and lead fumes is shown by the dotted lines:

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C The mechanisms of contamination in Kabwe

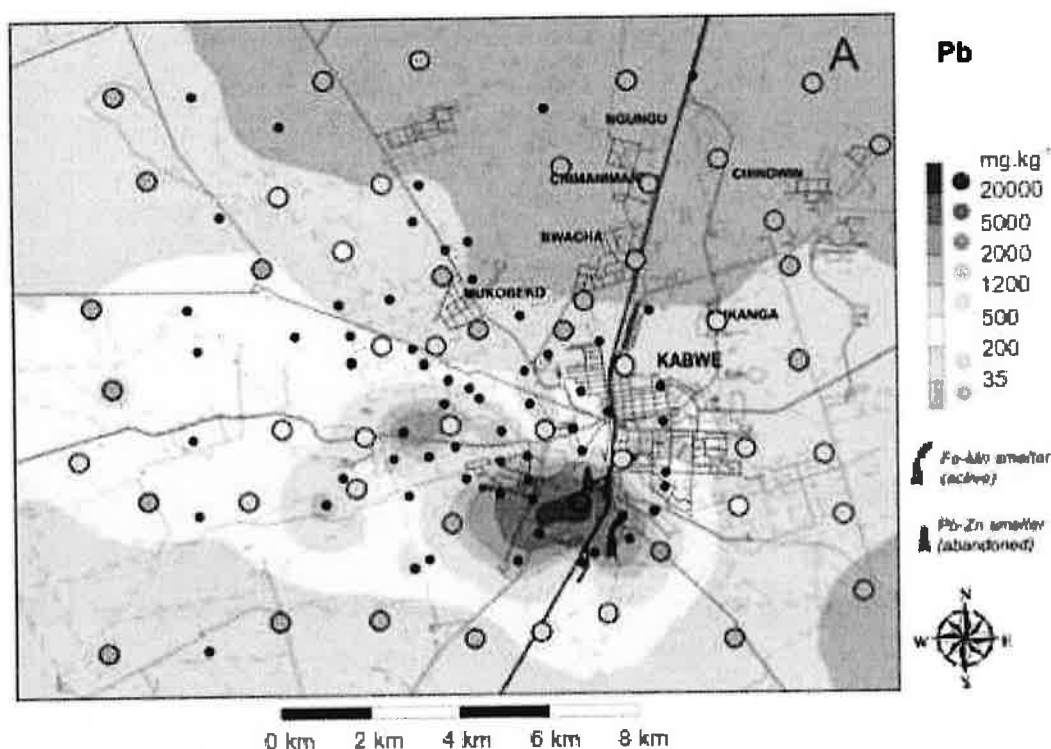
- 76 As explained by Prof Betterton and Prof Harrison, by reference to A.R.L. Clark's 1975 study, wind patterns in Kabwe are dominated by winds from an eastern/south eastern direction which, as Prof Betterton points out, aligns with global scale trade wind patterns known since the eighteenth century. Throughout the Mine's operations, these winds carried lead fumes and dust from smelting and mining operations directly over Kasanda and Makululu, with occasional shifts in wind direction, particularly in summer, also carrying emissions to nearby Chowa. Due to the proximity of the townships of Kasanda, Makululu and Chowa to the Mine site, this airborne lead and windblown dust would have been deposited in the local environment continuously.
- 77 Professor Betterton notes Clark's observation (in his dissertation previously attached as **ZMX3**) of fumigating and looping plumes from the smelter. Such plumes can quickly deliver pollutants to the ground where they loop downwards and envelop nearby residences, rather than being dispersed upward. Both

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Professor Betterton and Professor Harrison note that there is an observable symmetry between soil profile maps and smelter emissions, whereby the plume-like map immediately surrounding and extending several kilometres “downwind” of the smelter (towards Kasanda and Makululu) can only be explained by emissions from that plant. The low height of the Kabwe smelter stacks would have been an essential element in this process.

- 78 The dispersion of lead from the smelter stacks and Mine dumps is reflected in the “heat map” of lead contamination in the soil surrounding the Mine. This heat map, reproduced below, was prepared by a team of Czech researchers led by Bohdan Kříbek. An extract of their study, published in the *Journal of Geochemical Exploration*, is attached as **ZMX14**. The darker areas in this map reflect the highest levels of lead contamination in the Kasanda, Makululu and Chowa communities:



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D The nature and extent of lead poisoning in Kabwe

79 As a result of the Mine's operations, Kabwe is now one of the most lead-polluted sites in the world. There is incontrovertible evidence of massive lead contamination of soil and of staggeringly high levels of lead in the blood of a substantial proportion of the local population, particularly very young children.

80 I refer to the affidavit and accompanying report of Prof Dargan, who sets out in detail the various studies and reports on the extent of lead pollution in Kabwe and the health impacts on Kabwe residents. To avoid overburdening these papers, I attach relevant extracts from these reports and studies. Full copies of all reports, including the further reports referenced in Prof Dargan's affidavit, will be made available to the Court and Anglo on request.

80.1 In 1975, A.R.L. Clark of the London School of Hygiene and Tropical Medicine produced the very first study on the sources and health impacts of lead pollution in Kasanda, Makululu and Chowa townships between 1971 and 1974. Clark found high levels of environmental lead pollution and significantly elevated blood lead levels ("BLLs") in children living in these communities. Clark also recorded a number of cases of encephalopathy and death in the early 1970s resulting from lead poisoning. A copy of the thesis was previously attached as **ZMX3**.

80.2 In 2001/2002, a World Bank study reported on BLL testing carried out between 1994 and 1999-2000 in Kasanda. In 1994, average BLLs were found to be 45 µg/dL, the highest of the villages sampled, and 58µg/dL for those aged 0-5 years old, the most at risk group. Average BLL in Kasanda in 1999/ 2000 were reported to be 44.5 µg/dL. I attach relevant extracts from this study, marked **ZMX15**.

80.3 This World Bank study compared findings of various soil sampling programs and found that environmental lead pollution was greatest in Kasanda and Chowa (a range of 25-36,000 ppm, compared with the WHO limit of 1,000 ppm). The sources of the lead pollution were reported

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to be smelter activity from the Mine; on-site smelter waste and tailings dumps.

- 80.4 These findings are similar to those detailed in the 2019 study on Kabwe soil contamination led by Bohdan Křibek, which confirmed that the highest lead concentrations in topsoils ($> 20,000 \text{ mg kg}^{-1}$) were found in the area of the former smelting and processing plant at Kabwe. The study further produced contour maps illustrating a range of high topsoil concentrations (between 500 mg kg^{-1} and $20,000 \text{ mg kg}^{-1}$) across areas covering Kasanda, Chowa and Makululu. I note that Prof Dargan refers to a soil hazard standard for lead of 400 mg/kg in the US for bare soil where children play, set by the US Environmental Protection Agency (EPA). I understand that ppm and mg kg^{-1} are converted 1 to 1.
- 80.5 Between 2003 and 2011, the World Bank Copperbelt Environment Project ("CEP") carried out work to try and address some of the environmental health risks. Extracts from the CEP report are attached, marked **ZMX16**. Their work included removal and disposal of hazardous materials, demolition and re-vegetation, repair of four tailing dams and overburdened dumps. The program resulted in 2,822 children (of 5,000 tested) showing reduced BLLs of between 20 to 25 per cent in the case of treatment with nutritional supplements (for children with BLLs between $20\text{--}64 \text{ }\mu\text{g/dL}$) and of up to 74 per cent for chelation treatment (for children with BLLs beyond $65 \text{ }\mu\text{g/dL}$). However, it should be noted that the remediation measures undertaken in the villages themselves, in terms of soil replacement and re-vegetation, were extremely limited, it is therefore obvious that the historic lead contamination in those areas remains.
- 80.6 Given that remediation efforts have been limited, it is perhaps unsurprising that the World Bank found that in 2016, Kabwe continued to have serious environmental health risks. As of 2016, it was estimated that tens of thousands of residents may still be affected by high lead levels in the soil, both from naturally occurring mineralization and the impact of the smelting and reprocessing of tailings. The report also referred to 2015 data showing that lead levels in soil next to the Mine site ranged from 139

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mg/kg to 62,142 mg/kg, with a geometric mean concentration of 1470 mg/kg. Of the 339 soil tests, 86 readings (25.4%) showed a concentration more than 400 ppm. I attach relevant extracts of the World Bank 2016 report, marked **ZMX17**.

- 80.7 These findings correlate with a 2015 study led by John Yabe of Hokkaido University in which he analyzed the BLLs of 246 children under the age of 7 from Kasanda, Makululu and Chowa in Kabwe. The study found that the mean BLLs in children from those areas were 82.1, 57.1 and 39 µg/dL respectively. The study went on to say that lead poisoning in Kabwe *"is among the highest in the world, especially in children under the age of 3 years"*. The 2015 Yabe study is attached, marked **ZMX18**.
- 80.8 John Yabe has participated in a number of further studies analysing and discussing the health implications of lead exposure in Kabwe. A study published in 2020 presented findings based on testing carried out on 1190 residents. Areas where residents were most affected were Kasanda, and Makululu, with mean BLLs of 45.7 µg/dL, 29.3 µg/dL respectively, followed by Chowa, whereby age was found to be a significant factor. Five children had BLLs above 100 µg/dL, with a BLL of 162 µg/dL found in one child between the age 1 and 2. The study also highlighted that BLLs appeared to peak in children around the age of 2. This confirmed the finding of a study published in 2019, which concluded that BLLs peaked at around 15 months. It was found that this corresponded to the average age of children being weaned off breastmilk in Kabwe. The 2019 and 2020 Yabe studies are attached, marked **ZMX19** and **ZMX20**.
- 80.9 Prof Dargan's report summarises a number of additional studies, which further confirm the extent of the soil lead contamination and magnitude of blood lead levels among the local population.

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V ANGLO'S STRUCTURE AND INVOLVEMENT IN THE BROKEN HILL MINE

- 81 Throughout the relevant period of Anglo's involvement in the Mine, from 1925 to 1974, Anglo *inter alia*:
- 81.1 Was the parent company and head office of the Anglo Group, which oversaw, managed and / or advised the Mine;
 - 81.2 Served as the consulting engineer to the Mine between 1925 to 1927 and again from 1951 to 1963;
 - 81.3 Served as manager of Rhodesian Anglo American Limited ("RAAL") which served as consulting engineer to the Mine from 1928 to 1930, at which point lead production at the Mine was suspended from 1930 to 1936;
 - 81.4 Served as manager and consulting engineer to the Mine from 1937, when lead production resumed, to 1951;
 - 81.5 Provided management, technical engineering, and medical oversight and direction in respect of the Mine operations, including the control of lead pollution;
 - 81.6 Provided further consulting services and advice in respect of Mine operations, including the control of lead pollution and construction of houses.
- 82 The Applicants have prepared organograms illustrating what is currently known about the structure of the relevant entities in the Anglo Group, their involvement in the Mine, and their association with the owner of the Mine, RBHDC during the relevant period. These organograms and an accompanying table of cross-directorships between Anglo, RBHDC and other entities in the Anglo Group, are attached as **ZMX21**.
- 83 These organograms and the table of cross-directorships have been prepared by the Applicants' legal representatives using publicly available annual reports and documents. I stress that the Applicants have not yet had the benefit of discovery.

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The full extent of Anglo's investment, involvement in, and control over the relevant operations of the Mine, specifically its control over health and safety operations, will become apparent once all of the relevant documents have been discovered. As a result, these documents are of necessity a work-in-progress that will be updated as more information becomes available in preparation for trial.

- 84 On paper, the legal structure of the Anglo Group was complex and ever-changing. However, this complexity belies the centralised manner in which the group actually operated during this time, under the so-called "group system". This system was best described in Anglo's 1968 Annual Report, an extract of which is attached as **ZMX22**, as follows:

"The term 'group' has a wider meaning in the South African mining industry than its statutory definition of a parent company and its subsidiaries. The mining finance houses in South Africa have over a long period developed what is called the 'group system', by which the parent house not only plays a role in management, but also provides a complete range of administrative, technical and other services to the companies within the group. Thus the Anglo American Corporation Group comprises a large number of companies whose administration and management are closely linked to the Corporation."

- 85 The centralised group structure was in turn reflected in a highly centralised management style. A 1981 profile of Anglo in *The Economist*, attached as **ZMX23**, describes a group which, for much of the 20th century, was dominated by a single family and a "gentlemen's club" of their close associates:

"[T]he group's style of management is ripe for change. Despite its size (Mr [Harry] Oppenheimer says because of it), Anglo American is run at the top like a gentlemen's club. "Sensible understandings with people," rather than written rules, are the way the company is managed, says Mr Relly. The Oppenheims choose the people who work around them and the family prefers it that way. Anglo's main board of 29 directors meets four times a year. The most important decisions are taken by a four-man operating committee, consisting of Mr Relly, the highly influential Mr Julian Ogilvie Thompson (both are Rhodes scholars), Mr Gordon Waddell (the chairman's former son-in-law), and Mr Murray Hofmeyr, who came from what is now an indirectly-owned London associate, Charter Consolidated. Mr Oppenheimer himself attends, on average, two out of every three meetings of this committee."

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- 86 Throughout the relevant period, Anglo and the Mine's owner, RBHDC, shared a number of directors, as detailed in the organogram and table of cross-directorships previously attached as **ZMX21**. This meant that, at all material times, Anglo had detailed knowledge of the affairs of RBHDC and of the operations and conditions at the Mine. Directors who were on the Boards of both Anglo and the RBHDC at various times during the relevant period included:
- 86.1 Sir Ernest Oppenheimer, who was the Founder of Anglo and its Chairman from 1925 to 1957, a director of RBHDC from 1925 to 1945, and chairman of RBHDC from 1950 to 1957;
 - 86.2 Harry Oppenheimer, who was Chairman of Anglo from 1957 to 1982, and was Chairman of ZBHDC from 1957 to 1970;
 - 86.3 Edmund Davis, who was Chairman and Managing Director of RBHDC over the period 1925 to 1938 and a director of Anglo from 1929 to 1938;
 - 86.4 SS Taylor, who was Managing Director of the RBHDC from 1938 to 1946, Chairman of the RBHDC from 1938 to 1950, and a Director of Anglo from 1931 to 1950;
 - 86.5 LA Pollak, who was a Director of the RHBDC from 1928 to 1933 and a Director of Anglo from 1929 to 1933;
 - 86.6 Carl Davis, who was a Director or Alternate Director of the RBHDC from 1928 to 1948, a Technical Director of Anglo from 1929 to 1934 and a Director of Anglo from 1932 to 1952;
 - 86.7 Keith Acutt, who was a Director of RBHDC from 1955 to 1970, the Deputy Chairman of RBHDC from 1963 to 1970, a Director of Anglo from 1951 to 1970 and the Deputy Chairman of Anglo from 1957 to 1974;
 - 86.8 WD Wilson, who was a Director of RBHDC from 1960 to 1970 and a Director of Anglo over the same period;
 - 86.9 PHA Brownrigg, who was a Director of RBHDC from 1960 to 1970 and a Director of Anglo over the same period; and

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86.10 Gavin WH Relly, who was a Director of RBHDC from 1965 to 1970, a Director of Anglo over the same period, and Deputy Chairman of RBHDC from 1965 to 1968.

87 Anglo's involvement in the Mine during the relevant period can be divided into three parts:

87.1 1925 to 1937;

87.2 1937 to 1964, and

87.3 1964 to 1974.

A 1925 to 1937

88 As previously indicated, the Mine was established in 1904 under the ownership and control of the RBHDC, a company registered in London. The early years of the Mine's operations were plagued by financial and technical difficulties, resulting in limited production and frequent stoppages.

89 From 1925 to 1927, Anglo was Consulting Engineer to the Mine, as detailed in the attached extracts from the RBHDC Annual Reports, marked **ZMX24**,

90 In the 1925 RBHDC Annual Report (attached, marked **ZMX24**), Anglo is described as erecting buildings in Broken Hill to act as their offices in Northern Rhodesia. On their staff at Broken Hill was a mining engineer, a mechanical engineer and a geologist at the head of each department and residences were erected to house the Anglo's staff.

91 A 1928 edition of the Mining and Industrial Magazine, attached as **ZMX25**, states that Anglo set up offices in Broken Hill to act as the "*technical nerve-centre of the whole organisation*". This operation was described as an "*enterprise which in its magnitude and audacity might almost be likened to the occupation of Rhodesia*"

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by the Pioneer Column in 1890" – a reference to the invasion of present-day Zimbabwe by Cecil John Rhodes' private army.

- 92 From 1928, Rhodesian Anglo American Limited ("RAAL", subsequently known as "Zamanglo"), Anglo's mining finance subsidiary, acquired shares in RBHDC, as reflected in relevant extracts from RAAL's Annual Reports, attached as **ZMX26**.
- 93 From 1928 to 1930, RAAL was appointed as Consulting Engineer to the Mine. Extracts from RBHDC's relevant Annual Reports from the period are attached, marked **ZMX27**. A 1929 article on RAAL's prospects, attached marked **ZMX28**, states that *"We have taken over all the AAC Rhodesian mining interests, their buildings and staff at Broken Hill, and their holding in the shares of BSAC, and in addition will have available the services of their large and magnificent staff in Johannesburg"*.
- 94 I attach a copy of a speech made by Anglo's Chairman, Sir Ernest Oppenheimer, marked **ZMX29**, at Anglo's AGM in May 1929, where he summarised Anglo's motivations in establishing RAAL and Anglo's desire to act as a "strong parent company" to oversee its Northern Rhodesian interests:

"Our decision to form the Rhodesian Anglo American Ltd was based on our experience of the Rand, where it has been shown that the mining companies individually, and the industry as a whole, have benefited to an enormous extent through the presence of strong parent companies. The advantages of the system are manifold: the financing of the individual mining enterprises is facilitated thereby, the parent company provides the link between the various producing companies and promotes cooperation on matters of common interest, and perhaps most important, by engaging a staff of highly skilled experts is able to give valuable technical assistance...the existence of a central organisation for the supply of expert advice in various matters is obviously of incalculable value. It ensures to the individual companies great economies compared with the cost to which they would be put if each of them were called upon to maintain an equally complete staff...A central organisation makes for efficiency by providing a channel through which full interchange of ideas regarding mining methods and information generally may pass; it facilitates co-operation in matters such as native labour recruiting and negotiations with the authorities in respect of essential services."

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- 95 There was no consulting engineer at RBHDC from 1931 to 1936, and no lead was produced during this time.
- 96 As detailed above, there were substantial cross-directorships between Anglo and RBDHC during this and all later periods. In addition, from 1936 an RBHDC Johannesburg Committee was formed, made up of H.F. Oppenheimer (Director of Anglo), R.B. Hagart, and A.C. Wilson (Assistant Manager at Anglo). An extract of the relevant RBHDC Annual Report is attached and marked **ZMX30**.

B 1937 to 1964

- 97 From 1937 to 1964, Anglo became the manager and consulting engineer to the Mine and Company Secretary to RBHDC in London and Johannesburg. In particular, it provided financing, management services, and technical advice on engineering matters through its consulting engineers and medical oversight through its medical consultants and medical department.
- 98 Anglo's expanded investment and involvement in the Mine during this period was critical to the survival of the Mine, allowing it to exploit new ore reserves below the water table and to install new smelting equipment.
- 99 In a 1937 speech to shareholders of RBHDC, Sir Edmund Davis, chairperson and managing director of RBHDC and director of Anglo, described Anglo's expanded investment and its increased role in the Mine's affairs. A copy of the speech, reproduced in *The Times* of London, is attached as **ZMX31**. Sir Davis reported to shareholders that –

"As we are faced with a difficult mining proposition and the possibility of having to deal with 20 million gallons of water per day, and the necessity to provide a large plant to deal with the sulphide ores, we have considered it advisable to come to an arrangement with the Anglo American Corporation of South Africa, Ltd., to act as the managers and consulting engineers in South Africa, and we are pleased to state that part of the arrangement made includes their subscription of 500,000 shares at par less 10 per cent. commission, with a call of 206,980 shares at par till the 31st December, 1938.

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...
I feel sure that you will realise how anxious we have been to arrive at the new arrangement with the Anglo American Corporation of South Africa, Limited, and the British South Africa Company, and though negotiations have been difficult, they were greatly facilitated by the position of several of my colleagues being on two of the boards, and Sir Ernest Oppenheimer and myself being on all three (Hear, hear)."

- 100 In a newspaper article published at the time, titled "New Outlook for Rhodesian Broken Hill" (ZMX32) the author described Anglo as assuming "technical control" of the RBHDC from this point onwards:

"For a long time it has been felt by the most discerning shareholders that the Rhodesian Broken Hill Development Company was not being run on the right lines and that the only way to establish the mine on a sound profit-sharing basis was to develop the proved deep-seated bodies of lead-zinc sulphide ore and to improve and increase the surface plant for this purpose. Tardily, but at long last, the Board of the company has come around to this view. The fact, however, that such expansion as is now contemplated involves the raising of a large amount of capital called for the reconstruction of the Company's finances ; whilst the necessity of ensuring that the new money will be spent to the best advantage made it expedient to accept the services of Anglo American Corporation, who have consequently been given technical control of the company. The Anglo-American is also participating in the new capital issue, which will amount to £1,000,000 in 2,000,000 shares of 10s, each.

...
The Anglo-American can be relied upon to see that the mine is given a full chance to develop on more liberal lines than heretofore and to prolong its life for many years beyond present expectations."

- 101 Anglo's role in changing the Mine's fortunes is further is described by Mr Barlin, the Mine Manager in 1970, in his history of the Mine's operations, previously attached as ZMX11. Mr Barlin describes the Mine's predicament in 1937 and Anglo's involvement as follows, at pages 657 to 658 of that chapter:

"The affairs of the Company [the RBHDC] had reached a critical point.

The easily mined and treated ores were all but exhausted and it was essential that ore below the water level should be mined and modern plant installed to recover the metal content.

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Diamond drilling had established the existence of substantial ore reserves and that expansion of production was justified. Anglo American Corporation of South Africa, Limited, were appointed Consulting Engineers and Managers in January, 1937, they had been Consulting Engineers since 1925 and had recommended sinking a separate pump shaft under cementation cover and installing a concentrator for the separation of lead and zinc sulphides.

This represented a bold venture into the integrated mining and treatment of the underground ores.” (page 657) (Emphasis added)

- 102 Anglo's role in this “bold venture” was further described in a 1957 town brochure (Annexure **ZMX33**) which explained how Anglo's consulting engineer, Dr J.A. Bancroft, spear-headed the plans to sink a new shaft below the water table:

“By the mid-thirties a new problem threatened Broken Hill's existence. Ore reserves above the water table of 225ft were certain to be exhausted and mining would have had to cease by about 1940. It was largely the determination of Dr J.A. Bancroft, the consulting engineer, that prevented that from happening. He persuaded the directors to let him sink another shaft, the Davis Shaft, and install pump equipment to draw 20,000,000 gallons of water a day. The water table was lowered sufficiently for rich ores to be reached 1000ft below the earth's surface.”

- 103 As the Mine's manager and consulting engineer, Anglo was also integrally involved in planning and executing the installation of new smelting equipment at the Mine in 1946, 1953, 1957 and again in 1962. This too is detailed in Mr Barlin's history of the Mine, previously attached as **ZMX11**.

- 103.1 In 1946, the Newnam Hearth plant was installed at the Mine (pages 659, 665);
- 103.2 In 1953, new Dwight-Lloyd sintering machines were installed at the Mine, together with new lead blast furnaces;
- 103.3 In 1957, the blast furnaces were decommissioned and the Mine returned to using the Newnam Hearth for lead production (pages 662, 663);
- 103.4 In 1962, the Mine installed a new Imperial Smelting Furnace and Sinter Plant (page 666), which operated for the remaining life of the Mine;

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104 The 1960 RAAL Annual report confirms that Anglo itself had recommended the installation of the Imperial Smelting Furnace, as it states that *"the Broken Hill company has accepted the recommendation of its consulting engineers that an Imperial Smelting Furnace and ancillary plant should be erected at the mine"* (page 8). An extract from this report is attached as **ZMX34**.

105 Anglo's hands-on role in the Mine's operations was consistent with its "group system". I attach a joint memorandum produced in 1963 by Anglo and the Rhodesian Selection Trust, marked **ZMX35**, which contains a summary of how Anglo managed the Northern Rhodesian Mines, including Broken Hill, via its group system and its role as financier and technical adviser:

"In the group system a number of mines are administered by a strong parent company well placed to raise finance on their behalf, and to provide economically a comprehensive range of technical services. Sir Ernest Oppenheimer, citing Anglo American's Experience on the Rand, explained its manifold advantages as follows:

"the parent company provides the link between the various producing companies and promotes cooperation on matters of common interest, and perhaps experts, is able to give valuable technical assistance...In such circumstances the existence of a central organisation for the supply of expert advice in various matters is obviously of incalculable value. It ensures to the individual companies great economies compared with the cost to which they would be put if each of them were called upon to maintain an equally complete staff...makes for efficiency by providing a channel through which full interchange of ideas regarding mining methods and information generally may pass."

106 I attach an undated memorandum, marked **ZMX36**, by D.A. Etheredge of Anglo's Zambian subsidiary (and also later a Director of Anglo) in which he describes the relationship between the Mine and engineering staff as follows:

"Another factor in the days of the "family" was that a Consulting Engineer could regard mine staff as being part of his staff. Thus, for instance, the Consulting Engineer, in a matter such as the planning of a new shaft, would use mine staff exclusively."

107 During this period, there were frequent communications between Anglo and the local Mine management in relation to the problem of excess lead fumes at their operations, the gravity of the air pollution in the lead plant and the risk it posed to

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workers. For example, I attach as **ZMX37** a 1949 letter from the Chief Medical Officer of Anglo, Dr. van Blommestein, to the local Mine management. In it he describes the conditions in the smelter factory as being *"far from satisfactory...and...there is considerable room for improvement. The recognised standard for the air content in factories, workrooms and smelter plants...have been considerably exceeded on every occasion on which an air analysis has been carried out...it is inevitable that sooner or later, genuine cases of Lead Poisoning will occur"*. As will be explained further below, Dr van Blommestein and other Anglo officials issued further guidelines, instructions and advice on health and safety measures, including lead pollution emanating from the Mine's operations, demonstrating that Anglo exercised control over this problem or at least held itself out as exercising such control.

C 1964 to 1974

- 108 In 1964, Zambia gained independence. In 1965, the Mine's owner, the RBHDC, changed its name to the Zambian Broken Hill Development Corporation ("ZBHDC").
- 109 In 1964, Anglo American Corporation (Central Africa) Limited ("AACCA") was interposed as the consulting engineer / technical adviser at Broken Hill.
- 110 AACCA was a wholly owned subsidiary of Anglo and was under its direction and control at all material times.
- 110.1 Anglo's annual reports throughout this period described it as a subsidiary administered within the Anglo Group, which was therefore subject to the same "group system" and centralised management style described above.
- 110.2 An extract of Anglo's 1964 Annual Report, attached as **ZMX38**, indicates that Anglo had a 100% shareholding in the company.

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- 110.3 An extract of its 1981 Annual Report, attached as **ZMX39**, indicates that Anglo's shareholding had not changed.
- 111 It is clear from Anglo's various Annual Reports during this period, relevant extracts of which I attach as **ZMX40**, that Anglo was still directly 'administering' or providing managerial, technical and consulting services to the Mine up until at least 1974. Anglo's annual reports list the ZBHDC as being "*administered*" within the Anglo Group up to 1970 and as being "*managed*" by the Anglo Group up to 1974.
- 112 During the period between 1964 and 1974, the local management of Anglo's Zambian interests (i.e. the copper mines and Broken Hill) were based at its office in Lusaka. From 1965, GWH Relly, Anglo Director in Zambia, was in charge of the Anglo's offices in Lusaka and Kitwe. This is evident from extracts of the attached Annual Reports, marked **ZMX41**.
- 113 There remained multiple cross-directorships between the boards of Anglo, AACCA and RBHDC / ZHBDC. This analysis of the cross-directorships during this period was previously attached, marked **ZMX21**.
- 114 In or about 1970, the Zambian government acquired 51% of Nchanga Consolidated Copper Mines ("NCCM") and its associated mines. It appears that ZBHDC became a division of NCCM in 1971.
- 115 On or about 26 June 1970, the Zambian government and the Anglo Group entered into the Managerial, Consultancy and Metal Marketing Agreement ("MCMMA"). In terms of this agreement, the Anglo Group would provide managerial, consultancy, metal marketing and other services to the NCCM mines, including the Mine. This arrangement is outlined in the attached MCMMA, marked **ZMX42**.
- 116 The MCMMA provided for a Swiss-registered subsidiary of Anglo, Anglo American Corporation Management and Services AG ("AACM"), to provide services

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previously carried out by AACCA on behalf of the Anglo Group. The 'Anglo Group' was defined in this agreement as being:

"The Anglo American Corporation Group of Companies including Anglo American Corporation (Central Africa) Limited and any other company now in existence or to be formed which acts in concert with the companies in the Anglo American Corporation Group as internationally recognised and which has available to it the benefit of the financial, commercial and technical services of such companies as a group."

117 The duties required of the Anglo Group under the MCCMA included:

- 117.1 Services of "an executive and advisory nature towards effecting the policies and directions of the Board and towards the general management of the Company's business and specifically directed towards the optimisation of by the Company of production and profit."
- 117.2 Specific technical services, including provision of research and maintaining contact "with developments in mining and operation techniques in other parts of the world and with research and development activities elsewhere as shall be reasonably necessary for the development and efficient operation of the Company's business."
- 117.3 Other aspects of the agreement required Anglo to provide senior staff including by secondment.

118 A schedule from 1970 produced by Anglo (marked **ZMX43**), illustrates that while AACM was to provide services under the MCMMA, AACCA continued to provide duties required under the agreement, including managerial and consultancy functions and engineering services. Anglo, in turn, continued to exercise direction and control over AACCA.

119 The MCMMA was to last until 1979, but was eventually terminated by the Zambian government in 1974.

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- 120 Anglo's ongoing control over matters at the Mine in the period following 1964 is illustrated by the fact that in 1970, when Barlin (then the manager of the Mine) published his chapter on the Mine's processes from its inception in 1904 to 1970, he felt that he required consent from Anglo and recorded that he wished *"to thank the Anglo American Corporation for permission to publish this paper."*
- 121 Over the 1960s and early 1970s, Anglo planned the installation of a Waelz kiln at the Mine. Waelz kilns are equipment specifically designed for processing dumped material, including slag and residue from previous smelting operations, the product of which is then fed into the Imperial Smelter Furnace to increase lead production. The Waelz kiln ultimately commissioned at the Mine in 1975 appears to have been designed and installed on the basis of sketches produced by AACCA and as culmination of a process which was directed by the Anglo Group for several years prior to 1975.
- 121.1 As appears from the Barlin's chapter, previously attached as **ZMX11** at p 698, by 1970 detailed investigations were taking place with a view to using a Waelz kiln to process dump materials at the mine.
- 121.2 The idea of installing Waelz kilns was referenced in a 1969 ZAAL Annual Report, attached as **ZMX44**, which states that:
- "The technical advisers have long been endeavouring to find means of treating economically the refractory portion of ore from current mining operations and the surface dumps. They believe the use of Waelz kilns might offer a solution to this problem. The cost of installing these would, however, be very high and this is one of the matters which will have to be discussed with the Government in the context of its proposed participation in the equity of this company"*
- 121.3 The "technical advisers" at the time would be AACCA and Anglo itself.
- 121.4 I attach as **ZMX45** AACCA's sketches for the Waelz kiln produced in 1973 and as **ZMX46** correspondence between AACCA and the Mine in relation to the design of the Waelz kiln in 1973.

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- 122 The Waelz kilns at the Mine were installed immediately upwind of the Kasanda township, right on the boundaries of the Mine premises.

D 1974 to 1994

- 123 From 1974 to 1994, operations continued under the control of NCCM (to 1981) and Zambian Consolidated Copper Mines ("ZCCM") (to 1994). After 1974, Anglo was no longer managing operations but was still involved in the Mine through financial holdings in intermediary companies and provided engineering consulting services to the Mine from time to time. Anglo would also have been aware of matters taking place at the Mine through the secondment of expatriate staff from the Anglo Group, and cross-directorships on the board of NCCM/ZCCM:

- 123.1 Anglo had direct and indirect shareholdings in NCCM/ZCCM, Zamanglo (formerly RAAL, which changed its name to Minorco from 1974) and ZCI.⁵ This is evident from extracts of Anglo's' Annual Reports for the years 1976 and 1978 – 81, attached and marked **ZMX47**.
- 123.2 After 1974 when the mines in Zambia were fully nationalised, local and expatriate staff from the Anglo Group who had been working on NCCM mines were transferred to NCCM under the take-over agreement. However, those longstanding Anglo employees involved in the transition, remained employees of Anglo and were merely seconded to NCCM. This is confirmed in an article from the Times of Zambia in 1974, which I attach, marked **ZMX48**).
- 123.3 There were extensive cross-directorships between Anglo, NCCM/ZCCM, AACCA, Zamanglo and ZCI. For example:
- a. NCCM Board Minutes from 1978, relevant extracts of which are attached and marked **ZMX49**, indicate a number of Directors of Anglo present, including: Z.J. de Beer, M.B. Hofmeyr, V.I. Webber, and D.A. Etheredge.

⁵ ZCI, or Zambian Copper Investments Limited, was the vehicle through which Anglo held the copper interests that were not acquired by the Zambian government after 1970.

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- b. In 1982, ZCCM was formed following a merger between Roan Consolidated Mines ("RCM") and NCCM. I attach the proposal sent by RCM to its shareholders, marked **ZMX50**, which shows that the Board of ZCCM was to be made up of five 'B' directors, three of whom were also Directors of Anglo at the time: M.B. Hofmeyr, J.A. Holmes and V.I. Webber.

123.4 ZCCM approached Anglo for engineering advice, well after they stopped acting as consulting engineer to the Zambian operations. The attached letter from ZCCM to the Anglo in 1993, marked **ZMX51**, details a visit by ZCCM officials to Anglo's Johannesburg office to talk with their engineers about, among other things, "*Records (drawings and design specification) kept by Anglo American on our Nchanga, Nkana, Kabwe and Konkola Division winders.*"

E Summary

124 In summary, I submit that on the available evidence, it is clear that during the relevant period, from 1925 to 1974, Anglo was intimately involved in the Mine's affairs and had detailed knowledge of its workings. In terms of the "group system" employed by Anglo, its highly concentrated management style, and the various cross-directorships, it retained centralised control and oversight over the activities of the Anglo Group and the Mine's operations, despite changes in the structure of the group over time. Throughout this period, Anglo provided relevant management, technical, medical, and engineering oversight and advice in respect of the Mine operations, including the control of lead pollution.

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VI ANGLO'S ACKNOWLEDGEMENT OF ITS DUTIES TO THE HOST COMMUNITIES WHERE ITS GROUP MINED

125 From its creation in 1917, Anglo and the broader Anglo Group have always held themselves out as having a duty to promote and protect the welfare of the communities in which they conducted mining operations.

126 In 1954, at a time when he was the Chairman of both Anglo and RBHDC, Sir Ernest Oppenheimer described this duty as follows in a statement reprinted in 1993 attached as **ZMX52**:

"The aims of the group have been, and still remain, to earn profits, but to earn them in such a way as to make a real and permanent contribution to the well being of the people and to the development of Southern Africa"

127 These commitments were reflected in Anglo's contemporaneous public statements about its involvement in the Mine. For example, in a 1942 letter from Anglo to the Chief Secretary of the Government of Northern Rhodesia, attached as **ZMX53**, Anglo's representative stated that:

"It may therefore be said that the company is operating (and must continue to operate for some time) entirely for the benefit, directly and indirectly, of its employees, the Government, the Rhodesian Railways, and the community as a whole"

128 Harry F. Oppenheimer succeeded his father as chairman of Anglo in 1957. In 1963, he again affirmed his father's words:

"There is, I believe, a special need at the present time for a large mining and industrial group such as ours, operating in many different African countries and concentrating attention not on the political differences which divide them but on their common need to raise the standard of living of the people. Some years ago my father defined the aim of the Anglo American Corporation as being to make profits for our shareholders, but to do it in such a way as to make a real contribution to the welfare of the countries where we operate. This seems to me to be just as valid today as when he said it. We shall bring to our task long and wide experience in many parts of Africa and great goodwill and faith, not only in the material but also in the human potential of the continent."

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This statement was quoted in Anglo's 1965 annual report, an extract of which is attached as **ZMX54**.

- 129 In Anglo's 1968 annual report, an extract of which is attached as **ZMX55**, the company reflected on the continuity of Anglo's leadership and its commitment to the welfare of communities:

"The philosophy underlying the Corporation's activities has remained basically unchanged throughout its existence. There have been only two chairmen, Sir Ernest Oppenheimer; who was Chairman from the formation of the Corporation until his death forty years later in 1957, and his son, Mr H. F. Oppenheimer. From the start it was the policy of the Corporation to contribute constructively to the development of Southern Africa."

- 130 To this day, the Anglo Group continues to trade on these historical commitments. Its Sustainable Mining Plan, described as the "*blueprint for the future of our business*", gives particular prominence to the 1954 statements of Anglo's founder:

"Our goals for the future are firmly rooted in the values of our past.

As our founder Sir Ernest Oppenheimer said: 'The aim of this Group is, and will remain, to earn profits for our shareholders, but to do so in such a way as to make a real and lasting contribution to the communities in which we operate'.

It's still true today. Our Sustainable Mining Plan is one way we are re-imagining mining to improve people's lives."

A copy of this Plan is attached as **ZMX56**.

- 131 In its 2017 centenary celebration, the Anglo Group again made much of these historical commitments and their continued relevance. In a video released at the time, titled "Celebrating 100 years", senior executives in the Anglo Group, including the CEO of Anglo American plc, described Anglo's history as follows:

"Anglo American is a company built on integrity and trust...

In the 1950s [Sir Ernest Oppenheimer] set a clear direction for the group by explaining that our aim is to make profits for our shareholders, of course, but to do so in a way that makes a real and lasting contribution to the communities in which we operate".

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"We have never stopped striving to achieve our goal of Zero Harm"

"Operating sustainably for the benefit of all our stakeholders, was part of the promise our founder made more than 60 years ago. Today we're working harder than ever to become Partners in the Future because we know that the delivery of returns to shareholders will only endure if we deliver real and lasting value to society as a whole, including our local communities"

"We remain true to this pioneering spirit and committed to doing the right thing. That is what Anglo American is all about"

The full video is available online at <https://www.companiesshistory.com/anglo-american/>. I have watched and listened to the video and confirm that these quotations are accurately transcribed.

- 132 These historical commitments are now reflected in Anglo's public support of international human rights principles. Since at least 2011, the Anglo Group has been a supporter of the UN Guiding Principles on Business and Human Rights, which establishes a charter of human rights obligations for private actors:

132.1 Principle 13 obliges Anglo to:

"(a) Avoid causing or contributing to adverse human rights impacts through their own activities, and address such impacts when they occur;

(b) Seek to prevent or mitigate adverse human rights impacts that are directly linked to their operations, products or services by their business relationships, even if they have not contributed to those impacts."

132.2 Principle 22 specifically commits Anglo to remediating the harm that it has caused:

Where business enterprises identify that they have caused or contributed to adverse impacts, they should provide for or cooperate in their remediation through legitimate processes.

- 133 As stated above, the Anglo Group's own Human Rights Policy acknowledges these duties and undertakes that "[w]here we have caused or contributed to adverse human rights impacts we will contribute to their remediation as appropriate." A copy of this policy has been attached, marked **ZMX5**.

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- 134 The Anglo Group further describes itself as a “custodian of land air and water” and a “champion” of human and economic development. In his introduction to the Anglo Group’s 2018 sustainability report, attached as **ZMX56A**, Mr Stuart Chambers, the chairperson of Anglo American plc, stated that:

“At the centre of our work as a mining company is the understanding of our role as stewards. We are custodians of land, air, and water. We are custodians of the resources we extract and the materials we produce. In many cases, we are the champions of the human and economic development of the communities and regions in which we operate.

...

Our sustainability goals relate to three global sustainability pillars: to foster and sustain thriving communities; to create a healthy environment; and to proactively shape policy and ethical standards to drive greater trust and transparency. Its aims are to innovate and deliver step-change results across the entire mining value chain, from mineral discovery to the end customer.

As such, we are going far beyond compliance with legal and regulatory requirements by raising the bar on what we believe society expects of us, with clear stretch goals against which to judge our performance, so that we make a comprehensive and lasting impact that will positively transform how all our stakeholders view our business.”

- 135 These public commitments and statements stand in contrast with Anglo’s involvement in the Mine and its ongoing failure to address the consequences of its actions in Kabwe.

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VII ANGLO'S KNOWLEDGE OF THE DANGERS OF LEAD POLLUTION

A *Knowledge of the risks of lead exposure*

- 136 There can be no doubt that Anglo knew or ought reasonably to have known of the general risks of working with lead from the very outset of its involvement with the Mine. This is confirmed by the expert reports of Prof Betterton, Prof Harrison and Prof Taylor.
- 137 The harmful effects of lead on the human body have been known for thousands of years and in greater detail than perhaps almost any other toxin.
- 138 A.R.L. Clark's 1975 dissertation on lead exposure in Kabwe conveniently summarised the historical knowledge on the harmful effects of lead. A copy of this dissertation was previously attached as **ZMX3**.
- 138.1 The author traced how it was Hippocrates in 460 BC who first recorded toxic manifestations due to lead when he described abdominal colic in a miner.
- 138.2 In 1473 Ulrich Ellenbog wrote the first ever work on industrial hygiene and warned of the dangers of vapours from working with lead.
- 138.3 By the Industrial Revolution in Britain in 1832, Thackray published the first English work on occupational diseases in which he noted that "*Miners rarely work more than six hours a day, yet seldom attain the age of 40...Smelting is considered a most fatal occupation. The appearance of the men is haggard in the extreme.*"
- 138.4 By the late 19th Century, Sir Thomas Legge, the first Medical Inspector of Factories, was able to state that "[p]ractically all industrial lead poisoning is due to the inhalation of dust and fumes and if you stop their inhalation you will stop the poisoning."

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- 139 The risk of environmental poisoning from lead mines to the wider community, including the impact on children, should have been known to the lead mining industry, including Anglo, from as early as the late 1800s.
- 140 The 1893 Broken Hill Report (Annexure “ZMX2”) was produced by a committee convened by the New South Wales government to inquire into lead poisoning in Broken Hill in Australia, the Mine’s namesake.
- 140.1 The committee was appointed to investigate the extent of lead poisoning among workers and the local community surrounding the Broken Hill site. The committee described the scope of its report as covering *“the extent to which lead poisoning occurs, not alone among the getters and smelters of silver-lead ores, but also among the townspeople who live in houses clustered round the mines and smelter nests, who are not themselves engaged in mining”* (para 3).
- 140.2 At that time, most mines in the Broken Hill area conducted lead smelting on site, in close proximity to the local town of Willyama. The Report noted that *“as the prevailing winds are southerly, by far the greater number are thus exposed to the fumes which escape day and night without ceasing from the smelter stacks”* (para 2).
- 140.3 The report described the knowledge at the time of the effects of lead poisoning on workers and the general population in stark terms, noting that these harms had already led many European governments to impose strict restrictions on lead production (para 3):

“The kind of poisoning to be expected among both classes [workers and townspeople] is almost exclusively of the chronic sort: this is not very often immediately fatal that the cause of death is clearly seen to lie in it; and in fact only eleven deaths out of a total number of 2,132 have been due to it during the five years, 1888-92, in one of which no death, and in one other only a single death occurred. Nevertheless lead poisoning has immediate economic and remoter social effects of serious importance. Its immediate economic importance lies in its reducing the power of effective work in persons who are still able to attend to their daily duty although suffering to some extent, and in causing

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repeated attacks of graver illness which incapacitate them entirely for more or fewer weeks at a time. Its remoter and less obvious social importance consists in its being attended, in persons at young ages or in the prime of life, who alone are here exposed to risk, by degenerative organic changes which are akin to those commonly observed at old ages. A branch of its social importance, equal to the former as far as it goes, but doubtless of less magnitude, is the special power possessed by lead to interfere with the procreative function; so that chronically lead-poisoned persons often produce no offspring at all, or one which dies soon after birth. All these effects are so well known and so much feared that several European Governments regard the production and use of lead with great jealousy, and have enacted searching laws to shield workmen and the public from risk of leading, in as far as they may be so protected." (Emphasis added)

- 140.4 The committee conducted tests in the local community by sampling air quality, water and soil. These test methods and results are reflected in Appendices K and L to the Report, showing that well-established methods already existed at the time for monitoring quantities of lead pollution in the environment.
- 140.5 Appendix L was prepared by a government analyst, Mr Hamlet, who described the sampling and testing methodology. He drew particular attention to the fact that lead dust and fumes settled in the local soil, noting that *"[the] fumes escape into the air, and are diffused over the town – falling upon the roofs of houses and finding their way into water-tanks and, above all, covering the ground, and any scanty herbage that may be found."* Mr Hamlet also conducted tests to show that the lead in the soil was not from naturally occurring deposits. He describes his tests as follows:

"The question raised by one member of the Board that the lead may have been originally present in the soil before the mines were worked, caused me to have a hole dug some 5 feet into the soil inside a dam at the corner of Wolfram and Iodide Streets, and 23 per cent of lead was found. But as this may have been brought there by water, another hole was dug in the ground off Chloride Street with the result that no lead was found. Having heard that an ironstone load occurred at Corona, having a remarkable resemblance to the Broken Hill lode, I visited the spot, situated about 60 miles from Broken Hill. Four samples of the soil

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were analysed, but no lead was found in them, while there was lead found in some minerals found in the neighbourhood".

Soils and waters from three dams were examined from points situated about 2 miles south of Broken Hill, and no lead was discovered, from which it follows that the lead is present in the soil, having been deposited by the lead fume from the mine stacks."

140.6 The committee also interviewed local medical practitioners and surveyed children in local schools to determine the health effects of lead on the local population. These investigations are described at paragraphs 9 to 12 of the Report.

140.7 As regards the effects on the general public, the committee noted that "the lead-workers themselves are not the only persons [...] exposed to risk" (para 9). The Report explains that lead is volatile at high temperatures and therefore, escaped during the smelting process "in the form of 'smoke'", consisting of fumes and flue-dust. It observed that the population living near the Mine —

"must have frequent opportunities of respiring these lead-compounds with the air, both directly from the stacks and indirectly from the ground, from which they are raised again on the winds which almost constantly blow there, and which keep the atmosphere more or less laden with dust." (para 9)

140.8 The Report concluded that the exposure to lead fumes from the smelters had caused an impact on the health of the local population and found that children were also impacted.

"[M]atters are emitted from the stacks in large quantities, which could, and, in one case at all events probably did destroy human life. In the case of some persons who live within 600 yards of the Hill, and to leeward of the smelters in relation to prevalent winds, it was shown by medical evidence that leading occurred, and was not traceable to any other cause than near neighbourhood of the smelters and consequent exposure to smoke. Other medical witnesses testified that they met with cases of illness among the townspeople which they suspected were due to leading, although they could never make certain of it; and evidence of similar kind, but of greater weight, was got from inspection of the scholars in the three public schools. ...

The Central school [...] draws its pupils in great numbers from just those streets which lie within three-quarters of a mile from

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the Hill, and are pretty constantly bathed in the smoke; they are the streets upon which the smoke was seen so often to beat down before it rose again and was carried farther afield; they are the streets immediately adjacent on one side or the other to those spots at which the air was found to be so heavily charged with flue-dust and lead-fume; they include the streets in which the indubitably leaded persons and the doubtful cases spoken of by certain of the medical witnesses lived. Then, it was proved that lead is borne upon the air, by examining' the latter in suitable ways at points of the inhabited area near to the stacks and farther away; lead was found in drinking-waters and in soils: animals died of an illness connected with locality, and that locality lay within a short distance of the Hill-... . From these data we conclude that the fumes are injurious to the general population ...
(para 12)

- 140.9 The Report recommended a variety of steps to reduce the risks to both mine workers and the general population living near the Mine, noting the “*far-reaching importance*” of the matter, which meant that it required “*urgent attention in the general public interest*”. The Report went on to recommend that the emission of flue-dust from smelter stacks should be eliminated, if not greatly reduced. It also recommended that the way in which flue-dust was handled required radical alteration, aiming at avoiding, as far as possible, “*the possibility of its being blown about on the air.*”
- 141 Anglo and the industry were aware, or ought reasonably to have been aware, of this evidence of the harmful effects of lead pollution at Broken Hill in Australia. The fact that the Mine and the town of Kabwe were named “Broken Hill”, after their Australian counterpart, can leave little doubt as to the link. Moreover, as one of the leading mining houses in the world, it is inconceivable that Anglo was unaware of the notorious harmful effect of lead pollution.
- 142 There is also evidence that the Broken Hill Mine in Kabwe was in direct correspondence with the Broken Hill mines in Australia about the impacts of lead poisoning.
- 142.1 I attach extracts from a thesis by Ms Buzandi Mufinda on the history of mining in Kabwe between 1904 and 1929, marked **ZMX57**, which indicates that the Mine manager was corresponding with his counterpart at

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the Broken Hill mine in Australia about the challenge that poisonous lead fumes were creating at the RBHDC mine, and that the Mine sought assistance from the New South Wales Institution of Mining and Metallurgy in 1916 in dealing with the issue.

142.2 The original correspondence referred to in Ms Mufinda's thesis is no longer available in the ZCCM archives. Efforts will be made to obtain this correspondence in discovery.

143 Even in the unlikely event that Anglo was not aware of the 1893 Broken Hill Report, that Report is compelling evidence of Anglo's negligence in failing to contain the lead harm at the Mine. The Report shows that even in the 19th Century, responsible persons were able to identify the harm caused by lead mining and lead smelting to a community downwind of the Mine and smelter, simply by –

143.1 drawing on long known facts about the harm caused by lead;

143.2 applying a modicum of common sense; and

143.3 using available technologies for investigating lead levels in the air, water and the soil.

144 In 1925, the South Australian Royal Commission Report on Plumbism was published. This report investigated the occupational risks of lead exposure in the town of Port Pirie, where lead from the Broken Hill mines in Australia was smelted and processed. Relevant extracts from this report are attached as **ZMX58**.

144.1 This report was precipitated by complaints from trade unions about the prevalence of lead poisoning among workers, referred to as "plumbism". Consequently, the report was focused on occupational exposure to lead dust and fumes. No efforts were made to take air, water and soil samples in the surrounding community, unlike the wider investigations conducted in the 1893 Broken Hill report.

144.2 The report carefully documented the medical knowledge at the time about the risks of lead poisoning. Chapter IV of the report addressed this topic

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under headings including '*Toxicity of Lead Dust and Fumes*', '*Causes and processes of Plumbism*' and '*Lead Absorption*'. Under the heading '*Lead as a Cumulative Poison*', the report noted the following:

"Lead gradually banks up within the tissues of the body while absorption continues. Absorption may continue under uniform conditions for many years, and then the individual may suddenly show marked symptoms of poisoning. ... In other words lead acts as a cumulative poison." (para 24)

- 144.3 Chapter VI of the report outlines the legal measures adopted in Australia, the United Kingdom, France, Germany, Austria and the United States to address the hazards of occupational lead exposure and to protect workers. The report noted that *"[m]ost of the countries where lead is extensively mined, smelted or used have laws and regulations governing the conduct of operations in lead metallurgical processes"*.
- 144.4 Acknowledging the work of Legge on industrial lead poisoning in England, the report's authors acknowledged that the *"sole causative agents in industrial plumbism are leady dust and fume"* (para 35) and that *"the principal cause of industrial plumbism is the inhalation of lead in the form of fine dust"* (para 56).
- 144.5 In its conclusions, the report emphasised that *"it is imperative that, as far as possible, accumulations of dust should be prevented, and fumes and noxious gases to be collected, as near as possible, to the point of origin in order to preclude contamination of the atmosphere of working places"* (para 56).
- 144.6 The report includes a dissenting opinion, which took issue with the recommendation of compulsory periodic medical examinations for workers noting that: *"the hazard should be attacked at its base, and the only successful measure of accomplishing that is the adoption of scientific measures to eliminate the dust and fumes".* The dissent continued that *"it cannot be honestly claimed that compulsory medical examination would play even a small part in preventing industrial diseases at the Smelters. As I have pointed out, it would reduce the number of cases of*

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industrial diseases at the Smelters, but industrial disease would still be prevalent even to a greater extent in the community" (page xxviii).

- 145 The Mine and Anglo were aware of this report. A 1949 report prepared by Mr CT Hardy on the Mine's operations relied heavily on this 1925 report and its descriptions of the occupational risks of lead exposure. A copy of Hardy's report is attached as **ZMX59**.
- 146 The dangers of exposure to lead were again captured in a 1933 report on lead poisoning at Mount Isa in Queensland Australia, relevant extracts from this report are attached as **ZMX60**. The report, titled "*Enquiry into Lead Poisoning and its Incidence*" again focused on the risks of occupational exposure to lead in the lead mining and smelting industries.
- 146.1 The medical report, prepared by a Dr J.V. Duhig, acknowledged that scientific and medical knowledge was already well advanced on the effects of lead and that within the "*last eight or ten years ... precise medical knowledge has been brought to bear on the problem of the prevention of Plumbism in mining, milling, and smelting lead ore*" (p 10).
- 146.2 Once again, Dr Duhig identified dust and fumes as the primary source of lead poisoning, supported by the "*opinion of the world's best authorities*" (p 14).
- 146.3 Dr Duhig further summarised the medical knowledge at the time on the pathways of lead absorption into the body. He recognised that once lead has been absorbed, it is stored in the bones presenting a "*potential source of future danger*" (p 17).
- 146.4 On this basis, Dr Duhig confirmed that "*[f]rom all the available data, the conclusion is inevitable that the greater the amount of lead in the atmosphere as fumes or dust, the greater is the risk of lead poisoning*".

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- 146.5 His report further indicated that there were already advanced and widely available medical techniques for testing lead exposure, including taking blood and urine tests.
- 146.6 The report provided detailed recommendations on the various measures that ought to be adopted to prevent lead fumes and dust within the workplace, reflecting learning from the 1893 Broken Hill Report and the Port Pirie report. These included measures to prevent the emission of flue dust from smelter stacks (p 5), adequate ventilation (p 6) and the maintenance of roads and paths to prevent dust (p 6).
- 147 The health risks of lead mining therefore ought to have been known to RBHDC from its inception at the turn of the 20th century, and to Anglo once it became involved in the Mine in 1925.
- 148 Anglo would also have been aware of the growing regulation of lead production, in recognition of its harmful effects. From the late 19th century, European nations began passing laws to protect against the harmful effects of lead. In 1883, the United Kingdom Parliament passed the Factory and Workshop (Prevention of Lead Poisoning) Act (1883) which required lead factories to conform to certain minimum standards. Lead smelting regulations – providing for limiting of exposure in the workplace – were passed in the United Kingdom in 1911. The existing regulations at the time are set out some detail in Chapter VI of the 1925 Port Pirie report.
- 149 By definition, children would not have been subject to occupational lead exposure, however, in light of the knowledge gleaned from the 1893 Broken Hill (NSW) experience explained above, Anglo would, or ought to, have been aware that children were at risk of environmental lead poisoning from the very early days of its involvement at the Mine. The 1893 Broken Hill Report had noted the harmful effects experienced by schoolchildren from environmental lead poisoning emanating from the Broken Hill smelter.



- 150 As explained by Prof Harrison, evidence for the low mobility of lead in soil was available from as early as 1954 and accumulation of deposited lead was a logical consequence of this. Given what had been known about lead as a serious industrial toxin since the early twentieth century, Anglo ought to have understood the potential consequences of its lead mining operations on the local populations, especially given: the scale of the operations; the high levels of dust at the Mine; the lack of measures to contain lead emissions; the very close proximity of the operations to the local communities. At the very least, Anglo had the resources and knowledge to actively investigate these consequences.
- 151 During its time as the Mine manager and consulting engineer, Anglo would have been integrally involved in the major changes to the smelting equipment and processes used at the Mine. This is detailed in Barlin's history of the Mine, previously attached as **ZMX11**. As previously noted, the Mine used four different smelting processes during the period of Anglo's involvement (page 650, 666):
- 151.1 Anglo became involved in the Mine's operations in 1925, the then existing open blast furnaces continued to be used at the Mine until 1946;
 - 151.2 In 1946, the Newnam Hearth plant was installed at the Mine (pages 659, 665);
 - 151.3 At the start of 1953, the Newnam Hearth plant was replaced with Dwight Lloyd downdraught sintering machines and a lead blast furnace (pages 672);
 - 151.4 In 1962, a sintering plant and Imperial Smelting Furnace were installed (Barlin p 666) which operated for the remaining life of the Mine, which was supplemented with Waelz kilns in or around 1975 (see Prof Betterton's report, citing Ettler et al);
 - 151.5 As indicated above, Anglo and the Anglo Group were directly involved in advising on and planning the installation of the Waelz kilns prior to 1974.

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- 152 These overhauls of the smelting process and equipment would have given Anglo ample opportunity to study the consequences of lead pollution, to consider the widely known measures to limit lead pollution, and to implement these measures. For instance, Barlin describes how, in 1957, a project team was established at the Mine to study smelting technology at other plants around the world, resulting in the installation of the Imperial Smelting Furnace in 1962 (page 664).
- 152.1 In the course of these investigations, the project team visited Avonmouth in England, the home of the Imperial Smelting Corporation, to inspect its Imperial Smelting Furnace which allowed for efficient smelting of lead and zinc.
- 152.2 As described in Prof Harrison's report, Avonmouth was widely acknowledged as one of the world's lead pollution hotspots at the time with studies in the 1970s demonstrating that the Imperial Smelter Furnace was a significant source of lead contamination in the surrounding soil.
- 152.3 Based on this visit to Avonmouth, the project team could have been in no doubt about the potential risks of lead pollution arising from this smelting technology. Nevertheless, Anglo still recommended that the Imperial Smelting Furnace and ancillary plant be erected at the Mine, thereby placing commercial considerations above safety.
- 153 Anglo should also have been aware of the extensive academic literature documenting the risk of environmental lead contamination. For example, in 1965, the US Department of Health, Education and Welfare sponsored a "Symposium on Environmental Lead Contamination". The speeches were published that same year. Among those that highlighted the known risks of environmental lead contamination from smelters, was a speech of Professor Melvin W. First, a copy of which is attached marked **ZMX61**. Prof First makes the following observations showing the "*ample documentation*" of the risks and that measures for preventing emission to the environment were "*already well known*":

'I believe it is safe to say that all operations associated with mining, smelting, chemical conversion, and fabrication of lead and lead compounds result in the release of lead, in some form, to the environment'.

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'There is ample documentation that local lead exposures from these sources may be sufficiently intense to cause acute and chronic lead poisoning... to residents in the vicinity, and to animals grazing in the area. Primary and secondary lead smelters have figured in a number of such episodes'.

'...I wish to make the point that almost all of the lead discharged to the environment from these sources tends to deposit and remain in the vicinity of the point of origin'.

'Fortunately, the technical means for protecting lead workers and preventing emission of lead to the environment from industrial establishments is already well known'.

'Indeed, it is a fundamental concept of environment health engineering that controls may be applied most economically at the contamination source'. (Emphasis added)

- 154 By the 1960s, a growing body of academic literature highlighted both the clinical and subclinical effects of lead poisoning on children. For example, a 1964 study by A.A. Moncrieff and others on lead poisoning in children referred to a number of authors who had noted the variable levels at which poisoning appeared to occur and concluded that lead poisoning presented in variable ways. They called for "*preconceived ideas about the level of blood lead at which toxicity occurs [to] be abandoned.*" Moncrieff et al. also made reference to a study by R. K. Byers and E. E. Lord published in 1943 on the effect of lead poisoning on the growth and development of the nervous system, which followed 20 children who had been hospitalised with lead poisoning, although none of them had acute encephalopathy. Despite their complete recovery from lead related symptoms at the time of discharge, Byers and Lord reportedly found that eight years later, only one of the children was reported to make reasonable progress at school and most had evidence of intellectual or emotional difficulties. I attach the Moncrieff et al. study, marked **ZMX62**.

- 155 In 1977, the WHO published a report on lead following a meeting of international experts in 1975. Relevant extracts of the report are attached and marked **ZMX63**. The report further described environmental pollution resulting from smelters of lead ores as "*well known*". It noted that areas surrounding mines suffered from pollution of air and soil, the extent of which depended on "*the height of the stack,*

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the trapping devices in the stacks, the topography, and other local features". As regards health impact on children, the report noted the particular vulnerability of young children as a result of ingestion of non-food items, such as soil and dust. In addition, the report discussed particular biological effects of lead exposure. For instance, it noted the "effects of inorganic lead on the central nervous system have been under intensive investigation in recent years, particularly with regard to the subtle effects on behaviour, mainly in children, but also to some extent in adults."

B Knowledge of the specific risks of lead pollution in Kabwe

- 156 Anglo also knew, or ought reasonably to have known, of the specific risks of lead pollution from the Mine operations in Kabwe.
- 157 I have referred above to the 1893 Broken Hill Report which highlighted the lead poisoning harm caused by the Australian Broken Hill mine and smelter to residents of the Broken Hill town downwind the mine and smelter. Whether or not Anglo was directly aware of the 1893 Broken Hill Report, the Report illustrates how a reasonable institution in the position of Anglo would have been able to identify the harm it was causing to the communities surrounding the Mine and the smelter.
- 158 While Anglo's direct involvement in the Mine commenced in 1925, correspondence and documents from the early years of the Mine's operations indicate that the problems of lead pollution were already well understood.
- 159 An early letter from the RBHDC, dated 30 August 1907, attached as **ZMX64**, reflected that the Mine was well aware that the location of residential areas in close proximity to the Mine presented a danger to residents. At the time, the RBHDC and the British South Africa Company were in the process of selecting and developing township sites which, it is believed, were the sites that would later develop into the present-day Kasanda and Makululu. The Mine's General

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Superintendent and consulting engineer reported to the British South Africa Company that:

"It is recognised by all who have experience in mining that a township existing close to a mining location is not desirable, and while benefits of little real value are obtained the interests of the Mine and the Public are, sooner or later, bound to clash in many ways...refuse, fumes and smoke from the furnaces of the mine plant, as well as water contaminated by the mining and metallurgical operations are drawbacks to which those employed in mining are of necessity always exposed, but which would be objected to by the outside public, and which would therefore give rise to dispute with Municipal Authorities, if the Township is too near to the mine area and works"

- 160 An extract from the 1924 Broken Hill Council Minutes, signed by the local magistrate at the time reported that "[t]he fumes from the smelter cause discontent and trouble. They are indeed most noxious. One or two deaths have occurred from lead poisoning". This extract is attached as **ZMX65**. Although a year before Anglo's involvement, this shows an early awareness of the dangers.
- 161 Anglo's subjective awareness of the gravity of the air pollution in the lead plant at the Mine and the risk it posed to workers is evident from correspondence from the late 1940s and early 1950s between Anglo's consulting engineers and the Chief Medical Officer Dr. van Blommestein, as well as between the Mine management and Anglo's consulting engineers.
- 162 In 1941, correspondence regarding medical inspections at the Mine noted of workers underground that *"they are more protected from the weather and they are much better off than those in the Acid plant, ball mill, pyrites mill, zinc plant, vanadium crushing, or lead smelters where the dust and fumes are toxic" and "certain surface employees are exposed to toxic dust and fume". A copy of this letter is attached as **ZMX66**.*
- 163 In a memorandum dated 13 October 1947, a copy of which is attached and marked **ZMX67**, Dr van Blommestein, Anglo's Chief Medical Officer, states:

Dr. van Blommestein  

"There are two ways by which inorganic Lead products may enter the human body (1) through the inhalation of vapours, fumes, dust etc and (2) by way of the Gastro-intestinal tract, that is, by way of the mouth.

"In the Lead Plant at Broken Hill, it seems fairly obvious that workers are being exposed to both these portals of entry. In the roasting processes both inside and outside the Plant, Lead fumes are in evidence" (emphasis added).

164 As Dr van Blommestein noted, the danger from lead dust and fumes did not stop at the plant doors. While he only expressed concern for employees of the Mine, the risks to the wider community must have been reasonably foreseeable.

165 In his correspondence, Dr van Blommestein further recommended a series of measures to be taken to prevent lead poisoning cases. These measures included ensuring adequate ventilation, wetting of dusty areas and taking care during processes such as removal of lead dross from furnaces. He further noted that no air quality analysis was being undertaken and recommended that it be done along with improving change house facilities. If such measures were not adopted, Dr van Blommestein predicted that there would be further cases of lead poisoning:

"The fact that there have already been cases of lead poisoning confirms the view that there should be stricter surveillance over the African employees in the change-house and further, means should be introduced for the detection of atmospheric lead and that the present system for the prevention of lead fumes should be improved upon in the smelting plant. If these methods are not adopted, it is my opinion that there will be a steady increase in the number of cases of lead poisoning in the future."

166 Anglo and the Mine evidently failed to ensure that these measures were implemented. A 1949 summary of the correspondence between Anglo and the Mine management in relation to air quality at the lead plant is attached and marked **ZMX68**. It shows that over the two-year period summarised, Dr. van Blommestein was damning about the conditions and that they had not improved.

166.1 The report records that in August 1949, a Mr Pickard summarised air analysis figures at the Mine and claimed that *"the measures taken to stop lead poisoning have been effective"*. Dr van Blommestein strongly disagreed.

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166.2 On 8 November 1949, Dr van Blommestein is recorded as sending a further memorandum in which he expressed *"a serious view of present conditions stating that the tests show gross vitiation of the air in the lead plant and stating the conditions must be improved. His recommendations are outlined and supported by the Consulting Engineers who now ask for London's instructions."*

167 In 1948, Mr CT Hardy was appointed by the then Northern Rhodesian government to investigate *"a silicosis hazard and ... to what extent a health hazard due to lead exists"* at the Mine. His report, published in 1949, was previously attached as **ZMX59**.

167.1 The report noted that the management of the Mine were *"very much alive to the lead poisoning hazard"* (page 5):

"The management of the Rhodesia Broken Hill Mine is very much alive to the lead poisoning hazard. During April, 1948 the first of a series of investigations was conducted to determine the lead concentration in the atmosphere in the lead plant building. The report on this investigation was handed to the writer (see Annexure No. 2). The report discloses that dust in a form which is considered injurious to health is present in the atmosphere in the vicinity of the Newman Hearth area. Similar investigations are to be made in other parts of the building, and also to be conducted to ascertain if any improvement in atmospheric conditions occur as steps are taken to diminish the hazard of lead poisoning."

167.2 The report observed the substantial dust and fumes generated by the Newnam Hearth furnaces which were in operation at the time and were open to the elements (page 12):

"The blast furnaces, only one of the two of which was in use during my visit, are situated in a position at the end of the main building. The furnaces stand in the open and the prevailing winds carry away the dust and fume made in a direction past the main building."

167.3 Hardy further observed the *"enormous amount of fume"* generated from the furnaces (page 12):

"An observer is struck by the enormous amount of fume given off from the blast furnace during the tipping of slag and lead. Depending on the position of the tap holes relative to the prevailing

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wind, workers are enveloped in this dense fume which they inhale and which comes in contact with exposed portions of their bodies and clothes. The time taken to tap a charge is in the region of fifteen minutes and under unfavourable conditions the operator controlling the flow of lead from the furnace is exposed to the dense white fume for the full period of tapping. Approximately nine tappings of slag to four of lead are made per twenty-four hours."

168 In his affidavit, Prof Betterson concludes that based on the Hardy report it is clear that Anglo *"knew they had a very serious and widespread lead problem on its hands."*

169 Following Dr van Blommestein's reports, a 1949 letter from the Assistant Manager of the Mine to the RBHDC Board acknowledged the risk of lead poisoning but suggested it would be prudent to delay any capital expenditures on the dust control measures that were recommended until a new lead plant was completed. A copy of this letter is attached as **ZMX69**.

169.1 The Assistant Manager did not dispute Dr van Blommestein's view on the risks of lead exposure:

"You will note that Dr van Blommestein takes a serious view of the present conditions, particularly as the tests which have been carried out show gross vitiation of the air in this plant. He feels that in order to avoid the implications of compensation and possibly Government interference should there be any serious cases of lead poisoning, conditions must be improved.

We do not dispute this view, but any decision in this regard must be influenced by the more or less temporary nature of the existing state of affairs in the lead plant. With the completion of the extensions and alterations now in progress, it is most probable that the Newnam Hearths will be dispensed with. As these hearths contribute largely to the unsatisfactory state of the lead plant, their removal may materially assist in improving conditions in the smelter house."

169.2 However, he went on to query whether a solution to the problem of lead pollution was *"immediately essential"* and suggested that this could be deferred:

"To provide a satisfactory vacuum plant or any other efficient system of reducing the lead content of the atmosphere, would

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involve considerable capital outlay and we are wondering whether this expenditure is immediately essential particularly as it would not be possible to procure and install the equipment within less than, say, one year, or whether we should be justified in deferring any action involving material capital expenditure until the completion of the new lead plant in, say, 15 months' time. Conditions could then be re-investigated and should it then be decided to retain the Newnam Hearths, and the lead content of the air still prove to be too high, a vacuum plant could be installed."

169.3 The Assistant Manager claimed that the Mine would begin some form of medical testing of employees, in line with Dr van Blommestein's recommendations. However, he suggested that all capital expenditure on measures to prevent lead pollution *"might be deferred until further information is available as a result of the more exacting tests recommended."*

169.4 He concluded by deferring to the Board on whether preventative measures should be taken sooner:

"On the other hand, the Board may feel that the present risk is unacceptable and that all possible preventative measures should be taken immediately, regardless of cost. We should be glad to have your instructions in this regard."

170 Evidently, the RBHDC Board and Anglo elected not to incur the costs of implementing significant preventative measures.

171 A letter on 19 January 1950, authored by the General Manager of the Mine, reported on piecemeal measures adopted to respond to the occupational risks of lead pollution from the smelter. The General Manager stated that the Mine *"did not consider it advisable to make more than one change at once. Alterations have been made one at a time and the effects observed."* The letter discloses that the only alterations that were contemplated were the installation of hoods and a fan for the blast furnace, at a cost of £400. A copy of this letter is attached as **ZMX70**.

172 Despite the acknowledged risk of harmful lead pollution from the Newnam Hearth plant, the Mine only replaced this plant with the Dwight Lloyd plant and new blast

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furnaces in 1953, some four years after Dr van Blommestein's recommendations and warnings.

173 The Dwight Lloyd plant and new blast furnace evidently did not bring about any reduction in lead pollution. Two communications from the RBHDC in July and September 1953, sent to Anglo in its capacity as consulting engineer, illustrate further Anglo's knowledge of dangerous lead dust and fumes of its new lead plant, and its failure to take adequate measures. Copies of this correspondence are attached as **ZMX71**.

173.1 In July 1953, a report sent by the RBHDC noted the seriousness of the dust conditions at the Mine. It included a review from the Mine medical manager stating that "[u]nder present conditions, excessive lead absorption is unavoidable".

173.2 In September 1953, the RBHDC wrote to Johannesburg seeking advice, and suggesting that *"serious consideration be given to closing down the plant until adequate provisions are made for dust and fume collection otherwise we are likely to find ourselves in serious trouble with labour organisations and Government Authorities"*.

173.3 The new plant referred to in this correspondence would have been the lead blast furnaces installed with the Dwight-Lloyd sintering machines, commissioned in January 1953. The Barlin report makes clear that far from being closed down, this new plant continued to operate unsatisfactorily for another four years until the blast furnaces were decommissioned in 1957 and the Mine returned to the Newnam Hearth furnaces for lead production.

174 The impact of smoke and fumes on the local population did not pass unnoticed or unremarked. In a 1955 letter from the government's Provincial Medical Officer to his superior in Lusaka, attached as **ZMX72**, he reported –

"I have received a complaint from the residents of the Old Boma concerning the fumes from the Rhodesia Broken Hill Development Company's Mine, which at this time of year blows directly over their houses."

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I went out to investigate and found the Boma covered in dense smoke and pungent fumes. These were most offensive and irritating. I discussed the matter with the Mine Medical Officer of Health who didn't think much could be done about it and he in his turn pointed out that he suffered similarly from Railway engines which belched smoke all over his house."

- 175 Anglo could hardly claim to have been unaware of these conditions in the town. Senior representatives of Anglo visited the Mine regularly and would have experienced these noxious fumes. The available RBHDC monthly reports from 1954 show that Anglo's Mr CP Nicholls, the consulting engineer and later a manager of Anglo, made visits to the Mine throughout the year. Extracts from these monthly reports are attached as **ZMX73**.
- 176 By 1957, the Mine abandoned the Dwight Lloyd plant and returned to using the Newnam Hearth plant. There is again no evidence to suggest that the recommissioning of the old Newnam Hearth plant was accompanied by any additional pollution control, as recommended by Dr van Blommestein almost a decade earlier.
- 177 After the Newnam Hearth plant was recommissioned, a Mr R Mackie of Anglo produced a report on his inspection of the lead smelter and his recommendations to improve the efficiency of the plant. A copy is attached as **ZMX74**. His report provides a description of some rudimentary dust and fume collection systems in place. As Prof Betterton notes in his expert report, the primary purpose of these systems was evidently "*to recover valuable lead-containing product, not to protect their workers or the community*". In respect of dust collection at the blast furnace, Mackie noted (at page 11 of his report) that:

"No serious attempt has been made to tackle this problem as yet because of lack of knowledge, owing to the short runs on the Blast Furnace, as to the quantity of dust to be handled per day."

It is evident from this report that Anglo and the Mine had still made no attempt to measure the quantities of dust and lead fumes in the air, despite Dr van Blommestein's warnings.

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- 178 Local residents continued to complain about noxious fumes coming from the Mine, as reflected in the attached extracts of minutes of sessions of the Municipal Council of Broken Hill Health and Trade Committee in 1963, marked **ZMX75**. These minutes note that the nuisance was becoming more frequent and affecting a wider area. This would have coincided with the installation of the new sintering plant and Imperial Smelting Furnace in 1962.
- 179 Anglo's failure to remedy lead pollution, and its consequent impact on the surrounding community, is further evident twenty years after Dr van Blommestein first raised his concerns. I attach a copy of a letter, marked **ZMX76**, from ZBHDC to Anglo's consulting engineers in 1970, which was also copied to the Chief Medical Officer. The General Manager of the Mine outlines the extent of the lead pollution problem from Mine dust, the cost of suppressing dust on the dumps, tarring roads and moving houses exposed to the dust problem. Several statements in this correspondence are telling:
- 179.1 The letter headed "Lead Pollution" refers to correspondence and a meeting in 1970 with representatives of Anglo to discuss "*the problem*".
- 179.2 Under paragraph 1, headed "*Dust Suppression on Dumps*", the General Manager of the Mine indicates that measures to reduce dust from the Mine dump were only contemplated from 1970. Even then, the Mine apparently opted not to install sprinkler systems or blanketing, but instead opted for the bare minimum by "*simply mak[ing] better use of the existing tailings pumping system*".
- 179.3 Under paragraphs 2 and 4, the General Manager refers to the planned move of residents from "*A, B and C sections of the high density township*" to "*more suitable housing to the east of the plant*". This was an apparent reference to the planned relocation of employees from the Kasanda township, to the west of the Mine, to the Chowa township, to the east of the Mine.
- 179.4 This planned relocation was evidently in recognition that Kasanda was downwind of the Mine and experienced the greatest pollution from lead

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fumes and dust from the Mine. No mention was made in this report of the steps that would be taken to protect the remaining residents of Kasanda from lead pollution, who would not benefit from the relocation.

179.5 The report also contains repeated reference to the "squatter problem" in the area. At paragraph 6 of the report, the General Manager suggests that once the Mine's employees had been moved from the affected townships "we could withdraw completely from involvement with the squatter problem as none of our employees would be in the area." No measures were proposed or contemplated to protect this "squatter" community against the acknowledged risks of lead pollution.

180 A study by Ann and Connor Reilly published in 1972 in the *Zambian Medical Journal*, attached and marked **ZMX77**, on 'Patterns of Lead Pollution in the Zambian Environment' further demonstrates what was known or ought reasonably to have been known at the time. Kabwe was described as a "*highly contaminated area containing mining residues*" and it was noted that it extended into a residential area. The very high levels of lead in soil were further described as "*a well-known and unfortunate side effect of the mining industry*" and Reilly and Reilly noted that "*cases [of lead poisoning] do undoubtedly occur. It is a revealing indication of the attitudes of former administrators to find that workers' homes and a school lie within the polluted area, in the path of the prevailing wind.*" (Emphasis added)

181 Clark's 1975 thesis, previously attached as **ZMX3**, provides the fullest contemporaneous account of the sources of lead pollution and its effects on residents of the Kasanda, Makululu and Chowa townships.

181.1 Clark conducted this research in Kabwe between 1971 and 1974 prompted by "*world wide concern*" over the health impacts of lead and the reported deaths of children in Kabwe from suspected lead poisoning (p iii).

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181.2 Clark's methods involved taking air, soil and water samples in Kasanda, Makululu and Chowa and measuring the BLLs of residents in these areas, focusing on children under the age of 16 and pregnant mothers.

181.3 Clark identified atmospheric lead emissions as the primary source of lead pollution. Clark observed substantial atmospheric emissions from the smelter and Mine dumps:

"[The] wind takes up lead particles from the effluent of the Imperial Smelting Furnace and Sinter Plant stacks creating a looping or fumigating plume. The wind also picks up particles from the waste ore deposited on the ground on the lee side of the mine forming ground level dust clouds which sweep towards Kasanda." (p 6)

181.4 Soil samples taken at Kasanda, Chowa, and Makululu showed elevated lead levels, which Clark attributed directly to "fall out originating from the smelter stack":

"Lead is widespread over Kabwe, but it is more concentrated in Kasanda, Chowa and Makululu areas. Some of this lead can be expected to be of natural occurrence, but much is lead oxide fall out originating from the smelter stock. ... All samples taken at depths of 10 cm showed very much reduced concentrations ..."

181.5 Clark demonstrated that the elevated levels of lead pollution in these communities were correlated with dangerously high BLLs. This was evident from blood samples taken from children under the age of 16 in these communities.

a. In Kasanda, for example, Clark measured peak mean BLLs of 103 µg/dL in children of two years of age. Clark noted that, in 1973, 11 children from this area had been admitted to hospital with lead encephalopathy.

b. In Makululu, peak mean BLLs were 83 µg/dL at two years. The peak BLLs measured in the wider municipality, representing the normal range, were 22 µg/dL in children of the same age.

181.6 Clark also demonstrated that mothers with elevated BLLs were likely to pass on lead to their unborn children. Clark concluded that it was

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"apparent that an infant's blood lead at birth follows closely that of its mother's even at high levels, a factor of significance for a community subject to a lead polluted environment ..." (p 41).

- 182 Anglo would certainly have been aware of Clark's investigations and findings. In the acknowledgments, Clark thanked the Mine management for their "*permission*" to undertake the survey and the Anglo Group Medical Adviser for "*making this survey possible*". Clark states:

"I wish to thank the Management of Broken Hill Mine for permission to undertake this survey. [...] ... and Dr. L. Glatthaar, Group Medical Adviser to Anglo-American Central Africa Limited, for his report on the X-rays and his enthusiasm in co-ordinating the various departments involved thereby making this survey possible. ..."

- 183 Clark's thesis was the first concerted effort to study and record the health effects of lead pollution on the local community. Clark's single-handed efforts to test air and soil samples and to measure BLLs in the community demonstrate that this information was relatively easy to obtain, had proper steps been taken. A company with Anglo's resources could have conducted the necessary monitoring and evaluation had it applied its mind to the issue. Anglo and the Mine appear to have taken no steps whatsoever to monitor the health impacts of lead pollution on the surrounding community, despite their awareness of the problem of lead pollution in the area. If they did conduct these investigations, this information was never made public, nor did Anglo and the Mine take steps to warn the residents of Kabwe of the danger.

C Knowledge of the risks to future generations

- 184 As explained above, lead is an element which cannot be destroyed in the environment. These basic properties have been widely understood for some centuries.
- 185 As detailed in the expert reports of Prof Betterton, Prof Harrison and Prof Taylor, there is overwhelming evidence that the lead production activities during Anglo's

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involvement in the Mine led to significant contamination of the local environment in Kabwe, which persists to the present day. Anglo was, or ought to have been, aware of the stable and persistent nature of lead, as well as its toxicity to humans. Prof Betterton notes that by 1914, the dangers of lead poisoning were widely known across the lead mining industry, as was the need to mitigate exposure.

- 186 As explained by Prof Harrison, once the local environment becomes contaminated with lead, this will remain in the environment. Already by the 1950s, there was substantial scientific evidence of lead's long-lasting effects. Prof Harrison notes that:

"[Lead] has long-term stability, but can disperse within the environment. A paper published in 1954 (Butler, E17) showed that lead and tin differed from other metals by being enriched in surface soils, and unlike most other metals (which showed higher concentrations at depth than at the surface) was not moved downwards by percolating rainwater, a clear sign of the immobility in soil of lead entering from the atmosphere. In the 1960s and early 1970s, extensive research was conducted on lead in the environment. Studies at this time showed lead poisoning of livestock in the vicinity of lead mines (E14) and smelters (E20) and should have been well known to Anglo. Around this time, studies such as those around the Avonmouth lead-zinc smelter (E10 and E21) and the Swansea Valley (E15) were revealing extensive lead contamination. It was obvious from such studies that lead had accumulated around these sources and Purves, in a paper published in 1972 (E22), commented that "contamination of soils with elements such as copper, lead and zinc appears to be largely irreversible". Purves reports an experiment in which he leached columns of contaminated soil with the equivalent of 40 metres of rainfall and these elements were not substantially reduced (E22)."

- 187 If there was any doubt at the time about the long-term effects of lead pollution, Anglo had the time and resources to investigate these effects, had it been so inclined. Over the course of its almost 50-year involvement in the Mine's affairs, it had opportunity to conduct the necessary long-term sampling of air, water, soil and vegetation and to monitor the health impacts on the local communities living in Kabwe, but did not do so.

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D Summary

188 In light of the above, and in view of the scale of the lead mining operations and the close proximity of the Mine and smelter to the communities, it is inconceivable that Anglo was unaware of the gravity of the lead poisoning risk created by its operations both to the population living in the surrounding communities at the time and to future generations. In any event, as a substantial mining company, with in-house medical and engineering expertise, it ought reasonably to have appreciated this risk and taken steps to study the problem and take steps to prevent harm.

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VIII ANGLO'S KNOWLEDGE OF THE MEASURES REQUIRED TO PREVENT AND ADDRESS LEAD POLLUTION

189 Anglo was an established mining company with significant experience and expertise in the management and control of mining and smelting operations.

190 The reasonable steps required to prevent and address lead pollution arising from lead mining and smelting were well known in the industry at all relevant times. Anglo knew or ought to have known of those steps throughout its involvement in the Mine.

191 Measures to prevent lead pollution had been detailed in the 1893 Broken Hill Report prepared by the New South Wales committee tasked with investigating lead pollution at Broken Hill. The committee called for urgent and "*radical*" alterations to prevent lead pollution from escaping into the atmosphere, which included increasing the length of stacks and installing measures to capture residues of lead and other metals. Its recommendations stated, in relevant part:

"8. Emission of flue-dust from smelter stacks should be as nearly prevented as possible, and should at all events be very greatly reduced below what is at present allowed; a time should be named within which the necessary alterations are to be made, and such time should not exceed twelve months.

9. The way in which flue-dust is at present handled urgently requires radical alteration on some systematic plan which shall as far as possible avoid the possibility of its being blown about on the air ...

...

12. It is very desirable that furnaces should be surrounded with a jacket which should , expand below so as to catch fumes from molten metal and slag, and which should terminate on one side in a chimney leading to the air on the open side of the tapping-floor."

192 Dr van Blommestein's correspondence between 1947 and 1949 and RBHDC's communications to Johannesburg in 1953 show that Anglo was aware that the measures to prevent atmospheric emissions of lead pollution at the Mine were inadequate. Dr van Blommestein called for greater efforts to prevent lead fumes

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and insisted on measures to monitor lead emissions. This concern did not, however, extend to the general population of Kabwe.

- 193 By 1965, at the "Symposium on Environmental Lead Contamination", Professor Melvin W. First noted that "the technical means for protecting lead workers and preventing emission of lead to the environment from industrial establishments is already well known". A copy of his speech was previously attached as **ZMX61**.
- 194 By 1970, the correspondence between the General Manager of the Mine and Anglo, previously attached as **ZMX76**, reflects that there was recognition of the need to address lead pollution in the surrounding community. However, the proposed interventions only extended as far as doing the bare minimum to wet the Mine dumps, tar some local roads, and relocate employees from the Kasanda township to the new development in the Chowa township. Despite recognising the problem of lead pollution, little to no regard was shown for the other, non-employee residents of the affected townships.
- 195 Clark's 1975 thesis suggests that the measures taken by the Mine remained deficient at the time that his study was conducted between 1971 and 1974. Clark concluded with recommendations to limit lead pollution from the Mine, which included modifications to the sinter and smelter furnaces and stacks to reduce atmospheric lead pollution. Clark also made recommendations to contain dust from the Mine dumps, which indicates that the proposed measures to wet the Mine dumps had not yet been implemented or remained inadequate:

"[T]here remains the problem of wind-borne ground lead contribution the barriers need to be continuous and extend across the entire width of 'waste' land. A quicker but temporary method requires an articulated water pipe system with sprinklers to keep the surface of the waste area moist and thereby reduce wind take-up of the soil. Such watering might encourage growth of grass which will bind the soil and prevent further erosion. Watering should be started in May and continued until the rains which can be expected in November.

Because of the water shortage, in the dry season, sprinkling should begin after the heat of the day, when evaporation is least, or during the day if dust clouds are exceptionally severe. Traffic leaving the plant area should have a wheel wash to reduce take-out lead."

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- 196 Clark concluded by emphasising the need for proper monitoring of lead pollution in the local community: "[a]s part of the control programme it is important that monitoring of the atmosphere as well as biological monitoring continues." It appears that no such monitoring had been conducted before Clark's research.
- 197 Based on the above, and as further confirmed in Professor Betterton's expert report, Anglo could have taken a number of reasonable steps that were available and well known at the time to prevent and address lead pollution from the Mine's operations, including:
- 197.1 Monitoring the levels of lead pollution in the air, soil, water and food crops in the Mine premises, the town of Kabwe, and the broader Kabwe District;
 - 197.2 Establishing a network of airborne lead monitors to protect Mine employees and residents of Kabwe;
 - 197.3 Monitoring and testing employees and Kabwe residents for exposure to lead pollution and the adverse health effects of lead exposure;
 - 197.4 Providing medical facilities and resources for the testing of residents for exposure to lead;
 - 197.5 Implementing measures to prevent lead pollution from escaping from the mining and blasting processes, alternatively, ceasing mining and blasting at the Mine to the extent that lead pollution from these activities could not be adequately prevented or controlled;
 - 197.6 Implementing measures to prevent lead pollution from escaping the Mine's sinters, crushers and smelters, including:
 - a. Installing effective hoods and dust control systems to the smelters and roasters; and / or
 - b. Installing taller chimney stacks to disperse smelter fumes more effectively and to avoid fumigating plumes; and / or .
 - c. Enclosing the smelter building.

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- 197.7 Alternatively, ceasing sintering, crushing and smelting operations at the Mine and relocating these processes elsewhere, to the extent that lead pollution from these activities could not be adequately prevented or controlled;
- 197.8 Implementing measures to prevent lead pollution from the Mine dumps, including:
- a. Installing sprinkler systems or flooding to wet the Mine dumps and to manage windblown dust emissions;
 - b. Erecting barriers around the Mine dumps;
 - c. Cultivating grass and vegetation on the Mine dumps.
- 197.9 Alternatively, ceasing the dumping of waste rock, slag, tailings and dross at the Mine premises and relocating the Mine dumps to a safe location to the extent that lead pollution from the Mine dumps could not be adequately prevented or controlled;
- 197.10 Refraining from planning, developing, and / or facilitating the development of the town, staff quarters, and residential areas in close proximity to the Mine;
- 197.11 Relocating residents from residential areas in close proximity to the Mine;
- 197.12 Taking steps to remediate lead pollution in the Kabwe district, including:
- a. Tarring of roads;
 - b. Sprinkling of roads using water trucks to suppress dust dispersal;
 - c. Replacing topsoil in affected communities and households; and / or
 - d. Permanently remediating unused Mine dumps by capping them with clean soil and plants.

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- 197.13 Warning residents of Kabwe of the dangers of lead pollution from the Mine;
 - 197.14 Educating residents on measures to prevent and mitigate exposure to lead pollution from the Mine;
 - 197.15 Installing equipment and putting in place policies, procedures, and systems to ensure that lead production post-1974 proceeded safely, without generating harmful levels of lead pollution;
 - 197.16 Warning the Zambian government and subsequent owners of the Mine of the ongoing danger of lead pollution created by the Mine during the relevant period;
 - 197.17 Providing funding, resources and support to initiatives to prevent, address, and remediate lead pollution in the Kabwe District.
- 198 The available evidence demonstrates that Anglo knew or ought reasonably to have known that these measures were not being implemented at the Mine, effectively, timeously, or at all.

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IX ANGLO'S DUTY OF CARE

- 199 It will be argued that during the relevant period, from 1925 to 1974, Anglo owed a common law duty of care to the members of the classes to take all reasonable steps to protect them from harmful exposure to lead pollution.
- 200 This duty of care arose, *inter alia*, from the combined effect of Anglo's involvement in the Mine's operations, its knowledge of the harms of lead pollution, its knowledge of the means to prevent these harms, its ability to address these harms, and its public commitments to promoting the welfare of communities, as described in the preceding sections of this affidavit.
- 201 Due to its involvement in the Mine's affairs, as described in Section V above, Anglo exercised *de facto* control and responsibility over the operations of the Mine, and held itself out as exercising such responsibility and control, in terms of the "group system" which it applied to all of the operating Mines and other subsidiary companies within the Anglo Group.
- 202 Anglo's financial investments in the Mine further facilitated the ongoing production of lead at the Mine and substantially increased the rate of production of lead at the Mine, with a consequent increase in lead pollution. For example, Anglo's investment in 1937 was decisive in allowing the Mine's operations to survive and grow.
- 203 Anglo also assumed this duty of care through the oversight and direction it provided to the Mine on engineering, environmental and medical matters, whether directly, or indirectly through Anglo Group subsidiaries it controlled, pursuant to its appointments as consulting engineer and manager of the Mine, and the appointment of AACCA as consulting engineer and technical advisor to the Mine.
- 204 In addition, Anglo provided further administrative, engineering, environmental, medical, and technical services to the Mine directly, or indirectly through Anglo Group subsidiaries it controlled, pursuant to its appointments as consulting

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engineer and manager of the Mine, the appointment of AACCA as consulting engineer and technical advisor to the Mine, and in terms of the MCMMA.

205 In providing this oversight and these services, Anglo assumed specific responsibility over the control of lead pollution at the Mine. Even in advance of discovery, the available correspondence between the Mine and Anglo that has been discussed above, including Dr van Blommestein's interventions, provides strong evidence of this degree of oversight. It is likely that this evidence will be supplemented significantly with correspondence that is disclosed in the discovery process. Already, it demonstrates that Anglo held itself out as exercising such oversight and control over measures to address lead pollution at the Mine.

206 By way of further example, the correspondence between Anglo and the Mine, attached at **ZMX78**, suggests that managers at the Mine would be obliged, at least on occasion, to travel to Anglo's office in Johannesburg and receive instruction on matters relevant to lead exposure. A letter from Anglo's consulting engineer to the General Manager of the Mine of 28 October 1947 enclosing a copy of Dr. van Blommestein's concerns, stated that:

"This was the subject of discussion during your recent visit to Johannesburg and it was arranged with regard to the Lead Plant, you will put into effect any improvements you deem necessary in order to lessen the danger to employees within the plant...."

207 Not only was the Mine dependent on Anglo for instructions and directions on the control of lead pollution, but Anglo also knew that the Mine would rely on its knowledge and advice and that such advice would materially impact upon the environmental conditions to which the residents of Kabwe would be exposed. This was all consistent with Anglo's group system.

208 Furthermore, as outlined in Section VI above, throughout its involvement in the Mine, Anglo publicly acknowledged its obligation to promote and protect the welfare of communities surrounding Anglo Group Mines, including the Kabwe community. Its historical recognition of this duty of care is consistent with the public commitments that Anglo continues to make to this day.

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209 At all material times during its involvement in the Mine, Anglo also knew or ought reasonably to have known of the harmful effects of lead pollution from the Mine operations, both for present and future generations. This is set out in detail in Section VII above.

210 As is further detailed in Section VIII, Anglo was also fully aware of the reasonable measures that ought to have been implemented to prevent and address lead pollution and the fact that these measures were not being adequately implemented at the Mine.

211 In terms of its duty of care during the relevant period, Anglo was obliged to protect the class members from harmful lead pollution by:

- 211.1 Instructing and/or advising the Mine's owners and operators and other entities in the Anglo Group, including RBHDC / ZBHDC, RAAL / ZAAL and/or AACCA, on the measures necessary to prevent, reduce and address lead pollution from the Mine and the resulting health risks, as described in paragraph 197 above;
- 211.2 Making necessary capital and human resources available to implement the measures described in paragraph 197 above;
- 211.3 Ensuring that the measures described in paragraph 197 above were implemented;
- 211.4 Itself implementing the measures described in paragraph 197 above; and / or
- 211.5 Ensuring a cessation of the operations at the Mine if the measures described in paragraph 197 above could not be implemented effectively.

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X ANGLO'S BREACH OF ITS DUTY OF CARE

- 212 At this initial stage of the proceedings, the Applicants have not yet had the benefit of discovery. It is, therefore, not possible to provide full details of the deficiencies in Anglo's measures to prevent lead pollution of the surrounding environment.
- 213 Nevertheless, I submit that it is evident from section VI that Anglo knew or ought to have known of the grave risks to which the Mine operations were subjecting local communities.
- 214 It is further evident from the facts in section VIII that Anglo knew or ought to have known of the required measures to prevent and address these risks and that these measures were not being implemented at the Mine, effectively or at all.
- 215 It is also self-evident from the nature and scale of lead pollution in the community that no measures, or insufficient measures, were taken during Anglo's involvement in the Mine's operations.
- 216 There is no evidence to suggest that Anglo made efforts to reduce environmental lead emissions, beyond the limited interventions by Dr van Blommestein and the piecemeal efforts in the early 1970s. Whereas it appears that Anglo sought to implement some measures to protect workers from exposure to lead pollution, no such concerns seem to have been extended or expressed for the health and well-being of the local communities or future generations.
- 217 The Applicants will argue that Anglo acted negligently and breached the common law duty of care owed to the class members by failing, alternatively, refusing, further alternatively, making insufficient efforts, to take the steps detailed in paragraph 211 above.

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XI CAUSATION AND ACTIONABLE HARM

218 As a consequence of the negligent breaches outlined above, the classes of children and women of child-bearing age in Kabwe continue to be exposed to dangerous levels of lead pollution. Anglo's breaches caused and materially contributed to the ongoing harm to the class members.

A *The sources of lead pollution*

219 Whilst the Kabwe District is an area of naturally occurring lead, Professor Taylor notes that it is highly unlikely that natural erosion could cause the current levels of lead apparent in the soil. He notes that evidence points to mining and smelting operations as the main source of contamination of surface soils and contemporary dusts.

220 It is clear from the affidavits of Professor Roy Harrison, Professor Eric Betterton, and Professor Mark Taylor, that emissions from the Kabwe Mine and smelter are the preponderant sources of lead in the dust in Kabwe District, and moreover that such emissions from 1925 to 1964 or 1925 to 1974 comprise a significant contribution of the lead in the topsoil and dust in the local villages at the present time. There have been no other lead Mines in the area, and Professor Harrison, Professor Betterton and Professor Taylor all confirm that natural sources would not account for current levels of lead in the soil surrounding the former Mine, which are far in excess of what one would expect from the natural erosion of an ore-body, such as the one present in the Kabwe District.

221 With the Mine being the primary source of local pollution, the amount of lead production over its lifetime is significant. Attached and marked **ZMX79** is a table outlining the levels of production of lead from the Mine from 1915 to 1994. This information has been drawn from the available annual reports, corporate publications and Barlin's history of the Mine. A confirmatory affidavit has been prepared by Mr Jonathan Buckley, an attorney at Leigh Day, attached as **ZMX80**, describing the steps taken in compiling these tables and attaching the relevant

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source documentation. Once again, I emphasise that in the absence of discovery, this table is necessarily a work-in-progress.

222 This table of lead production indicates that approximately 35% of the overall production over the whole period of operation of the Mine occurred prior to 1964 and 31% between 1964 and 1974. In total, 66% of the total lead produced at the Mine over its lifetime was produced while Anglo was directly involved in the Mine's affairs.

223 The opinion of Professor Harrison indicates the following:

223.1 It is clear that the environment was already contaminated in 1971. As per the Clark thesis, previously attached as **ZMX3**, the Kabwe soil and air was already heavily contaminated at that time and blood-lead levels of residents of the worst affected areas of the town reflected this.

223.2 An appreciable proportion of the overall production of lead from the Mine occurred prior to 1964, and the vast majority (78%) by 1974. The majority of this was between 1925 and 1974 (66%).

223.3 Unless there was a significant deterioration in operational processes after this date, it is likely that the pre-1975 emissions are largely responsible for the current contamination of the environment, and consequently exposures may not have changed greatly over this period – as is suggested by the soil lead and blood lead measurements made over many years.

223.4 There is little doubt that the lead emitted prior to 1974 will have been a continuing material source of exposure of communities to the present day.

223.5 Patterns of soil lead contamination observed in the communities around Kabwe Mine are consistent with emissions from the smelter stacks.

223.6 Lead in soil is immobile once it is deposited, and consequently will persist for many decades or even centuries. Once the local environment becomes contaminated with lead, this will be highly persistent on human

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timescales and there is overwhelming evidence, that the lead production activities at Kabwe led to contamination of the local environment which persists to the present day.

224 The opinion of Professor Betterton indicates the following:

- 224.1 Dust or fume was created at almost every stage of the mining and smelting processes used at the Kabwe Mine.
- 224.2 The company did not implement adequate dust collection measures during their operations, though measures were known and available at the time. This led to exceptionally high levels of lead in the working environment (as indicated in Hardy's report, previously attached at **ZMX59**) and beyond, in residential areas (as shown in Clark's air sampling, previously attached at **ZMX3**).
- 224.3 The smelter stack was built too low to function adequately under the prevailing weather conditions, resulting in the fumigation of local township areas.
- 224.4 The shape of the heat maps and the results of the soil profiling make it near-certain that the lead in the Kabwe environment arose from historical smelting operations and not from natural geological origin or from later intentional redistribution of contaminated materials.
- 224.5 Post-1974, although still significant, industrial mining and smelting were beginning a steep decline, and after that, artisanal mining and subsequent remediation efforts would have represented only insignificant sources of airborne lead by comparison. In addition, dust created during the intentional transport of contaminated material from the Mine after it ceased operations would have been insignificant compared to the contributions of some five decades of mining operations.

225 The opinion of Professor Taylor indicates the following:

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- 225.1 The operations conducted during the period 1925 to 1974 were the most influential for the emission and ultimately deposition of lead in and around the Mine. Production of lead during this period amounted to 66% of the total over the Mine's lifetime.
- 225.2 Blood lead levels reported by Clark, previously attached as **ZMX3**, coincide with the peak in lead production at the Kabwe Mine.
- 225.3 The role of legacy lead stored in soils and dusts remains significant in Kabwe, Despite a period of almost 25 years since the smelter's closure it is self-evident from the blood lead data that historical contaminants remain present in contemporary soils and dusts and exposure remains persistent due to the remobilisation of lead in soil and dust.
- 225.4 Lead is elemental and does not degrade or 'go away'. Some estimates suggest a half-life of ~ 700 years, meaning that lead emissions from the Kabwe Mine formed deposits that remain present in contemporary soils and dust.
- 226 Moreover, as pointed out in the introductory section above, Anglo's negligent breach of its duty over the period 1925 to 1974 to the residents of Kabwe present and future, was also a material cause of the ongoing lead pollution deposited in the vicinity of the Mine during the period from 1974 to 1994 when the Mine was finally closed. If Anglo had behaved responsibly towards the residents of Kabwe, during its period in control of the Mine, the Mine that it handed over in 1974 would have been appropriately designed, managed and operated in the relevant period to minimise the risk of lead pollution to the Kabwe communities in the immediate vicinity of the Mine. But the Mine handed over by Anglo in 1974 was not appropriately designed, managed and operated to minimise the risk of lead pollution to the Kabwe communities in the immediate vicinity of the Mine. As a result it continued to subject these communities to lead pollution during the years 1974 to 1994:
- 226.1 when 22% of the lead produced over the lifetime of the Mine was produced; and

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226.2 a broadly commensurate percentage of the totally lead pollution currently present in the Kabwe environment was generated by the Mine.

B Lead-induced injury and actionable harm

227 As detailed above, exposure to lead can result in a range of injuries. The WHO table and Prof Dargan's further table, referred to at paragraphs 63 and 64 above, detail the injuries and conditions associated with different levels of lead in the blood.

228 The question whether specific injuries suffered by individual class members were caused by exposure to lead will be a matter for clinical assessment of the individual in question by medical experts such as Professors Dargan and Adnams.

229 Nevertheless, Prof Dargan confirms that there is no safe level of lead in the blood and that lead-induced injury can occur at levels of 5µg/dL and below. Effects caused can be acute or chronic with significant long-term consequences.

230 Prof Dargan explains that regular blood lead monitoring, among other interventions, is medically recommended where a person's BLL is 5µg/dL or more. He explains that based on his experience, blood lead monitoring should be conducted on the following schedule:

230.1 Every 2-4 weeks with blood lead concentrations greater than 65 µg/dL;

230.2 Monthly with blood lead concentrations in the range of 45 – 64 µg/dL;

230.3 Every 1 – 2 months with blood lead concentrations in the range of 20 – µg/dL;

230.4 Every 3 – 6 months for blood lead concentrations in the range of 5 – 19 µg/dL.

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231 According to Prof Dargan, chelation treatment above a BLL of 45µg/dL is standard international clinical practice, even in the absence of any injuries or symptoms of lead exposure. Prof Dargan explains that chelation may also be used in individuals with lower BLL, if significant effects of lead poisoning are observed. Chelation agents only bind to lead that is free in blood plasma. Lead stored within the bones typically gets released into the blood after chelation treatment. In case of chronic exposure, a very significant amount of lead is stored in the bones, which is released slowly, and chelation is therefore required for a period of many years.

232 In women of child-bearing age, the CDC further recommends a threshold level of 5 µg/dL and above for monitoring and nutritional intervention. Relevant extracts from the CDC report are attached as **ZMX81**. The CDC report states:

"Pregnant and lactating women with a current or past BLL \geq 5 µg/dL should be assessed for the adequacy of their diet and provided with prenatal vitamins and nutritional advice emphasizing adequate calcium and iron intake."

233 Prof Dargan further explains that pregnant women with BLLs greater than 5 µg/dL should be medically monitored for the risk of developing preeclampsia in pregnancy:

"[I]t is recommended that women with blood lead concentrations greater than 5 microg/dL are actively monitored for preeclampsia during pregnancy. This increased risk of preeclampsia is important because preeclampsia is associated with significant adverse outcomes in both the mother and the pregnancy, and is also a leading cause of maternal mortality."

234 The Applicants will argue that the negligent causation of a BLL requiring medical monitoring and intervention would constitute an actionable injury *per se*, independent of whether an individual displays any further symptoms or injuries from lead exposure.

235 As indicated above, it is clear from published medical and scientific articles that a large proportion of children in Kabwe District have suffered from BLLs of 45µg/dL and above, and many considerably in excess of this magnitude.

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236 I stress, however, that the Applicants do not limit the class to a specific measurement of lead in the blood. Many class members will have suffered actionable harm which can be directly attributed to lead exposure even at relatively low BLLs. This will depend on medical testing and individual evidence at the second stage of the proposed class action, after the common issues have been determined.

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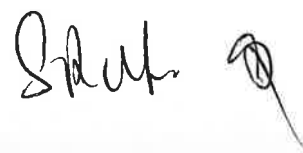


XII THE APPLICANTS HAVE SUFFERED HARM FROM EXPOSURE TO LEAD

- 237 The Applicants' experiences provide necessary insight into the scale and severity of the harms suffered by the proposed class members. The Applicants are all children (represented or assisted by their parents or guardians) and young women who have suffered harm from exposure to lead. All have lived in the Kabwe District for their entire lives and most live in the worst affected areas – Kasanda, Makululu and Chowa – where lead pollution from the Mine remains most heavily concentrated in the soil.
- 238 The Applicants' supporting affidavits describe how these children and young women were exposed to lead pollution in the dusty conditions in Kabwe. There is little to no ground cover and children have no option but to play in the dirt, where they are at great risk of ingesting and inhaling lead-contaminated dust.
- 239 They have all had their BLLs tested in November 2019 and again in February 2020. Supporting affidavits from the laboratories responsible for collecting and testing their blood samples will be filed with this affidavit. The test results confirm that all have elevated BLLs, far beyond the CDC reference value of 5 µg/dL for lead poisoning.
- 240 Prof Dargan and Prof Adnams have examined the children and young women in person and have prepared detailed expert reports setting out their observations and findings. These reports will also be filed with this application. They confirm that all have suffered injuries and are at risk of developing further injuries due exposure to lead. I ask that these individual reports be read as incorporated herein, as they provide detailed insight into the effects of lead pollution on children and women.
- 241 [REDACTED] is 3 years old. She was born in [REDACTED], Kabwe and has lived there all her life.

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- 241.1 In her supporting affidavit, [REDACTED] mother, Ms [REDACTED], explains that like other young children in Kabwe, [REDACTED] plays in the dusty soil. Ms [REDACTED] states that *"[s]he spends all day outside and when she comes back from playing, she is covered in dust. She used to eat the soil when she was younger but she does not do that anymore, she stopped when she was about a year old."*
- 241.2 In November 2019, [REDACTED] was found to have BLLs of 69.50 µg/dL and 73.70 µg/dL. By February 2020, her BLLs were recorded as 84.75 µg/dL.
- 241.3 When [REDACTED] was assessed by the experts in February 2020, she showed distractible and impulsive behaviour, which Prof Dargan found was likely to relate to lead toxicity.
- 242 [REDACTED] is 3 years old. He was born in [REDACTED], Kabwe and has lived in [REDACTED] all his life.
- 242.1 [REDACTED] mother, Ms [REDACTED], explains that *"[REDACTED] spends most of the day outside playing in the dirt by the roadside. He comes back with his hands and face covered in dust."*
- 242.2 [REDACTED] blood lead concentrations in November 2019 were 83.60 µg/dL and 82.15 µg/dL. His blood lead concentration in February 2020 was 87.53 µg/dL.
- 243 [REDACTED] is 2 years old, he will turn 3 in [REDACTED] 2020. He was born and lives in [REDACTED], Kabwe, where he also plays in the dusty, lead-contaminated soil.
- 243.1 [REDACTED] blood lead concentrations in November 2019 were 106.00 µg/dL and 106.00 µg/dL. His blood lead concentration in February 2020 was 114.22 µg/dL. This puts him at significant risk of encephalopathy, which is potentially life-threatening.
- 243.2 His mother, Ms [REDACTED], describes his current condition: *"He has a poor appetite and sometimes does not eat solids for up to a week. [REDACTED] suffers from abdominal pains which cause vomiting, diarrhoea and*



coughing, which started when he was 4 months old. When he is ill, he vomits four times a day and experiences weakness in his body."

243.3 [REDACTED] also had a low birth-weight (15th centile) and is small for his age. In February 2020, his growth parameters were below average for his age (15th to 50th centile). This is all consistent with lead toxicity.

244 [REDACTED] is 2 years old. He was born in [REDACTED], Kabwe, and has lived there all his life.

244.1 [REDACTED] mother, Ms [REDACTED], describes that how he is often covered in dust after playing outside.

244.2 [REDACTED] has severe lead poisoning. His blood lead concentrations in November 2019 were 114.00 µg/dL and 118.00 µg/dL. His blood lead concentration in February 2020 was 81.37 µg/dL. He too is at risk of encephalopathy and even death.

244.3 [REDACTED] was found to have an anaemia when he was younger and was also anaemic in February 2020, to which lead, along with iron deficiency, was contributory, according to Prof Dargan.

245 [REDACTED] is 10 years old. He was born in [REDACTED], Kabwe, and has lived there all his life.

245.1 [REDACTED] averaged blood lead concentrations in November 2019 were 55.05 µg/dL. In February 2020, his blood lead concentrations were 64.24 µg/dL.

245.2 [REDACTED] mother, Ms [REDACTED], states that he has experienced cognitive problems and learning difficulties: *"His teacher informed us that he is forgetful, lacks concentration and when he is asked a question, he will just look at the teacher blankly. I noticed that his language development is slower than normal as he takes a long time to react when spoken to."*

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245.3 The expert reports confirm that such cognitive problems, including short attention spans and reduced memory, are sequelae of lead exposure.

245.4 [REDACTED] has also experienced debilitating abdominal pains, which can cause him to vomit, and headaches. As a result, he frequently misses school. Prof Adnams concludes that "*no other cause has been found*" for these illnesses, other than lead poisoning.

246 [REDACTED] is 6 years old. He was born in [REDACTED], Kabwe and has lived there all his life.

246.1 [REDACTED] mother, Ms [REDACTED], has prepared a supporting affidavit explaining [REDACTED] circumstances and his experiences. He also plays in the dirt and often ate soil when he was younger.

246.2 His averaged test results in November 2019 showed BLLs of 50.60 µg/dL. In February 2020, his BLLs had increased to 54.58 µg/dL.

247 [REDACTED] is 10 years old. He was born in [REDACTED], Kabwe and has lived there all his life.

247.1 [REDACTED] father, Mr [REDACTED], explains that [REDACTED] also likes to play outside at home and "*comes back covered in dust*". While he has tried to grow some grass cover at home, Mr [REDACTED] reports that his yard remains very dusty.

247.2 [REDACTED] attends school at the [REDACTED]. His father reports that he has experienced learning difficulties and has difficulty concentrating, which meant that his teacher recommended he repeat a year.

247.3 The experts confirm that such neurodevelopmental delay and problems with attention are sequelae of lead exposure.

247.4 [REDACTED] average BLLs in November 2019 were found to be 54.95 µg/dL. In February 2020, he was shown to have BLLs of 54.28 µg/dL.

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248 [REDACTED] is 5 years old. He was born in [REDACTED], Kabwe, and has lived there all his life.

248.1 [REDACTED] mother, Ms [REDACTED], states that "[h]e comes home with grey dust on his hands and legs and on his clothes after playing." [REDACTED] also ate soil when he was younger, but has since stopped.

248.2 [REDACTED] averaged BLL results in November 2019 were 47.85 µg/dL and in February 2020 his BLLs had increased to 51.47 µg/dL.

249 [REDACTED] is 4 years old. She was born in [REDACTED], Kabwe, and has lived in [REDACTED] all her life.

249.1 Ms [REDACTED], [REDACTED] mother, explains that "[REDACTED] spends around half an hour per weekday outside playing in the dirt, and all morning on weekends. Her whole body and clothes are covered in dust after playing. I try to keep her inside by turning on the TV, but I constantly find her outside."

249.2 [REDACTED] averaged blood lead concentrations in November 2019 were 52.05 µg/dL; in February 2020, her blood lead concentration was 50.78 µg/dL. In February 2020, [REDACTED] also had a mild anaemia, to which lead along with iron deficiency was contributory, according to Prof Dargan.

250 [REDACTED] is 7 years old. She was also born in [REDACTED], Kabwe and has lived there all her life.

250.1 Ms [REDACTED], [REDACTED] mother, explains that "[REDACTED] has poor concentration and often forgets instructions. She can also become aggressive, and fights with other children, including her brother. [REDACTED] often plays outside on the dirt road and in the soil in my yard. She eats the soil. I tell her not to eat it, but she does it anyway. [REDACTED] has a poor appetite."

250.2 The experts confirm that [REDACTED] is distractible and has poor concentration, effects which are consistent with lead poisoning.

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250.3 [REDACTED] average BLLs in November 2019 were 45.25 µg/dL. In February 2020, her BLLs were 43.88 µg/dL.

251 [REDACTED] is 2 years old has lived in [REDACTED], Kabwe since he was born.

251.1 His mother, Ms [REDACTED], states that dust from the Mine blows into her yard, where [REDACTED] plays. She states that he *"spends around two hours per day outside playing in the dirt"* and that he *"comes home with his legs or body covered in dust"*.

251.2 In November 2019, [REDACTED] BLLs were found to be 26.10 µg/dl, falling slightly to 25.63 µg/dl in February 2020. He had previously been tested at a local clinic in October 2019 and his mother was told that he had lead poisoning, but was not given any precise indication of the results.

252 [REDACTED] is 17 years old. She has lived in [REDACTED], Kabwe since she was born.

252.1 [REDACTED] mother, Ms [REDACTED], who assists [REDACTED] in this litigation, has prepared a supporting affidavit. Ms [REDACTED] explains that like other children, *"[REDACTED] used to play in the soil every day and come back covered in dust."* [REDACTED] also ate soil when she was young.

252.2 [REDACTED] is in Grade 12 at secondary school. Ms [REDACTED] indicates that she has had learning difficulties at school. [REDACTED] has also experienced headaches, which in the past have affected her eyesight.


252.3 [REDACTED] growth is below average for her age, which is consistent with lead poisoning.

252.4 [REDACTED] averaged BLLs in November 2019 were 38.00 µg/dL and in February 2020 she registered 28.04 µg/dL.

253 [REDACTED] is 21 years old. She was born in [REDACTED] and has lived there all her life.

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- 253.1 Ms [REDACTED] attended school until Grade 12. Her performance was low, and she explains that it was difficult for her *"to learn and remember things."*
- 253.2 Ms [REDACTED] blood lead concentrations in November 2019 were 13.40 microg/dL and 13.70 µg/dL. Her blood lead concentration in February 2020 was 10.06 µg/dL.
- 253.3 In or about [REDACTED], when she was just two years old, Ms [REDACTED] was tested by [REDACTED] and found to have a BLLs of 84 µg/dL.
- 254 In their reports, Prof Dargan and Prof Adnams confirm that all of the children and young women have suffered injuries and / or are at risk of developing future injuries due to exposure to lead, including *inter alia*:
- 254.1 Reduced life expectancy and risk of premature death;
- 254.2 Severe brain damage (encephalopathy);
- 254.3 Neurodevelopmental effects in childhood, including but not limited to impaired and/ or diminished language development, arithmetic and reading ability, impaired short-term memory and reduced IQ, attention deficit disorder and behavioural problems;
- 254.4 Kidney damage;
- 254.5 Impaired liver function;
- 254.6 Anaemia;
- 254.7 Peripheral neuropathy;
- 254.8 Gastrointestinal symptoms, including nausea, vomiting, loss of appetite, weight loss, severe stomach cramps and constipation;
- 254.9 Dementia;
- 254.10 Male infertility;

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254.11 Damage to haemopoiesis (decreased haemoglobin synthesis);

254.12 Reduced vitamin D metabolism;

254.13 Hypertension;

254.14 Ischaemic heart disease;

254.15 Impaired nerve function;

254.16 Decreased calcium homeostasis; and

254.17 Decreased growth.

255 The experts further confirm that should the children and young women fall pregnant when they are older, they will be at greater risk of developing serious injuries in pregnancy due to their exposure to lead, including *inter alia*:

255.1 Hypertension and pre-eclampsia;

255.2 Pre-term delivery and reduced birth weight;

255.3 Spontaneous abortion and pregnancy loss;

255.4 Increased risk of giving birth to children with congenital abnormalities and adversely affected neurodevelopment;

255.5 Remobilisation of lead stored in bone into the bloodstream, creating further risk of harm.

256 As a result, all of these children and young adults will require medical monitoring and intervention, including regular blood tests, medical treatments, including chelation therapy, and urgent steps to reduce their exposure to lead.

257 For the reasons addressed in Section XI above, Anglo caused the actionable injuries suffered by these children and young adults:

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257.1 But for Anglo's breach of its duty of care, the members of the classes would not have been exposed to such quantities of lead pollution in the environment and would not have suffered the harms listed above.

257.2 Further or alternatively, it will be argued that Anglo's breach of its duty of care materially contributed to the levels of lead pollution in the Kabwe District and the resulting harms suffered by these children and young women as a result of exposure to lead.

258 The applicable law on actionable injury and causation is discussed in detail in the expert affidavits of Mr Mwenye SC and Mr Hermer QC, to which I make further reference below, and will be addressed further in argument.

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XIII THE BASIS FOR CERTIFYING THE CLASS ACTION

260 I am advised that, in considering whether to certify the class action, the overarching question is whether it is in the interests of justice, having regard to the following considerations:

- 260.1 the existence of a class identifiable by objective criteria;
- 260.2 a cause of action raising a triable issue;
- 260.3 that the right to relief depends upon the determination of issues of fact, or law, or both, common to all members of the class;
- 260.4 that the relief sought, or damages claimed, flow from the cause of action and are ascertainable and capable of determination;
- 260.5 that where the claim is for damages there is an appropriate procedure for allocating the damages to members of the class;
- 260.6 that the proposed representative is suitable to be permitted to conduct the action and represent the class;
- 260.7 whether, given the composition of the class and the nature of the proposed action, a class action is the most appropriate means of determining the claims of class members.

A *The existence of a class identifiable by objective criteria*

261 The proposed classes are the following:

- 261.1 The class of **children**, comprising:
 - a. Children under the age of 18 on the date that this certification application is launched;
 - b. Who reside in the Kabwe District, Central Province, Zambia;

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- c. In the case of children over the age of seven, have lived in the Kabwe District for at least two years between the ages of zero and seven; and
- d. Who have suffered injury as a result of exposure to lead.

261.2 The class of **women of child-bearing age**, comprising:

- a. Women over the age of 18 and under the age of 50 on the date that this certification application is launched;
- b. Who reside in the Kabwe District, Central Province, Zambia;
- c. Have lived in the Kabwe District for at least two years between the ages of zero and seven;
- d. Have been pregnant or are capable of falling pregnant; and
- e. Have suffered injury as a result of exposure to lead.

262 I submit that membership of a class defined as above can be objectively determined. The fact that some individuals could only definitively establish harm from lead exposure after medical testing does not render this definition subjective or unworkable. Medical testing is inherently objective.

263 Furthermore, I am advised that the requirement that the class membership be objectively determinable does not require that the precise membership of the class must be determinable from the outset of the action. In a two-stage class action such as this, involving an opt-out stage for the determination of common issues and an opt-in stage for the determination of individual issues, including individual harm, medical testing would only be required at the second stage.

264 It is clear that the sizes of the two classes will be very large. Attached to this founding affidavit is an expert affidavit and report furnished by Professor Mary Lou Thompson, Research Professor Emerita in the Department of Biostatistics



at the University of Washington, Seattle, USA. Professor Thompson estimates that there are

- 264.1 between 89 000 and 99 000 children with BLLs over 5 µg/dL, and
- 264.2 within this group there are between 17 000 and 26 000 children with BLLs over 25 µg/dL, including between 7 000 and 9 000 children with BLLs over 45 µg/dL,
- 264.3 between 42 000 and 43 000 women of childbearing age who have given birth, or will give birth and who have BLLs over 5 µg/dL, and
- 264.4 within this group there are between 4 000 and 5 000 women with BLLs over 25 µg/dL, including approximately 1 000 women with BLLs over 45 µg/dL. As explained in Prof Thompson's report, this group excludes any females who would also fall within the children class and who will therefore have similar claims relating to past and future pregnancies.

B A cause of action raising a triable issue

265 The nature and basis of the cause of action against Anglo appear from the draft particulars of claim, attached as annexure "ZMX1" above. I submit that the claim clearly raises triable issues based on the evidence addressed in Sections III to XII above.

266 I am advised that Zambian law is the applicable law in resolving the substantive issues in the case and that Zambian common law follows English common law in all respects relevant to this action.

267 In *Vedanta Resources PLC v Lungowe* [2019] UKSC 20, eminent Zambian law experts for both sides agreed that the Zambian common law of negligence follows the principles of English common law and that the Zambian courts regularly cite and apply the English case law in reaching their decisions. The UK Supreme Court decided the matter on the basis of English precedents.

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268 An affidavit prepared by Mr Musa Mwenye SC, the expert on Zambian law for the Claimants in the *Lungowe* case, will be filed together with this application.

269 In relation to the relevant principles of English law and their applicability to this case, an affidavit and accompanying report prepared by Mr Richard Hermer QC, the lead counsel in *Lungowe*, will also be filed with this application.

270 I respectfully submit that it is clear from the affidavits and reports of Mr Mwenye SC and Mr Hermer QC read with the evidence furnished in this application relevant to the merits of the Applicants' prospective class action, that the Applicants have shown a prima facie cause of action raising triable issues in the prospective class action.

C The right to relief depends upon the determination of issues of fact, or law, or both, common to all members of the class

271 There is a range of legal and factual issues that, I submit, will be common to all members of the class in an action against Anglo, including:

- 271.1 The nature and prevalence of lead poisoning among children and women of child-bearing age in the Kabwe District;
- 271.2 The precise role played by Anglo in relation to the Mine and its operations from 1925 to 1974;
- 271.3 What Anglo ought to have known of the harms of lead pollution and when;
- 271.4 What measures ought reasonably to have been taken to prevent lead poisoning of local residents;
- 271.5 Whether Anglo was negligent in failing to take those measures;
- 271.6 The existence of a duty of care owed by Anglo to the class members;
- 271.7 Common issues of factual and legal causation, including the correct test for causation to be applied, the Mine's contribution to lead pollution in the

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Kabwe District and whether there is a sufficient causal link between Anglo's negligence and the lead pollution caused by operations of the Mine in the last twenty years of its existence: 1974 to 1994;

271.8 Whether specific BLLs, requiring medical monitoring and intervention, give rise to actionable injuries *per se*, without further proof of harm arising from lead exposure.

272 The issues between the parties will be defined by the pleadings, so it is not possible at this stage to provide an exhaustive list of common issues. However, the above list demonstrates that there are sufficient issues common to all class members that make the matter appropriate for determination by means of a class action.

D The relief sought, and damages claimed, flow from the cause of action and are ascertainable and capable of determination

273 I again refer to the draft particulars of claim attached as annexure "ZMX1" above. The claim is for compensation for lead poisoning arising from Anglo's conduct in relation emissions of lead into surrounding areas from the Kabwe Mine.

274 A bifurcated approach along the lines adopted by this Court in the *Nkala* silicosis class action⁶ is appropriate in this proposed class action. This involves:

274.1 Firstly, a determination of the common issues on behalf of the class on an "opt-out" basis, with notice provided to members of the class as set out in the Notice of Motion.

274.2 Second, if successful at first stage, the determination of individual issues on an "opt-in" basis, including causation of specific injuries and assessment of the quantum of damages.

⁶ *Bongani Nkala & Ors v Harmony Gold & Ors* [2016] ZAGPJHC 97 ('Nkala').

275 Precise damages will differ in each individual case, however, in general, each class representative seeks the following damages:

275.1 Past medical expenses;

275.2 Future medical expenses, including nutritional intervention, radiological investigations, regular blood tests, admission to hospital, chelation therapy, consultations, monitoring and treatment by the relevant medical health practitioners including *inter alia* a specialist physician, a haematologist, a toxicologist, a neurologist, a gynaecologist, a fertility specialist, a urologist, a hepatologist, a paediatrician, an educational psychologist, an occupational therapist, an audiologist and a clinical psychologist;

275.3 Past loss of earnings;

275.4 Loss of future earnings;

275.5 Remediation of the home environment;

275.6 Remediation of the community environment;

275.7 General damages for pain, suffering and loss of amenities of life, disablement and reduced life expectancy.

276 At the second stage, if class members want their claims to be assessed, class members will be required to 'opt in', by notifying the Applicants' attorneys of record accordingly. Directions will be sought from the trial court in respect of the notice required to be given to class members for this purpose.

277 The objective at the second stage should be to establish a range of damages awards that apply to different sub-classes, potentially demarcated along the lines of varying BLLs, injuries and / or different age brackets. In this way, should a class action settlement eventuate it will assist in determining the appropriate tariff payable to individual class members and the overall value of the settlement.

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278 In the event that the class includes categories of claimants whose claims are not assisted by the second stage exercise contemplated in the previous paragraph, further cases can be selected for quantum evaluation from among the wider classes.

E There is an appropriate procedure for allocating the damages to members of the class

279 Following the determination of appropriate brackets or sub-classes of claimants in respect of the quantum of damages to be paid, it is proposed that a further public notice process be employed to enable class members to claim their damages.

280 Those class members would be entitled, upon satisfying the criteria of the class definition, within a reasonable period of approximately two years or such other period as the court may determine, to claim their damages directly from a Trust established to hold and disseminate these funds.

281 It is submitted that this procedure will best serve the purpose of enabling individual class members to receive their damages, while ensuring an appropriate degree of certainty and finality for all parties.

282 In this regard, my first-hand experience in the *Chakalane/Qubeka* silicosis litigation offers a useful model for how this process could be conducted. The Q(h)ubeka Trust was established following the 2016 settlement in the *Chakalane/Qubeka* silicosis litigation that I undertook in collaboration with Leigh Day. That Trust operates as follows:

282.1 In order to qualify for compensation, claimants need to be medically diagnosed with silicosis and have worked on Qualifying Operation (a mine owned by Anglo or AngloGold) for at least two years.

282.2 The Trust arranged medical evaluations of the claimants locally to determine the existence and severity of silicosis.

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- 282.3 Payments are based on a tariff system, which reflect the severity of disease and age of the claimant. Relatives of deceased claimants who meet the criteria are included. Since the overall amount of the settlement is a fixed amount, the level of the tariffs depends on the number of claimants who qualify. As of January 2020, approximately 55% of those who have been medically assessed qualify for compensation.
- 282.4 In addition to payment from the Trust, the Trust will arrange for claims to be submitted to the Medical Bureau of Diseases for compensation under the Occupational Diseases in Mines and Works Act 1973 (ODMWA), which established a no-fault system to compensate miners suffering from prescribed occupational diseases.
- 282.5 The Q(h)ubeka Trustees, chaired by Doctor Sophia Kisting, are experts in the fields of occupational disease, financial administration and law.
- 282.6 As of January 2020, the Trust had medically examined approximately 75% of the claimant cohort and approved payments to qualifying claimants totalling just over R180 million.
- 283 This model can be appropriately adapted and applied in respect of the proposed class in this case.

F The proposed representatives are suitable to be permitted to conduct the action and represent the class

- 284 In relation to the suitability of the proposed class representatives, I address the following three issues:
- 284.1 First, the adequacy of the representative Applicants;
- 284.2 Secondly, the adequacy of the Applicants' legal representatives to secure certification and conduct the class action;
- 284.3 Finally, the costs arrangements proposed by the Applicants for approval by the court.



Adequacy of the proposed class representatives

285 As indicated in the attached schedule, a copy of which I attach, marked "ZMX82", the proposed class representative Applicants meet all the proposed class membership criteria referred to above and represent different facets of the proposed class:

- 285.1 All are children under the age of 18 or women of child-bearing age currently residing in the Kabwe District;
- 285.2 They come from the main communities in Kabwe affected by lead poisoning;
- 285.3 Different age groups are represented, from infants, very young children, teenagers, and women of child-bearing age;
- 285.4 Their BLLs range from very high, to intermediate, to low;
- 285.5 The injuries that they allege arising from exposure to lead vary in nature and severity and as such, their claims, when quantified, will attract different levels of damages.

286 It should therefore be feasible through this group to resolve the generic issues in this litigation.

287 The fact that the class representatives are predominantly children, represented or assisted by their parents or guardians, should not in any way be seen as an impediment to these proceedings. In terms of section 14 of the Children's Act 38 of 2005, read with section 28(2) of the Constitution and applicable international instruments, *"every child has the right to bring, and to be assisted in bringing, a matter to a court, provided that matter falls within the jurisdiction of that court"*.

288 All of the class representatives under the age of 18 are represented or assisted in bringing these proceedings by a parent or guardian. Their parents and guardians have been advised on, and accept their special responsibilities to participate

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in these proceedings and to give instructions in the best interests of the class and in the best interests of the children.

289 Where the children are of such an age, maturity and stage of development as to be able to participate and express their views, they too have been consulted and advised fully on the nature of these proceedings, their rights, and their responsibilities.

290 The proposed class representatives, represented by their parents and guardians where necessary, are all readily contactable for the purposes of obtaining instructions and giving advice.

The adequacy of the legal representatives to act for the class

291 The Applicants are represented by Mbuyisa Moleele, with London law firm Leigh Day acting as consultants, in addition to a team of counsel. In view of our experience in the silicosis litigation and more generally, I now address the adequacy of the Applicants' legal team to represent the class sought to be certified in this application.

292 I am a South African attorney and a founding partner of Mbuyisa Moleele, a firm of attorneys based in Johannesburg. I am also a founder of Haki Legal Clinic, established in 2018 to provide free legal services to indigent and marginalised communities in South Africa. I have worked extensively and continuously with Leigh Day since 1998, first on the Cape plc litigation and from 2003 to 2016 on the silicosis litigation.

293 Along with attorneys from Mbuyisa Moleele and Leigh Day, I have made a number of trips during the past two years to Kabwe in connection with the prospective class action. We have developed detailed knowledge of the situation in Kabwe and have developed relationships with local community-based organisations in these areas.

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- 294 The Applicants' legal team has accordingly developed specific capacity and expertise to act for the communities in Kabwe, who may not have easy access to electronic means of communication and who speak various languages and may not speak English.
- 295 In addition to the thirteen class representatives, Mbuyisa Moleele represents a further 1058 individuals in this action. Of these 1058 individuals, 913 (or 86%) are under the age of 13. The majority of the individuals live in Makululu (479). 401 live in the community of Kasanda (including the communities of Maganda and Makandanyama) and a further 178 live in Chowa.
- 296 Private commercial law firms may not have experience or expertise in acting for such clients, and may have unrealistic expectations of such clients being able to have ready access to fax and e-mail facilities and to have full documentary records available. However, Mbuyisa Moleele ordinarily act for such clients and are well placed to represent the members of the class, which responsibility it did not accept lightly when it resolved to act for former miners with silicosis.
- 297 Counsel for the Applicants are Gilbert Marcus SC, Matthew Chaskalson SC, Grace Goedhart SC, Vusumzi Ngutshana and Chris McConnachie. The Counsel team includes senior members who were involved in either the silicosis litigation (*Blom & Ors v Anglo American / Chakalane & Ors v Anglo American, Qubeka & Ors v Anglo Gold*) or the *Nkala* silicosis class action for several years, and, as a team, has the expertise and experience to deal with all foreseeable issues in the proposed class action.
- 298 An integral member of the legal team is Leigh Day, acting as consultants to Mbuyisa Moleele on the matter. Leigh Day is a leading UK firm specialising in mass tort, personal injury, environmental and human rights litigation in jurisdictions across the world, including South Africa. Mass tort cases in which they have represented claimants include the following:

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- 298.1 Acting for South African workers poisoned by mercury at a factory in Kwa-Zulu-Natal in UK litigation against Thor Chemicals, which was settled in 1997 and 2000. [*Ngcobo v Thor Chemicals Holdings Ltd & Desmond Cowley* Times L Rep 10 November 1995; *Sithole v Thor Chemicals Holdings & Desmond Cowley* [2000] WL 1421183];
- 298.2 Acting for 7,500 South African asbestos miners in the UK litigation against Cape plc, which settled in 2003. [*Lubbe v Cape Plc* [2000] 1 WLR 1545 (HL)];
- 298.3 A claim by 30,000 residents of Cote D'Ivoire against Trafigura arising from the dumping of toxic waste [*Motto & Ors v Trafigura Limited*];
- 298.4 A claim by 15,000 Nigerian fisherman suing Shell for loss of livelihoods arising from oil pollution [*Bodo Community v Shell Petroleum Development Company (Nigeria) Ltd*];
- 298.5 Claims against the UK government on behalf of Mau Mau torture victims [*Ndiku Mutua and Ors v The Foreign and Commonwealth Office* [2011] EWHC 1913 (QB)];
- 298.6 Representing 32 indigenous Peruvians in a claim against a UK parent company, Monterrico Metals plc, alleging complicity in human rights violations at a mine in Peru [*Tabra & Ors v Monterrico Metals plc*];
- 298.7 Working as consultants to the Legal Resources Centre and then to Mbuyisa Moleele in claims in South Africa by 4,385 former gold-miners or relatives of deceased gold-miners who contracted silicosis during their employment on mines operated by Anglo American South Africa and Anglo Gold Ashanti in South Africa [*Blom & Ors v Anglo American / Chakalane & Ors v Anglo American, Qubeka & Ors v Anglo Gold*];
- 298.8 Representing 270 Colombian peasant farmers in an oil pollution case against Amerisur Resources [*Bravo & Ors v Amerisur Resources Plc*];



- 298.9 Acting for 273 Mozambicans against Gemfields Limited in relation to serious human rights abuses at or around the Montepuez ruby mine in northern Mozambique;
- 298.10 Acting for 13 Tanzanians against African Barrick Gold plc and its subsidiary, North Mara Gold Mine Limited, in relation to injuries and fatalities at the North Mara mine in Tanzania [*Kesabo v. African Barrick Gold Plc & NMGML*];
- 298.11 Acting for 1826 Zambian villagers in a claim against Konkola Copper Mines and its parent company Vedanta Resources Plc alleging damage to land and health as a result of toxic effluent discharge from the Nchanga Copper Mine [*Vedanta Resources PLC and another v Lungowe and others* [2019] UKSC 20]
- 299 Richard Meeran was admitted as a solicitor in 1988 and is the Leigh Day partner involved in the litigation. Since 1993, Mr Meeran has specialised almost exclusively in litigation against multinational head office parent companies arising from operations in developing countries. He has been involved in most of the above-mentioned cases, including all of those relating to South Africa. A confirmatory affidavit by Mr Meeran will be filed with this affidavit.
- 300 I would submit that in light of our background knowledge and experience and our demonstrable ability to work effectively and constructively together as a team on complex and protracted litigation of precisely this type, Mbuyisa Moleele working together with Leigh Day as consultants, is ideally placed to act as legal representatives for the proposed class. In addition, in light of the breadth and complexity of the proposed class action litigation, a multi-organisation team of legal representatives with different capacity and particular expertise is appropriate and, in the South African context, the only effective way to prosecute such litigation.
- 301 I would also submit, in the context of a class action, that it is essential that the members of the legal representatives team have a track record of being able to




work together smoothly in the long term on litigation that is likely to be both complex and at times stressful. I confirm that I have enjoyed an entirely constructive working relationship with Leigh Day over the past 20 years and have experienced a good working relationship with all members of the counsel team.

The cost of the litigation

302 The costs of running the proposed litigation are substantial and involve the following:

- 302.1 Costs of maintaining staff and offices in Johannesburg;
- 302.2 Costs of retaining Leigh Day as consultants;
- 302.3 Costs and expenses of local assistants in Kabwe engaged to liaise with the communities;
- 302.4 Costs of instructing medical, environmental and engineering experts;
- 302.5 Costs of maintaining databases and e-discovery platforms;
- 302.6 Expenses associated with travel to and from Zambia to take instructions from clients;
- 302.7 Costs of instructing counsel;
- 302.8 Costs of advertising the opt-out notice to class members and implementing the directions of the Court in this regard.

303 The costs of the litigation are largely dependent on the duration, which is difficult to predict with certainty, and will depend on the position taken by Anglo.

304 The total costs to trial are expected to be approximately R78 million. No South African law firm would be able to fund a case of this magnitude and complexity on a contingency fee basis, which is why I have retained the expertise of Leigh Day and arranged for partial funding of the case by a third-party litigation funder.

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Proposed funding arrangements for court approval

305 I confirm that agreements have been entered into between Mbuyisa Moleele and the proposed representative plaintiffs in accordance with the pro-forma agreements annexed, marked "**ZMX83**".

306 The essential elements of the funding agreements are as follows:

- 306.1 Mbuyisa Moleele will act as the attorneys for the Client and will have control of the conduct of the litigation;
- 306.2 Leigh Day will act as consultants due to their specialization in mass tort class action. Leigh Day will co-ordinate legal strategy, gather and evaluate evidence, assist in instructing counsel and experts and be engaged in trial preparation;
- 306.3 A litigation funder, Kabwe Finance Limited ("KFL"), a company registered in England & Wales and a member of the Augusta Group, has agreed to pay a portion of the budgeted costs and disbursements of the class action: all of the disbursements including experts' fees and 62% of the fees of Mbuyisa Moleele, South African counsel, and Leigh Day. Augusta Ventures Limited ("AVL") provides advisory and consultancy services to KFL for this purpose.
- 306.4 KFL, AVL and other members of the Augusta Group will have no control over the litigation, but will be entitled to be regularly updated by Mbuyisa Moleele and Leigh Day;
- 306.5 KFL will be entitled to terminate funding in the circumstances set out in the Litigation Funding Agreement (annexed at '**ZMX84**'), including if:
 - a. The application for certification of the class is unsuccessful;
 - b. If KFL believes that the prospects of the class action succeeding are no longer positive, or the case ceases to be commercially viable (Mbuyisa Moleele or the Client can require that an

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independent Senior Counsel confirms that the KFL is not unreasonable in forming this view);

- c. The clients breach their agreements with Mbuyisa Moleele in a manner which would entitle Mbuyisa Moleele to terminate the fee agreement with the clients or the fee agreements cease to be legally enforceable; or
- d. The clients themselves terminate the fee agreement with Mbuyisa Moleele.

306.6 In return for the funding outlined in paragraph 306.3, KFL will be entitled to receive 25% of the clients' damages (or settlement payment) recovered as a result of the class action (the "Funder's Return") plus, 100% of any budgeted costs and disbursements recovered from Anglo.

306.7 In addition to the Funder's Return, the clients will also be liable, to the extent recoverable for payment of legal costs and disbursements.

306.8 If the class action is unsuccessful, the clients will not be liable to repay KFL.

307 The Managing Director of AVL, Mr Hanna, has prepared a supporting affidavit that will be filed together with this affidavit. In his supporting affidavit, he addresses, *inter alia*:

307.1 The corporate structure of the Augusta Group and relevant background on KFL and AVL;

307.2 AVL's membership of the Association of Litigation Funders (ALF), its status as a signatory to the ALF Code, and the implications for KFL;

307.3 The funding arrangements between KFL, Mbuyisa Moleele and Leigh Day under the Litigation Funding Agreement;

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- 307.4 The sources of KFL's funding, the adequacy of this funding for the purposes of the proposed class action, and confirmation that these funds are committed and available;
- 307.5 Confirmation that KFL has taken out an "After-the-Event" insurance policy to meet an adverse costs order in the event the litigation is unsuccessful and to ensure the class members will not be required to make any payment in respect of adverse costs; and
- 307.6 Confirmation that KFL and the Augusta Group are committed to funding these proposed proceedings to their conclusion.
- 308 My firm and Leigh Day are both committed to achieve justice for the class members and, after undertaking a significant amount of work to prepare the case to reach this stage, have concluded that the above funding arrangements are the most appropriate and indeed the only way to successfully prosecute this class action.

G The appropriateness of a class action as the means for determining the claims of class members

- 309 In this section, I address the appropriateness of a class action as the means for determining the claims of class members. In this regard, I address both:
- 309.1 The appropriateness of the proposed two-stage class action, in principle, for deciding lead poisoning claims; and
- 309.2 The appropriateness of a class action in South Africa on behalf of Zambian residents.
- 310 As set out above, it is proposed that this claim should proceed as an opt-out class action, to be followed by an opt-in stage. Based on my experience as the attorney for the claimants in the *Chakalane/Qubeka* silicosis litigation, referred to at para 282 above, which was an opt-in group action, I do not think that an opt-in mechanism would be appropriate for the first stage of this case for the following reasons:

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- 310.1 Firstly, in the *Chakalane/Qubeka* silicosis litigation, my firm took instructions from 4,385 individuals. This in itself was a lengthy process. The claims arising from exposure to lead pollution from the historical operations of the Mine are likely to be far more numerous. As detailed above, we estimate that the proposed class will consist of more than 100,000 members, the majority of whom are indigent residents of the district of Kabwe, Zambia. Taking instructions from the current 1058 clients has taken over 5 weeks and involved several of my staff members almost full time, including Saturdays, assisted by Leigh Day and paralegals/ interpreters. The process was complicated and extended due to precautions taken as a result of the current Covid-19 pandemic. However, I am certain that even under more normal circumstances the process to sign up the whole class would be resource-intensive, lengthy and costly.
- 310.2 Secondly, given that there is a risk that the common issues could ultimately be determined against the plaintiffs then the risk of wasting substantial costs and resources can be avoided by deferring the opt-in stage until after determination of the common issues.
- 310.3 Thirdly, it would be preferable and more cost effective for the members of the wider class to decide whether or not it was worthwhile opting into the class once the common issues are resolved. This will avoid individuals whose claims do not meet the criteria arising from determination of common issues, actively joining the proceedings prematurely and the unnecessary costs and inconvenience to individuals that this would entail.
- 310.4 Consequently, I submit that the appropriate procedure is a bifurcated opt-out, opt-in class action as we have proposed, whereby common issues are determined first for the largest number of class members. After the determination of the common issues at the first stage, an opt-in process can occur. Thereafter, in the absence of a global settlement, the next phase will be the trial of the representative plaintiffs' claims.
- 310.5 After the trial, or as part of a global settlement, an appropriate mechanism for evaluating the claims of the individual class members will be



stipulated. This will obviously include a mechanism for mass blood lead screening and other medical examinations. Whilst there is overwhelming evidence of the extent and magnitude of elevated blood lead levels, it should be noted that most of the Kabwe residents have not yet undergone blood lead screening and other medical examination. Screening tens of thousands of class members will be a costly and time-consuming process which, for the purposes of the legal proceedings (though not from a health perspective) should appropriately be dealt with as part of the final phase.

310.6 I have previously explained the procedure that was adopted in the *Chakalane/Qubeka* and again submit that this could provide a useful model for this case. In class actions generally, as occurred in the *Chakalane/Qubeka* and *Nkala* silicosis litigation, individual medical examinations of the class usually occurs after a global settlement (approved by the court) in accordance with the mechanism provided in the settlement for determining which class members qualify for payment and in what amounts. It is worth noting that the absence of medical evaluations of the claimants did not prevent settlement of the silicosis litigation. In *Qubeka*, a random statistically significant random sample of claimants (115 in that case) were medically evaluated and the results of those evaluations were then extrapolated to the whole group of claimants in order to gauge the approximate number of silicosis sufferers and degrees of silicosis across the group. This exercise enabled a global settlement to be reached. I should add that the percentage of silicosis cases in the random sample was virtually the same as that found by the Q(h)úbeka Trust following evaluation of thousands of the claimants. In the present case a similar random sampling exercise could be conducted, although, as indicated in the report of Professor Marylou Thompson, there is already substantial data from medical studies of BLLs in the Kabwe population that would be of value in this regard.

311 Substantial legal and factual issues are likely to arise, which it would be far more cost-effective to resolve through representative lead cases in the context of a

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class action. Bearing in mind the likely quantum of individual cases as against likely litigation costs, I would submit that litigating and re-litigating these common issues in each and every individual case would not be proportionate or cost-effective for the litigants or for our court system. The reality is that without a class action, prospective litigants have no realistic prospect of ever obtaining justice.

312 Trying the prospective claims as a class action also ensures that the parties will litigate on a more equal footing, with the class members benefiting from aggregating their claims and being represented by a legal team specialised in complex cases such as this against a well-resourced multinational mining company.

313 As referred to in paragraph 20, Anglo is resident in South Africa and the South African courts will therefore have jurisdiction over the proposed class action.

314 We submit that it is not feasible for the Zambian legal system to address a claim of this magnitude and complexity and the class members would face significant barriers to access to justice if they were forced to litigate claims in the Zambian courts. This is addressed in the affidavit of Musa Mwenye SC, the expert on Zambian law for the Claimants in the *Lungowe* case. His report explains that:

314.1 Zambian law does not make provision for opt-out class actions, but only provides for group actions and representative actions, which are not suitable for a case of this nature and magnitude;

- a. Group actions are provided for under the Mines and Minerals Development Act 2015 in respect of breaches of its provisions, however, such group actions are not available for independent tortious claims, such as this matter.
- b. Representative actions are only available for actions relating to the estate of deceased persons, property subject to a trust or the construction of a written document including a statute.

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- c. Zambian courts have required all claimants to file medical reports evidencing individual injury, even where several individuals were affected by the same incident.
 - d. No case of a remotely comparable magnitude and complexity has been tried in Zambia.
- 314.2 Contingency fees are unlawful in Zambia, which means that other than legal aid, indigent claimants have no access to funding;
- 314.3 There is no prospect of legal aid by way of legal representation from organisations such as the National Legal Aid Clinic for Women ("NLACW"), Legal Resources Foundation ("LRF") and the Legal Aid Board for such claims, due the nature and magnitude of this case;
- 314.4 The claimants are too poor to meet the significant costs and disbursements;
- 314.5 Zambian lawyers are not allowed to pay experts from their own pockets and are ordinarily required to secure funds from clients for this purpose;
- 314.6 Practical access to legal representation is limited, as very few lawyers are located in Kabwe;
- 314.7 No law firm in Zambia has been identified that is suitably resourced for such large and expensive claims;
- 314.8 It is likely that many established Zambian firms have previously acted for Anglo and affiliated companies, which would disqualify them from taking this case;
- 314.9 Mr Mwenye concludes that *"because of the absence of contingency fee arrangements in Zambia, the absence of litigation funding, the insufficiency of legal aid and the huge expenses that would be necessary to prove each plaintiffs' injury in Zambia, I am of the considered opinion that the vast majority of claimants would not be able to receive effective legal representation"*.

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315 For these reasons, it would be extremely difficult, if not entirely impossible, to obtain justice for the prospective members of the class in the Zambian courts. I refer in this regard to the findings of the Supreme Court of England and Wales in *Lungowe* at paragraphs 88 to 101. The Court agreed with the findings of the English High Court that the claimants did not have a real prospect of obtaining justice in Zambia for broadly the same reasons addressed in Mr Mwenya SC's report.

316 The severe issues with lead pollution in Kabwe and their consequences are well known, yet the residents have yet to obtain a remedy. The class members would not be able to fund a case in the Zambian courts on a contingency basis, as such agreements are prohibited.

317 I have first-hand experience of the substantial barriers to justice that a case of this scale and complexity entails, having initially explored the possibility of assisting residents of Kabwe to claim for their lead poisoning harm more than a decade ago.

317.1 From 2004, I worked together with Leigh Day and Mr Peter Sinkamba who was then part of the Zambian NGO, Citizens for a Better Environment, the Legal Resources Centre (Johannesburg), Slater & Gordon (the Australian firm at which Mr Meeran was based from 2004-2008) and Washington-based US law firm, Cohen Milstein Hausfeld, to investigate possible test case lead poisoning litigation in South Africa against Anglo on behalf of Kabwe victims.

317.2 Over the next four years considerable work was devoted to these investigations. However, we concluded in 2007 that it was not feasible to pursue the litigation at the time. The absence of any developed system of class actions in South Africa at that time was an important factor in the decision. This was many years prior to the SCA's 2012 judgment in *Children's Resources Centre* and the Constitutional Court's 2013 judgment in *Mukadam*, which extended recognition of class actions to causes of action outside of constitutional litigation for the first time. So in 2007, we

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had to contemplate a litigation process that would have involved running individual "test cases" and then obtaining instructions from tens of thousands of individual clients to pursue follow-on cases if the "test cases" were successful. To run litigation of the complexity and scale of the present matter on this basis would have been extremely costly and too risky financially. Furthermore, litigation funding was not an available option at that time.

317.3 Therefore, two developments that have been critical to our ability to advance this proposed litigation now are, first, the development of opt-out class action procedures in South Africa and, secondly, securing substantial third party litigation. The latter was enabled by the former, indeed it is clear that this case would not have secured litigation funding in the absence of an opt-out class action mechanism. The contrast with the position in Zambia – where no opt-out class action procedure or litigation funding would be available and where contingency fees are not permissible and no other sources of funding for this case would be available – is stark and in my respectful submission explains why, despite the scale and severity of the tragedy, no litigation has been pursued in Zambia on behalf of the Kabwe communities.

318 Given the barriers that we faced in 2007 to launch this litigation in an era when class actions were not established in South Africa, it is my belief that this proposed class action, in this Court, at this time, is the only way that the rights of the class members can be effectively vindicated. In particular, this class action would support their right of access to court in terms of section 34 of the South African Constitution, the best interests of the children in terms of section 28(2) of the Constitution, and the associated rights of children under domestic and international law to pursue legal action in courts that have jurisdiction.

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XIV PROPOSED PROCEDURE FOR THE NOTIFICATION OF THE CLASS

- 319 The Applicants acknowledge that adequate mechanisms and procedures must be established to ensure that all members of the class are notified of: (a) the nature, existence and purpose of the class action; (b) the process that the class action is likely to follow; and (c) their right to opt out of the class at the first stage and to opt-in at the second stage, together with the implications of doing so and how they may exercise those rights.
- 320 The classes have been framed to include only residents of the Kabwe District, so it ought to be possible to reach all members of the class through the notification procedure proposed by the Applicants.
- 321 A copy of the draft class notice for the first stage, opt-out process is attached to the notice of motion in this application as **Annexure "A"**. This draft notice is prepared in English, which is the official language of Zambia. The notice will be translated into Bemba and Nyanja, which are the local languages spoken by the vast majority of residents of Kabwe.
- 322 It is proposed that after the conclusion of the first stage of the class action, the trial court will then provide further directions on the publication of appropriate class notices for the second stage, opt-in procedure.
- 323 Ms Lydia Moyo, a resident of Kabwe who is assisting Mbuyisa Moleele and Leigh Day in carrying out paralegal duties in Kabwe, has prepared a supporting affidavit addressing the proposed notification procedure for the opt-out notice. She confirms the primary languages spoken in Kabwe and the sufficiency of the proposed procedures to bring the class notice to the attention of all prospective class members.
- 324 The Applicants' legal representatives propose to publish the class notice using three mediums: newspapers, local radio, and notice boards outside local churches.


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325 In terms of newspaper publication:

- 325.1 A notice will be published in the three national newspapers in Zambia - the *Zambia Daily Mail*, the *Times of Zambia* and *The Mast* – which have national coverage and are all available in the Kabwe District. This is confirmed in a table of media rates and coverage, attached as **ZMX85**, which was compiled following inquiries to the various media organisations listed there.
- 325.2 We propose that the notice will be published in each of these newspapers once per week for a period of four weeks in English, Bemba and Nyanja.
- 325.3 Ms Moyo confirms that there are no local or regional newspapers in the Kabwe District.
- 325.4 While many Kabwe residents do not read newspapers, Ms Moyo further confirms that newspaper publication will complement the other forms of publication that are proposed.

326 In terms of radio publication:

- 326.1 The notice will be broadcast on nine local and regional radio stations which are available in the Kabwe District: Power FM, Q-FM, KNC Radio, ZNBC Radio 4, Millenium FM, ZNBC Radio 2, Cloud FM, Radio Phoenix FM, and Radio Maranatha. I again refer to the rates and coverage card, attached above as **ZMX85**, which confirms their coverage and available frequencies.
- 326.2 The draft radio announcement is attached to the class notice as **Annexure "C"**.
- 326.3 We propose to broadcast the announcement twice daily on alternate days for a period of four weeks in English, Bemba and Nyanja
- 326.4 Ms Moyo confirms that radio is very widely available in Kabwe, and most people in the community have a radio, either in their home or on their mobile phone or they listen to it in vehicles, taxis and minibuses.

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326.5 The identified radio stations have wide listenership in the community, particularly among young people. Ms Moyo indicates that the proposed radio announcements would reach the majority of Kabwe residents.

327 In terms of notices on church notice boards:

327.1 Ms Moyo explains that the residents of Kabwe, including children and women, are very devout and the majority of residents attend local Christian churches regularly. In my visits to Kabwe, I have seen this first-hand.

327.2 Ms Moyo further explains that if there is an important community announcement to be made, it will generally be announced in church and information will be posted on the church notice boards.

327.3 Ms Moyo has compiled a list of the local churches in Kabwe, reflecting their location and congregations, which is attached to her affidavit and is reproduced in **Annexure "D"** to the class notice.

327.4 The Applicants propose to publish notices at each of these churches, in English, Bemba and Nyanja. Ms Moyo confirms that she has spoken with the leaders of a number of these churches who have agreed to publicise the class notices. Further arrangements will be made with the churches in due course.

328 Ms Moyo confirms that publication of the notices in newspapers, local radio and at local churches will ensure the prospective class members are sufficiently informed of the class action and their rights to opt out. She also indicates that because Kabwe is a relatively small town, news of the class action will spread rapidly through word-of-mouth once the notices have been published and broadcast.

329 On this basis, I submit that there are adequate mechanisms and procedures in place to ensure that the members of the classes are notified of the class action and their rights. The fact that the class members are all located in the Kabwe District will make this a relatively straightforward task as compared with the

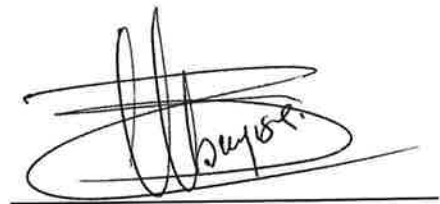
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silicosis litigation, where class members were scattered across South Africa and in neighbouring states.

XV CONCLUSION

330 It is submitted that the Applicants have established that it is in the interests of the members of the class of potential claimants to certify a class action on the terms set out above.

331 In the circumstances, the Applicants respectfully pray for an order in terms of the notice of motion to which this affidavit is attached.



SONIA ZANELE MBUYISA

THUS SWORN and SIGNED before me at Melville on this 19 day of October 2020, the Deponent having declared that ~~he~~ she is conversant with the contents of this affidavit, understands same and that the contents are true, and that she has no objection to taking the prescribed oath, and that she considers the prescribed oath as binding on her conscience. Suf.

SABELO RONALD MABUZA
PRACTISING ATTORNEY
EX OFFICIO - COMMISSIONER OF OATHS
UNIT 2 HOWICK GARDENS
WATERFALL PARK
MIDRAND
1682
TEL: 011 312 5383



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