JUDICIARY
IN THE HIGH COURT OF MALAWI
LILONGWE DISTRICT REGISTRY (CIVIL DIVISION)
CIVIL CAUSE NO. 223 OF 2020

BETWEEN

JOWARD KATSABOLA AND OTHERS …..... CLAIMANTS

AND

MOTA ENGIL ENGENHARIA
CONSTRUCAO E AFRICA, SA ……...… DEFENDANT

CORAM: **THE HONOURABLE JUSTICE KENYATTA NYIRENDA**
Mr. Kazembe, Counsel for the Claimants
Messrs. Chagoma and Misanjo, Counsel for the Defendant
Mr. Henry Kachingwe, Court Clerk

JUDGMENT

Kenyatta Nyirenda, J.

Introduction

1. The Claimants commenced the present proceedings by way of writ of summons and they seek damages against the Defendant. The claim is based on the tort of negligence and breach of duty imposed on the Defendant under section 14 of the Occupational Safety, Health and Welfare Act and the Explosive Act.

2. The action by the Claimants is strenuously resisted by the Defendant.

Causes of Action and Prayer for Reliefs

3. For reasons that will become apparent in a due course, a word or two regarding causes of action and prayers for reliefs have to be stated at the outset.

4. Simply put, the term *"cause of action"* refers to a set of facts or allegations that make up the grounds for filing a lawsuit. A cause of action is, therefore, by its very nature essential to a civil suit. Needless to say, without a cause of action, a civil suit cannot arise.

5. It is trite that a statement of case must mention the cause of action if it is to be instituted as a suit. To pursue a cause of action, a claimant pleads or alleges material facts in a statement of case (a claim): see Order 7, rule1, of the Courts (High Court) (Civil Procedure) Rules, 2017 [Hereinafter referred to as the "CPR"].

6. A cause of action consists of two parts, namely, the legal theory (that is, the legal wrong the claimant claims to have suffered) and the remedy (that is, the relief a court is asked to grant, usually termed as "prayer for reliefs"). There are a number of specific causes of action and these include:

(a) contract-based actions;

(b) statutory causes of action;

(c) torts such as negligence, assault, battery, invasion of privacy, fraud, slander, intentional infliction of emotional distress, etc.; and

(d) suits in equity, such as unjust enrichment and quantum meruit.

7. Any remedy or prayer for relief in a civil suit has to flow from the cause of action that has been pleaded. In short, the remedy or prayer for relief has to be with respect to the cause of action from whence they arise: see Order 7, rule 2, of the CPR.

8. Another important point regarding pleadings is that a statement of case has to *"identify any statute or principle of law on which the party relies"*: see Order 7, rule 1(e), of the CPR.

The Claims by the Claimants

9. Before their consolidation by the order of the Court dated 18th April 2019, there were initially three separate cases, that is, Joward Katsabola and others v. Mota Engil, HC/PR Civil Cause No. 3 of 2018, Mwanditcha Zinileya and Others v. Mota Engil, HC/PR Civil Cause No. 15 of 2018 and Madalitso Daniel and Others v. Mota Engil, Civil Cause No. 395 of 2018. Pursuant to a court order dated 8th November

2019, the consolidated cases were transferred from the Principal Registry to this Registry.

10. The substance of the claims in the three cases are more or less the same. It will, therefore, suffice to reproduce only one statement of claim. The *"Statement of Case"* by the Claimants in Civil Cause No 3 of 2018 provides as follows:

> *"1. The Claimants were at all material times the residents of Mponda, Ben, Filipo, Mtomondo, Magalamula, Katakata, Sakonzeka, Chabwera, Mthiko, Wakumtunda, Katchola, Mkathama, Chilowa, Mthiko Wakumusi, Jelemiya, Chakwanila, Msimbi, Gwengwe, Katchule,Kumikuyu, Bauleni, Kapazanje,Dzundi, Lakimu, Chisalaza and Ndawala Villages in the area of Group Village Head Mwenda 1, Katakata, Chilowa, Msindo, Lakimu Kapazanje wa Nsalu at Bunda and in the area of Seniour Group Village Headman Kapazanje in the Traditional Authorities Chadza and Chizeka in Lilongwe District.*
>
> *2. The Defendant was at all material times a construction company carrying on quarrying activities at Bunda quarry mine in the Traditional Authority Chadza's area in Lilongwe district.*
>
> *3. The Defendant started its quarry activities at Bunda quarry mine in or around 2013.*
>
> *4. The Defendant did not conduct sensitization activities in the surrounding area of Bunda quarry mine.*
>
> *5. All the Claimants herein live within a radius of about 1000 meters from Bunda quarry mine.*
>
> *6. All the Claimants herein have at all material times owned and all the Claimants herein are entitled to possession of the land surrounding the Defendant's quarry mine at Bunda quarry mine which the Claimants use as residential land and for cultivating crops and rearing animals.*
>
> *7. The Defendant's quarrying activities have caused cracks to the houses belonging to all the Claimants herein and the houses are at risk of falling down.*
>
> *8. Houses of some Claimants herein have fallen down due to the Defendant's quarrying activities*
>
> *9. All the Claimants herein were not told of the impending quarry activities, the impact and the effects of the quarry activities and how to mitigate the dangers and effects of the quarry activities.*
>
> *10. Before the Defendant started its quarry activities at Bunda site, none of the Claimants had complained to any authority that quarry stone, bad smell and dust*

have been coming from the direction of the Defendant's quarry site or that the Claimants houses or property had been damaged.

11. *Houses belonging to all the Claimants have developed cracks and some of the Claimants have left their houses for fear that the said houses may fall down due to the cracks.*

12. *The cracks on the houses of the Claimants have developed because of the seismic vibrations caused by the explosives being carried out by the Defendant at the Defendant's Chiwaula quarry mine.*

13. *There is bad smell, dust and loud noise coming from the Defendant's quarry site and these have greatly inconvenienced the Claimants.*

14. *Ground vibration frequency originating from blasting operations which are measured at lower than 40Hz are classified to be capable of damaging structural buildings as far as 3000 metres from the blasting point.*

15. *The Claimants complained to the Defendant but they were not assisted.*

16. *The 1st Claimant who is also Village Headman Mpando of Traditional Authoriy Chadza of Lilongwe District had been receiving complaints from his subjects who are also Claimants herein that heavy stones flying from the Defendant's quarry site had been destroying iron sheets and that houses had been developing cracks due to Defendant's quarrying and blasting activities.*

17. *The Claimants wrote letters of complaints to the office of the office of the Lilongwe District Commissioner but they were not assisted*

18. *All the Claimants herein have been persistently complaining to the Traditional Authority, District Commissioner for Lilongwe and the Defendant and that Defendant's quarrying activities were causing damage to their houses and other properties.*

19. *The Defendants were not giving notice when they are exploding bombs and that caused a lot of anxiety to all the Claimants.*

20. *Elsewhere at Njuli quarry in Blantyre it was observed that the Defendant was using wrong methods of mining operation per report done by the Department of Mines and Minerals which supervises the mining activities in Malawi which also observed that indeed the cracks of all the building structures, breaking of windowpanes, damaged roofs and fly rocks that were scattered in the areas surrounding Njuli quarry mine were caused by the blasting operations of the Defendant at Njuli quarry.*

21. *All the Claimants herein have been fleeing from their houses with their families every time the Defendant was carrying out its quarry activities. The Claimants would return to their houses after the Defendant had finished carrying out blasting.*

Every time the Claimants were fleeing their houses they could stop everything they were doing.

22. *The Defendant was using blasting materials and methods at its Bunda Quarry that produced vibrations or shock waves which were capable of damaging Claimant's houses and properties and the houses and the houses and property were indeed damaged.*

23. *On or around 24th July, 2014 the Claimants through Village Headman Mponda lodged a complaint with the Office of the Commissioner of Mines and Minerals and District Commissioner of Lilongwe pursuant to section 113 of the Mines and Minerals Act[Cap 61:01 of the Laws of Malawi].*

24. *The Claimants' complaint was not heard by the Commissioner of Mines and Minerals as the office of the Commissioner of Mines and Minerals at the Department of Mines in the Ministry of Natural Resources, Energy and Mining is vacant.*

25. *The Claimants have been denied their right to access justice in view of paragraph 24.*

26. *By reason of the matters aforesaid the Claimants have been deprived of the use and enjoyment of the said land thereby have suffered loss and damages.*

27. *The Claimants have been deprived of their right to peaceful use and enjoyment of their houses and land.*

28. *The Claimants have been subjected to humiliation and have suffered great anguish and mental distress.*

29. *The Defendant did not show duty of care to its neighbours.*

30. *The Defendant was negligent and was in breach of its duty as neighbour.*

PARTICULARS OF NEGLIGENCE

a. *Carrying out quarrying activities without due regard to the surrounding houses and without due regard to the welfare of the occupants of the surrounding houses.*

b. *Carrying out rock blasting operations or any other operations without giving notice to the surrounding villages and without due regard as to whether the operations were causing vibrations and further causing cracks to the surrounding houses.*

c. *Failing to visit the Claimant's houses to check and ascertain the damage done to those houses and taking measures how to mitigate the damages and losses.*

d. Failing to take measures to control noise, nuisance, damage and inconvenience to the neighbors while carrying out mining operations.

e. Failing to take measures to control the dust and bad smell blowing to the Claimant's area while carrying out mining operations.

f. Blasting rocks without proper safeguards to the safety of the Claimants.

g. Failure to mount shields to stop flying rocks.

h. Failure to do all acts necessary to prevent damage to the Claimants house

i. Alternatively, the Claimants will rely on the Doctrine of res ipsa loquitur.

31. The Defendant was in breach of its statutory duty as prescribed under section 14 Occupational Safety, Health and Welfare Act [Cap 55:07 Laws of Malawi] and Explosive Act [Cap 14:09 Laws of Malawi].

PARTICULARS OF BREACH OF STATUTORY DUTY

a. Failure to provide a safe living environment to the Claimants as neighbours.

b. Failure to stop dust and other flying debris from escaping from its quarry site

c, Failure to reduce vibrations produced from its explosives.

d. The Defendant failed to create a committee to advise and help it to advise and help it to devise safety mechanisms for its neighbours.

e. Failing to visit the Claimant's houses to check and ascertain the damage done to the Claimants and take measures how to mitigate the damages.

32. The Claimants have suffered loss as a result of the Defendant's negligence in operation of its quarry site.

PARTICULARS OF LOSS

a. The Claimants' houses have developed cracks and there is a risk they may fall down. The walls and floors of the houses of all Claimants have developed cracks.

b. Houses of some Claimants have fallen down

c. The Claimants are failing to live in their homes peacefully due to the cracks.

d. The value of the houses of the Claimants have diminished.

e. *The Claimants' value in land has diminished.*

f. *The Claimants household property has been destroyed due to the cracks and winds.*

g. *The Claimants houses are leaking and liquids and air from outside enter the houses at will thereby causing inconvenience and exposing the Claimants to diseases.*

h. *The iron sheets and the planks holding the iron sheets of all the houses of all Claimants have been damaged*

AND THE CLAIMANTS CLAIM:

1. *Damages for nuisance*
2. *Damages for exposing the Claimants to noise pollution*
3. *Damages for trespass*
4. *Damages for compelling the Claimants inhale dust from the quarry site*
5. *Damages for interference with the peaceful enjoyment of their houses*
6. *Damages for pain and suffering for those who became sick*
7. *Damages for loss of earning capacity for those who became sick*
8. *Damages for inconvenience*
9. *Damages with the peaceful enjoyment of the land*
10. *Replacement of the damaged houses*
11. *Damages for loss of mesne profits.*
12. *Special damages*
13. *Costs of this action."*

11. I pause to make two observation. Firstly, the statement of claim by the Claimants mentions just two causes of action, namely, negligence and breach of statutory duty laid down under section 14 of the Occupational Safety, Health and Welfare Act and the Explosive Act. In this regard, if the Claimants succeed in proving these two causes of action, the remedies or prayer for reliefs by the Claimants will, per force, have to be confined to the said two causes of action.

12. Secondly, regarding the requirements of Order 7, rule 1(e), of the CPR, the statement of case by the Claimants has identified the Mines and Minerals Act, the Occupational Safety, Health and Welfare Act and the Explosive Act, and the doctrine of res ipsa loquitur, as the three statutes and one principle of law which they seek to rely on.

The Defence by the Defendants

13. As already stated, the Defendant contests the action and it filed the following statement of defence:

"1. The defendant denies contents of paragraph 1 of the statement of case and puts the claimants to strict proof thereof.

2. The defendant admits paragraph 2 of the statement of case.

3. The defendant denies paragraph 3 of the statement of case and puts each of the claimants to strict proof thereof.

4. The defendant pleads that at all material times it had Licences issued under the Mines and Minerals Act and the Explosives Act to prospect for and mine minerals at Bunda quarry mine.

5. The defendant pleads that at all material times it employed reasonable care and skill when carrying out its quarrying operations as particularized below, among other measures:

5.1 ensuring that an environmental and social impact assessment is done prior to commencement of the blasting;

5.2 taking reasonable measures to mitigate the effects of the blasting operations;

5.3 employing qualified operators to carry out and/or supervise the blasting operations;

5.4 ensuring that sensitization is conducted and warning people of any scheduled blasting;

5.5 complying with the provisions of the law and health and safety regulations;

5.6 using safe type and amounts of explosives as well as methodology when carrying out the blasting operations and also using the explosives in accordance with the Explosives Act and Explosives Regulations.

6. In the alternative, the defendant repeats paragraphs 4 and 5 herein and pleads that if the claimants suffered any loss, damage or inconvenience as a result of the defendant's quarrying operations, which is denied, the said loss, damage or inconvenience were an inevitable result of the mining operations for which the defendant is, therefore, not liable.

7. The defendant denies paragraphs 5 and 6 of the statement of case and puts each of the claimants to strict proof thereof.

8. The defendant refers to paragraphs 7, 8 and 11 of the statement of case and:

8.1 pleads that the circumstances surrounding the quarrying activities including the distance between the quarry mine and the communities is such that the quarrying activities could not cause the loss or damage alleged;

8.2 denies that houses belonging to all the claimants have develoɔed cracks or that some ɔf the claimants have lɛft their houses for fear ɔf the houses falling down due to cracks;

8.3 denies that the dɛfendant's quarrying activities have caused cracks to houses belonging to all the claimants;

8.4 denies that the claimants' houses are at the risk ɔf falling down;

8.5 pleads that ıf the damage, loss, risk or inconvenience alleged in in the said paragraphs has been sʊffered by the claimants, which is denied, the same are not attributable to the dɛfendant's action;

8.6 rɛpeats paragraphs 4, 5 and 6 herein above.

9. The dɛfendant rɛfers to paragraphs 4, 9 and 19 ɔf the statement ɔf case and:

9.1 pleads that residents ɔf the villages surrounding the quarry were duly sensitized ɔf the quarrying or impending quarrying ɔperations with regard to necessary aspects ɔf the same. Accordingly, paragraphs 4 and 9 ɔf the statement ɔf case are denied and each ɔf the claimants is put to strict proɔf thereɔf.

9.2 pleads that at all material times it gave notice ɔf any intended blasting. Accordingly, paragraphs 19 and 24 ɔf the statement ɔf case are denied and each claimant is put to strict proɔf thereɔf.

10. The dɛfendant rɛfers to paragraphs 10, 15, 16, 17, 18, 23 and 24 ɔf the statement ɔf case and:

10.1 denies that the claimants lodged the complaints alleged therein.

10.2 alternatively, pleads that ıf the alleged complaints were made, which is denied, the same were ʊnfounded and without merit as the dɛfendant's quarrying activities never caused any ɔf the damage, loss and inconvenience alleged therein.

10.3 rɛpeats paragraph 6 herein above.

11. The dɛfendant rɛfers to paragraphs 12 and 13 ɔf the statement ɔf case and:

11.1 the dɛfendant denies that quarry stone, bad smell, dust arose from its premises and ɔʊfected the claimants in the manner alleged therein or at all;

11.2 denies that its ɔperations caused loud noise or seismic vibrations and /or that the same ɔʊfected the claimants in the manner alleged therein or at all;

11.3 denies that the claimants run from their residential premises during blasting by the defendant and puts each plaintiff to strict proof thereof;

11.4 repeats paragraphs 4 to 6 above.

12. The defendant denies paragraph 14 of the statement of case and puts each claimant to strict proof thereof.

13. The defendant denies paragraphs 21 and 22 of the statement of case and puts each of the claimants to strict proof thereof. Alternatively, pleads that if the Claimants were required to flee their houses, the same was done for their own safety and pursuant to requirements of the law including the Explosives Act [Cap 14:09 of the Laws of Malawi] and the Explosives Regulations.

14. The defendant refers to paragraph 20 of the statement of case and:

14.1 pleads that the contents of the paragraph are irrelevant to this action as they contain allegations in respect of a different quarry mine which is not connected to the claimants and at a different location;

14.2 pleads that the cited report is a confidential document which cannot be disclosed without permission;

14.3 denies that it was using wrong methods of mining or that its operations caused the damage or flying of rocks alleged therein.

15. The defendant denies paragraphs 25, 26, 27, 28 and 29 of the statement of case and puts each claimant to strict proof thereof. Alternatively, the defendant repeats paragraphs 4 to 6 herein.

16. The defendant refers to paragraph 30 of the statement of case and:

16.1 denies that it was guilty of the alleged or any negligence or breach of duty as alleged and particularized in paragraph 30 of the statement of claim or at all or that any loss or damage or inconvenience which the claimants may have suffered was caused thereby as alleged or at all;

16.2 in the alternative, if the defendant was negligent or in breach of any duty as alleged or particularized in paragraph 30 of the statement of case, which is denied, the defendant pleads that the matters complained of were caused or occasioned without any negligence or default on the part of the defendant;

16.3 in the further alternative, repeats paragraphs 4 to 6 herein.

17. The defendant refers to paragraph 31 of the statement of case and:

17.1 denies that it was in breach of statutory duty as alleged or particularized therein or at all;

17.2 repeats paragraphs 4 to 6 herein;

18. The defendant refers to paragraph 32 of the statement of case and:

18.1 denies that the claimants have suffered loss as a result of its negligence or at all;

18.2 denies all the particulars of loss pleaded therein and puts each claimant to strict proof thereof;

18.3 in the alternative, the defendant repeats paragraphs 4 to 6 herein.

19. In the further alternative, the defendant pleads that in line with section 113 of the Mines and Minerals Act, the High Court has no jurisdiction to adjudicate upon the dispute herein.

20. The defendant denies that the claimants are entitled to the claims or reliefs pleaded in the statement of case or at all.

21. Save as hereinbefore expressly admitted, the defendant denies each and every allegation contained in the claimants' statement of case as if the same were herein set forth and traversed seriatim."

Reply to Amended Defence

14. The Claimants filed the following Reply to the Amended Defence:

"1. The claimants refer to paragraph 5.3 of the Amended defence and avers that the defendants employed incompetent employees who could not contain flyrocks within the quarry site but allowed flyrocks to go beyond or failed to control flyrocks from going beyond the quarry and onto the gardens, houses and premises of the claimants.

2. The claimants refer to paragraph 5.3 of the amended defence and aver that the defendant hired incompetent employees who did not erect shields to prevent flyrocks from reaching the land, houses and premises of the claimants.

3. The claimants refer to paragraph 5.6 of the amended defence and aver that the defendants did not follow the methodology and materials recommended by the Department of Mines and those stipulated in the Explosives Act and the Explosives Regulations.

4. The claimants refer to paragraph 8.1 of the Amended Defence and avers that the closest house to the quarry is less than 412 metres from the quarry and that the houses and premises of all the claimants herein are very close to the quarry and the distances were so close such that the houses and premises were capable of being destroyed and being negatively affected in the circumstances.

5. *The claimants refer to paragraph 8.1 of the Amended defence and avers that all the claimants and their premises and their properties were affected and were damaged by the flyrocks, other debris, noise , air pollution, dust and vibrations coming from the defendant's premises.*

6. *In view of the foregoing paragraphs all the claimants herein were greatly inconvenienced and they suffered great loss and damage and they were unable to live in their houses and to enjoy their premises peacefully.*

7. *The claimants refer to paragraph 13 of the Amended Defence and aver that the defendants were supposed to pay for the inconvenience caused to the claimants for compelling the claimants to leave their premises and houses against their will whether it was for their safety or not.*

8. *The claimants refer to paragraph 13 of the Amended defence and aver that the mining licence under the Mines and Minerals Act and the requirements of the Explosives Act are to the effect that the defendants should do their mining and blasting operations within their premises and should not affect the neighbours in any way and that if the neighbours who are the claimants herein are affected the defendants should pay for the same.*

9. *The claimants aver that section 22 of the Explosives Act makes it an offence to damage property during blasting due to wilful act or omission. The defendant omitted to erect shields to prevent flyrocks from reaching the claimants' premises. This was an act of recklessness and negligence and that resulted in trespass and damage to the premises and properties of the claimants.*

10. *The claimants refer to paragraph 13 of the Amended defence and aver that the claimants are entitled to be compensated under both common law and statute.*

11. *The claimants aver that Explosives Act and the Mines and Minerals Act do not make it mandatory for neighbours to leave their land when their neighbor is carrying out blasting operations. The Explosives Act and the Mines and Minerals Act do not say that neighbours should not be compensated if they are compelled to leave their premises.*

12. *The claimants refer to paragraph 13 of the amended defence and aver that the Explosives Act makes it mandatory for the defendant to take all precautions to ensure that there in no damage to property or injury to persons. The claimants will prove that the defendant did not take such precautions and that negligence resulted in damage to the claimants land through flyrocks and vibrations.*

13. *The defendants did not carry out an Environmental and Social Impact Assessment as required by law and did not follow any recommendations to eliminate impact on the environment and the surrounding community.*

14. *The claimants aver that section 94 of the Mines and Minerals Act compelled the defendant to conserve the natural resources of the neighbouring land but the defendant ended up destroying the said neighbouring land with flyrocks.*

15. The claimants aver that the Mines and Minerals Act entitle the owner and occupier of premises to claim damages for damage to property and inconvenience. The conditions of the mining licence compel the defendant to pay for all such claims."

The Evidence

Evidence of the Claimants

15. The Claimants called six witnesses to prove their case and these were Harvey Chilembwe (CW1), Levison Chaula (CW2), Leebok Grey (CW3), Joward Katsabola (CW4), Annes Zimpita (CW5) and Mwanditcha Zinkileya (CW6).

16. CW1 filed with the Court two witness statements and he adopted both of them. The first witness statement provides as follows:

*6.1 **THAT** I am a Geodesist and Geodynamics expert.*

*6.2 **THAT** Geodynamics studies plate technics, earth movements, earth quakes and volcanoes. Geodynamics is concerned with processes that move material and waves and it understands earth's internal activities by measuring gravity and seismic waves as well as mineralogy.*

*6.3 **THAT** I have a Master of Science degree in Geodynamics and Geodesy obtained from Ardhi University in Tanzania. I also have a Bachelor of Science degree in Land Survey obtained from the University of Malawi.*

*6.4 **THAT** I did research and study at the Defendant's Bunda quarry mine in Traditional Authority Chadza's area at Bunda in Lilongwe. I also studied the Claimants' houses at the said location.*

*6.5 **THAT** the Defendant was carrying out mining and explosive activities close to houses of the Claimants and those activities subjected the Claimants to noise, dust inconvenience and air pollution. The activities of the Defendant also destroyed houses of the Claimants.*

*6.6 **THAT** I carried out a detailed study on the effects of the blasting activities of the Defendant at Bunda quarry mine in Lilongwe on the houses and lives of the claimants.*

*6.7 **THAT** the study found out that the seismic events emanating from the Defendant's quarry mine at Bunda caused structural and architectural damage to the houses of the Claimants . The cause effect relationship between the blasting activities of the Defendants and the damage done to the houses and livelihood of the Claimants is explained in my report exhibited as "HC1".*

*6.8 **THAT** during my study I found that there were a lot of fly rocks that had been flown onto the houses of the Claimants and close to the houses of the Claimants.*

6.9 ***THAT*** *I concluded from my study that all nuisance experienced by the Claimants and the damage done to their houses were a direct result of the blasting activities done by the Defendants.*

6.10 ***THAT*** *the houses of all the claimants herein are* ***within 2500 metres*** *from the blasting point as explained and illustrated in my report in exhibit HC1. Some houses are as close as 471 metres. Distances of houses of the claimants from the blasting point are in exhibit* ***HC2****. I measured those distances using a GPS machine. HC2 also shows the locations of the houses of the claimants.*

6.11 ***THAT*** *my study found out that all the claimants were exposed to noise pollution above the recommended rates set by the Malawi Bureau of Standards number MS 173:2005. The recommended limit according to that standard is 75 decibels. Blasting operations were producing noise at 92.65 decibels (dBA) for houses at 400 metres, at 90.72 dBA at 500 metres, at 84.7 decibels for houses at 1000 metres, 81.17 decibels for houses at 1500, 78.66 decibels for houses at 2000 metres and 76.73 decibels for houses at 2500 metres from the blasting point. A copy of the Malawi Bureau of Standards standard number MS 173:2005 is exhibited at HC 3. All the calculations are explained in my report.*

6.12 ***THAT*** *exposure to loud noise is irritating, is a nuisance and is harzadous to the ear drum. It can cause temporary or permanent loss of hearing."*

17. The second witness statement by CW1 was a supplementary one and it will be quoted in full:

"6.1 ***THAT*** *I am a Geodesist and Geodynamics expert.*

6.2 ***THAT*** *Geodynamics studies plate technics, earth movements, earth quakes and volcanoes. Geodynamics is concerned with processes that move material and waves and it understands earth's internal activities by measuring gravity and seismic waves as well as mineralogy.*

6.3 ***THAT*** *I have a Master of Science degree in Geodynamics and Geodesy obtained from Ardhi University in Tanzania. I also have a Bachelor of Science degree in Land Survey obtained from the University of Malawi.*

6.4 ***THAT*** *I did research and study at the Defendant's Bunda quarry mine in Traditional Authority Chadza's area in Bunda in Lilongwe. I also studied the Claimants' houses at the said location.*

6.5 ***THAT*** *it is a requirement for any major project to have an Environmental and Social Impact Assessment report. In the case of the Bunda quarry mine the defendant had an Environmental Audit report. I exhibit hereto a copy of the said Environmental Audit report and mark it* ***HMC 1.***

6.6 ***THAT*** *Environmental and Social Impact Assessment report and Environmental Audit report are public documents and any member of the public can have access to these documents upon request.*

*6.7 **THAT** the Environment Audit Report projected that there would be definitely air pollution, sound pollution and vibrations.*

*6.8 **THAT** on pages 61 to 67 of the Report it was envisaged and expressly stated that there would be sound pollution of over 90 decibels during blasting and lesser sound pollution during machine operation. It is noteworthy that Malawi Bureau of Standards Standard number MS 173:2005 stipulates that maximum acceptable noise level for a residential area is 55 decibels and for an industrial area is 75 decibels.*

*6.9 **T**HAT on page 62 of the report it is stated that there would **definitely** be ground vibrations and dust emission in the vicinity during blasting*

*6.10 **T**HAT on page 62 of the report it is stated that there would be flyrocks in the vicinity during blasting*

*6.11 THAT on page 64 of the report it is stated that there would **definitely** be dust emission and noise generation during use of heavy duty earth moving machinery.*

6.12 THAT on page 73 of the report, the report concludes that during the Envoronmental Audit it was found that there was a lot of noise produced beyond acceptable limits. The report notes in paragraph 6.4.9.1 that the equipment (Holan COMPARE) which Mota Engil was using generates 130 decibels of noise. The allowable noise limit according to Malawi Bureau of Standards is 75 decibels for an industrial area and 55 decibels for a residential area.

6.13 THAT I understand my duty to the court and I have complied with said duty to the court.

Dated 25th day of October 2020"

18. CW1 also gave evidence at the locus quo. He showed the Court a quarry pit outside the Bunda forest. He said this was where the Defendant was actually carrying out the quarrying activities. He also stated that the actual licenced quarry mine where the Defendant should have been quarrying was inside the forest. He took the Court inside the Bunda forest to a dilapidated quarry pit. He told the Court that this was the licenced quarry site where the Defendant was required to quarry. He explained that the quarry site inside the forest was identifiable by the following four sets of coordinates:

Point A: Easting - 582890

Northing - 8434620

Point B: Easting - 582880

Northing – 8434870

Point C: Easting - 583090

Northing – 8434870

Point D: Easting - 583160

Northing - 8434620

19. In cross-examination at the locus in quo, CW1 was asked how he got the coordinates. CW1 stated that he got them from the Environmental Audit Report.

20. During his cross-examination by Counsel for the Defendant at the Court house, CW1 confirmed that geodynamics studies earth movements and that it understands the earth's internal activities by measuring the gravity of seismic waves. He agreed that the purpose of his study in Exhibit HC1 was to establish the cause-effect relationship between cracks that developed on houses situated in the proximity of Bunda quarry mine and the blasting operation that took place at Bunda quarry in 2013. CW1 conceded that villages surrounding the quarry mine are not mentioned in Exhibit HC1. He said that figures 3, 4 and 5 in Exhibit HC1 do not disclose the names of the villages in which the houses are located. He equally agreed that Exhibit HC1 does not mention names of the owners of the houses in figure 3, 4 and 5 in Exhibit HC1. He confirmed that Exhibit HC1 does not disclose the distance at which the houses depicted in the said figures in Exhibit HC1 are situated from the Bunda quarry mine. CW1 told the Court that it would not be possible for someone who was not involved in the study leading to Exhibit HC1 to know the exact location of each of the houses in figures 3, 4 and 5 in Exhibit HC1 from the Bunda quarry mine. He said such a person would also not be able to tell whether or not the houses appearing depicted in figures 3, 4 and 5 in Exhibit HC1 surround or are close to the Bunda quarry mine.

21. CW1 stated that he used a GPS machine to measure the distances at which the Claimants' houses are situated from the Bunda quarry mine. He said the distances appear in Exhibit HC2 (Supplementary Report). He confirmed that paragraph 6.10 of his witness statement says the houses of all the Claimants in this matter are situated within 2,500 metres from the blasting point at Bunda quarry mine.

22. CW1 agreed that paragraph 5 of the Claimants' statement of case states that all the Claimants in this case live within a radius of about 1000 metres from Bunda quarry mine. He confirmed paragraphs 5 of the Claimants' statement of case that all the Claimants live within a radius of about 1000 metres from Bunda quarry mine. He further agreed that all the Claimants in this matter live within a radius of about 500 metres from Bunda quarry mine. He admitted that, according to what is pleaded

in the Claimants' statement of case his operating distance for purposes of coming up with Exhibit HC1 should have been 1000 metres, and not 2,500 meters. He agreed that there are only 54 houses within 1000 metres from Bunda quarry mine. When shown Exhibit HC2, CW1 agreed that there are 112 houses on Exhibit HC2 up to a distance of 1000 meters from the Bunda quarry mine. He admitted that Exhibit HC1 shows that there are 54 houses within 1000 meters of the Bunda Quarry mine and that this contradicts Exhibit HC2 which indicates there are 112 houses within the same distance of 1000 meters from the Bunda Quarry mine.

23. CW1 agreed that, according to paragraph 2 of Exhibit HC1, his study specifically focused on the blast operations that took place at Bunda quarry mine in 2013. He said that he conducted the study in October 2020. He agreed that Exhibit HC1 does not disclose how many blasts were conducted at Bunda quarry in 2013. He conceded that Exhibit HC1 does not state the type of explosives that were used at the mine. CW1 further agreed that Exhibit HC1 does not even disclose the blast design, maximum charge weight, blast hole depth and diameter which were used at Bunda quarry mine. He equally agreed that Exhibit HC1 does not state whether Defendant used electrical or non-electrical methods of blasting. CW1 admitted that he did not measure the gravity or frequency of the blasts that were conducted at Bunda quarry mine in 2013. He said HC1 does not state the rate at which the blast frequency from Bunda quarry mine attenuated in 2013, or at what distance. CW1 agreed with Counsel Chagoma that without mentioning gravity of the blast and the corresponding distances, it would be difficulty to calculate "accentuation of the blast".

24. CW1 agreed that HC1 states that most houses in the area have superficial cracks. When shown the last sentence to paragraph 1 of Exhibit HC1 (which reads that "*Considering the building materials and methods of the surrounding villages, it is clear that already existing cracks may have been extended during blasting operation*"), CW1 agreed that it was possible that were already existing cracks on the houses before Defendant started carrying out its blasting or quarrying activities at Bunda quarry mine. He agreed that the already existing cracks on the houses might have been caused by natural geological causes.

25. CW1 agreed that before the coming in of the Defendant, the Bunda quarry had been operated by several other companies. It was originally opened by W.J. Gulliver in 1992. The quarry was thereafter operated by Rocksizer between 1997 and 2000, followed by Blacktop (2000 to 2008). The quarry remained idle until Master Stone operated it for a year only before the Government, through the Ministry of Mining, granted to the Defendant in May 2013. CW1 said according to the community, the blasting activities were conducted between 2012 and 2016. He agreed that the Report

does not disclose the precise period the Defendant operated the Bunda quarry because he recorded based on what he heard from the community.

26. CW1 said that he was not an acoustician by profession. He agreed that blast noise is by nature impulsive. He said he did not measure noise levels at Bunda quarry. He said paragraph 8 of Exhibit HC1 states that his investigation had accessed a report prepared by Mr. Gift Tsokonombwe who carried out a noise assessment study at Mangochi and Njuli quarry sites operated by the Defendant. When quizzed on how he accessed Mr. Tsokonombwe's report, he said he was given the report by the Claimants' lawyers, Mr. Wellington Kazembe. He said Mr. Kazembe gave him the report in 2020. He read to the Court paragraph 4.1 of Exhibit HC3 which states as follows:

> *"In selecting criteria to evaluate a situation, it is important to recognize various problems that may be caused by the noise. Criterion for environmental noise is best developed basing on problems faced by human beings, animals, physical damage to structures and reduced utility of property."*

27. CW1 also read to the court paragraph 4.2.1 of Exhibit HC3 as follows:

> *4.2 Noise has effects on health such as.*
>
> *4.2.1 Physical injury. Exposure to sound pressure level exceeding 140db, even for a short period involves a risk of morphological damage to the ear.*

28. CW1 agreed that one such criterion which can be used to evaluate a noise situation is whether or not there is physical injury after exposure to noise as stated in paragraph 4.2.1 of Exhibit HC3. He stated that this criterion applies generally, whether to industrial or residential area. He agreed that the 84.7dBA for houses at 1000 meters from Bunda quarry mine stated in paragraph 6.11 of his witness statement is lesser than the 140dBA stated in paragraph 4.2.1 of Exhibit HC3.

29. CW1 read paragraph 8.0 of his report (Exhibit HC1) on flyrocks as follows:

> *"Flyrocks are caused by a mismatch of the distribution of explosives energy, confinement of the explosives charge, and mechanical strength of the rock. At Bunda, flyrocks were reportedly reaching a distance of 470m from the blasting site, 30m less of the safe zone. It is worth noting that flyrocks reached the habited areas especially those within 500m from the point of blasting. It is reported that a flyrock damaged a roof of a house at some point"*

30. CW1 said he did not state in Exhibit HC1 the type of explosives that were used at Bunda quarry. He said that he did not state what the confinement of the explosive charge was used at Bunda quarry in 2013 since such information was not available. When put to him that there is nothing in Exhibit HC1 to show that there was a mismatch occasioning flyrocks at Bunda quarry, CW1 said that there is. When

put to him that he uses the word "reportedly" in paragraph 8 of Exhibit HC1 and that he did not measure to determine whether or not that there was in fact a mismatch, CW1 said he measured 400m from the quarry mine. When challenged to show the Court where in Exhibit HC1 it shows that he had measured to determine that there was a mismatch, CW1 failed to show the Court his alleged measurement in Exhibit HC1. He agreed that Exhibit HC1 does not establish whether there was mismatch at Bunda quarry by way of measurements. He confirmed to have used the word "reported" in paragraph 8 of Exhibit HC1 and that the report does not disclose the qualifications of the person who reported to him

31. In re-examination by Counsel Kazembe, CW1 was asked to explain why he stated that there was a mismatch in his report. He stated that there are three factors which describe a mismatch, namely distribution of explosive energy, confinement of the explosive charge and strength of the rock mass. He said he was not at Bunda when the Defendant was carrying out the blasts. He said a blast attenuates depending on design itself and geology. He explained that the geology at Bunda consists of alluvial soils and this means that blast will reach the village easily. He agreed that that the type of building materials also matter.

32. CW1 said figure 5 in Exhibit HC1 is about distribution of houses around Bunda quarry mine. He stated that he had measured the distances of the houses in his report using a GPS machine. He said Exhibit HC2 lists the names of the Claimants and that paragraph 6 in Exhibit HC1 shows the number of houses within 1000m from the blast point. He said he did not mention in Exhibit HC1 the exact period within which the Defendant operated at Bunda quarry because Exhibit HC1 was prepared after the mine had already been decommissioned. He said this is also the reason why he did not state in Exhibit HC1 the type of explosives used, the maximum explosive charge used, blast depth and diameter. He said in coming up with Exhibit HC1, he based on observations on the ground, consultations with the locals and taking measurements of distances of flyrocks as stated in paragraph 8.0 of Exhibit HC1. He said the fact that flyrocks reached 470m is evidence that there was a mismatch.

33. CW1 said although he did not measure the frequency of oncoming wave from the blasts carried out at Bunda quarry, he was able to talk about attenuation based on his understanding and experience of blast frequencies generally. He further said the nature of geology at Bunda permitted attenuation of blast wave. He said the geology at Bunda could amplify the oncoming wave to reach levels of natural frequencies of houses. He said natural frequency of a house is less than 20 htzs, that is, the frequency in which a house would negatively respond to earth movement. He said that when he mentioned existing cracks in Exhibit HC1, he meant cracks that

were on the house before the blasting operations by the Defendant at Bunda quarry took place.

34. CW1 confirmed that he is not an acoustician. He said he was nonetheless able to make conclusions in Exhibit HC1 on noise since he had involved a physicist who enlightened him on some of the issues. He said he also studied physics and therefore understands the subject on noise.

35. CW2 adopted his Witness Statement which has the following paragraphs:

> *"6.1.* ***THAT*** *I was at all material times working for the Defendant as a Crush Operator at the Defendant's Bunda Quary mine from 2012 to 2014.*
>
> *6.2.* ***THAT*** *the Defendant was at all material times a construction company carrying on quarrying and rock blasting activities at Bunda quarry mine in the Traditional Authority Chadza's area in Lilongwe district.*
>
> *6.3.* ***THAT*** *the Defendant started its quarry activities at Bunda quarry mine from 2012 to 2015.*
>
> *6.4.* ***THAT*** *houses of some Claimants herein fell down due to the blasting operations and other houses developed cracks.*
>
> *6.5.* ***THAT*** *rock fragments (flyrocks) used to move from our quarry to the houses and land of the claimants. This used to happen frequently. The flyrocks were as a result of mistakes on the part of the blasting team. Extremely careful and meticulous execution of the blasting process would avoid flyrocks altogether.*
>
> *6.6.* ***THAT*** *Group Village Headman Mponda used to come to our work premises to report incidents of flyrocks, houses falling down and houses developing cracks as a direct result of the quarrying and blasting activities.*
>
> *6.7.* ***THAT*** *at all the material times when Defendant was conducting its blasting at Bunda quarry, quarry stones and quarry dust were thrown onto the gardens and land of all the Claimants herein.*
>
> *6.8.* ***THAT*** *we were receiving several complaints from some of the Claimants herein.*
>
> *6.9.* ***THAT*** *the Defendant did not build a fence between the blasting area and the land of the Claimants to prevent quarry stones and dust from reaching the Claimants' land.*
>
> *6.10.* ***THAT*** *I remember at one point, when I was working at the defendant's Bunda quarry mine, one of the blast lost its direction and it caused damage to the Claimants' houses and land such that some houses fell down.*
>
> *6.11.* ***THAT*** *the blast lost its direction because it was not properly planted. The rock underground was cut in the middle as a result of improper plannting and as a result*

of poor connection of wires. The blaster did not go back to check each and every connection and every line to ensure that all areas of the blast were perfect and in order. This type of meticulous care would have prevented causing damage to the claimants and their properties.

6.12. ***THAT*** *the blasting used to cause serious vibrations. The vibrations were caused due to the planting of too many holes. The defendant was planting too many holes in order to increase production of rock aggregate as we were given targets to produce so many rock aggregate in a day.*

6.13. ***THAT*** *vibrations can be controlled by reducing the number of holes but the Defendants were more interested in money than in the welfare of the claimants and the surrounding community.*

6.14. ***THAT*** *it only takes one day to plant the blast and the blasting used to happen once or twice a month.*

6.15 ***T****HAT the blasts were producing loud noise, pungent smell and these were causing great discomfort to the surrounding community.*

6.15. ***THAT*** *the Defendant used to ring a loud siren and used to tell the claimants to leave their houses every time there was a blast at Bunda quarry mine. The claimants used to run away from their houses during the blasts. The claimants would stay away from their homes for hours during the blasts"*

36. CW2 was also one of the Claimants' witnesses that showed the Court the area where the Defendant was blasting. He also stated that there were several crushers and these were being moved from one place to another. He also said that the villages were about 300metres from where the blasting was taking place and they were being asked to about 500 metres away whenever the blasting was being done. In cross-examination at the locus in quo, CW2 stated that they would go away for about 500metres away for safety. He also said that the name of the village was Mponda.

37. During cross-examination, CW2 confirmed that he did not state in his witness statement the names of the Claimants whose houses fell or whose houses developed cracks. He agreed that he did not state from which villages such Claimants were. He also agreed that he did not state in his witness statement that his house fell down. He said his house and land were not hit by fly rocks. CW2 conceded that he was a crush operator and not a blaster by profession. He further said that he did not mention the name of the blaster he referred to in paragraph 6.11 of his witness statement. Finally, he confirmed that he did not suffer any injury or loss during the time the Defendant operated the Bunda quarry.

38. In re-examination, CW2 stated that his name is not on the list of the Claimants. He said he worked at Bunda quarry from September 2013 to December 2014.

39. CW3 adopted his witness statement wherein he testified as follows:

*"1. ... I come from **Beni Mwenda 1** Village, Traditional Authority **Chadza** in **Lilongwe** District.*

2. On or around February 2014 rocks from the defendant's quarry site rolled on my farm land thereby destroying my maize crops on the land.

*3. I went to the quarry offices at Bunda in Lilongwe where I met **Levson Chauya** and **Zofuna Chipungu.***

4. They came to visit the farm and after a long period of time I was paid MK30,000 as compensation for the destroyed maize crops.

5. The MK30,000 was not enough for the special damages I suffered.

6. I was not given compensation for the general damages I suffered

7. We were being compelled to leave our houses with our family members and animals, we would leave food on the fire place in some cases.

8. I was not compensated for the rocks and dust that was on the farm land.

9. I was greatly inconvenienced.

10. The Defendant did not uphold its duty of care to its neighbours.

11. I was subjected to noise pollution, nuisance and air pollution.

12. We were being told to leave our houses every time they were blasting.

13. I have been subjected to humiliation, suffered great anguish and mental distress due to the defendant's activities.

14. I verify that this statement is true to the best of my knowledge, information and belief.

15. The injuries I suffered are quite severe and I therefore need to be compensated for:-

i) Damages for nuisance

ii) Damages for trespass

iii) Damages for inconvenience

iv) Diminution in the value of the land

v) Interference with the peaceful enjoyment of land

vi) Loss of mesne profits;

vii) Special damages

viii) Costs of this action."

40. At the locus in quo, CW3 showed the Court his garden. It is situated adjacent to the quarry pit outside the Bunda forest. He said many fly rocks were landing in his garden and damaged his maize. He said the Defendant compensated him with K30,000.00 in respect of his damaged maize.

41. In cross-examination at the locus in quo, CW3 stated that the distance from where the blasting was taking place to the end of his garden was 500 metres. He said that his Beni Village borders with Mponda Village. He said that fly rocks fell in his garden in 2014 and all of the maize was destroyed.

42. The cross-examination of CW3 at the Court house followed closely that at the locus in quo. CW 3 confirmed that her house was made of mud and the house fell down when she was away to her garden. She agreed that she would tie her goat most of the times, including when blasting was being done.

43. During re-examination, CW3 stated that she used to tie her goat to prevent it from destroying other people's gardens. She also said that nobody forced her to go to her garden.

44. CW4 adopted his witness statement and the same is couched in the following terms:

*"6.1. **THAT** I am one of the claimants in this matter.*

*6.2. **THAT** the Claimants were at all material times the residents of Mponda, Ben, Filipo, Mtomondo, Magalamula, Katakata, Sakozenka, Chabwera, Mthiko waKumtunda, katchola, Mkathama, Chilowa, Mthiko Wakumusi, Jelemiya, Chakwanila, Msimbi, Gwengwe, Katchule, Kumikuyu, Bauleni, Kapazanje, Dzundi, Lakimu, Chisalaza and Ndawala Villages in the area of Group Head Village's Mwenda 1, Katakata, Chilowa, Msindo, Lakimu Kapazanje wa Nsalu at Bunda and in the area of Senior Group Head Village Headman Kapazanje in the Traditional Authorities Chadza and Chizeka in Lilongwe District.*

*6.3. **THAT** the Defendant was at all material times a construction company carrying on quarrying activities at Bunda quarry mine in the Traditional Authority Chadza's area in Lilongwe district.*

*6.4. **THAT** the Defendant started its quarry activities at Bunda quarry mine in or around 2012 to 2015.*

*6.5. **THAT** the Defendant did not conduct sensitization activities in the surrounding area of Bunda quarry mine.*

*6.6. **THAT** all the Claimants herein were not told by the Defendant on the impending quarry activities, the impact and the effects of the quarry activities and the*

Defendant did not tell the Claimants on how to mitigate the dangers and effects of the quarry activities.

6.7. ***THAT*** *at all the material times, all the Claimants herein have been the owners and were entitled to possession of land which is close to the Defendant's Bunda quarry mine in Lilongwe.*

6.8. ***THAT*** *at all material times, all the Claimants herein used the said land for cultivating agricultural produce and for residential purposes.*

6.9. ***THAT*** *the Claimants' land herein had different types of trees and crops.*

6.10. ***THAT*** *the Claimants herein have at all material times owned and are entitled to possession of the land surrounding the Defendant's quarry mine at Bunda quarry mine which the Claimants use as residential land and for cultivating crops and rearing animals.*

6.11. ***THAT*** *at all the material times when Defendant was conducting its blasting at Bunda quarry, quarry stones and quarry dust were thrown onto the farms of all the Claimants herein.*

6.12. ***THAT*** *at all the material times crops and trees of all the Claimants were damaged and destroyed by the quarry stones thrown due to the Defendant's blastings operations.*

6.13. ***THAT*** *at once, in or around 2013 the Defendant only paid me for maize stalk and maize cobs that were damaged by quarry stones and fly rocks from the Defendant's quarry blasting site at Bunda quarry mine.*

6.14. ***THAT*** *at once, in or around 2013 the Defendant through one of the Defendants' servant and agent known as Mr. Zefuna only removed few quarry stones from concentrated farms of the Claimants but left a huge number of quarry stones in the said farms.*

6.15. ***THAT*** *all the farms of all the Claimants herein were contaminated by quarry stones and quarry dust that was thrown, flown and blown by the Defendant to the Claimants' land from its Bunda quarry mine.*

6.16, ***THAT*** *at all material times quarry stones, bad smell, loud noise and dust have been coming from the Defendant's quarry site and those greatly inconvenienced the Claimants.*

6.17. ***THAT*** *at all material times there were bad smell, dust and loud noise coming from the Defendant's quarry site and those greatly inconvenienced the Claimants.*

6.18. ***THAT*** *the houses of the Claimants have been destroyed by the blasting activities of the Defendant.*

6.19. ***THAT*** *the houses of the Claimants have developed cracks and some houses have fallen due to the effects of the Defendant's mining activities.*

6.20. ***THAT*** *the Claimants wrote letters of complaints to the Office of the District Commissioner for Lilongwe but they were not assisted. A copy of the letter is exhibited as "JK1."*

6.21. ***THAT*** *all the Claimants herein have been persistently complaining to the Traditional Authority, District Commissioner for Lilongwe and the Defendant that the Defendant's quarrying activities were causing damage to their houses and other properties.*

6.22. ***THAT*** *the Claimants complained to the Defendant but they were not assisted.*

6.23. ***THAT*** *on or around 24th July, 2014 the Claimants through me as Village Headman Mponda lodged a complaint with the Office of the Commissioner of Mines and Minerals and District Commissioner of Lilongwe pursuant to section 113 of the Mines and Minerals Act [Cap 61:01 of the Laws of Malawi].*

6.24. ***THAT*** *the Claimants' complaint was not heard by the Commissioner of Mines and Minerals as the Office of the Commissioner of Mines and Minerals at the Department of Mines in the Ministry of Natural Resources, Energy and Mining is vacant.*

6.25. ***THAT*** *the Claimants and I have been denied their right to access justice.*

6.26. ***THAT*** *the Claimants and I have been deprived of the use and enjoyment of the said land thereby we have suffered loss and damages.*

6.27. ***THAT*** *the Claimants and I have been deprived of our right to peaceful use and enjoyment of our houses and land.*

6.28. ***THAT*** *the Claimants and I have been deprived of our right to peaceful use and enjoyment of our houses and land.*

6.29. ***THAT*** *the Claimants have been subjected to humiliation and have suffered great anguish and mental distress.*

6.30. ***THAT*** *the Defendant was in breach of its statutory duty as prescribed under section 14 Occupational Safety, Health and Welfare Act [Cap 55:07 Laws of Malawi] and the Explosive Act [Cap 14:09 Laws of Malawi].*

6.31. ***THAT*** *the Defendant did not show duty of care to its neighbors.*

6.32. ***THAT*** *the Defendant was negligent and was in breach of its duty as a neighbor.*

6.33. ***THAT*** *the Defendants are liable to pay for the damages due to the Claimant.*

6.34. ***THAT*** *the Defendant has no defence and the defence filed herein is a sham.*

6.35. ***THAT*** *the houses herein are very close to the quarry site. A copy of the document showing the coordinates and the distance from the quarry mine is exhibited hereto and marked as "JK2."*

6. 36. ***THAT*** *the defendant once admitted that the sound and effects of their blasting operations can go as far as 2km from the blasting point and the vibrations can go as far as 1km. A copy of the said admissions is exhibited as "JK3."*

6.37. ***THAT*** *the defendant would ring a siren every time they were carrying out a blast. During such times the defendant would order the claimants to leave their homes. We were leaving our homes and we would be away from our homes for 4 hours. Sometimes we would leave our homes whilst nsima was being cooked.*

6.38. ***THAT*** *we would carry old people on our backs as we were running away from the blasts.*

6. 39. ***THAT*** *the experience was very dehumanizing and we were greatly inconvenienced.*

6.40. ***THAT*** *the siren itself was too loud and was hurting my ear drum. The sound of the siren was disturbing everyone and the whole neighbourhood.*

6.41. ***THAT*** *my family and I were always disturbed with loud noise and pungent smell coming from the defendant's quarry mine.*

6.42 *THAT the defendant'ss equipment would work throughout the night and the sound would disturb us throughout the night as my house was very close to the quarry.*

6.43. *THAT the defendant did not construct a wall or shields around the quarry mine to prevent flyrocks from reaching us*

6.44. ***THAT*** *we claim the following from the Defendant:*

i) *Damages for nuisance*

ii) *Damages for Inconvenience*

iii) *Damages for Trespass*

iv) *Damages for loss of value of the houses of the Claimants*

v) *Damages for betterment*

vi) *Damages for interference with the peaceful enjoyment of their houses*

vii) *Replacement of the damaged houses*

viii) *Replacement of the damaged household items"*

45. At the locus in quo, CW4 showed the Court his garden which was adjacent to the quarry mine. He showed the flyrocks which fell in his garden. He said his garden is about 300 metres from the quarry. He said that there is no barrier or hill between the quarry and his village. In cross-examination, CW4 said that his garden was about 6 acres and he was initially harvesting about five (50kg) bags. He said three villages surround the quarry, namely, Mponda, Beni and Ndawala Villages.

46. In cross-examination at the Court house, CW4 stated that he does not know what the Explosives Act and the Occupational Safety, Health and Welfare Act are about. He said he was in Court to complain. He said the Defendant was asking them to run away out of the safety radius. He said it was a request and not an order. He said he would evacuate on his own. He said he would run to Kabanga Village before each blast. He said they were not carrying anything with them when evacuating. He confirmed that he is Village Headman Mponda. He said he knows all the villages that are mentioned in this case. He said he only knows some Claimants. When asked which of the Claimants he knew, he said he knows the names of the chiefs. He said he knows that only three villages border the quarry, namely, Katakata, Filipo and Gwengwe.

47. CW4 stated that he had never been to Njuli Quarry and does not know anything about it. He said that he does not know what hertz (HZ) are. He said he did not have any medical proof or report to prove that some Claimants suffered disease. Given the answers by CW4, Counsel Chagoma wondered whether CW4 was indeed the author of the witness statement in question.

48. In re-examination, CW4 stated that he knows the names of people mentioned in Exhibit JK2. He said he signed his witness statement himself. He stated that villages bordering the quarry are Mponda, Beni, Gwengwe, Kumsinja, Dzundi and Ndawala villages. He said gardens affected by quarry dust were in Mponda, Beni, Kumsinja, Dzundi and Ndawala villages. He said villagers affected by fly rocks were Mponda, Beni, and Dzundi villages. He said he could not mention all the villages affected by noise but they included Mponda, Beni, Ngwegwe, Kumsinja, Mwadidya, Phillip, Katsonda and Kapadzanje villages. He said Village Headman Mponda wrote the letter referred to in his witness statement. He said he wrote the letter in his capacity as chief and also as a person whose garden was affected. He said it was not voluntary for them to leave their houses before each blast. He said they were not carrying anything during the evacuation. He said goats and the sick were remaining behind in the village. He said he, as a chief, was not consulted before the quarry project started. He said the siren was making noise.

49. CW5 adopted her Witness Statement which has the following paragraphs:

> *"1. My name is Annes Zimpita I am one of the Claimants in this matter and I come from **Kabanga Mwenda 1** Village, Traditional Authority **Chadza** in **Lilongwe** District.*
>
> *2. In or around January 2014 I was engaged in farm activities on my land, when I heard explosion from the defendant's quarry site which caused my house to collapse.*

3. *I visited the quarry site where I met the officer in charge and Mr James Nyadani who is our current chief.*

4. *They came to visit my residence and concluded that it was as a result of the exploding bombs from the defendant's quarrying site.*

5. *I was told I would be assisted but have not been assisted till date.*

6. *I was not compensated in any way despite the complaints.*

7. *I was greatly inconvenienced.*

8. *The Defendant did not uphold its duty of care to its neighbours.*

9. *I have been subjected to humiliation, suffered great anguish and mental distress due to the defendant's activities.*

10. *I was subjected to noise pollution, nuisance and air pollution.*

11. *We were being told to leave our homes every time they were blasting.*

12. *We were being compelled to leave our houses with our family members and animals, we would leave food on fire place in some cases.*

13. *I verify that this statement is true to the best of my knowledge, information and belief.*

14. *The injuries I suffered are quite severe and I therefore need to be compensated for:-*

    i. *Damages for nuisance;*
    ii. *Destruction of the house;*
    iii. *Damages for trespass;*
    iv. *Damages for inconvenience;*
    v. *Diminution in the value of the land;*
    vi. *Interference with the peaceful enjoyment of land;*
    vii. *Loss of mesne profits;*
    viii. *Special damages;*
    ix. *Costs of this action."*

50. At the locus in quo, CW5 showed the Court the place where her house which fell down used to be. In 2014, the house developed cracks after the first blast and the second blast made the house to collapse. She said it was a two bedroomed house which was made of "chikombole chosinja''. She said she was at her garden when the house collapsed. She said that her goats were tied outside her house when the blast occurred and her house fell on the goats which died instantly.

51. In cross-examination at the locus in quo, CW5 stated that they were not taking goats with them to the garden when leaving the village during blasting. She said that two houses had cracks ("one over there and another at Katsimbe").

52. During re-examination at the locus in quo, CW5 stated that she did not take the goats to the garden because the goats usually stay at home. She said she was only taking children and not goats when running away before each blast at Bunda quarry. She said she was not forced to go to the garden. She said she went to the garden on her own.

53. CW6 adopted his witness statement wherein he testified as follows:

"6.1. ***THAT*** *I am one of the Claimants in this matter.*

6.2. ***THAT*** *at all the material times I was staying close to Bunda Quarry Mine.*

6.3. ***THAT*** *my house and garden were very close to the defendant's quarry mine.*

6.4. ***THAT*** *at all material times the Defendant was a construction company carrying on quarrying activities at Bunda Quarry Mine in the Traditional Authority Chadza's area in Lilongwe.*

6.5. ***THAT*** *the Defendant started its quarry activities at Bunda Quarry Mine in or around 2012 and they worked up to 2015. Throughout this period my family and I were greatly inconvenienced by the activities of the quarry mining of the defendant.*

6.6. ***THAT*** *the Defendant did not conduct sensitization activities in the surrounding area of Bunda Quarry Mine.*

6.7. ***THAT*** *I and the other claimants herein were not told of the impending quarrying activities, the impact and the effects of them and how to mitigate the dangers and effects of the quarry activities.*

6.8. ***THAT*** *before the Defendant started its quarrying activities at Bunda site I and none of the Claimants herein had complained to any authority that quarry stones, bad smells and dust were coming from the direction of the Defendant's quarry site or that our houses or property had been damaged.*

6.9. ***THAT*** *we were running away from our residential premises when the Defendant was conducting its blasting activities due to the dangers posed by the flyrocks and we were being told by the defendant to leave our premises.*

6.10. ***THAT*** *there were quarry stones, bad smells and dust coming from the Defendant's quarry site which greatly inconvenienced me and the other claimants.*

6.11. ***THAT*** *the Defendant was ordering people to flee their homes with their livestock every time blasts were being conducted. We were greatly inconvenienced and dehumanised.*

6.12. ***THAT*** *people living near the Defendant's quarry site had to stop everything they were doing and flee their homes every time the Defendants began blasting.*

6.13. ***THAT*** *the Defendant's practice of ordering claimants to flee their homes at any given time they want to commence blasting was causing great inconvenience.*

6.14. ***THAT*** *in every place where the Defendant has been carrying out quarrying activities in the Republic of Malawi, the Defendant has been paying people surrounding its mine for inconvenience caused every time they have to flee their homes with their animals as was the case in the villages of Masinde and Mtambalika from T/A Chigaru area in Blantyre where villagers surrounding Zalewa Mgodi quarry were being paid every time the villagers fled their houses due to the quarry blasting operations.*

6.15. ***THAT*** *the Defendant's blasting operations produced vibrations which caused great inconvenience to the Claimants.*

6.16. ***THAT*** *we have been complaining to the Defendant but we were not assisted.*

6.17. ***THAT*** *the claimants have written letters of complaints to the office of the District Commissioner for Lilongwe but again to no avail.*

6.18. ***THAT*** *the Defendant were not giving sufficient notice of when they intended to conduct some explosions and this was causing great anxiety'*

6.19. ***THAT*** *elsewhere at Njuli Quarry in Blantyre it was observed that the Defendant was using wrong methods in its mining operation, per report done by the Department of Mines and Minerals which supervises the mining activities in Malawi. It was further observed that cracks of all the building structures, breaking of windowpanes, damaged roofs and flying rocks in areas surrounding Njuli Quarry Mine were caused by the blasting operations of the Defendant at Njuli Quarry mine.*

6.20. ***THAT*** *the Defendant was using blasting materials and methods at its Bunda Quarry that produced vibrations or shock waves which damaged houses and properties with houses and properties of the Claimants.*

6.21. ***THAT*** *I and the other claimants have been denied our right to access justice.*

6.22. ***THAT*** *I and the claimants herein have been deprived of the use and peaceful enjoyment of our land thereby suffering loss and damages.*

6.23. ***THAT*** *we have been subjected to humiliation and have suffered great anguish and mental distress.*

6.24. ***THAT*** *the Defendant has not upheld its duty of care to its neighbours.*

6.25. ***THAT*** *the Defendant was negligent and was in breach of duty as a neighbor*

6.26. ***THAT*** *the flying rocks from the Defendant's blasting operations landed in my garden, on my house, and the gardens of many other people.*

6.27. ***THAT*** *all the Claimants herein have been persistently complaining to the Traditional Authority, District Commissioner for Lilongwe and the Defendant that the Defendant's quarrying activities were causing damage to their houses and other properties.*

*6.28. **THAT** the defendant would ring a siren every time they were carrying out a blast. During such times the defendant would order the claimants to leave their homes. We were leaving our homes and we would be away from our homes for 4 hours. Sometimes we would leave our homes whilst nsima was being cooked.*

*6.29. **THAT** we would carry old people on our backs as we were running away from the blasts.*

*6.30. **THAT** the experience was very dehumanizing and we were greatly inconvenienced.*

*6.31. **THAT** the siren itself was too loud and was hurting my ear drum. The sound of the siren was disturbing everyone and the whole neighbourhood.*

*6.32. **THAT** my family and I were always disturbed with loud noise and pungent smell coming from the defendant's quarry mine.*

*6.33. **THAT** the defendant's equipment would work throughout the night and the sound would disturb us throughout the night as my house was very close to the quarry.*

*6.34. **THAT** the defendant did not construct a wall or shields around the quarry mine to prevent flyrocks from reaching us."*

54. During cross-examination, CW6 could not say who wrote the report mentioned in paragraph 6.19 of his witness statement. The report was not exhibited to this witness statement. He said he did not bring the letters of complaints mentioned in paragraph 6.17 of his witness statement. He confirmed that his witness statement does not disclose the names of members of his family stated in paragraph 6.5 of his witness statement. He stated that Blacktop (a quarry company) operated the Bunda quarry mine between 2013 and 2015. He admitted that paragraph 6.5 of his witness statement says that the Defendant started quarry activities at Bunda quarry mine in or around 2012 and worked up to 2015. He conceded that he was indeed mistaking the Defendant with Blacktop.

55. During re-examination, CW6 stated that the Defendant worked at Bunda quarry from 2012 to 2015. He said he did not know Blacktop. He said he knew that the Defendant operated the quarry because its workers used to wear clothes written "Mota-Engil' on them. CW6 said Mwanditcha village is close to Mponda village. He said the Defendant used to announce an intended blast and that people used to flee to safety before each blast. He said they had complained to the District Commissioner and traditional authorities on the effects of the Defendant's quarrying operations at Bunda quarry.

56. This marked the end of the case of the Claimants.

Evidence of the Defendant

57. The first person to give evidence for the Defendants was Mr. Odala Malata (DW1). He adopted his witness statement which is worded as follows:

> *"1. I joined Mota Engil in 2012 as a blaster. I was posted to Chongoni quarry soon after joining Mota Engil. I worked at Chongoni quarry for some months before being posted to Njuli quarry where I worked as a blaster until 2017. Although I was posted to Njuli quarry, I was, on some occasions, sent to blast at Bunda quarry. This was at the beginning of Mota Engil's quarry project at the said place. I currently work as a Magazine Master at Mgodi quarry in Zalewa.*
>
> *2. I became a licenced blaster in 1994. I attach marked **OM 1** a copy of my current licence.*
>
> *3. During the times that I conducted blasting at Bunda quarry, the whole process of preparing and executing a blast was carried out by myself as the blaster. I did not engage any labourer, driver or anyone without a blasting lience or without specialized*
> *training to assist in the blasting process. At Mota Engil blasting is only done by licenced blasters.*
>
> *4. Further, during the times that I conducted blasting at Bunda quarry, the blasting process went on well, without any mistakes, and did not cause any damage to any person or property. And as far I know, Mota Engil did not receive any complaint of any effect of the blasting process nor were there any reports of any such damage.*
>
> *5. At all times we took reasonable measures to reduce the impact of the blasting activities including using appropriate volumes of explosives, making proper wire connections and digging appropriate number of holes.*
>
> *6. I was not at any point given any targets to meet in terms of the volume of rock aggregate to be produced."*

58. During cross-examination, DW1 stated that he worked for the Defendant as a blaster from 2012 and was stationed at Njuli quarry until 2017. He said he would go to Bunda quarry in Lilongwe for blasting at times. He said his blasting licence is for 2018. He stated that he was processing its renewal. He said a blaster cannot blast without a blasting licence. He said he has a Junior Certificate of Education. DW1 stated that he was preparing and executing the blasts at Bunda quarry on his own. He said these decisions relate to hole depth and diameter depending on hardness of the rock to be drilled. The decisions also relate to quantity of explosives to be used. He stated that this required him to make calculations on the ground. He said before joining the Defendant, he was trained at Soche quarry where he was learning on the job. Thereafter, he was tested and certified by the Ministry of Mines as a qualified blaster.

59. DW1 said he does not know the chemical composition of Amonium Nitrate. He also said he did not learn physics, chemistry or geology. Regarding drilling of blast holes at Bunda quarry, he said he would drill to a depth of between six to eight metres. He said drilling an 18 meter blast hole would be too much as it would entail use of more explosive materials which is not allowed. He said he had never had incidents of fly rocks at Bunda quarry. DW1 said if the blast pattern is wrong, it is possible for the blast to go into a different direction. He said he had learnt how to avoid flyrocks. He said one way was to drill straight blast holes. He said he was not given targets for amount of quarry stones to be blasted. He said only a blaster is required to be at the blast point. He said they used such explosives as Gimnex, primo and trankliners. He said these are filled in blast hole and covered soil.

60. DW1 explained that when preparing a blast, they always leave a free face where the blasted stones are supposed to go after a blast. He said a free face always points away from peoples' residence dwelling place for safety of the community. He insisted that a blast cannot lose direction because of the blast plan which they use. He said that the smell from the blasted explosive could only be felt within the quarry and not outside. He stated that that even himself, as the blaster, would be outside the 500 meters from the blast point by the time the blast occurs. He said he would leave the blast point by a motor vehicle and cruise outside the 500 meters just before the blast. He said this is why blasters do not use earmuffs. He said the Defendant however gives earmuffs to all its workers including drillers. He said the crusher at Bunda quarry worked from 6am to 5pm. He said he was commissioned to blast at Bunda because at that time there were no blasters there. He said he only conducted two blasts there before some blasters came to settle there. He said he would not therefore know how the other blasters conducted the blasts.

61. DW1 said that after filling the blast hole with the required explosives, they were covering the remaining hole space with soil. He said this is called stemming. He said stemming avoids an explosives overcharge. He said he has never seen an overcharge. He said that stemming is used to avoid flyrocks. He said they would drill 30 blast holes at Bunda quarry. He said at the time he was the only blaster and used to prepare and fill the holes with explosives himself. He said for example, a 10 meter blast hole, they would put 25kg of explosives. He said they would put 15kg in 8 meter hole. He said he only remembers two people he worked with at Bunda quarry who were close to him. He said these were Mr. Dickson Chiwaya and Mr. Mphande. He said these were drillers.

62. In re-examination, DW1 was asked to explain about the jerk hammer. He said it is used to break stones and the noise made does not go outside the quarry. He said that this also applies to fumes and dust.

63. The second witness for the Defendants was Mr. Moses Kachemwe (DW2). He adopted his witness statement wherein he testifies that he conducted a study on the impact of the Defendant's quarrying activities on quality of ground water in the surrounding areas. The study related to a number of the Defendant's quarry projects in Malawi, including Bunda quarry in Lilongwe. His findings are contained in a report which he tendered in Court and it was marked as Exhibit MK 1.

64. The relevant part of Exhibit MK1 states as follows:

> *"...From Table 1, it shows that the 2 water samples satisfy the requirements of both WHO and MBS guidelines. Groundwatter sample from Mponda Village Borehole shows slightly lower ph than the range of 6.0 – 9.5.*
>
> *DISCUSSIONS*
>
> *The groundwater from the area surrounding Bunda Quarry Mine is safe for drinking based on chemical analysis of the water samples that were collected from the area.*
>
> *The results show that the two groundwater samples which were collected proximal to the mine have similarities in their chemical compositions. They have concentrations of dissolved species similar to that of rainwater with relatively high concentrations of dissolved oxygen. The groundwater samples suggest that the water is recently recharged and the high concentration of dissolved oxygen indicate that they are extracted from the level with high oxygen content. This indicates that the water is from shallow aquifers which is typical of Basement Complex aquifers. Both groundwater samples satisfy chemical requirements of WHO and MBS.*
>
> *The groundwater from Mponda Village Borehole has slightly lower pH than the groundwater from Gwengwe Village Shallow Well. The borehole sample has also slightly higher concentration of dissolved solids and lower concentration of dissolved oxygen than the shallow well, consistent with the difference in depth from which the groundwater is extracted from.*
>
> *The groundwater samples do not show any signs of contamination from human activities such as mining as there is no anomalously gigh concentration of trace elements. The chemical composition of the groundwater in the area is therefore controlled by the bedrock underlying the area and surface water recharge coupled with depth of the aquifers.*
>
> *Conclusions*
>
> *During this exercise, groundwater was tested both in the field and in the laboratory for chemical compositions and such characteristics as pH, Electrical Conductivity and Total Dissolved Solids.*
>
> *The chemical characteristics of groundwater in the vicinity of Bunda Quarry Mine are generally controlled by the bedrock hosting the groundwater and the recharge by surface water coupled with depth from which the groundwater originate. There is no significant impact of the mining activities of Bunda Quarry Mining Site on the general characteristics*

of the surrounding groundwater. The groundwater from the area has the acceptable chemical attributes with respect to WHO and MBS water quality guidelines."

65. During cross-examination, DW2 said Ph measures acidity level in water. To the question whether quarry dust causes water to be acidic, he said quarry dust does not cause water to be acidic but alkaline. He said that alkaline means the water has more than pH7. DW2 said groundwater sample from Mponda Village registered a pH of 5.8. He said the water in Mponda Village is slightly acidic. He said being slightly acidic, there is no danger or effect of drinking such water. He stated that according to Biology, when we eat food, our bodies produce more (hydrolic) acid which is more than pH 5.8. He said drinking the water with a 5.8pH will therefore not have any effect on our bodies because the pH in our bodies is already high. He further explained that generally the dangers of drinking acidic water is that it imbalances the pH or acidity level in the body and can cause ulcers in the intestines.

66. When quizzed on what Standard from the Malawi Bureau of Standards (MBS) he used in coming up with his expert report, DW2 said that he used a 2005 Standard (MS 733:2005) from the MBS. He added that the result would have been the same even if he had used latter standards. He stated too much iron in water gives undesirable smell and it is annoying to drink water that is smelly.

67. In re-examination, DW2 explained that too much aluminium attracts undesirable elements but he did not find such elements in his study at Bunda Quarry. He also stated that although iron gives undesirable smell, it is not injurious. Water containing iron is drinkable.

68. DW2 was recalled on 21st January 2022 to testify in relation to his supplementary witness statement dated 12th January 2022. The adopted the said supplementary witness statement and the same is reproduced below for ease of reference as follows:

"1. *This statement is supplementary to my earlier statement in this matter dated 3rd June 2019 (the "main statement')*

2. *In paragraph 2 of my main statement, I did attach my report (on the Impact of Bunda Quarry Mine Operations on Groundwater Quality of the surrounding Areas) which is marked as "**MK1**".*

3. *At the time I was being cross-examined on my report (MK1), I told the court that in coming up with my expert opinion and conclusion in MK1, I had used **MS733:2005** (first edition) which is Malawi Bureau of Standards (MBS) **Borehole and Shallow Well Water Quality – Specification**. I attach copy of MS 733:2005 (first edition) hereto and marked as "**MK2**"*

4. *This Standard (**MK2**), according to the MBS, specifies requirements for **untreated or raw groundwater in boreholes and shallow wells** suitable for human consumption and all usual domestic purposes.*

5. *During the time I was being cross-examined, the claimants' lawyer relied on **MS 214:2013** (second edition) which is the **Drinking Water-Specification**, a Standard which specifies the physical, biological organoleptic and chemical requirements **for treated drinking tap water.** This standard, according to the MBS, does not apply to borehole water, bottled water and natural mineral water.*

6. *The use by the Claimants lawyers of MS 214:2013 instead of **MS733:2005** would be misleading in the following ways:*

   6.1 *MS 214:2013 suggests that the groundwater samples from the borehole at Mponda Village and a shallow well at Gwengwe Village T/A Chadza had an excessive concentration of iron (Fe) of 46.62 ppb and 70.08 ppb respectively compared to the maximum limit of 10 ppb as regulated by MBS in MS 214:2013. However, MS 733:2005 requires the groundwater to have an iron concentration of not more than 3000 ppb (3 mg/l). According to MS 733:2005, the concentration of iron in groundwater from the two villages is within limit. This suggests that the groundwater of the 2 villages will not change smell or taste based on the detected level of iron.*

   6.2 *The use of MS 214:2013 indicates that the groundwater from both Mponda Village borehole and Gwengwe Village Shallow well has unacceptably high concentration of aluminium (Al) compared to the maximum limit of 200 ppb set by the MBS. Based on MS 733:2005 which is the correct standard for untreated groundwater used for drinking, the groundwater from both Mponda Village borehole and Gwengwe Village shallow well have acceptable concentration of aluminium values of 239.1 ppb and 270.4 ppb respectively, compared to the maximum limit of 500 ppb (0.5 mg/l) set by the MBS.*

69. He also tendered in evidence an exhibit attached to the supplementary witness statement which was marked as "**MK2**". This exhibit (**MK2** is a Malawi Bureau of Standard (**MS 733:2005 – First edition**) entitled "**Borehole and shallow well water quality – specification**".

70. During cross-examination, DW2 said that acid mine drainage occurs when acidic fluids from the mining pit sips through into water system. He said it is not always the case that whenever there is a mining pit, there is an acid mine drainage. He said that it is only in some circumstances that acid mine drainage occurs. He said iron and aluminium are not heavy metals since they are not classified as such. He said both of them do not have any effects on humans. He said they only makes water to have a bad smell.

71. DW2 stated that MS 214:2013 applies to treated drinking tap water and not to borehole and shallow well water. He said tap water comes from surface water. He

further said that the MBS does not expect tap water to have more iron. He said if there is more iron in tap water, the assumption is that it comes from metalic pipes used to convey the water. He said this is unlike borehole or shallow well water whose iron comes from the bedrock or underground rock. He said that there was no significant impact of the mining activities at Bunda quarry on well water in the villages of the Claimants. He insisted that the conclusion in his expert report is correct in the circumstances that ground water in the areas surrounding the Bunda quarry mine has acceptable chemical attributes and has not been contaminated by the quarry operations at Bunda.

72. The third person to testify on behalf of the Defendant was Mr. Gift Tsokonombwe (DW3). He adopted his witness statement which provides as follows:

> *"1. I am a lecture of Environmental Geology in the Mining Engineering Department of the faculty of Engineering at the Polytechnic, Blantyre.*
>
> *2. I conducted a study on seismicity and impact of Mota Engil's quarrying activities on noise levels in relation to Mota Engil's quarries including Bunda Quarry in Lilongwe.*
>
> *3. My reports for the study are hereto attached marked GT1 and GT2."*

73. In cross-examination, DW3 stated that his study was in respect of the quarry mine on the edge of the Bunda forest and not the one inside the forest. He said he did not indicate the coordinates of the quarry mine in his report but merely indicated the locations of the seismic stations used. He said the mining licence he referred to in his report was for the Bunda quarry mine on the edge of the forest.

74. DW3 said that an Environmental and Social Impact Assessment (ESIA) report envisages problems that may come with a project activity. He said the ESIA report prepares a developer of a project on measures with which to mitigate the envisaged problems once project activities start. He stated that he did not agree with the noise levels from the noise sources indicated in the ESIA report. He said the levels so indicated are simply general values based on a scenario where there are no mitigation measures. He further said that if mitigation measures are used, those values or levels are likely to lessen. He said these levels are based on assumptions before the project starts. He stated that the maximum allowable limit for noise for a residential area according to the MBS (Noise pollution Tolerance limits) is 55 dBA for day time and 45 dBA for night time.

75. DW3 also cautioned against just focusing on Tables 1 and 2 on ambient air quality in trying to determine whether or not quarry/blast noise is within or above the tolerance limit. He said, taking into account the nature of blast noise, that one has to look at the whole document before making certain conclusion as to whether

the blast noise level is beyond the maximum allowed limit or not. He said that blasting is a special activity and that is why people are required to evacuate from the safety radius of 500 meters from the blast points before each blast. He said that blast noise is impulsive by nature. DW3 said that the quarry site, including the safety radius, qualifies as an occupational area for purposes of paragraph 6 of MS 173:2005 and that the noise limits in 6.1 (c) and (d) applies to such occupational area. He stated that the requirement for people to evacuate from the safety radius before each blast is a legal requirement and it cannot, therefore, be an inconvenience to them. He said people are told of this requirement beforehand. He said the people are consulted and the parties agree first before the actual evacuations start. He also explained that ear muffs are required to be provided to the operators and not the villagers.

76. DW3 stated that it is not necessarily true that if there are flyrocks, it follows that no mitigation measures were taken. He said it is possible for one to take all the necessary mitigation measures at a quarry site but still have something negative like flyrocks happening. He said that during the Court's visit to the locus in quo, CW1 did not measure the coordinates of the quarry area.

77. DW3 stated that resonance occurs when something vibrate at the same frequency as that of an oncoming seismic wave. He said that when there is resonance houses shake. He said during the resonance, some houses can fall and some cannot. He also said when resonance occurs, the walls and floors of some houses can crack and yet some cannot. He said shaking of houses can inconvenience a person if he is inside the house but not when he is outside the house. He said that before each blast, people residing or present within the safety radius of 500 meters from the blast point are required to evacuate. He conceded that most blast frequencies are above 40Hz. The witness said the natural frequency of most houses are between 20 to 40Hz. He said that the main determining factors as to whether a house will be damaged or not due to resonance are distance of the house from the blast point and the house's peak particle velocity (PPV). He said PPV is the speed at which a particle within an object vibrates. He said the strength of a house also matters. He stated that houses at Bunda are poorly constructed. He read to the Court his report where it states that "*hairline cracks that were observed on the houses at Bunda were caused by geological factors*". He said that the geological factors were probably tremours or seismic activities. He said, based on the findings in his report, it would be wrong to conclude that blasting caused the cracks. He said that the most likely cause of the hairline cracks in this case was settling down of the buildings / houses due to the geological factors.

78. DW3 added that an oncoming wave from a blast can also cause settling down of the buildings. He read the last paragraph of his conclusion in his report where it is written that:

> *"the blast frequencies at the quarry are within the low frequency range (<20Hz). Most of the residential buildings respond in the same range which may contribute to cosmetic or threshold cracking due to vibrations especially when resonance is reached. Such frequency from the blast site was experienced within a radius of 800m at Bunda quarry. However such frequency cannot cause any structural damage".*

79. DW3 conceded that he was not there at Bunda quarry during the blasts in 2013 and that he did not measure the frequencies of the blasts. He said that his conclusion was better than nothing in the absence of measurement. He said his conclusion on noise levels in his report is right since the blast noise is an impulse noise or is like noise from a gunshot. He said before such a blast noise emanates, people would have evacuated already the safety radius of 500m from the blast point. He said that his study concluded that noise levels from the blastings and other quarry activities at Bunda quarry were within the allowable limits. He said insofar as noise from blasting was concerned, people were evacuating from their residential houses situated within the safety radius as required. He also said MS 173:2005 has to be read as a whole otherwise there would be no blastings at all allowed and no roads in countries. He said since blasts noise is impulse noise, one has to use paragraph 6 of MS 173:2005 as applicable. He said a further consideration is that blast noise is not ambient or continuous (as is the case in Tables 1 and 2 of MS 173:2005) but only lasts for a few seconds. He said this is why blast noise is required to be measured with an instrument set at "fast".

80. DW3 read from NOTES (2) of MS173:2005 which state that *"non-continuous exposure to sound level in excess of 85dB(A) shall be regarded as exceeding 85dB(A)".* He explained that this is taken care of in paragraph 6.1 (c) and (d) of MS173:2005. In this regard, he read to the Court the contents of the paragraph below paragraph 6, NOTES (2) of MS 173:2005 which states that:

> *"all area where people may be exposed to sound levels exceeding the limits above (i.e. in paragraph 6) identified as ear protection area and shall be suitably cordoned-off".*

81. DW3 said that this is the exact reason why people are required to move out of the safety radius of 500m from the blast point. He further stated that his study found that even at 1000m from the blast point mine, the noise level from the noise sources at Bunda quarry was within the acceptable limits.

82. In re-examination, DW3 said that he witnessed neither in situ blasting nor a jerk hammer or rock crusher working 8 hours in a day.

83. The 4th witness for the Defendant was Mr. Patrick Gremu (DW4).He adopted his witness statement which reads:

> *"1. I work Mota Engil as a blaster. My job mainly invovles conducting blasts in quarries.*
>
> *2. I was trained in blasting between 1976 and 1978. I have been a licenced blaster since then. I renewed my licence in 2018. I attach marked PG 1 a copy of the current licence.*
>
> *3. I am curently stationed at Malingunde Dam project (being carried out by Mota Engil).*
>
> *4. I worked at Mota Engil's Bunda quarry from November 2014 to October 2015.*
>
> *5. During the time I worked at Bunda quarry, there was no damage caused by blasting. In fact we did not receive any complaint about effects of blasting at the said quarry including in relation to flyrocks.*
>
> *6. At the Bunda quarry, blasting was not frequently done. I remember that blasting could occur once a month and sometimes a month or even more would pass without any blasting activities.*
>
> *7. At all times I took reasonable measures to reduce the impact of the blasting activities including using appropriate volumes of explosives, making proper wire connections and digging appropriate number of holes.*
>
> *8. I have considered the allegations made by Levison Chauya in his statements. To start with, Levison Chauya was working as a crush operator and not a blaster. A crush operator operates the crusher machine which crushes stones gathered after blasting. A crush operator does not get invovled with blasting. Further, there was no blast that caused damage to houses in my working time at the Bunda quarry.*
>
> *9. Further, during the times that I worked at Bunda quarry, the whole process of preparing and executing a blast was carried out by myself as the blaster. I did not engage any labourer, driver or anyone without a blasting lience or without specialized training to assist in the blasting process. At Mota Engil blasting is only done by licenced blasters.*
>
> *10. It is not true that we were planting too many holes in order to meet targets. I was not given any such target in my work."*

84. In cross-examination, DW4 stated that he is a blaster and he did school up to standard 7 only because he had school fees problems. He said that he knew tamlock. It is a machine used for drilling rocks. He said the tamrock makes noise but not too much. He confirmed that drillers at Bunda quarry were using earmuffs to protect

them from noise and dust. He said drilling rocks could take 3 to 4 days and that they could drill 30 to 40 holes. He said that an excavator is used to load blasted stones into a tipper. He said a jack hammer breaks stones that have been blasted. He stated that, at Bunda quarry, the jack hammer was not used at night to break stones. He said the level of noise from the Tamrock and jack hammer are similar in that they are not too much.

85. DW4 further stated that the excavator does not make noise. He said that dust produced when loading quarry stones in a tipper is localized at the loading point. He stated that they had mobile and stationery crushers at Bunda quarry. He said the crusher does not make a lot of noise. He stated that crusher operators also use earmuffs. He said that they used a water bowser to sprinkle water on the quarry load before putting it on the tipper to control spread of dust. He said after drilling, the drillers count the number of blast holes drilled and check their depth and width. He stated that that Gimnex is used where there is water in the ground on which the blast holes are drilled. He said this is unlike Ammonium Nitrate which is only used in holes where is no water in them.

86. DW4 said that flyrocks occur when there is a hard rock and there is overcharging. He said if the rock is hard, they reduce the charge or quantity of explosives in the blast hole but increase soil used for covering the hole during stemming. He said that flyrocks have never happened to him even at Bunda quarry. He said he had not overcharged a blast hole at Bunda quarry. He said that he was taught at school that overcharging a blast hole causes flyrocks. He said overcharging means putting too much explosives in a blast hole than is necessary.

87. DW4 stated that an open face is the direction where the blasted stones go. He said as blasters, they choose or direct where the blasted stones should go. He said they do not direct the open face towards people's residences. He said that safety radius from the blast point is $500m^2$. He said this radius ensures safety of the people. He said at Bunda, they had always required people to move out of the safety radius before each blast. He said they used sirens and red flags and told the people to leave whenever they hear the siren or see the red flag. He further stated that at Bunda quarry they could only blast once in a month because the output was not much. He said there was a shortage of crushers and the available crushers used to breakdown and this was a cause of infrequent blasting at Bunda quarry. He said that as a blaster he used reasonable measures to ensure appropriate charging of blast holes and proper wiring or connections. He said they were not overcharging at Bunda quarry in order to minimize or reduce the effects of blast vibrations. He said if all holes are blasted at once, houses could be damaged. He however pointed out that this has never happened to him at Bunda since they used delayed blasting system to enable power

from the blast to quickly distribute at the open face. He said where such power is not so distributed at the open face, there is a misfire. He said the presence of more blast holes does not mean that there will be a huge or heavy blast vibration.

88. DW4 said that he did not do or learn Physics or Chemistry. He said he learnt geology as he was working. He said as a blaster, he decides the quantity of explosives to be used and puts or fills explosives himself in the blast hole. He said when requisitioning the explosives he determines and writes the required quantity of explosives on the requisitioning form. He said he did Mathematics in standard 7. He stated that he did not keep a photocopy of his blast licence that he used at Bunda quarry between 2014 and 2015. He said the licence was taken away upon its expiry by the Department of Mines when he was seeking its renewal. He insisted that he is a very experienced and professional blaster. He said this is why he is now manning the Kanvula quarry mine by himself.

89. DW4 stated that their safety officer at Bunda quarry told them of the importance of proper execution of the blast works and of the need to maintain good relationship with the people surrounding the quarry mine. He said the safety officer did not tell him of the incidents of flyrocks that counsel for the Claimants was suggesting to have occurred there through his questions. He stated that the average number of blast holes at Bunda quarry was 35. He said he did not visit the claimants' houses at Bunda because he did not receive any complaint from the residents. He said he knows Levison Chauya. He said Mr. Chauya worked as a crusher operator at Bunda quarry. He said before he could conduct each blast at Bunda quarry, Mr. Chauya used to move out of the safety radius with other people as required. He stated that he used to prepare and conduct the blast alone. He said he had no juniors or assistants as a blaster.

90. In re-examination, DW4 stated that he was determining the blast hole depth and diameter as well as the quantity of explosives to be used on his own. He stated that he has never had any incidents of misfires at Bunda quarry. He also said that he never had any flyrocks during the entire period he worked at Bunda quarry. He confirmed to have told the Court that the safety officer did not tell him of any incident of flyrocks when he went to work at Bunda quarry.

91. The last witness for the Defendant was Mr. da Renato Costa (DW5). He testified by way of video link (zoom) from Portugal. He adopted both his witness statement and supplementary witness statement. His witness statement is couched in the following terms:

"1. I was the quarry Manager at Mota Engil in Malawi from May 2010 to December 2016, during which period Mota Engil carried out quarrying projects at Bunda in Lilongwe and other places.

2. I hold a Degree in Geotechnical engineering and have 10 years' experience in operating/managing quarries.

3. During my employment with the Defendant in Malawi, I was responsible for quarry operations of Mota Engil Malawi Branch. This, among other duties, involved supplying crushed stone to road, railway and other construction projects; coordination of teams for technical drilling and blasting; hauling and crushing; assembly and maintenance of crushing equipment; production planning; work programs and team management.

*4. Bunda Quarry was operative from September 2013 to April 2015. Mota Engil was granted a licence to operate this quarry on 13th June 2013. I attach a copy of the licence marked **RC1**.*

5. An audit to verify the viability to reopen and operate a quarry was requested to be done in the area to be submitted to the Environmental Affairs Department. Apart from that, the surrounding community was addressed on Mota Engil's intention of reopening the previously explored quarry to minimize effects of a new quarry and its impact. Some of the maters addressed were the access road to the village that passes in the middle of the quarry, and also the usage of the quarry by manual stone breakers and the need for the people to be relocated to an area where they could continue their activity without interfering in quarry works in Bunda.

6. Blasting activities were done only when needed, the previous operator of the quarry left a very big quantity of boulder stones that we used for crushing, this way we reduced the need for blasting, in total we operated 9 blasts in 2 years and in some months there was no blasting at all (as per bellow list of usage of explosives). The local villagers were informed of all intended blasting activities. On the day of the blasting, a quarry team member would go to the nearest houses to inform that we would do a blasting on that day and also advising of the probable hour for the blast. Further, 10 to 15 minutes prior to the blasting, a pick-up with a siren would drive in the area to signal that the blasting was to begin. We could only proceed to blast after satisfying ourselves that the area secure zone radius was clear. No blasting was done at night.

Diagram on Usage of Explosives

……

Allegation of bad smell

7. The only smell produced emanated from the burning of nitrate ammonium which was part of the explosive mixture. However, this has a very small impact as the smell completely dissipated after 5 to 10 minutes.

8. *No measures can be taken to mitigate the smell as it is an inherent/natural consequence of the nitrate ammonium.*

Allegation of Dust

9. *As a way of mitigating the dust, we were preparing the crushing plant with a water spraying system. A borehole was drilled in the quarry premises to supply water for this system, and this borehole was intended at the end of the quarry operations to be used by the community.*

10. *The crushing plant was installed in the northern part of the quarry area where there was a hill that worked as a barrier to prevent dust from going to the village areas and farm lands.*

11. *We received no report of illnesses caused by dust not even from workers that operate in in the quarry who would be expected to experience most of the dust.*

Allegation of fly rocks and other debris

12. *As a way of mitigating the flyrocks, Mota Engil erected a hump to control the rocks and other debris from flying out to the masses. The altitude of the quarry area was conducive for the erection of the hump.*

13. *We were contacted in one case in relation to damage to crops. The residents that were affected by the flyrocks were compensated. It is important to note that some of the crop land that was affected by flyrocks was inside the quarry licensed area, land which was not supported to be used for farming*

Allegation of Noise

14. *Most of the Bunda quarry emanated from the crushing process of the stone and the mechanical equipment that was being used. Blasting noise was punctual and lasted only a few seconds. However, it is important to note that the crushing plant was installed in the northern part of the quarry area where there was no presence of houses. In addition, there was a natural barrier, that is Bunda hill, that controlled the noise.*

Allegation of Noxious fumes

15. *No fumes are produced in the crushing of stone apart from the normal usage of diesel to propel the diesel engine equipment in usage. Such fumes are not noxious.*

Allegation of Water contamination

16. *The quarrying activities did not contaminate any water. In fact, we received no report or complaint of water contamination throughout the project.*

Allegation of Damage to houses (including in form of cracks) and other properties

17. *The quarrying/blasting activities did not cause damage to houses. In fact, we received no report or complaint of water contamination throughout the project.*

Allegation of Shock waves and Vibrations

18. *Blasting activities normally cause vibrations. However, shock waves and vibrations caused by blasting are dissipated with distance very quickly to harmless values. As per the below international standards table, for unreinforced light structures the maximum vibrations admitted is of 20mm/s. If we consider the maximum charge per blasting time in all blasting done at Bunda, the maximum quantity of explosives was 25kg for a 10m drilling hole per delay. We can see in the technical table below that after a 100m distance from the origin we are in the maximum limit 21.8mm/s (this value is standard for granite stone) at 200m the value is 5.57mm/s and after 500m the value is 0.92mm/s. So after 200m distance, it is technically not possible to cause damage to structures.*

19. *Also note that after the 200m distance, the ground vibration for human comfort is below the standard international maximum limit (5mm/s). This means that all houses and constructions that are more than 200m from the quarry pit have the minimum comfort assured. There were no settlements/houses within the 200 metre radious*

PEAK PARTICLE VELOCITY (mm/s) AS FUNCTION OF CHARGE WT AND DISTANCE

Charge Weight Per Delay / kg \ Distance From Charge / m	0.5	1	2	5	10	20	50	100	200	500	1000
0.025	825	211	53.8	8.84	2.26	0.58	0.09	0.02	0.01	0.00	0.00
0.050	1633	417	106	17.5	4.47	1.14	0.19	0.05	0.01	0.00	0.00
0.075	2435	622	159	26.1	6.66	1.70	0.28	0.07	0.02	0.00	0.00
0.100	3233	825	211	34.6	8.84	2.26	0.37	0.09	0.02	0.00	0.00
0.150	4820	1230	314	51.6	13.2	3.37	0.55	0.14	0.04	0.01	0.00
0.250	7972	2035	519	85.4	21.8	5.57	0.92	0.23	0.06	0.01	0.00
0.500	*****	4028	1028	169	43.2	11.0	1.81	0.46	0.12	0.02	0.00
0.750	*****	6005	1533	252	64.3	16.4	2.70	0.69	0.18	0.03	0.01
1.000	*****	7972	2035	335	85.4	21.8	3.59	0.92	0.23	0.04	0.01
1.500	*****	*****	3034	499	127	32.5	5.35	1.36	0.35	0.06	0.01
2.500	*****	*****	5018	825	211	53.8	8.84	2.26	0.58	0.09	0.02
5.000	*****	*****	9932	1633	417	106	17.5	4.47	1.14	0.19	0.05
7.500	*****	*****	*****	2435	622	159	26.1	6.66	1.70	0.28	0.07
10.000	*****	*****	*****	3233	825	211	34.6	8.84	2.26	0.37	0.09
15.000	*****	*****	*****	4820	1230	314	51.6	13.2	3.37	0.55	0.14
25.000	*****	*****	*****	7972	2035	519	85.4	21.8	5.57	0.92	0.23
50.000	*****	*****	*****	*****	4028	1028	169	43.2	11.0	1.81	0.46
75.000	*****	*****	*****	*****	6005	1533	252	64.3	16.4	2.70	0.69
100.000	*****	*****	*****	*****	7972	2035	335	85.4	21.8	3.59	0.92
150.000	*****	*****	*****	*****	*****	3034	499	127	32.5	5.35	1.36
250.000	*****	*****	*****	*****	*****	5018	825	211	53.8	8.84	2.26
500.000	*****	*****	*****	*****	*****	9932	1633	417	106	17.5	4.47

site law exponent = -1.97 site law constant = 7972

Ground vibration limits for human comfort (blasting)		
Blasting		
Category	***Type of operations***	***Peak component particle velocity (mm/s)***

*Sensitive site**	*Operations lasting longer than 12 months or more than 20 blasts*	*5 mm/s for 95 per cent blasts per year* *10 mm/s maximum unless agreement is reached with the occupier that a higher limit may apply*
*Sensitive site**	*Operations lasting for less than 12 months or less than 20 blasts*	*10 mm/s maximum unless agreement is reached with the occupier that a higher limit may apply*
Occupied non-sensitive sites, such as factories and commercial planes	*All blasting*	*25 mm/s maximum unless agreement is reached with the occupier that a higher limit may apply for sites containing equipment sensitive to vibration, the vibration should be kept below manufacturer's specifications or levels that can be shown to adversely affect the equipment operation*

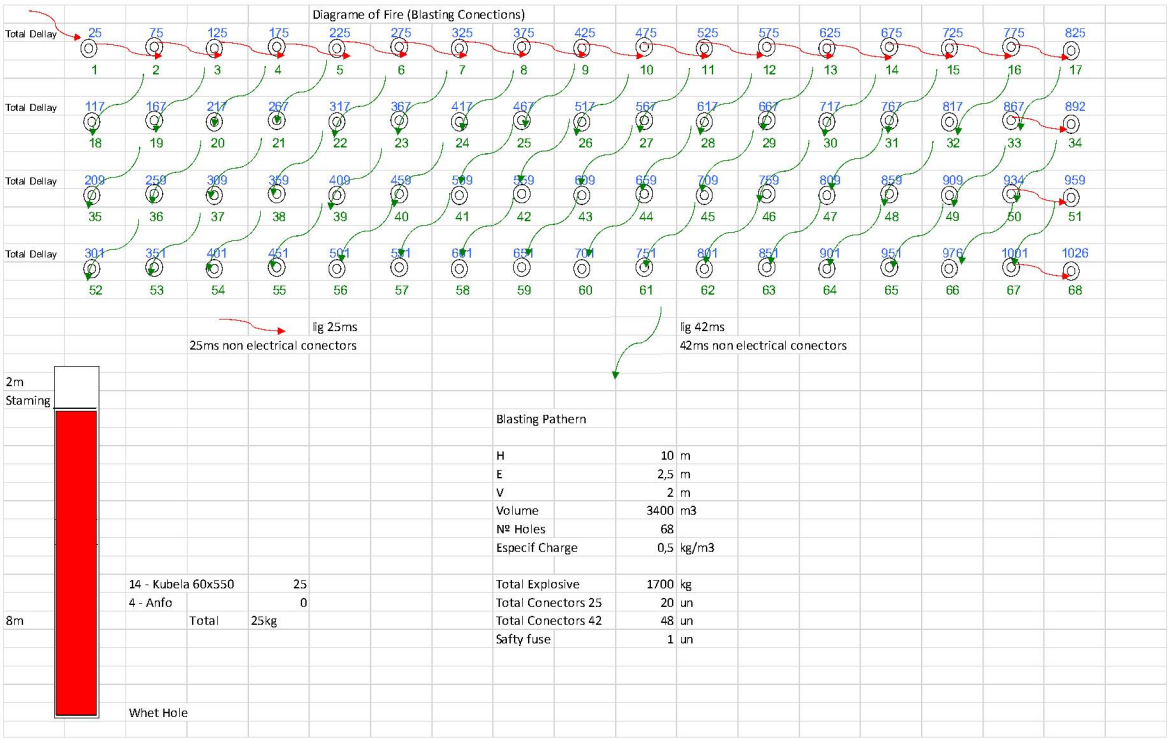
BS 7385-2 Transient vibration guide values for cosmetic damage

Line	***Type of building***	***Peak component particle velocity in frequency range of predominant pulse***	
		4 Hz to 15 Hz	***15 Hz and above***
1	*Reinforced or framed structures. Industrial and heavy commercial buildings*	*50 mm/s at 4 Hz and above*	
2	*Unreinforced or light framed structure. Residential or light commercial type buildings*	*15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz*	*20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above*

Methods used in the blasting/type and quantity of explosives

20. *Non Electrical blasting with time delays per hole is the standard method used for blasting worldwide. All explosive manufacturers tend to propose this as the first choice method in blasting. This is because it is safe to use, and when applied, its connection sequence ensures that all charges detonate in a different delay of time. We used this method at the*

quarry in issue. Below is an illustration showing only 2 delays 25 and 42 ms – we do not repeat any time for blasting:

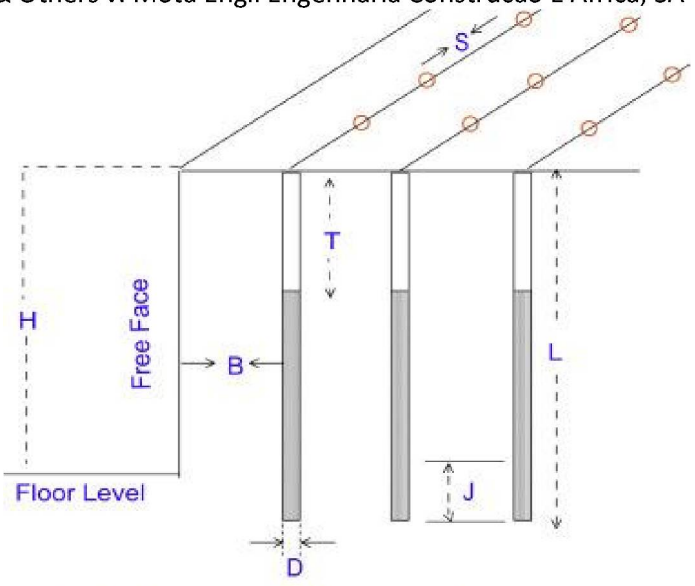


21. *We used an emulsion based explosive that came packed in standard diameter and weight, and anfo with dry holes. This means that we could not, and did not, increase the quantity of the explosive in a hole.*

22. *As an example the stander packing for a 60mmx0.55m (diameter length) explosive is of 1.785 kg the max quantity of packages you can put in a hole is of 14un that means a total of 25kg.*

23. *In general, during actual blasting operations, the safe charge weight evaluated is distributed in a number of holes drilled to the required depth in a specific pattern and fired at small time interval. However, due to widely varying nature of rock, geological structure, and explosive materials, it is very difficult to set down simple equations, which may enable to design an ideal blast without some field testing. Trade-off needs to be exercised in designing the best for a given situation. Field testing is very useful for optimizing the individual blast design parameters. The performance of a blasting operation depends mainly on the rock properties, explosive properties and various blast design parameters that need to be adjusted blast by blast till you get the best results in a specific stone.*

24. *We also employed mechanisms/measures to ensure that the impact of the blasting activities is minimized. We ensured the maximum quantity to be used per hole per time to be blasted was 25kg as per the pattern below and also as per the above example of delays.*



25. *It is not true that ground vibration frequency which originates from quarrying operations measured at lower than 40H2 are capable of damaging structural buildings as far as 3000 metres from the blasting point. In order for damage to occur to structures below 40hz, you have to measure particular velocity of 15mm/s to 50mm/s; so in the worst case scenario the structure would need to be between 50m to 100m. ~~[This needs to be clarified]. At Bunda, the nearest structure was 400m away.~~*

PEAK PARTICLE VELOCITY (mm/s) AS FUNCTION OF CHARGE WT AND DISTANCE

Charge Weight Per Delay / kg	Distance From Charge / m										
	0.5	1	2	5	10	20	50	100	200	500	1000
0.025	825	211	53.8	8.84	2.26	0.58	0.09	0.02	0.01	0.00	0.00
0.050	1633	417	106	17.5	4.47	1.14	0.19	0.05	0.01	0.00	0.00
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0.150	4820	1230	314	51.6	13.2	3.37	0.55	0.14	0.04	0.01	0.00
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1.000	*****	7972	2035	335	85.4	21.8	3.59	0.92	0.23	0.04	0.01
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2.500	*****	*****	5018	825	211	53.8	8.84	2.26	0.58	0.09	0.02
5.000	*****	*****	9932	1633	417	106	17.5	4.47	1.14	0.19	0.05
7.500	*****	*****	*****	2435	622	159	26.1	6.66	1.70	0.28	0.07
10.000	*****	*****	*****	3233	825	211	34.6	8.84	2.26	0.37	0.09
15.000	*****	*****	*****	4820	1230	314	51.6	13.2	3.37	0.55	0.14
25.000	*****	*****	*****	7972	2035	519	85.4	21.8	5.57	0.92	0.23
50.000	*****	*****	*****	*****	4028	1028	169	43.2	11.0	1.81	0.46
75.000	*****	*****	*****	*****	6005	1533	252	64.3	16.4	2.70	0.69
100.000	*****	*****	*****	*****	7972	2035	335	85.4	21.8	3.59	0.92
150.000	*****	*****	*****	*****	*****	3034	499	127	32.5	5.35	1.36
250.000	*****	*****	*****	*****	*****	5018	825	211	53.8	8.84	2.26
500.000	*****	*****	*****	*****	*****	9932	1633	417	106	17.5	4.47

site law exponent = -1.97 site law constant = 7972

<u>Approval of Explosives</u>

26. *Explosives that we used were approved, imported, and inspected by local authorities i.e. Mine Departments and Malawi Police Explosives Department. All importations need to be inspected by this two entities and periodical inspections are made to*

Explosive magazine quarry blasting and explosive transports to and from Magazine/Quarry.

Officers carrying out the blasting

27. *We also used duly qualified and licensed officers to carry out the blasting. These were myself, Odala Malata, Suselio Fernando Cardoso Oliveira, Joel Quaresh, Philip Sisya and Samuel Gawaza. I attach the relevant licences marked **RC**."*

92. The supplementary sworn statement by DW5 states:

" *Allegation of bad smell/noxious fumes*

1. *I refer to paragraphs 7 and 8 of my statement dated 3rd June 2019 ("Main Statement') and add that the smell/fumes were not much and cannot go beyond 100 metres. These are only felt in the blasting area and dissipate quickly. The smell/fumes are nether bad nor noxious in the ranges of the nearby houses/.*

Allegation of flyrocks

2. *The incident referred to in paragraph 13 of the Main Statement was the only incident where flyrocks affected people's fields. In respect of this incident, the flyrocks only reached few gardens bordering the blasting area. I recall that these gardens had their boundaries within the quarry pit; the usage of these gardens should not have been allowed as they were inside the quarry-licensed area. Mota Engil removed the flyrocks from the fields. Those whose crops were affected were compensated, despite the fact that this land should not have been used while the quarry was operationalere compensated. There was no incident whatsoever of flyrocks reaching people's compounds or houses.*

3 *Further, it is not true that incidents of flyrocks were frequent. To start with, Mota Engil only blasted ~~9 (please provide records of the blasts)~~ a few times during the whole period that it operated at Bunda quarry as evidenced by thr Permits hereto attached marked RC3(a) to RC3(g). Secondly, apart from the incident referred to in paragraph 2 above, there was no other incident of flyrocks going out of the blasting area - it is important to note that after each and every blast the safety team used to go into the surrounding area to check if any damage had been caused by blasting so if there was any complaint we could know immediately.*

4 *I wish to add that the flyrocks are not as a result of mistakes of the blasting team. It is important to note that blasting is a complex process and can be affected by several factors e.g. geology of the rock, fending of the rock in the existing bench, direction of the exposed bench, height of the bench, drilling deviations and delays in the conections – all these factors were evaluated so that we could use the best pattern possible, adjusting explosives charges and delays in the connections; but it is always an unpredictable task. We had ensured that every blast was conducted and supervised by an experienced blaster, to ensure the best outcome of the blast.*

5. *Further, as already stated in paragraph 12 of the Main Statement, we created a hump with a view to mitigating the effect of flyrocks. This hump was made around the quarry pit perimeter especially near the gardens. This was done in order to try*

and protect the gardens from flyrocks. However, the main problem was that some gardens were located in the quarry pit boundaries just a few metres from the blasting area..

Blasting personnel and the blasting process

7. *I refer to paragraph 27 of the Main Statement. I also refer to the witness statements of Levison Chauya for the Claimants. I state as follows:*

7.1 As stated in the Main Statement, Mota Engil used to use qualified and licenced personnel to carry out the blasting. At no point was anyone unlicenced and unskilled used to participate in the blasting process;

7.2 It is not true that blasters were not checking each and every hole to see if there was no overfill. As explained in my Main Statement, we used standard quantity of explosives at all times – see paragraphs 21 to 24 of the Main Statement;

7.3 It is not true that a blast lost direction and destroyed houses. There was no incident of a rock underground being cut in the middle as a result of improper planting or poor connection of wires or at all. As already stated, we always used qualified, experienced and licenced blasters who always executed their duties well and by following all the necessary standards. It is not true that we used to plant to many holes, the pattern of each blast was determinate evaluating the existing bench and its conditions adjusting the distance of holes to the specific charge of explosive that is standard, the pattern was given to the drill operator to execute, we also adjusted blast after blast to mitigate flyrocks and improve the final result.

Safety

8. *As a safety requirement, we were making sure that the danger zone [100 metres] is clear. Those loitering around this radius could be asked to move out of the danger zone before the blasts."*

92. In cross-examination, DW5 stated that he was the Quarry Manager for the Defendant from May 2010 to December, 2016 and that he is a technical engineer. DW5 defined resonance as the situation whereby the frequency of an incoming wave reaches the same frequency as the natural frequency of a building. He said when resonance is reached problems can occur, such as development of cracks or falling of the building.

93. DW5 stated that he was supervising all queries of the Defendant in Malawi. He said he was not at Bunda quarry all the time. He said that he did not know of the quarry inside the forest. He stated that the mining licence was for quarry outside the Bunda forest. He said that he was surprised to hear that there was another quarry inside the forest. DW5 explained that it is the authorities that gave the coordinates and showed them the quarry outside the Bunda forest.

94. DW5 said that they were carrying out one blast in a month. He confirmed that the maize in some gardens adjacent to the quarry pit was destroyed. He confirmed that some flyrocks fell on maize in some adjacent gardens. He said that the gardens were situated within the quarry licenced area close to the quarry pit. He said that the Defendant paid for the damaged maize. He confirmed that the secure radius was 500 metres from the blasting point as indicated in the Method System. He said that 15 minutes before the blast, the Defendant's agents were going to the villages and were telling the people within 500 metres from the quarry to leave the safety radius. He confirmed that the secure radius for blasting is 500 metres.

95. DW5 said that they were using ammonium nitrate or emulsion. He said all explosives produce smell. He said ANFO is ammonium nitrate. He said smell is a natural consequence of the chemical reaction of explosives. He said that the smell is like that of gun powder and is localized within the blast area. He said that it is normal for quarrying activities to produce dust but the dust would have gone by the time they advise people to go back to the villages.

96. Regarding quarry mining bringing acid to the water, DW5 explained that whether or not the water would be acidic depends on the quantity and material used and the type of weather. In this regard, he said that ammonia nitrate is used in dry season only and emulsion in wet season only..

97. As regards flyrocks, DW5 said that these are caused by the forces or gases which are produced during the blast and these forces propel stones into the air. He said the blasters can use some methods to prevent flyrocks such as stemming that is leaving the space on top of the hole of about 1.5 meters for instance without explosives. He said a blaster needs to do calculations to know how much space to leave without explosives. The blaster also need to calculate how much explosives to put in the blast hole. He said a blaster has to measure and do calculations involving the volume of the stone to be blasted, the distance in front of the bench, the depth and the diameter of the blast hole, amongst other parameters. He said the number of holes being drilled depended on the demand for stones from users. He also said the number holes depends on how much stones you need. DW5 said that calculations are to be by a blaster on the ground before the blast. He said that the one doing calculations is supposed to know Mathematics and Physics. He said the Defendant's blasters did not know Physics but were educated and experienced.

98. DW5 said it is normal for blasting to cause vibrations. He said the ground shakes when there is a blast. He said the power of the explosion dissipates with distance. The further the shockwaves from a blast goes, the weaker the frequency from shockwave becomes. He said the further from the blast point the smaller the frequency. He said low frequencies are dangerous. He said the low frequencies are

the ones which damage houses because they are closer to the natural frequency of a house. He said the frequency of a house is normally 15-20 hertz (Hz).

99. DW5 stated that every blast has a direction which is determined by the blast pattern or connections. He said a blaster can orient the blast direction through the connections or blast pattern. He said it is possible that one blast at Bunda Quarry lost direction. He said that the Defendant's blasters at Bunda quarry were educated and very experienced. There was also a foreman. He said there were few incidents of flyrocks at Bunda involving the maize crops in the nearby fields. He said that the payment for the damaged maize was done by the defendant.

100. DW5 said they put a hump opposite the forest and the hump was made of soil with a height of 3 to 4 metres. He said that even 20 metres was not enough to prevent flyrocks as flyrocks fly very high. He said they were using a delay system of blasting at Bunda quarry in order to reduce the impact of the blasts. He said they would use 17 milli seconds, 25 milli seconds, 34 milli seconds, 42 milli seconds delay. He said that the blast would take a few seconds. He said that if all the holes could be blasted at once or if the delays are not much there would be too much vibration. He said that shock wave is the sound resulting from the blast.

101. During re-examination, DW 5 re-stated that he was supervising all quarries of the Defendant. He stated that the Defendant worked on the quarry outside the Bunda forest. Regarding crops, DW5 said that the crops that were destroyed were those that were about 1 to 2 metres near the quarry and this was within the licensed area of the Defendant's quarry. He explained that there were a few isolated cases of fly rocks reaching the cropland within the licensed are but not the villages. As regards dust, he said that dust takes about 10 minutes to settle depending on climatic conditions. It settles quickly in wet conditions than in dry season. He also confirmed that the blasters were well educated and had long experience in blasting.

Burden and Standard of Proof

102. The burden of proof lies upon the party who substantially asserts the affirmative of the issue. The rule means that where a given allegation, whether affirmative or negative, forms an essential part of a party's case, the proof of such allegation rests on the party: see Phipson on Evidence (16th Edition), 127, **Commercial Bank of Malawi v. Mhango** [2002-2003] MLR 43 (SCA) and **Milner v. Minister of Pensions** [1974] 2 All E.R. 372**.**

103. It is also well settled that the standard of proof in civil cases is on balance of probabilities. In **Msachi v. Attorney General [1991] 14 MLR 287**, at 290, Tambala J (Rtd) put the point thus:

"[t]his is a civil action and the duty of the plaintiff, in a civil case, is to prove his case on a balance of probabilities.' – See also Phipson, infra, 154. A balance of probabilities

simply means that a Court is entitled to say that, based on the evidence led before it, it is of the view that 'it is more probable than not' that the fact asserted is made out"

104. The party on whom lies a burden must adduce evidence of the disputed facts to the required standard or fail in his or her contention. It, therefore, follows that in the present case the burden of proof is on the Claimant as the party who has asserted the affirmative to prove on a balance of probabilities his case against the Defendant.

Issues for Determination

105. Following failure to reach settlement agreement at mediation session, Justice Nriva referred the matter to trial on the following issues:

"(1) Whether or not the Defendant was negligent or in breach of duty in the manner it was carrying out its blasting activities

(2) If so, whether the Claimants suffered loss

(3) whether or not the Claimants suffered nuisance due to the Defendants' mining activities

(4) whether or not the Claimants are entitled to the reliefs particularized in their statement of case."

106. It is important to observe that unless subsequently changed by another court order, issues for trial are those outlined in the order made by the Judge under Order 13, rule 9(2), of the CPR as being issues where the parties are in disagreement. In the present case, no other order was made by the Court providing contrary to the order that was made by Justice Nriva. We will, therefore, proceed to consider the issue outlined in the said order.

Negligence

107. The case of **Blyth v. Birmingham Waterworks Company (1856) 11 Ex Ch 781** is famous for its classic statement of what negligence is and the standard of care to be met. Baron Alderson made the following famous definition of negligence:

"*Negligence is the omission to do something which a reasonable man, guided upon those considerations which ordinarily regulate the conduct of human affairs, would do, or doing something which a prudent and reasonable man would not do. The defendants might have been liable for negligence, if, unintentionally, they omitted to do that which a reasonable person would have done, or did that which a person taking reasonable precautions would not have done*"

108. The essential elements of actionable negligence are (a) a duty to take care owed to the claimant by the defendant, (b) a breach of that duty, and (c) damage suffered by the claimant resulting from the breach of duty: see **Donoghue v. Stevenson** [1932] AC 562 quoted with approval by Justice Ndovi, as he then was, in **Kadawire v. Ziligone and Another** [1997] 2 MLR 139 at 144, **J. Tennet and Sons Limited v. Mawindo** 10 MLR 366.

109. It is also commonplace that the damage suffered by the claimant must be foreseeable and not remote: see **Vincent Lompwa v. Raiply Malawi Limited,** HC/PR Civil Cause No. 510 of 2012. The term remoteness refers to the legal test of causation which is used when determining the types of loss caused by a breach of duty which may be compensated by a damages award. Legal causation is different from factual causation which raises the question whether the damage resulted from the breach of duty. Thus, once factual causation is established, it is necessary to ask whether the law is prepared to attribute the damage to the particular breach, notwithstanding the factual connection. Damage which is too remote is not recoverable even if there is a factual link between the breach of duty and the loss.

110. In relation to some torts such as negligence, the test for remoteness of damage is whether the kind of damage suffered was reasonably foreseeable by the defendant at the time of the breach of duty: see **The Wagon Mound No 1** [1961] AC 388). The defendant will be liable for any type of damage which is reasonably foreseeable as liable to happen even in the most unusual case unless the risk is so small that a reasonable man would in the whole circumstances feel justified in neglecting it: see **Heron II** [1969] 1 AC 350.

111. The Claimants hold the view that the tort of negligence on the part of the Defendant has been proved. I deem it expedient to quote the relevant part of the Claimants' Submission Post Trial and the same has been framed as follows:

> *"a) Analysis of the evidence shows that the claimants have proved their case on a balance of probabilities or even beyond that. All witnesses for the claimants stated that the quarry mining activities of the defendants subjected the claimants to ground vibrations, destruction of houses, noise pollution, air pollution, water contamination and interference with the peaceful occupation of their houses and land. Mr Tsokonombwe and Mr Costa, witnesses for the defence both confirmed that the houses were damaged due to resonance when the frequency of the waves from the blasts matched with the natural frequencies of the houses. Mr Tsokonombwe and Mr Costa both confirmed that there were ground vibrations and noise from the defendant's quarry mining activities and that these are normal in quarry mining.*
>
> *b) The evidence of Mr Costa, Mr Gremu and Mr Malata also confirmed that blasting and quarry mining activities were producing noise, vibrations and dust. The*

evidence of Mr Harvey Chilembwe and Mr Tsokokombwe also confirmed that sound levels were ***beyond the 55 decibels for residential houses being the maximum limit set by the Malawi Bureau of Standards****. Houses at 2,500 metres from the blasting point were exposed to noise levels at 76.73 decibels from blasting. All claimants herein are within a radius of 2,500 metres and all claimants including the furthest ones were exposed to noise levels* ***BEYOND the maximum limit set by Malawi Bureau of Standards****. At 400 metres from the blast point claimants were exposed to noise levels at 92.65 decibels. At 500 metres claimants were exposed to noise levels at 90.72 decibels. All the claimants were exposed to ground vibrations which disturbed them. This is clear from the expert evidence of Harvey Chilembwe (see pages 247 to 250 of the trial bundle) and the evidence of the claimants' witnesses as further supported by the evidence of Mr Tsokonombwe and Mr Costa. Mr Tsokonombwe (for the defence) and Mr Costa (for the defence) both confirmed that blasts produce vibrations and shockwaves.*

c) *The evidence of Moses Kachemwe (for the defence) proved that the water at Mponda village is acidic below the level recommended by Malawi Bureau of Standards. Both Mr Kachemwe and Mr Costa confirmed that acidity of water is caused by quarry mining. The evidence of Mr Kachemwe also showed that iron causes water to be smelly. Mr Kachemwe's expert report showed that the drinking water at the claimants' villages had iron. The claimants pleaded that their drinking water was smelly as a result of the defendant's mining activities. Mr Kachemwe's expert report showed that the drinking water at the claimants' villages was below the recommended standard for tap water.*

e) *The evidence has shown that the defendant's mining activities interfered with the Claimants' peaceful enjoyment of their land. This is clear from the evidence of CW 1 to CW 6. Even the evidence of DW 2 (Mr Tsokonombwe) (expert witness for the defence) confirmed that the houses of the claimants developed cracks. DW 2 also confirmed that the noise levels were above 55 decibels which is the maximum level allowed by Malawi Bureau of Standards. It follows that the claimants have proved on a balance of probabilities that torts of trespass, nuisance and interference with peaceful occupation of houses were committed by the defendants.*

j) *The defendant grossly underpaid some claimants for flyrocks which fell on their land. Further the claimants were not paid damages for nuisance, inconvenience, trespass, loss of mesne profits and damages for loss of amenity value in the claimants' land. The fact that the gardens of some claimants were infested with flyrocks was confirmed by Renato Costa (DW 5), the last defence witness. This also confirms that there was trespass, nuisance and interference with peaceful occupation of land by the defendants."*

112. It is the position of the Defendant that the Claimants have utterly failed to substantiate these allegations of negligence to the requisite standard. In the interest of parity of treatment, that part of the Defendant's Written Submissions after trial will also be quoted in full:

" ...

Allegation of failure to erect / mount shields or high humps to stop flyrocks and allegation that flyrocks were destroying iron sheets and planks supporting the iron sheets on roofs of houses

6.7 *Contrary to the claimants pleadings on paragraph 32 (h) on page 37 of the trial bundle, and particular of loss (g) on page 55 of the trial bundle and also the contents of paragraph 8.0 of HC1 titled "Flyrocks" on page 253 of the trial bundle, the entirety of the claimants evidence shows that none of the claimants' house, ironsheets and/or planks were hit by flyrocks as alleged. Furthermore, when the court visited the locus in quo, none of the claimants' witnesses, including Mr. Harvey Chilembwe, showed the court houses that were allegedly hit by flyrocks. There is no evidence whatsoever adduced by the claimants to show that the iron sheets of their houses and/or the planks supporting the iron sheets were hit and destroyed by flyrocks as pleaded. However, the only evidence brought by the claimant was one incident of flyrocks falling into two gardens situated very near the quarry pit outside the forest. Mr. Renato Costa however told the court (through paragraph 13 of his statement on page 443 of the trial bundle and also during cross-examination) that these gardens were in fact situated within the Bunda quarry mine* ***licenced*** *area which were not supposed to be used for farming in the first place. In paragraph 4 of HC1 (on page 245 of the trial bundle), the claimants' expert witness, Mr. Harvey Chilembwe states that "****researchers have established that the main causes of flyrocks are (i) inadequate burden and spacing (ii) inadequate stemming (iii) improper blast hole pattern (iv) inaccurate drilling (v) overloaded blast holes (vi) excessive powder factor (vii) unfavourable geological conditions (i.e. open joints, weak seams and cavities) (viii) inappropriate delay timing and sequence, and (ix) inaccuracy of delays.*** *At the trial, however, the claimants did not lead any evidence whatsoever to prove any of these as being the cause of flyrocks at Bunda quarry mine. The claimants' expert witnesses, Mr. Harvey Chilembwe in particular, did not say in HC1 that these were found to be the cause of flyrocks at Bunda quarry. After all, the particulars of negligence pleaded do not suggest that the incident of flyrocks falling onto the two gardens at Bunda quarry were a result of negligence on the part of Mota-Engil. To this end, paragraph 6.5 of the statement of Mr. Levison Chauya on page 401 of the trial bundle lacks basis and merit and should be disregarded by the court. Contrary to the claimants' allegation, there is evidence that Mota-Engil mounted a shield or hump at Bunda to mitigate the effects of flyrocks (See paragraph 12 of Mr. Renato Costa's witness statement on page 443 of the trial bundle. See also this aspect in his answers given during cross-examination). We invite the court to note here that much as the claimants made this allegation, none of the Claimants' witnesses established at trial by way of evidence that there was no hump at Bunda quarry. Mr. Costa however told the court during the cross-examination that no high hump can totally prevent incidents of flyrocks. The high hump or shield at Bunda quarry was therefore erected with regard to ensuring the safety and welfare of the claimants by minimizing the incidents of flyrocks in the circumstances. That these incidents were in fact minimized is buttressed by Mr. Costa's undisputed evidence*

*in paragraph 6 of his statement on page 441 that "**in total, Mota-Engil conducted 9 blasts only in 2 years", and also in paragraph 13 on page 443 of the trial bundle that "Mota-Engil was only contacted in one case in relation to damage to crops. The residents that were affected by the flyrocks were compensated".** Further, when the work visited the locus in quo, it observed very few flyrocks present in only two gardens which Mr. Costa told the court that they are situated within the Bunda quarry licenced area.*

Allegation of blast vibrations causing houses to crack and fall

6.8 *Further, there is no evidence whatsoever brought by the claimants at trial to prove the allegation that the cracks on all the claimants' houses were caused by blast vibrations at Bunda quarry as alleged. It is not in dispute that the mining licence for the Bunda quarry was granted in May 2013 (See paragraph 3 of HMC1 on page 287 of the trial bundle). It is equally not in dispute that quarrying activities at Bunda quarry were commenced in September 2013 to April 2015 (See paragraph 4 of Mr. Renato Costa's statement on page 441 of the trial bundle). It is clear from page 243 of HC1 under paragraph 2 on "purpose of the study" that HC1 was an expert study of the blasting operations that took place in **2013** at Bunda quarry. On the last sentence of paragraph 1 on page 251 of the trial bundle, HC1 states that **"It is clear that already existing cracks may have been "extended" during the blasting operations"** at Bunda quarry. Obviously, the blasting operations that may have extended the already existing cracks took place before Mota-Engil started its blasting operations in September 2013. Before Mota-Engil started in September 2013, the immediate previous quarry operator was **Master Stone** (see paragraph 3 on page 287 of the trial bundle). There are also other prior quarry operators named on the same page. This piece of the Claimants' evidence in HC1 is however an acute departure from what was pleaded, namely that **Mota-Engil was carrying out blasting operations whose vibrations were "causing" cracks to the surrounding houses**. This piece of evidence from HC1 is very clear that the cracks and their cause pre-existed Mota-Engil's blasting operations that took place from September 2013 at Bunda quarry, and that the pre-existing cracks may only have been extended when Mota-Engil commenced the blasting operations at Bunda quarry from September 2013 to April 2015. We accordingly submit that, since there is evidence that there were other blasting operations (by other quarry operators) before September 2013, the cause of the pre-existing cracks recorded on page 11 of HC1 (on page 251 of the trial bundle) surely falls in the period before September 2013.*

6.9 *However even if it were to accepted that the cause of the cracks were the blasting operation carried out from September 2013 when Mota-Engil started operating the Bunda quarry as pleaded, the court will notice that there is no evidence whatsoever brought by the claimants, either in HC1, or otherwise, of the magnitude of the blast frequencies at Bunda quarry. There is also no evidence of the rate of attenuation of the blast frequencies to help determine at what distance such blast frequencies would have matched and resonated with the natural frequencies of all the claimants' houses so as to cause cracks or damage to the claimants' houses as alleged. The claimants' expert witness, Mr. Hervey*

Chilembwe, in fact conceded during cross-examination that there is no such evidence in HC1. Such a concession therefore renders the contents of paragraph 2 of Annes Zimpita's statement (on page 410 of the trial bundle) very unlikely. In that paragraph she says her house collapsed in January 2014 after an explosion was heard from Bunda quarry. This witness said she comes from Kabanga Mwenda 1 Village. During a visit to the locus in quo, the court saw that only Beni and Mponda villages surround or border the Bunda quarry site. The court should not therefore accept that Kabanga Mwenda 1 is close to the Bunda quarry. The name of this witness and how far her house (that allegedly collapsed) was situated from Bunda quarry is also not shown in HC2. The collapse of her house can therefore be hardly attributed to the blast vibrations from the Bunda quarry for lack of credible evidence (on this, see also paragraph 18 of Renato Costa's statement on page 444 of the trial bundle which in essence is to the effect that after 200m distance from the blast point, it is technically not possible to cause damage to structures). What is more. The focus of HC1 was only the blast operations that took place in 2013 at Bunda quarry (see paragraph under "purpose of the study" on page 243 of the trial bundle). This obviously does not cover blast operations that took place in 2014 when Annes Zimpita's house allegedly collapsed. We further invite the court to note that in the last two sentences of paragraph 2 under "conclusion" on page 253 of the trial bundle, it is stated in HC1 that ***"the scenario in Bunda is an indication that most controllable factors that contribute to excessive vibrations were ignored. Vibrations and air pressure can be minimized by limiting the amount of explosives perday****". However, there is no evidence whatsoever from the claimants on the court record that Mota-Engil was using an increased amount of explosives per day than was necessary. The claimants did not even bring evidence to prove that the blast vibrations were excessive during the period Mota-Engil operated the Bunda quarry. Further, in paragraph 14 on page 34 of the trial bundle, the claimants plead that* ***"Ground vibration frequency originating from blasting operations which are measured at lower than 40Hz are classified to be capable of damaging structural buildings as far as 3000 metres from the blasting point"****. However none of the claimants' witnesses, including their seismic expert (Mr. Chilembwe), brought evidence to the court that the ground vibration frequency from blasts at Bunda quarry were in fact measured to be lower than 40Hz. As a matter of fact, if what is pleaded in paragraph 14 on page 34 of the trial bundle were to be accepted, it would mean that blast frequency resonates or matches with natural frequency of the houses at 3000 metres from the blast point. Alternatively, it would mean that resonance or the matching of that blast frequency with the natural frequency of the claimants houses would not have occurred and affect the alleged houses which are located within a maximum radius of 1000 meters from the blast point at Bunda quarry given that the claimants plead in their statement of case that they live within a maximum of 1000m from the blast point. We accordingly submit that Mota-Engil blast operations at Bunda quarry were not the cause of the cracks and damage to the claimants houses. We submit further that Mota-Engil can therefore not be said to have carried out its blasting activities at Bunda quarry in disregard of the welfare of the occupants of the houses surrounding the Bunda quarry in the circumstances.*

Allegation of blasting without giving notice to the claimants

6.10 *One way in which Mota-Engil is alleged to have carried out blasting operations without due regard to the welfare of the occupants of the surrounding houses is through failure to give notice before each blast. However there is contrary and ample evidence from the claimants' own witnesses (See paragraph 6.20 of Mr. Frazer Gama's statement on page 407 of the trial bundle) which states that the claimants were required to leave their homes every time Mota-Engil was carrying out blasts at Bunda quarry. See also paragraph 11 of the statement of Anesi Zimpita on page 411 of the trial bundle), Mr. Renato Costa, witness for Mota-Engil, also stated that the claimants / residents within the villages surrounding the Bunda were required move out of safety radius of 500 metres from the blast point. Mr. Costa also testified that Mota-Engil in fact had a safety team to ensure this at Bunda quarry. This is a legal requirement (to evacuate) and the evidence so far shows that Mota-Engil was in the circumstances giving notice to the claimants before conducting each blast at Bunda quarry. We accordingly submit that, on the available evidence before the court, Mota-Engil had done all acts necessary when it was carrying out the blasts activities at Bunda quarry."*

113. Having given the respective submissions a careful consideration, it is my firm view that the submissions by the Claimants cannot be sustained for a variety of reasons. Firstly, I have carefully gone through the evidence that was adduced by the parties in this case and it is clear to me that the analysis of the said evidence by the Claimants is grossly not correct. The statements that Counsel Kazembe has sought to attribute to the witnesses is not supported by the evidence as set out in this judgment. For example, it is not true that:

(a) DW 2 and DW 5 confirmed that *"the houses were damaged due to resonance when the frequency of the waves from the blasts matched with the natural frequencies of the houses";*

(b) DW2 and DW5 confirmed that *"there were ground vibrations and noise from the Defendant's quarry mining activities and that these are normal in quarry mining". In any case, this fact by itself does not mean much. It was incumbent on the Claimants to show that they sustained injury or suffered damage as a result of the ground vibrations and the noise;*

(c) *"the evidence of DW 2 confirmed that the houses of the Claimants developed cracks."*

(d) the evidence of DW 2 proved that *"the water at Mponda village is acidic below the level recommended by Malawi Bureau of Standards".* DW2 was adamant in his evidence both in cross-examination and re-

examination that it is not always the case that whenever there is a mining pit, there is an acid mine drainage; and

(e) both DW2 and DW 5 confirmed that "*acidity of water is caused by quarry mining*". The evidence given by these witnesses is to the contrary. For example, DW 5 maintained that acidity depends on the quantity and material used and the type of weather.

114. Secondly, the evidence by the Defendant that it only conducted nine blasts in two years went unchallenged. In this regard, I am not satisfied that the said blasts could have caused the nature and extent of the loss that the Claimants allege to have suffered.

115. Thirdly, it is not enough that the houses of the Claimants developed cracks. It was incumbent on the Claimants to establish that the cracks developed as a result of the Defendant's mining operations. To frame the issue in technical terms, the Claimants ought to have adduced evidence of the rate of attenuation or magnitude of the blast frequencies in relation to respective distances between the places where blasting was being done to the respective Claimants' houses alleged to have suffered cracks or damage. This was not done. It is, accordingly, my finding that if at all the Claimants' houses were damaged or developed cracks, the same were not caused by blast operations of the Defendant.

116. Fourthly, the allegation by the Claimants that the Defendant would proceed to carry out blasting operations without giving notice to the Claimants before each blast is without merit. CW3, CW4, CW5 and CW6 were resided near Bunda quarry at the material time and all of them conceded during cross-examination that the Defendant was giving notice to the villagers before conducting each blast at Bunda quarry.

117. Fifthly, the Claimants pleaded, in the alternative, that they would rely on the principle of res ipsa loquitur. This issue was not pursued in the submissions by the Claimants. In any case, for the principle to apply, a claimant has to prove three elements, namely, (a) the thing causing the damage was under the control and management of the defendant, (b) the occurrence could not have happened without negligence and (c) there is no evidence to show how the occurrence happened: see **Phekani v. Automotive Products Limited (1993) 16 (1) MLR 427 (HC)** and **Mugonya and Another v. Electricity Supply Commission of Malawi [1997] 1 MLR 295.**

118. In the present action, the Claimants have alleged and particularized negligence, among other causes of actions, as being the cause of their alleged loss and damage. The Claimants proceeded to lead evidence in seeking to support the

allegation of the pleaded cause(s). As such, there is evidence to show how the alleged occurrence happened and, accordingly, the doctrine of res ipsa loquitur is not applicable in this case to prove the alleged negligence of the Defendant. The cases of **Zaibunnisa Nurmahomed Malida v. Chiona and Suleman Haji Abba,** 3 ALR (Mal.) p.427), **Kalea v. Attorney General** [1993] 16 (1) MLR 152 and **Selemani & another v. Advanx (Blantyre) Ltd** [1995] 1 MLR 262 are instructive. In these cases, the plaintiffs had respectively pleaded the principle of res ipsa loquitor but the Court held that the principle was not applicable because the plaintiffs knew the respective causes of the accidents.

119. All in all, it is my finding and holding that the Claimants have failed to prove the tort of negligence to the requisite standard of proof.

Breach of Statutory Duty

120. The Claimants allege that the Defendant was in breach of its statutory duty as prescribed under section 14 of the Occupational Safety, Health and Welfare Act and Explosive Act: see paragraph 35 of the Claimants' Statement of Case and the particulars thereunder.

121. It is noteworthy that it is only the evidence of CW4 that makes reference to breach of these two statutes: see paragraph 6.30 of his witness statement. During his cross-examination, CW4 stated that he does not know the provisions of these Acts. It is also striking that neither arguments nor references are made to these Acts in the Claimants' Submissions Post Trial. Instead, the Claimants' Submissions Post Trial discuss the provisions of the Environmental Management Act, which Act is not referred to in the Claimants' statements of case, or the evidence.

122. As the matter stands, there is hardly any evidence adduced by the Claimants to prove any of the particulars of alleged breach of statutory duties pleaded under paragraph 35 of the Claimants' Statement of Case. In any case, I am satisfied based on the evidence of DW5 and the Environmental Audit Report that the Defendant duly complied with its statutory duties under the two Acts. In the circumstances, it my finding and holding that the Claimants have failed to establish, on a balance of probabilities, that the Defendant was in breach of any its statutory duties as pleaded particularized in their statements of case, or at all.

Nuisance

123. It is the case of the Claimants that the Defendant failed to take measures to control nuisance while carrying out mining operations: see paragraph 30(d) of the Claimants' Statement of Case and they claim damages for nuisance.

124. The issue of nuisance has been mainly dealt with in the Claimants' Submissions Post Trial under two parts, namely, "Guiding principles on Nuisance" and "ARGUMENTS". The part headed "Guiding principles on Nuisance" is worded as follows:

> *"D. Guiding principles on Nuisance*
>
> *2.11 Nuisance is a branch of law of tort mostly closely concerned with protection of environment. See Buckley, Law of Nuisance, 2nd edn*
>
> *2.12 Nuisance is divided into two as Public and Private Nuisance. See Winfield & Jolowicz, On Tort Eighteenth Edition at page 711*
>
> *2.13 Private nuisance is a continuous, unlawful and indirect interference with the use of enjoyment of land or some right over or connection with it as per Lord Lloyd in the case of Hunter –vs- Canary Wharf (1997) 2 All ER 426 where he stated that private nuisance are of three kinds. They are (1) nuisance by encroachment on a neighbour's land; (2) nuisance by direct physical injury to a neighbour's land; and (3) nuisance by interference with a neighbour's quite enjoyment of his land.*
>
> *2.14 The interference of a neighbour's quite enjoyment of his land must be continuous interference. See the case of Bliss –vs- Hall (1838) where it was held that smell and fumes from candle making invading adjoining land amounted to nuisance.*
>
> *2.15 The maxim **Sic utere tuo ut alienum non laedas** means that **"so use your own property as not to injure your neighbour's.** see the case of Cambridge Water Co –vs- Eastern Counties Leather (1994) 1 All ER 53*
>
> *2.16 Disturbing neighbours' sleep by noise and vibration and damage to clothes from acids smuts. See the case of Halsey v Esso Petroleum Co. Limited [1961] 2 All ER 145,"*

125. The arguments by the Claimants relating to the issue of nuisance is couched in the following terms:

> *"e) ... DW 2 also confirmed that the noise levels were above 55 decibels which is the maximum level allowed by Malawi Bureau of Standards. It follows that the claimants have proved on a balance of probabilities that torts of trespass, nuisance and interference with peaceful occupation of houses were committed by the defendants.*
>
> *f) The defendant grossly underpaid some claimants for flyrocks which fell on their land. Further the claimants were not paid damages for nuisance, inconvenience, trespass, loss of mesne profits and damages for loss of amenity value in the *-claimants' land. The fact that the gardens of some claimants were infested with*

flyrocks was confirmed by Renato Costa (DW 5), the last defence witness. This also confirms that there was trespass, nuisance and interference with peaceful occupation of land by the defendants.

g) *The defendant's mining operations were producing noise, bad smell and dust and these inconvenienced the Claimants. This is clear from the evidence of CW 1 to CW 6. The noise was also confirmed by DW 2. DW 4 also confirmed that different plant and equipment such as excavator jerkhammmer, crusher, drilling machines make noise. DW 1, DW 2, DW 4 and DW 5 confirmed that blasting itself makes a lot of noise. DW 4 and DW 5 confirmed that explosives used for blasting produce bad smell. The foregoing shows that the claimants have proved that there was nuisance and the claimants were inconvenienced."*

126. On its part, the Defendant asserts that the effects of its blasting or quarrying operations do not qualify as actionable nuisance. The submissions on this issue are covered in paragraphs 6.15 to 6.31 of the Defendant's Written Submissions after Trial. These paragraphs will be set out in full:

i) <u>*Allegation of blast vibrations causing physical / structural damage and discomfort or inconvenience*</u>

6.15 The claimants allege that there were strong blast vibrations from Bunda quarry which caused damage to their houses surrounding the quarry. At law, liability for nuisance of this kind is established by proving damage to the land or house. Negligence is not an element in determining liability. We have already pointed hereinabove that the physical damage to the claimants houses and its alleged cause, according to HC1, pre-existed September 2013 when Mota-Engil commenced its blasting or quarrying activities at Bunda quarry. We have also alternatively shown that (contrary to what was pleaded in paragraph 14 on page 34 of the trial bundle) there is no evidence whatsoever on the court file brought by the claimants on the magnitude of the blast frequencies, distance and rate of attenuation to help the court to determine whether or not the natural frequencies of all the claimants houses in all their villages had in fact resonated or matched with the oncoming blast frequencies so as to cause the alleged structural damage. We therefore submit that the physical or structural damage to the houses can hardly be attributed to the blast vibrations at Bunda quarry.

6.16 On the contrary, the unchallenged evidence of Mr. Renato Costa in paragraph 18 of his statement on page 444 of the trial bundle is that, after 200 meters from the blast point, it is technically not possible for shock waves and blast vibrations to cause damage to structures and that at the material time, there were no houses within the 200 metre radius. On his part, Mr. Gift Tsokonombwe (on the last paragraph of page 488 of the trial bundle), states that blast frequencies at the Bunda quarry are within the low frequency range of below 20HZ and that such frequency from the blast site was experienced within a radius of 800 metres at Bunda quarry. He further states on page 488 of the trial bundle that such frequency cannot cause any structural damage. In paragraph 2 on page 489 of the trial

bundle, this witness stated that the study (HC1) deduced that the cracks were caused by geological processes rather than the blast activities as the measured frequencies were close to the ambient. We accordingly submit in the circumstances that the physical damage to the claimants houses cannot be attributed to the blast vibrations that occurred during September 2013 to April 2015 when Mota-Engil operated the Bunda quarry. It does not therefore qualify as actionable nuisance in the circumstances.

6.17 Further, the claimants also failed to lead any evidence at the trial to establish on a balance of probabilities that the blast vibrations at Bunda quarry (at the time the quarry was operated by Mota-Engil) were materially excessive as to cause any inconvenience or discount alleged in the claimants' statement of case. However, the undisputed evidence of Mr. Renato Costa (in paragraph 19 on page 445 of the trial bundle) is that after 200 meters from the blast point at Bunda quarry, the ground vibration for human comfort is below the standard international maximum limit (5mm/s). He further states that this means that all houses and constructions that are more than 200meters from the Bunda quarry pit had the minimum comfort assured. He further states that at the material time there were no settlements / houses within the 200 meter radius. We accordingly submit that there is utterly no evidence whatsoever to show that this nuisance is actionable.

ii) <u>Allegation of noise pollution</u>

6.18 The claimants also seek to recover damages for alleged noise pollution from Mota-Engil. They allege that there is loud noise coming Mota-Engil's quarry at Bunda which has greatly inconvenienced them (see paragraphs 13 and 19 on pages 34 and 52 respectively of the trial bundle). To begin with, it is not in dispute that the safety radius at Bunda was 500 meters from the blasting point. It should also be recalled at the outset that according to their statement of case, all the claimants in this matter live within a maximum radius of 1000 meters from the Bunda quarry (see paragraph 5 on page 33 of the trial bundle, and paragraph 5 on page 50 of the trial bundle, and paragraph 5 on page 211 of the trial bundle).

6.19 The court should also note beforehand that paragraph 8.0 of HC1 on page 251 of the trial bundle states as follows:

> *Since the mine was decommissioned years ago, it was not possible to collect in situ data of the levels of noise pollution the residents were exposed to during blasting operation. Fortunately, this investigation accessed a report which was prepared by one Mr. Tsokonombwe, who carried out a noise assessment study at Mangochi and Njuli quarries operated by Mota-Engil. His findings show that noise levels are within accepted limits with the highest value recording **<u>during blasting</u>** [84.7dBC at 1000 metres from the blast point at the quarry mine in Mangochi.*

The contents of paragraph 8.0 of HC1 reproduced above obviously come from item number 9 on Table 1 on page 495 of the trial bundle which is as follows:

No.	Measured location	Distance to the Noise Sources(m)	Average readings (dBC
9	Nearest household (during blasting)	1000	84.7

It is therefore clear in the circumstances that Mr. Harvey Chilembwe only extrapolated blast noise, and that HC1 did not extrapolate noise produced by other noise sources at Bunda like the crusher, jerk hammer or the loading process.

6.20 *According to paragraph 6.11 of Mr. Chilembwe's witness statement on page 238 of the trial bundle, the blasting operations at Bunda quarry were producing 90.72 dBA at 500 meters from the blast point, and 84.7 dBA for houses at 1000 meters from the blast source. In paragraph 6.12 on page 238 of the trial bundle, Mr. Chilembwe states that exposure to loud sound is irritating, is a nuisance and is hazardous to the eardrum. He said such exposure can cause temporary or permanent loss of hearing. It is worth noting that these effects of blast noise have not been pleaded to have been suffered by the claimants and that all the claimants' factual and expert witnesses did not lead any evidence to prove or establish that any of the claimants in fact suffered these effects of blast noise, or that such effects were attributed to the blast noise at Bunda.*

6.21 *During the defence case however, Mr. Gift Tsokonombwe told the court that blast noise is impulsive in nature and not continuous. He pointed out to the court that Tables 1 and 2 of HC3, on the other hand, deal with limits for continuous noise in a day. He said it is because impulse noise is not continuous that it is required to be measured by an instrument set at 'fast". He told the court that blasting is a special activity that is why people are required to evacuate the 500 meter radius. He pointed out that one therefore has to look at and consider paragraph 6.0 of HC3 on allowable noise limits for impulse noise. He said according to paragraph 6.1 (c) and (a) of HC 3, the allowable limits for impulse noise are 135dBA and150 dBA respectively as measured with an instrument set at 'fast" in any one day. He told the court that, in terms of NOTES (2) under paragraph 6 on page 268 of the trial bundle, non-continuous exposure at a sound level in excess of 85Dba(A) shall be regarded as exceeding 85dB(A) and that all areas where people may be exposed to send levels exceeding the limits above in 6.1 (a)(b)(c) and (a) of HC3 shall be identified as **ear protection areas** and shall be suitably **cordoned off**. He further said since we are dealing with blast noise in this case which is impulsive or non-continuous, the applicable noise limits are those set in paragraph 6.1 (c) and (a) of HC3 and the area to be **cordoned off** (i.e. to prevent people from getting into) is the safety radius of 500 meters from the blasting point which qualifies as the ear protection area.*

6.22 *The claimants' expert witness (Mr. Chilembwe) claimed in paragraph 6.11 on page 238 of the trial bundle that people within 500 meter radius were subjected to noise pollution since his report (HC1) established that the blast noise level at the distance of 500m from the blast point was 90.72dBA. We accordingly submit that there is no*

evidence to support this since the claimants conceded during trial that they were in fact evacuating or moving out of the safety radius of 500 meters as required before each blast was conducted at Bunda quarry. This therefore means that the claimants were not exposed to the alleged noise pollution within the 500 meter radius even if the blast noise level within that 500 meter radius were to be accepted to be at 90.72 dBA as alleged. What is more. The claimants' expert witness also allege that people within 1000 meter radius (i.e. from 500 to 1000 meters) were also exposed to noise pollution since the blast noise level within that radius was at 84.7dBA. However, we have already seen in paragraphs 6.1(c) and (a) of HC3 that the applicable or relevant limits for blast / impulsive or non-continuous noise are 135 dba and 150dBA. The blast noise level of 84.7dBA (at 1000 metres from the blast point) was therefore way below the minimum limit of 135dBA. The blast level of 84.7dBA is even less than 85dBA stipulated in paragraph 6 NOTES (1) on page 268 of the trial bundle. We accordingly submit that the claimants have utterly failed to substantiate their allegation of noise pollution due to blast noise in the circumstances. This alleged nuisance is therefore not actionable in the circumstances.

6.23 *The basis of our submission here is that at law, an unreasonable (actionable) annoyance occurs whenever the physiological and psychological well-being of human beings is substantially interfered with by noise among other nuisance. Paragraph 4.1 of HC 3 on page 267 of the trial bundle states that criterion for environmental noise is best developed basing on problems faced by human beings etc. Paragraphs 4.2 on page 267 of the trial bundle states that noise has effects on health such as:*

> 4.2.1 ***Physical damage – Exposure to sound pressure levels exceeding 140dB, even for a short period, involves a risk of morphological damage to the ear.***

The last sentence on page 514 of the trial bundle (which is the WHO-Guidelines for Community Noise) states that ***"to avoid hearing loss from impulse noise exposure, peak sound exposures should never exceed 140dB for adults, and 120dB for children".*** *Further, paragraph 3 titled* ***Toys, fireworks and fire arms****, on page 517 of the trial bundle states as follows:*

> ***"To avoid acute mechanical damage to the inner ear from impulsive sounds (from toys, fireworks and firearms), adults should never be exposed to more than 140dB (lin) peak sound pressure level. To account for the vulnerability in children when playing, the peak sound pressure produced by toys should not exceed 120dB (lin), measured close to the ears (100 mm). To avoid acute hearing impairment LAmax should always be below 110dB(A)".***

6.24 *We accordingly submit that the claimants' witnesses failed to lead evidence at the trial, on a balance of probabilities, to establish that the blast noise levels and indeed any noise levels from any nose sources at Bunda quarry (when Mota-Engil operated the quarry) was so excessive as to substantially or materially interfere with the physiological and psychological wellbeing of the claimants in the present matter. The*

evidence of the claimants' witnesses, Mr. Fraser Gama, in paragraph 6.34 of his statement on page 408 of the trial bundle (that the siren was too loud and was hurting his eardrum or that the siren was disturbing everyone in the whole neighborhood) therefore lacks credibility for lack of proof.

iii) Allegation of flyrocks as a nuisance

6.25 *In paragraph 16 on page 34 of the trial bundle, the claimants allege that heavy stones flying from the Bunda quarry had been **destroying iron sheets** (see also in paragraph 21 on page 52 of the trial bundle on the same allegation). In paragraph 10 on page 51, the claimants allege that the quarry stones have **greatly inconvenienced them**. Further in paragraph 13 on page 51 of the trial bundle, they allege that heavy stones were thrown to their **houses** and **land**. In paragraph (h) on page 55 of the trial bundle, the claimants allege that they are failing to farm in their gardens due to the fly rocks. In paragraphs 10 and 11 on page 212 of the trial bundle, the claimants plead that quarry stones have been thrown onto the **farms of all the claimants** and that **crops and trees of all the claimants** have been damaged and destroyed by the quarry stones. In paragraph 12 on page 212 of the trial bundle the claimants state that in 2013, Mota-engil **only paid the first claimant** (Mr Joward Katsabola) for damaged maize stalk and cobs. In paragraph (C) and (a) on page 213 of the trial bundle, the claimants allege to have **lost monetary value of their gardens and farms** and that they are **unable to profit from the same**.*

6.26 *In paragraph 8.0 of HC1 at page 253 of the trial bundle, Mr. Harvey Chilembwe, the claimant's expert witness, states that at Bunda, fly rocks were reportedly reaching a distance of 470 meters from the blasting site, 30 meters less of the safe zone for employees (500m). He states that fly rocks reached the habited areas especially those within 500m from the point of blasting. He further states that it is reported that a fly rock damaged a roof of a house at some point. However during the visit to the locus in quo, none of the claimants' witnesses, including Mr. Chilembwe himself, showed the court any house whose roof or rooves was/were damaged by fly rocks. Again, during the trial, none of the claimants witnesses told the court of the name of any claimant whose house had been hit by fly rocks.*

6.27 *On the contrary the court observed at the locus in quo that there were very few fly rocks in two gardens. These gardens allegedly belong to Mr. Joward Katsabola from Mponda village (see paragraph 6.13 on page 418 of the trial bundle) and Mr. Leebok Gray, from Beni Village (see paragraphs 2 and 4 on page 414 of the trial bundle). These two claimants were both paid or compensated by Mota-Engil in respect of damaged crops. Although Mr Leebok Gray states in paragraph 5 of his statement (on page 414 of the trial bundle) that the K30,000.00 paid to him by Mota-Engil was not enough for the **special damage** he suffered, this alleged special damage was not pleaded, particularized and strictly proved as required by law. At the locus in quo, both Mr. Katsabola and Mr. Gray failed to tell the court what was the respective monetary value of the destroyed maize. Mr. Gray also failed to tell the court how much more, on top of the K30,000.00 already paid, would be sufficient. Furthermore, the court at the locus in quo, saw ridges prepared in these two gardens. The preparation of such ridges by the claimants was surely with hope*

to plant. The allegation that the claimants are unable to farm lacks basis in the circumstances.

However, of great importance in determining whether or not the hitting of the two gardens by the fly rock had amounted to an actionable nuisance is Mr Renato costa's evidence on court record. In paragraph 13 of his statement (on page 443 of the trial bundle as reiterated in court under cross- examination) Mr. Costa told the court as follows:

> ***We were contacted in one case in relation to damage to crops. The residents that were affected by the fly rocks were compensated. It is important to note that some of the crops and land that was affected by fly rocks was inside the quarry licensed area, land which was not supposed to be used for farming.***

6.28 *At law, Mota-Engil's conduct (in respect of incidents of fly rocks) would only have become an actionable nuisance if the fly rocks or its consequences were materially excessive and had extended to the land of the claimants. We have seen (from paragraph 13 on page 443 of the trial bundle) that incident of the flyrocks was only one but affected two gardens rendering the flyrocks not excessive. We accordingly submit that as the croplands or gardens affected by the fly rocks at Bunda were undisputedly inside the Bunda quarry licensed area, the fly rocks and their effects were not excessive and were confined within Mota-Engil's own licensed area. The flyrocks did not therefore extend to the lands of the two claimants at issue as alleged. This alleged nuisance is therefore not actionable.*

(iv) *Allegation of bad smell, dust and water contamination*

Bad smell

6.29 *The claimants allege that they were inconvenienced by bad smell that was emanating from the Bunda quarry. However, claimants did not produce any evidence at the trial of how excessive or strong the alleged smell was to enable the court to determine whether or not it could be withstood by any reasonable person in the claimant's shoes. The court did not even experience any bad smell at the locus in quo. Mota-Engil's witness, Mr. Renato Costa, however told the court that the only smell produced at the Bunda quarry emanated from burning Ammonium Nitrate which was part of the explosive mixture. He said the smell was confined within the quarry area and completely dissipated after 5 to 10 minutes. He told the court that no mitigation measures were taken by Mota-Engil on the smell as it is an inherent consequence of the Ammonium Nitrate (see paragraphs 7 and 8 on page 442 of the trial bundle). We therefore submit that the claimants have failed to prove that the alleged bad smell amounted to an actionable nuisance in the circumstances.*

Dust

6.30 The claimants also allege in their statement of case that dust had been coming from the Bunda quarry which has greatly inconvenienced. They allege that quarry dust had caused some of the claimants to develop could be diagnosed with illness or diseases. They further allege that quarry dust had contaminated the farms or gardens of all claimants and water from the wells in their villages such that the claimants are compelled to cover a long distance to draw water. However, during the trial, the claimants' witnesses did not adduce any evidence to establish whether the quarry dust was materially excessive to render any reasonable man or the claimants themselves not to put up with it. The claimants also failed to produce in court evidence proving the causal connection between the dust and alleged diseases or illness. The claimants did not even tell the court what diseases were allegedly suffered and the names of the claimants who allegedly suffered the diseases.

6.31 During the visit to the locus in quo, none of the claimants' witnesses showed the court any garden allegedly infested by quarry or foreign dust. The claimants also did not show the court the wells in any of their villages whose water was allegedly contaminated by dust. The claimants witnesses failed to demonstrate to the court during the trial how excessive the alleged quarry dust was. On its part, Mota-Engil paraded Mr. Moses Kachemwe who told the court through his expert report (MK1) that the water from the wells at Bunda was not infested or contaminated by dust as alleged. He told the court that there is no significant impact of the mining activities of the Bunda quarry on the general characteristics of the surrounding groundwater at Bunda. He in fact told the court during the trial that groundwater at Bunda has acceptable chemical attributes with respect to WHO and MBS water quality guidelines (see also "conclusions" on page 538 of the trial bundle). We accordingly submit that this allegation of dust pollution at Bunda is clearly baseless and fictitious."

127. The tort of nuisance may be described as unlawful interference with a person's use or enjoyment of land, or some right over, or in connection with it. This description was adopted in **Read v. Lyons & Co. Ltd** [1945] K.B. 216, **Howard v. Walker** [1947] 2 All ER 197 and **Newcastle-under-Lyne Corporation v. Walstanton Ltd** [1947] Ch. 92.

128. To be unlawful, the interference must be substantial and the claimant must have suffered actionable damage: see **Halsbury's Laws of England**, 5th Edition Volume 78, para 214. Interference is substantial if in all the circumstances of the case the claimant cannot reasonably be expected to put up with it: see **JF Van ECK and 12 Others v. Clyde Brickfields (Pty) Ltd, Ekurhuleni Metropolitan Council and the Minister of Mineral and Energy Affairs** – Case Number 6020/2002. In short, not every interference or annoyance is actionable. The point has been aptly put by the learned authors of **Winfield & Jolowicz on Tort**, 11th Edition, Sweet and Maxweel at pages 355 and 356 as follows:

"Generally, the essence of a nuisance is a state of affairs that is either continuous or recurrent, a condition or activity which unduly interferes with the use or enjoyment of land. Not every slight annoyance, therefore, is actionable. Stenches, smoke, the escape of effluent and a multitude of different things may amount to a nuisance in fact but whether they constitute an actionable nuisance will depend on a variety of considerations, especially the character of the defendant's conduct, and a balancing of conflicting interests. In fact the whole of the law of private nuisance represents an attempt to preserve a balance between two conflicting interests, that of one occupier in using his land as he thinks fit, and that of his neighbor in the quite enjoyment of his land. Everyone must endure some degree of noise, smell, etc. from his neighbor, otherwise modern life would be impossible and such a privilege of interfering with the comfort of a neighbor is reciprocal. It is repeatedly said in nuisance cases that the rule is sic utere tuo ut alienum non laedas, but the maxim is unhelpful and misleading. If it means that no man is ever allowed to use his property so as to injure another, it is palpably false. If it means that a man in using his property may injure his neighbor, but not if he does so unlawfully, it is not worth stating, as it leaves unanswered the critical question of when the interference becomes unlawful. In fact, the law repeatedly recognizes that a man may use his own land so as to injure another without committing a nuisance. It is only if such use is unreasonable that it becomes unlawful."

129. The test of reasonableness has to be used in cases of the tort of nuisance because in such cases the Court has invariably to do a balancing act between competing interests. The following passage in **Winfield & Jolowicz on Tort**, at page 363 is instructive and illuminating:

"... We cannot make such a proposition as that you may not make a noise which irritates your neighbour, for common sense tells one that such a rule would be totally unworkable. Some intrusion by noise (or smells or dust, etc.) is the envitable price of living in an organized society in proximity to one's neighbours, indeed "the very nuisance the one complains of, as the ordinary use of his neighbour's land, he himself will create in the ordinary use of his own and the reciprocal nuisances are of a comparatively trifling character". Accordingly, the protection of such interests must be approached with an attempt to balance the competing rights of neighbor, a process of compromise, a "rule of give and take, of live and let live. It is to this issue that we are directing our attention when we talk of the "reasonableness" of the defendant's conduct rather than to whether he took reasonable care in the negligence sense."

130. The critical question is how do you determine the reasonableness of the conduct or activities of the defendant? Reasonableness here is determined "*according to the ordinary usages of mankind living in ... a particular society*": see **Sedleigh-Denfield v. O'Callaghan** [1940] A.C. 880, 903, per Lord Wright. No precise or universal formula is possible to determine reasonableness in the above sense. Whether an act constitutes a nuisance cannot be determined merely by an abstract consideration of the act itself. This is where the Claimants missed the plot big time. It was not enough just for the Claimants to show that the activities of Defendant was producing noise, dust, fumes, smell, etc.

131. Reasonableness of the defendant's conduct or activities has to be by reference to all the circumstances of the particular case, including the time and place of its commission, the seriousness of the harm, the manner of committing it (whether it is done maliciously or in the reasonable exercise of rights), the effect of its commission (whether it is transitory or permanent, occasional or continuous not), etc.

132. Having regard to the position of the law in respect of the tort of nuisance and taking into account the evidence that is before the Court, it is my finding and holding that the Claimants have failed to adduce evidence to prove, on a balance of probabilities, that:

(a) the blast vibrations at the Defendant's quarry were materially excessive as to cause any inconvenience or discomfort alleged in the Claimants' statement of case;

(b) the blast noise at the Defendant's quarry constituted actionable nuisance bearing in mind the different preventive measures that the Defendant put in place to deal with effects of blast noise and the measures included requiring people to evacuate the 500 meter radius;.

(c) the activities of the Defendant regarding fly rocks amounted to actionable nuisance in that neither the incidents of fly rocks nor their consequences could be labeled as materially excessive;

(d) the quarry dust was materially excessive to render any reasonable man or the claimants themselves not to put up with it;

(e) they suffered diseases as a result of quarry dust since, among other matters, they failed to adduce evidence to establish the causal connection between the dust and alleged diseases or illness;

(f) the alleged interference by the Defendant of the Claimants' use or enjoyment of land was "continuous", in the sense used in the case of **Hunter v. Canary Wharf** (1997) 2 All ER 426, bearing in mind the unchallenged evidence by the Defendant that it only conducted 9 blasts during the two years of its operations at Bunda.

133. In view of the foregoing and by reason thereof, the claim by the Claimants based on nuisance is dismissed.

The Rule in Rylands v. Fletcher

134. The Claimants seek to rely on the rule in **Rylands v. Fletcher** (1868) L. R. 3 H. L. 330. The arguments on this issue are covered in the Claimants' Submission Post Trial as follows:

> *"h) The defendants are liable per the rule in Rylands vs Fletcher which states that "the person who for his own purposes brings on his lands and collects and keeps there anything likely to do mischief if it escapes, must keep it at his peril, and, if he does not do so, is prima facie answerable for all the damage which is the natural consequence of its escape. The activities of the defendant resulted in rocks, debris, dust, bad smell and noise being thrown onto the premises of the Claimants. The defendant's activities also resulted in seismic waves flowing to the claimants' land which destroyed the claimants' houses. The claimants are thus liable under the rule in Rylands v Fletcher. Mr Costa confirmed in cross examination that blasting is a dangerous exercise.*
>
> *i) Per the rule in Rylands vs Fletcher the defendant cannot claim that the movement of the debris, dust, seismic waves and noise onto the premises of the Claimants was an act of God. The movement of the debris, stones, seismic waves, bad smell and dust amounted to trespass, nuisance, inconvenience and the illegal interference with the land of the Claimants. We have seen that in the case Rigby vs Northamptonshire (supra) and British Waterways Board vs Seven Trent Water Limited that throwing things onto somebody's land amounts to trespass.*
>
> *j) The defendant has no defence to the claims for damages for negligence, trespass, loss of mesne profits, loss of amenity value in the claimants' land, nuisance, inconvenience and interference with the peaceful enjoyment of land and this court is requested to enter judgment accordingly.*
>
> *k) It is noteworthy that **the liability under the rule in Rylands vs Fletcher is strict. Therefore, there is no need to prove negligence**."*

135. The first point to note is that, just as is the case with the principle of res ipsa loiquitur, a party that seeks to rely on the rule in **Rylands and Fletcher** has to plead the rule. This was not done in the present case.

136. Further, it is critical to recall that there are two prerequisites of the rule in **Rylands v. Fletcher**. Firstly, there must be the escape of something from one's close to another man's close. Unless there is an escape of the substance from the defendant's land where it is kept to the plantiff's land, there is no liability under the rule.

73. The second pre-requisite to liability under the rule in **Rylands v. Fletcher** is that the defendant must have brought onto the land something *"which was not naturally there"*. The most frequently quoted definition of non-natural user is that given by the Judicial Committee in the case of **Richards v. Lathian** [1913] A.C. 263:

It must be some special use bringing with it increased danger to others and must not merely be the ordinary use of the land or such a use as is proper for the general benefit of the community."

74. "non-natural use of the land" has to be determined as a matter of fact having regard to all circumstance of the case under consideration. In this regard, "non-natural use" is similar to the idea of unreasonable risk in negligence. In **Read v. Lyons**, supra, Lord Parker commented that:

""non-natural user seems to be a question of fact ... and in deciding this question I think that all the circumstances of time and practice of mankind must be taken into consideration so that what may be regarded as dangerous or non-natural may vary according to the circumstances.""

75. The Courts balance the magnitude of the risk (i.e. the extent of the accumulation and the injury potential of the thing accumulated) with the desirability or necessity of the activity from the point of view of the defendant and the public. The observations on this point by the learned authors of **Winfield & Jolowicz on Tort,** supra, at page 407**,** are pertinent:

"The identification of non-natural user with conduct creating an abnormal risk that ought not to have been borne by the public has given to the courts a device for determining liability in accordance with what they consider to be public policy. There is no objective universal test of what is non-natural. The court must make its own value judgment on the defendant's conduct, taking into account its social utility and the care with which it is carried out. Because of this, some of the early cases may require consideration. It may well be, for example, that courts in the future will be reluctant to hold that the use of land as a reservoir to supply water to a great city is non-natural."

76. Having regard to the pre-requisites for the application of the rule in **Rylands v. Fletcher** and the caselaw thereon, the Claimants erred in thinking that it was enough for the Claimants just to show that the Defendant's blasting activities resulted in fly-rocks, debris, dust, bad smell and noise. It would be wrong for the Court to take it for granted that a particular activity constitutes a non-natural use of the land just because it has been held to be so in another case: see **Read v. Lyons**, supra, where the House of Lords declined to consider itself bound by the **Rainham Chemical Works, Ld v. Belvedere Fish Guano Co., Ld.**

77. All in all, the Claimants have failed to prove, on a balance of probabilities, the existence in the present case of the pre-requisites for the application of the rule in **Rylands v. Fletcher**. Accordingly, it is my finding and holding that the rule in **Rylands v. Fletcher** was not pleaded and it does not apply in the case under consideration.

Claim of Trespass

78. The Claimants pray to be paid damages for trespass: see the prayer in the statement of case by the Claimants, paragraph 15 of the witness statement of CW3, paragraph 6.44 of the witness statement of CW4 and paragraph 14 of the witness statement of CW5. The issue of trespass is then covered in in the Claimants' Submissions Post Trial under two parts, namely, *"Guiding Principles on Trespass to Land"* and "*ARGUMENTS"*. The part headed "*Guiding principles on Trespass to Land"* is worded as follows:

> *"C. Guiding principles on Trespass to Land*
>
> *2.7 "Trespass is unjustifiable interference with possession of land." Tea Brokers (Central Africa) Ltd v Bhagat [1994] MLR 339 (HC) per Mwaungulu AJ (as he was then)*
>
> *2.8 Throwing things on someone's land amounts to trespass. See the case of Rigby –vs- CC Northamptonshire (1985) WLR 1242*
>
> *2.9 In British Waterways Board –vs- Seven Trent Water Ltd (2001) EWCA Civ. WLR 613 it was held that;*
>
> > *"Discharging water into the flowing watercourse of another amounted to trespass."*
>
> *2.10 Trespass is actionable per se. see the case of Entick –vs- Carrington (1765) 2 Wils. K.B. 275"*

79. The issue of trespass is dealt with under "ARGUMENTS" as follows:

> *"e) The evidence has shown that the defendant's mining activities interfered with the Claimants' peaceful enjoyment of their land. This is clear from the evidence of CW 1 to CW 6. Even the evidence of DW 2 (Mr Tsokonombwe) (expert witness for the defence) confirmed that the houses of the claimants developed cracks. DW 2 also confirmed that the noise levels were above 55 decibels which is the maximum level allowed by Malawi Bureau of Standards. It follows that the claimants have proved on a balance of probabilities that torts of trespass, nuisance and interference with peaceful occupation of houses were committed by the defendants.*
>
> *j) The defendant grossly underpaid some claimants for flyrocks which fell on their land. Further the claimants were not paid damages for nuisance, inconvenience, trespass, loss of mesne profits and damages for loss of amenity value in the claimants' land. The fact that the gardens of some claimants were infested with flyrocks was confirmed by Renato Costa (DW 5), the last defence witness. This also confirms that there was trespass, nuisance and interference with peaceful occupation of land by the defendants.*

...

i) Per the rule in Rylands vs Fletcher the defendant cannot claim that the movement of the debris, dust, seismic waves and noise onto the premises of the Claimants was an act of God. The movement of the debris, stones, seismic waves, bad smell and dust amounted to trespass, nuisance, inconvenience and the illegal interference with the land of the Claimants. We have seen that in the case Rigby vs Northamptonshire (supra) and British Waterways Board vs Seven Trent Water Limited that throwing things onto somebody's land amounts to trespass.

j) The defendant has no defence to the claims for damages for negligence, trespass, loss of mesne profits, loss of amenity value in the claimants' land, nuisance, inconvenience and interference with the peaceful enjoyment of land and this court is requested to enter judgment accordingly.

...

i) Trespass is actionable per ***se. It follows that there is no need to prove that the Claimants suffered damage. The throwing of rocks, debris and the movement of seismic waves on the claimants' land amounted to trespass. The defendants would go to claimants' houses and take the claimants out of their houses whenever the defendants were carrying out blasts. That amounted to nuisance and trespass. That also amounted to interference with the peaceful occupation of the claimants' houses. All these amounted to inconvenience. However in this case the claimants also suffered damage.***"

80. I have carefully reviewed the evidence and the submissions by Counsel regarding the issue of trespass. As already stated herein at paragraph ..., trespass was not pleaded as a cause of action but as a relief. A prayer for relief cannot stand on its own. The prayer for relief has to flow from a cause of action that has been pleaded. The pleaded causes of action in this case were negligence and breach of statutory duty and both causes of action have been dismissed.

81. Further, even if trespass had been pleaded, it could not have succeeded in this case for a number of reasons. Firstly, the alleged trespass is based on "flyrocks reaching the claimants' premises". This allegation cannot stand having regard to the fact that the only concrete evidence before the Court is that the Defendant, during the material time, only "*operated 9 blasts in 2 years and in some months there was no blasting at all"* and the Court has already made its finding on this issue: see paragraph 114. Secondly, on the few occasions that the flyrocks found their way outside the Defendant's licensed area, this happened accidentally. It is trite that accidental events cannot constitute trespass. The learned authors of **Winfield & Jolowicz on Tort**, supra, have explained it thus, at page 335**:**

> *"It is true that land adjoining a highway may be unintentionally entered as the result, for example, of a motor accident, but in such cases it was clear long before Fowler v. Lanning [1959] 1Q.B. 426 that the plaintiff must prove negligence. Other cases of unintentional entry are more likely to occur in the imagination than in real life – I may, perhaps, fall or be thrown from my window into your garden, In the latter case there has been no act on my part and so I cannot be liable in any event."*

82. Furthermore, the only witness statements of the Claimants that refer to *"damages for trespass"* are those of CW4 and CW5. However, neither the witness statement of CW4 nor that of CW5 contains evidence which supports the tort of trespass. With due respect to Counsel for the Claimants, the mere fact that houses developed cracks is not proof of trespass.

83. Having regard to the foregoing analysis, the inescapable conclusion is that the Claimants have failed to prove to the requisite standard that the Defendant committed acts of trespass.

Area covered by the Mining Licence

*84. It is c*ontended in the Claimants' Submission Post Trial that the Defendant was carrying out mining activities outside the area covered by its licence. The point was put thus:

> "*a) The defendant's carried out mining at an area outside the mining licence. The defendant did not check the boundaries and coordinates of the mining licence that they were given. It follows that everything they did at Bunda Quarry mine was illegal. However even if they had the licence for the place they were blasting the destruction of the property of the claimants was illegal and so was the inconveniencing of the claimants without paying compensation to the claimants."*

85. This contention lacks merit. As was correctly observed by the Defendant in the Defendant's Written Submissions after Trial:

> *"This alleged illegality is not pleaded in the claimants' statement of case. The claimants' evidence at trial that the mining licence was for the quarry inside Bunda Forest, and not the one outside the forest, serves to support nothing in their own pleadings."*

86. In any case, the Court is inclined to believe the evidence given by the witnesses for the Defendant that the Defendant was licensed to carry out its operations in the quarry on the edge of, and not inside, Bunda Forest. It will recalled that DW5 testified that it was the authorities that gave the Defendant the coordinates of the licensed area and showed the Defendant the quarry outside the Bunda forest. I am sure that both members of the community and government authorities would have taken the Defendant to task well before the commencement of this case and there would have been supporting documents to that effect.

87. On this score, I have no hesitation in throwing out the allegation of the illegality.

Conclusion

88. In these circumstances and by virtue of the foregoing, I am satisfied that the Claimants have failed to prove their claims herein to the requisite standard. Accordingly, the suit by the Claimants is dismissed in its entirety with costs for lack of merit.

Pronounced in Court this 15th day of August 2022 at Lilongwe in the Republic of Malawi.

Kenyatta Nyirenda
JUDGE