NEWMONT WAIHI GOLD LTD
VIBRATION MANAGEMENT PLAN
SEPTEMBER 2012

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VIBRATION MANAGEMENT PLAN

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1. PLAN OBJECTIVE

The objectives of this Vibration Management Plan (VMP) are to detail the methods to be used by Newmont Waihi Gold (NWG) to:

- comply with the relevant conditions of Mining Licence 32-2388, the Hauraki District Council (HDC) Land Use Consent 97/98 - 105 (for the Martha Mine), and HDC Land Use Consents 85.050.326E (Favona Underground Mine) and RC-15774 (Trio Underground Mine);
- liaise with the community and respond to complaints and concerns as they arise;
- avoid or mitigate unreasonable noise as required by s16 of the Resource Management Act.

1.1. Pre-existing Mine and Favona Plans Amalgamated

This VMP is the 2012 review of the Martha Mine Stability Cut Back Vibration Management Plan (September 2006) and the Favona Underground Mine Vibration Management Plan (June 2007), plus the incorporation of Trio Underground Mine Vibration Management, and is submitted as an amalgamation of the two documents into one plan.

During the review, the similarity between the two existing plans was apparent, particularly in relation to monitoring, reporting and community interaction. For example, the Vibration Monitoring Plan (refer appendices) already includes both operations, quarterly reporting is in one combined report, and community interaction is undertaken through a common process.

In order to avoid multiplication and potential confusion, and to reduce the number of NWG management plans, this plan is submitted as a single comprehensive document for the management of vibration across the NWG operation.

This VMP still contains separate sections where the Martha Mine (Section 2) and Underground mines (Section 3) are unique, particularly the management of the actual blasting. Later sections (Sections 4 – 11), generally managing the consequences of the blasting, have been amalgamated where management of the operations are not differentiated.

2. MARTHA MINE

2.1. Background

As a result of stability issues associated with the south and east pit walls that developed after the Martha Mine Extended Project was approved, and in order to comply with condition 36 of the mining licence which requires that "pit faces are to be left in a stable and safe condition", NWG has undertaken cutbacks of specific walls. The South Stability Cutback was completed in late 2010.

While the Cutback was being completed, the Eastern Layback was initiated with battering back of the North-eastern high-wall and relocation of infrastructure further to the east to enable the Layback to proceed. This Layback is currently the principal mining activity within the pit.

Blast related vibration has the potential to affect amenity values for residents to the north and east of the pit. The operational mining licence and land use consent vibration limit of 5mm/s (peak particle velocity) will apply throughout the stability cutback project. The higher vibration limit of 10mm/s allowed under 10(e) of the mining licence will not apply as it is restricted to "initial construction" activities only.
2.2. Legal Requirements

The conditions of Mining Licence 32-2388 (ML) are included in this Management Plan as Appendix A. The Hauraki District Council Land Use Consent 97/98-105 (LUC Martha) conditions relating to vibration are included as Appendix B.

In summary these conditions require NWG to comply with the following:

- the appointment of a Company Liaison Officer (CLO) (ML 7B(a) to (c) and LUC Martha 3.4(a) to (c));
- the provision of all reasonable costs associated with the appointment and support of a CLO to be employed during construction activities (LUC Martha 3.4(d) to (g)). This was also a requirement during construction activities (ML 7B(d) to (g));
- CLO to provide details of the blasting programme to all residents (LUC Martha 3.10(c)) Construction period blast programme notification was also required (ML 10(b));
- conditions relating to blasting times (ML 20(d) and LUC Martha 3.10(d));
- blasting to be carried out so as to ensure the safety of persons in the mine and/or in the immediate vicinity of the mine site. The blasting procedures shall address the following specific items: regular blasting times, warning and all clear signals, control of fly rock, vibration and air blast monitoring and such other matters as the Inspector may direct (ML 20(a) and LUC Martha 3.10(a));
- monitoring of every blast over 1.0mm/sec in terms of blast location, charge weight per delay, number of holes, initiation time and measured vibration. A roving monitor deployed to record blast vibrations in the location where complaints regarding vibration have been made. The results of the monitoring shall be provided to the Minister (ML 29(a) and LUC Martha 3.11(a));
- conditions relating to blast vibration limits (ML 20(g) and LUC Martha 3.10(h));
- the peak overall sound pressure level due to air blasts shall not exceed 128dB linear (unweighted), measured at any affected residence excluding those properties owned by the licensee within the area shown on the plan attached hereto (ML 20(f) and LUC Martha 3.10(f));
- the provision of quarterly summary reports (ML 29(b) and LUC Martha 3.11(b));
- procedures to be followed for complaints management (ML 7C and LUC Martha 3.5).

In addition to compliance with conditions as summarised above, a Memorandum of Understanding (MoU) was developed in 2006 between NWG and HDC. A project-focused forum called the Effects Management and Mitigation Alliance was established as part of this MoU to discuss any issues and legitimate complaints arising from the stability cutback activities. Although this MoU is still ‘in effect’ in principle, the relationship between the parties has become more dynamic and issues are resolved at the earliest opportunity (rather than arranging formal meetings).
2.3. Blasting Times and Frequencies

Blasting shall be restricted to within the following hours:

- Monday-Friday 1000-1500
- Saturday 1000-1200

Typical practice for the layback is that one or two shots are fired per day (up to 50 shots per month) using the smallest practicable pattern. Main blast times are around 10:00, 12:00 or 15:00 may vary subject to the constraints on drilling and loading. As working space is more restrictive at certain areas in the Layback, shots may become smaller but more frequent.

If, due to public response, a need is identified to change the blasting times or frequencies, such change will be determined in agreement with HDC through the MoU process.

2.4. Vibration Limits

The following table summarises the relevant conditions for impulsive vibration as listed in the Hauraki District Plan:

<table>
<thead>
<tr>
<th></th>
<th>$V_{\text{max}}$ (mm/s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday - Saturday 0700 - 2100 (except public holidays)</td>
<td>5</td>
</tr>
<tr>
<td>All other times, including public holidays</td>
<td>1</td>
</tr>
</tbody>
</table>

Notes: $^a$ - $V_{\text{max}}$ is measured as the vector sum peak particle velocity.

In practice, the permitted blasting times already restricts blasting to 5mm/s limit periods. For reporting purposes, compliance performance is assessed in terms of 95% of blasts being within prescribed limits in any 12-month rolling period.

2.5. Mining Method

Mining methodology will be of the conventional drill-blast-excavate cycle. For the duration of the Layback, the activities will move progressively along the length of each bench, reducing the consecutive days during which residents will be most exposed to the effects of blasting.

As the mining progresses deeper, the cycle time will decrease as the mine benches get smaller. The effect of this on residents will be offset by an increase in the distance between the blast site and private residences (as the vertical distance differential becomes more significant).

2.6. Management of Effects

2.6.1. Vibration

In order to ensure compliance with the requirements of the operative Hauraki District Plan and the Martha Mine Extended Project conditions it is necessary for vibration levels to be maintained below 5mm/s. To ensure that levels are unlikely to exceed this value, all blasts are specifically designed with at least a 95% Confidence Level to achieve a vibration level not more than 5mm/sec. The design is progressively reviewed and refined (as appropriate) based on the vibration data generated from the preceding blasts.

During the history of operations in the Martha Mine, blasts have been designed to achieve a significantly lower level of vibration resulting in a high level of compliance with the 5mm/s vibration limit.
Heilig and Partners Pty Ltd modelled the blast design for the Layback and showed that similar blast patterns used in the pit prior to the Layback could continue, although there was a need to tune the patterns and reduce charge weights in some of the upper areas in order to comply with 5mm/s limit.

The means of managing blast designs and mitigating undesirable vibration effects is covered in depth in the Martha Mine Blast Vibration Mitigation Plan (Appendix E). This plan gives considerations to:

- previous blast results in the vicinity;
- geology, presence of voids and location on the bench (including proximity to high walls and bench edges);
- charge weights, drilling patterns and firing sequences;
- formal blast design review and approval;
- record keeping;
- post-blast review of unexpected or unacceptable outcomes.

### 2.6.2. Sound Pressure (Noise)

Monitoring over the preceding 20 years of operation has demonstrated that sound pressure levels (noise from the blast) comfortably complies with the mining licence limit of 128dB (unweighted). Accordingly, no permanent sound pressure monitoring is presently deployed. However, temporary roving monitors were utilised during initial blasting of the layback to confirm that overpressure readings were appropriately low; these monitors can be redeployed if the need arises.

In the event that sound pressure levels are shown to generate nuisance effects, NWG will implement a monitoring programme developed with and agreed by HDC.

### 2.6.3. Fly Rock

While fly rock has rarely been an issue, NWG remains vigilant and will mitigate its occurrence if necessary.

The blasting method used by NWG minimises the risk of fly rock; the primary controls being the paddock blasting practice and the electronic detonators. In addition, the restrictive vibration limits under which NWG operates constrain the blast hole charge weights and experience over the past years of mining has demonstrated that fly rock is unusual.

The paddock blasting method generally practiced at Martha means that each shot is fired against broken rock and there is no vertical face from which fly rock is liable to generate. With electronic detonators, at-risk holes (those overloaded or with short stemming) are identified and fired at the end of the shot by which time most of the explosive has been destroyed leaving only the detonator and booster to fire.

Another existing mitigation measure includes taking video footage of each shot. If any precursors are observed, e.g. stemming ejection or face bursts, NWG would assess additional controls such as increasing the uncharged collar depth or modifying confinement.

Blast mats are available to be laid on top of the blast if there is a demonstrated need to manage fly rock.
2.6.4. Dust and Odour

Blasting results in emissions of gases and particulate matter. Control of these emissions is managed through good blasting technique, including conservative blast patterns, effective stemming, and utilising explosives that produce relatively low emissions.

Monitoring for general air quality is undertaken in accordance with the current NWG Air Quality Management Plan.

3. FAVONA AND TRIO UNDERGROUND MINES

3.1. Background

3.1.1. Favona

The Favona Underground Mine is located under rural land to the east of Waihi, in the vicinity of the existing processing plant. Waikato Regional Council Resource Consents for Favona were granted in May 2004, and the Hauraki District Council Land Use Consent in August 2004.

Initial work on the Favona Project began in November 2004 with the development of an Exploration Decline to access the Favona orebody. The Favona Underground Mine consents were activated in 2007 prior to stope development and the mining of ore. In 2009, additional development accessed the nearby Moonlight orebody (still within the Favona consent boundary), with mining of this orebody throughout 2010 and 2011.

Blasting is required for development of access drives and to free ore for removal from stopes. This blasting (particularly stope blasts) regularly causes vibration that is felt by neighbouring residents. Hauraki District Council Land Use Consent 85.050.32.6E (LUC Favona) includes specific consents related to permissible vibration levels, with limits set to ensure residents experience minimal disturbance.

3.1.2. Trio

The Trio Underground Mine is located under Union Hill, between the Martha Pit and the existing processing plant. Waikato Regional Council Resource Consents for Trio were granted in November 2010, and the Hauraki District Council Land Use Consent in July 2011.

Access to the Trio orebody began in 2010 with the development of a decline and incline from the existing Favona decline, initially under the Favona consents then under the Trio Development Consents as the access crossed out of the Favona consent boundary. The Trio Underground Mine consents will be activated in mid-2012 prior to stope development and the mining of ore.

Like Favona, blasting at Trio will be required for development of access drives and to free ore for removal from stopes. Vibrations from this blasting is felt by neighbouring residents, and the Hauraki District Council Land Use Consent RC-15774 (LUC Trio) includes specific conditions related to permissible vibration levels to mitigate negative experiences.

3.2. Legal Requirements

The conditions of LUC Favona and LUC Trio relating to vibration from blasting are included in this management plan as Appendices C and D. In summary these conditions require NWG to comply with the following:
• compliance with Rule 9.4.3 of the Operative Hauraki District Plan regarding continuous and impulsive vibration from blasting (LUC Favona 11);
• 95% level of confidence to achieve permitted vibration levels (LUC Trio 8);
• conditions relating to blasting times, durations and permitted vibration levels (LUC Favona 12, LUC Trio 9);
• Favona Mine blast events must not coincide with Martha Mine blast events (LUC Favona 13, LUC Trio 10);
• impulsive vibration from all blast events to be monitored (LUC Favona 15, LUC Trio 11(a));
• monitoring system to be automated to allow for immediate analysis (LUC Favona 16, LUC Trio 11(b));
• monitoring to be conducted by suitably trained personnel, using equipment compliant with current AS/NZ standards (LUC Favona 17, LUC Trio 11(c));
• the establishment of monitoring locations (LUC Favona 18, LUC Trio 11(d & g));
• structural condition surveys to be completed (LUC Favona 19, LUC Trio 11(e));
• a roving monitor to record vibrations at complainant locations (LUC Favona 20, LUC Trio 11(f));
• complete records to be kept of each blast event (LUC Favona 21, LUC Trio 11(h));
• blasting and material storage and handling to be carried out so as to ensure the safety of persons and compliance with the relevant legislation (LUC Favona 22, LUC Trio 12);
• a Vibration Management Plan to be submitted for written approval by the Manager – Planning and Environmental Services prior to commencement of mining (LUC Favona 23, LUC Trio 13);
• blasting requires the written approval of the Favona Mine Manager (LUC Favona 24(a), LUC Trio 14(a));
• mitigating actions are required in the event of vibration standards being exceeded (LUC Favona v24(b), LUC Trio 14(b));
• report to be provided to Council where measured vibration exceeds specified maximum limits (LUC Favona 24(c), LUC Trio 14(c));
• six monthly summary report to be provided to Council (LUC Favona 24(d), LUC Trio 14(d));
• monitoring records, reports and complaint schedules to be stored and maintained in a systematic manner (LUC Favona 24(e), LUC Trio 14(e));
• Establishment of a Heritage Items Monitoring Plan, with identified requirements in response to vibration related effects (LUC Trio 19 - 21) – this is a separate specific document.
• the appointment and notification of a Company Liaison Officer (LUC Favona 40 and 41, LUC Trio 25);
• a Standard Operating Procedure for Complaints (LUC Favona 42, LUC Trio 26).
3.3. Blasting Times, Frequencies, and Duration

Although blasting is permitted to occur at any time during any specified period, limits are placed on the number of blast events that may take place during that period as well as the level of vibration that may be generated by any blast event (Section 3.4).

Limitations have been placed on the duration of blasts, with different durations depending on the type of blasts (or combination thereof):

- production blasts (which are generally larger) are restricted to not more than 6 seconds;
- development blasts are restricted to not more than 12 seconds;
- a combination of production and development blasts restricted to not more than 18 seconds.

Blast durations for each blast are documented and recorded in the Blasthub database (Section 4). The overall waveform from each monitor triggered by each blast event is also recorded, which enables verification of overall blast duration. Monitors for Underground Operations are set to 18 seconds to capture the full duration of permitted blast events. In the event that a monitor is triggered twice in succession in relation to a blast event (indicating a vibration event greater than 18 seconds), the waveforms can be reviewed to determine whether the event was solely blast-related or influenced by extraneous vibrations.

3.4. Vibration Limits

The following table summarises the relevant vibration levels. Appendices C and D should be referred to for further detail.

<table>
<thead>
<tr>
<th>Time</th>
<th>Maximum number of blast events per period</th>
<th>Maximum ground vibration level (instantaneous vector sum of velocity components) (95% design)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday to Saturday (0700 to 2100)</td>
<td>4</td>
<td>6.0 mm/s</td>
</tr>
<tr>
<td>Monday to Saturday (2100 to 0700 the following day)</td>
<td>4</td>
<td>1.0 mm/s</td>
</tr>
<tr>
<td>Sundays &amp; Public Holidays (0700 to 2100)</td>
<td>4</td>
<td>1.0 mm/s</td>
</tr>
<tr>
<td>Sundays &amp; Public Holidays (2100 to 0700 the following day)</td>
<td>4</td>
<td>1.0 mm/s</td>
</tr>
</tbody>
</table>

3.5. Mining Methods

Underground mining is undertaken using a Modified Avoca method. Benching cut and fill is the preferred technique as it can provide better safety for workers and greater production. In benching cut and drill, the stopes are mined and filled in sequence from the bottom up. Access from the decline to the ore body is developed at several points and at levels vertically separated by about 15m.

Development drives are formed within the ore body along the line of strike between accesses. The floor of the upper drive is drilled, charged and fired - the broken ore between the levels falls to the lower level from where it is mucked out using manned or remote loaders. Once the broken ore is removed, backfill will be tipped from the upper drive to support the stope walls.
3.6. Management of Effects

3.6.1. Vibration

Development blasting at Favona since early 2005 and production blasting since 2007 has provided an excellent base of experience for vibration management. Blast design is strongly based on the results of earlier blasts in similar areas, utilising a conservative approach to avoid exceedances. Compliance with consent conditions since production blasting began is evidence of this progressive management.

The two types of blasting are subject to general protocols.

Production Blasts

- All stopes are fired during 6mm/s consent limit periods, usually between 1.00 - 2.00pm.
- A Maximum Instantaneous Charge (MIC) is selected, based on experience, which will achieve an acceptably low level of vibration but also maximises the efficiency of the blast. At the bottom of the mine 50kgs MIC is common practice whilst at the top of the mine 10kgs may still approach the consent limit of 6mm/s). Specified maximum charge weight per delay is 30kgs. If holes are longer and require more explosives (equating to an increased charge weight), the holes are decked charged. This means there are two columns of charge, each with its own delay in one hole, effectively reducing the charge weight per delay.
- The delays chosen for production firings are dependant on the type of initiation system used e.g. Nonel blasting uses the Enduradet range which is restricted to a specific period delay of the 1 to 36 millisecond range whilst IKON electronic detonators can be programmed for between 1 millisecond out to 15,000 milliseconds. When using IKON’s the delays are nominally set from 50 out to 150 milliseconds between holes.
- The above routine protocols have come about after extensive modelling and trial blasting; there is a check process for each stope blast design. If there is a need to increase the size of patterns above and beyond standard practice, blast plans are sent to Heilig and Partners Pty Ltd for review.

Development Blasts

- Generally for development there are no more than 4 holes on one delay.
- Each and every face is monitored through Blasthub. If monitoring is starting to show elevated vibration (>0.9mm/s at compliance stations) future blasts in the heading are scheduled for 6mm/s vibration limit periods until the vibration levels trend back down.
- Note: Stripping blasts (which are less confined than normal development blasts) are scheduled during 6mm/s vibration limit periods as stripping has repeatedly returned elevated vibration results.

Irrespective of blast type, NWG has procedures that utilise the blast design for management of the blasting process; from marking up a heading face, for drilling through to production charging and firing, then re-entry after firing and managing misfires.

Results from blast monitoring are automatically loaded onto Blasthub from the vibration monitoring network, along with manual loading of details of the blast design and plan. Heilig and Partners Pty Ltd compares the corresponding plans/results and provides an external review, developing recommendations when necessary for on-going blasting plans and procedures to ensure compliance (with a safety margin).
3.6.2. Sound Pressure (Noise)

Blast noise from underground is only an issue when development is being undertaken near the portal; when there is a direct access for the air blast to reach open air. This may happen at times when new declines are developed to provide alternate access to the underground. During such periods, specific measures are undertaken to mitigate noise propagation, including (but not limited to): reducing charge weights, placing large machinery or shields near the decline entrance, and firing during the day. Noise monitoring is also undertaken at the portal and afield to assess any effects.

3.6.3. Air Emissions

While the underground operations have the potential to generate air emissions like Martha Mine, the underground has the advantage of controlled, constrained air flows and a designed discharge system in the form of the underground vent system. Air emissions during and after blasting were monitored in 2007 (Watercare Services Ltd, September 2009), with results showing emissions are within Workplace Exposure Standards.

4. MONITORING

The Blasthub vibration monitoring system (VMS) has been utilised as the blast vibration monitoring system at Martha Mine since 1 January 2005 (HDC approval reference 64.601.001 dated 8/3/05). The system provides real-time, web-based monitoring that is accessible to both HDC and NWG and includes automatic email notification of blast events that trigger two or more monitors. The VMS will continue in operation throughout the open pit and underground mining operations.

The vibration monitoring system (VMS) provides real-time monitoring and recording. Results are accessible for review on an internet web-site (http://newmont-waihi.blasthub.com). Access to the web-site is controlled by the NWG External Affairs Manager with permission for review provided to HDC staff and NWG users. A schematic of the VMS is shown in Figure 1.
Each VMS monitor has four recording channels. An external geophone (transducer) monitors vibration in three directions (Transverse, Vertical & Longitudinal particle velocities). Ground vibrations generated by a blast are detected by the geophone generating a variable voltage trace. From this data a Peak Particle Velocity (PPV) is generated.

In addition to the permanent monitoring stations, NWG deploys roving monitors in response to community concerns and to ensure that there are no anomalous responses in areas between or beyond the permanent vibration monitoring network.

The monitors have vibration trigger levels & preset recording period (see Table 1). After recording an event a monitor will automatically dial the Blasthub computer to download the data. In addition each monitor has a “dial home” schedule for administrative checks. Downloaded data is filtered by Heilig & Partners Pty. Ltd. to classify blast events from erroneous events (activities such as vehicular, farm stock, seismic, etc.). Blast Location Monitoring Reports (summarising results & displaying vibration traces) are generated and incorporated into the Blasthub database.
### Table 1: VMS Monitor Configurations

Provided the vibration level triggers the minimum number of units, the Blasthub system automatically sends a notification email to key HDC & NWG personnel. Blast Records are linked to the relevant Blasthub records (along with complaint records if received).

Roving vibration monitors are available to be deployed at locations of vibration complaints or other discretionary use (e.g. directly over the Favona underground operations for internal management purposes). Additional roving monitoring capability is available by temporarily disconnecting monitors from the Blasthub network. Monitoring data is stored in the Blasthub database accessed via the web-site.

#### 4.1. Geophones

Figure 2 shows the location of the vibration monitors (geophones) associated with the Martha Mine and the Underground Operations. These locations were established by agreement with the HDC.
Figure 2. Geophone locations.

Geophones are bolted to a concrete block set in the ground at each site. The site is secured by protective box and fencing to prevent vandalism. Within the protective box is housed an “Instinctel MiniMate Plus” seismograph and a computer modem. Each monitoring station calls the Blasthub computer at predetermined schedules to conduct administrative checks and after being triggered by an event.

4.2. Microphone

A microphone can be used at any of the monitoring sites or via a roving monitor to measure overpressure from air blasts. When deployed, the microphone is located at least 3.5m away from reflective surfaces to ensure representative monitoring.

4.3. Geophone & Microphone (Sound) Calibration

The seismographs, geophones and microphones undergo annual calibration by an independently certified company. The preferred supplier is Saros Group Pty. Ltd., contact:

Level One, 2 Park Road, Milton, Queensland, 4064, Australia.
Tel: 00 61 7 3367 3400  Fax: 00 61 7 3367 3844

Original calibration certificates are kept in the Calibration Certificates folder in the Environmental Department. Copies are kept electronically on the Blasthub database accessible via the internet.

Calibration certificates required for geophones and microphones (currently included with geophone certificate) should contain the following information:

- Report number
- Make & Model of instrument
- Monitor serial number
- Geophone serial number
5. MITIGATION

5.1. Martha Mine

Blast vibration mitigation procedures for the Martha Mine are outlined in the Martha Mine Blast Mitigation Plan, appended to this management plan as Appendix E.

5.2. Underground Operations

Development blasting for underground operations have been undertaken since early 2005, and production blasting since 2007. The years of blasting have provided an extensive base of experience with vibration management, such that vibration levels are able to be accurately predicted during normal conditions.

Whenever production blasting is initiated in a new area, the first blasts are designed very conservatively and take into consideration the geographical location, geological factors of the ground and the vibration results from nearby production areas. Based on the results of the initial blasts, charging parameters may be altered for subsequent blasts to increase efficiencies whilst still maintaining vibration compliance.

All blasts are designed by Production Engineers and are reviewed and approved by a Senior Technical Services staff member. This review includes checks on the maximum instantaneous charge, timing and sequencing, and takes into account the results of previous firings in the same area.

NWG has also modified Blasthub to enable blast vibration history to be reviewed by level and location to inform subsequent blast designs. This process will continue throughout the life of mine.

5.2.1. Trio Mitigation

Mitigation measures for Trio are based on the same ‘monitor and response’ process as Favona, but it is recognised that blasting activities for Trio Operations are closer to Waihi residents than most of Favona blasting. Because of this, additional safeguards and responses to blast results have been incorporated through agreement with HDC.

Blast Design Documentation

If requested by HDC, NWG will provide a copy of the blast design documentation relating to a blast or series of blasts. Such documentation shall include relevant blast design parameters, raw data of all blasts over the time period used in determining the statistical parameters for the design and the statistical basis upon which the 95% design confidence level is achieved and other data that HDC may specify.
Trigger Level 1

When vibration levels from any two of three successive production blasts within any Confined Production Area exceed 4.5mm/sec, a review of the blast design will be undertaken by Heilig and Partners. While this review is undertaken, mitigation measures for further production blasting in that Confined Production Area will be implemented. HDC will be advised of the implemented mitigation measures and, when they are available, of the results of the review. The mitigation measures shall have regard to the appropriate mitigation options listed in condition 14b) of the Trio Land Use Consent.

The objective of the blast design review is to ensure that appropriate measures are taken to minimise vibration from succeeding production blasts in the area concerned and avoid exceeding the maximum vibration levels (condition 9 of the Trio Land Use Consent) at the 95% design confidence level. The outcomes of the review will be used to design subsequent production blasts in the area concerned.

A copy of the review documentation including the Blast Design Documentation shall be provided to HDC upon request.

Trigger Level 2

When any single blast exceeds 6.00mm/s a review of the blast design will be undertaken by Heilig and Partners. While this review is undertaken mitigation measures for further production blasting in that Confined Production Area will be implemented. HDC will be advised of the implemented mitigation measures and, when they are available, of the results of the review. The mitigation measures shall have regard to the appropriate mitigation options listed in condition 14b) of the Trio Land Use Consent. The results of the review shall be reported to HDC within five days of the exceedance of the trigger level, as required by condition 14c) of the Trio Land Use Consent.

The objective of the blast design review is to ensure that appropriate measures are taken to minimise vibration from succeeding production blasts in the area concerned and avoid exceeding the maximum vibration levels (condition 9 of the Trio Land Use Consent) at the 95% design confidence level. The outcomes of the review will be used to design subsequent production blasts in the area concerned.

A copy of the review documentation including the Blast Design Documentation shall be provided to HDC upon request.

Trigger Level 3

If any single blast measures 8mm/s or more, prior to firing another blast in that Confined Production Area NWG will immediately undertake an initial review to determine if the design parameters for that blast were properly implemented and also to determine if the vibration level was a result of operator error. The results of the initial review shall be provided to HDC within 24 hours of the trigger level exceedance, and no further blasting in that Confined Production Area shall occur until the report is provided to HDC.

If the initial review determines that the cause of the trigger level 3 exceedance is failure to properly implement the design or is due to some other operator error, then appropriate measures will be taken immediately to ensure that the subsequent blasts comply with the

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1 Confined Production Area is defined as being “a stope or series of adjacent stopes which have similar sensitivity to receivers in respect to vibration”
appropriate design parameters.

If the initial review determines that the actual blast practice complied with the appropriate blast design parameters, NWG will immediately;

- commission Heilig and Partners to undertake a detailed review of the blast design; and
- in the meantime implement such additional mitigation measures as necessary to ensure any subsequent blasts in that Confined Production Area comply with the 6mm/s consent limit.

HDC will be advised of the results of the initial review and of any additional mitigation measures implemented for subsequent blasts in that Confined Production Area. The mitigation measures shall have regard to the appropriate mitigation options listed in condition 14b) of the Trio Land Use Consent.

Where the initial review indicates the need for a detailed design review by Heilig and Partners, the results of the detailed review will be reported to HDC within five days of the exceedance of the trigger level, as required by condition 14c) of the Trio Land Use Consent.

The objective of the blast design review is to ensure that appropriate measures are taken to minimise vibration from succeeding production blasts in the area concerned and avoid exceeding the maximum vibration levels (condition 9 of the Trio Land Use Consent) at the 95% design confidence level. The outcomes of the review will be used to design subsequent production blasts in the area concerned.

A copy of the review documentation including the Blast Design Documentation shall be provided to the Council upon request.

6. REPORTING

Records of all vibration monitoring are maintained and can be provided to HDC on request. In the event of an exceedance or other consent breach, NWG prepares a specific report to HDC. This report contains the details of the event, along with the outcome of an investigation and mitigation measures to avoid a recurrence.

NWG provides a summary report to the Council at the end of each calendar quarter (HDC approved calendar quarter reporting, compared to the consent dates specified). This report provides information on blasting undertaken, explosive use, vibration and overpressure levels recorded, compliance and exceedance data, and any complaints received. These quarterly reports also effectively comply with the requirement to report Favona and Trio vibration performance six-monthly (LUC Favona 24(d) and LUC Trio 14(d)).

The CLO provides Council with six-monthly reports documenting any complaints (including those relating to vibration) and mitigation action taken.

7. COMMUNITY LIAISON

In accordance with conditions (ML 7B, LUC Martha 3.4(a-c), LUC Favona (40-41), and LUC Trio (25)), NWG maintains the position of Company Liaison Officer (CLO) to liaise between the consent holder, the community and the Council. The CLO has sufficient delegated power to be able to deal immediately with complaints received and is required to investigate those complaints as soon as possible after receipt.
NEWMONT WAIHI GOLD

Vibration Management Plan

The contact free-phone number for the CLO is notified in local newspapers as a foot-note in every community update (normally fortnightly). The current CLO and contact details are:

CLO - Donna Fisher  
DDI: 07 863-9827  
Mobile: 027 279-9739  
0800 Newmont (0800 639 6668)

In accordance with conditions (ML 20(c) and LUC Martha 3.10), the blasting programme is publicly notified in newspapers circulating in the area prior to any blasting taking place and at regular intervals not exceeding six (6) months thereafter. Changes to the blasting programme are publicly notified in newspapers circulating in the area at least three (3) days prior to implementation (refer NWG Standard Operating Procedure NWO-INT-009-CRM-S7 Public Notification, Appendix F).

The CLO also ensures that the blasting programme and changes to the blasting programme are provided to all residents in the immediate area surrounding the blasting areas who in the opinion of the CLO are likely to experience the effects of blasting and vibration. The notification time periods specified above apply to this practice.

Waihi’s Gold Story - Mine Interpretation Centre provides a contact point for the community and numerous educational groups. At the centre the public can obtain details about the Waihi operations, including details on vibration management.

A range of communication and engagement strategies are used for different stakeholder groups as appropriate including:

- a regular fortnightly Update in the local newspaper, with priority given to potentially affected residents who will receive Update information ahead of the general community;
- press releases in local newspapers in response to media requests or project milestones;
- public notice boards erected at viewing areas to provide project information;
- businesses in upper Seddon Street are utilised to distribute newsletters and other information to the general public;
- NWG maintains a phone list of nearby residents who are contacted prior to each production blast at Martha and Underground;

7.1. Amenity Effect Programme

In addition to on-going community liaison and complaints management, NWG has developed the Amenity Effect Programme (AEP) and has been implementing this as part of its ongoing liaison and consultation programme with the local community.

The consent limits that have been set for the Favona Underground Mine are designed to, and do, avoid nuisance effects for most of the Waihi community for most of the time. NWG complies with these limits most of the time but some people living close to the mine may consider they experience some reduction in amenity due to increased levels of noise, vibration and possibly dust. Thus, while the Waihi community broadly shares the economic and social benefits of NWG’s mining operations, a relatively small proportion of the town’s population may consider it bears some disadvantages from the operations.

The programme is an informal agreement between NWG and residents who may perceive some effect on amenity on a more-than intermittent basis as a result of mining activity. The property owners or occupiers within an area defined by NWG will receive payments despite the operations being conducted within consent compliance limits.
The partnership aims to:

- Acknowledge some people consider their amenity is affected by blast vibration, dust or noise effects;
- Provide an incentive for owners/occupiers to maintain the property ownership/occupation status quo to the maximum extent practicable;
- Provide an incentive for NWG to strive to minimise operational effects on the local community;
- Establish an agreed formula for calculating a purchase price for properties that the owner wishes to sell or that NWG wishes to buy; and
- Ensure cost-effectiveness for NWG and enable or enhance existing and future land access.

8. COMPLAINT RESPONSE

The NWG Standard Operating Procedure NWO-INT-009-CRM-S06 Managing Public Complaints (refer Appendix G) will be used for any complaints received from the community.

9. TRAINING

All management, staff and contractors who work on site take part in induction training before commencing work on the project. In addition to the site health and safety training, the induction aims at raising general awareness of individual responsibilities for managing and reporting environmental and community effects. Reporting procedures and accountabilities to departmental managers and environmental staff are outlined, and all inductees are provided with a site contact list.

Responsibility for staff environmental awareness and training rests with the Environmental Manager or delegated representative. Environmental personnel undertake vibration monitoring and maintain monitoring infrastructure, with training, support and guidance provided by John Heilig of Heilig and Partners Pty Ltd.

10. VIBRATION MANAGEMENT PLAN REVIEW

This VMP may be updated as necessary and modifications to the document may be required as operations proceed.

HDC and NWG have signed a MoU (Appendix H) establishing a forum to discuss and agree appropriate mitigation actions in the event of unacceptable vibration effects. The forum, labelled the Effects Management and Mitigation Alliance, will comprise staff of HDC and NWG, plus specialist advisors and possibly a community representative. The parties have committed to meet to discuss and address any issues and legitimate complaints in relation to the cutback project. To date, more proactive management practices have addressed issues quickly, and effectively negated the need for the forum to meet.

In the event that additional mitigation actions are required to reduce vibration effects, the agreed actions will be implemented by NWG as soon as practicable and this VMP will be modified to reflect changes.

11. REFERENCES


Watercare Services Limited, September 2009: Newmont Waihi Gold, Particulate, Carbon
APPENDIX A

Vibration Conditions

Variation to Mining Licence 32-2388

(as at 30 June 2011, incorporating Favona and Trio variations)
General and particular work programmes

1. The work to be undertaken pursuant to this licence shall be limited to the following:
   
a. Construction

   Construction of mine surface facilities, the ore-waste conveyor, the conveyor tunnel, the process plant, wastewater treatment plant and the tailings and waste rock disposal area, including removal and burning of vegetation and waste timber, stripping and stockpiling of top soil and the stripping of overburden and waste, the construction and destruction of noise barriers and all associated civil works and facilities.

b. Mining

   Open pit and minor underground mining and exploratory work, using explosives and mechanical excavating, truck handling of material within the pit area and that portion of the rest of the licence area that lies to the west of Junction Road, conveyor belt handling to a chemical processing plant, beneficiation and ore treatment including waste and tailings disposal within the licence area.

c. Rehabilitation

   The licensee shall progressively implement Part A of the approved Rehabilitation and Closure Plan and shall implement Part B of the approved Rehabilitation and Closure Plan in the event of closure occurring. The approved Rehabilitation and Closure Plan is the plan approved pursuant to the conditions of the resource consents granted by the Waikato Regional Council for the extended project.

d. Monitoring

   The regular monitoring of pit slopes, tailings retaining structures, ground movement, noise, blasting, vibration, air quality and rehabilitation programmes together with the necessary rectification work as required.

7B Company Liaison Officer

(a) The licensee shall appoint a person ("the Company Liaison Officer"), subject to the approval of the Minister to liaise between the licensee, the community, and the Minister as set below. The Company Liaison Officer shall have sufficient delegated power to be able to deal immediately with complaints received and shall be required to investigate those complaints as soon as possible after receipt.

(b) The name of the Company Liaison Officer together with the contact phone numbers for that person shall be publicly notified in local newspapers by the licensee prior to the commencement of the extended project (at least one month prior, but not more than two months prior to the commencement of construction activities) and at least once a year thereafter.

(c) The Company Liaison Officer shall be appointed prior to the commencement of the extended project and this position shall be filled at all times during the construction activities as defined in Condition 3.
Council Liaison Officer

(d) The licensee shall provide all the reasonable costs associated with the appointment and support of a Council Liaison Officer, to be employed by and be responsible to the Minister during the construction activities as defined in Condition 3.

(Note: The following is for information purposes only and does not form part of the condition.

The Council Liaison Officer may either be a new appointment or may be an existing employee.

Whether or not the appointee is an existing employee, the Council Liaison Officer’s role shall be independent and objective and designed to promote effective gathering of information of effects upon the community from the mining activity; and, in the light of such information, to promote effective liaison with the Company Liaison Officer so that the effects identified may be remedied or mitigated.)

The functions and responsibilities of the Council Liaison Officer shall be as follows:

(i) Liaise between the Company Liaison Officer, members of the community, the Waihi Liaison Forum (or its equivalent), and the Minister;

(ii) Report to the Minister on an “as events happen” basis, and weekly on complaints received, actions undertaken by the licensee and the complainant in respect to complaints, and on any other relevant actions and activities occurring during the week;

(iii) Ensure that the Company Liaison Officer is providing information to residents in the area around the mine and tailings facilities of the activities that are programmed to be undertaken in the coming week (especially land clearance, construction and blasting), activities that were carried out in the previous week and any other material that will inform the residents of what is programmed to happen in the coming weeks;

(iv) Facilitate the appointment of a mediator, venue, time etc agreeable to both parties, to undertake the mediation of disputes or concerns between the licensee and members of the community. Except in those situations where both parties are in agreement, the Council Liaison Officer’s function is not to act as a mediator. The role of mediation is a specialist one that needs to be undertaken by persons experienced and trained in this area.

(e) The Company Liaison Officer shall, during construction activities, report weekly to the Council Liaison Officer on all complaints received in the prior week and the action taken to investigate those complaints. In addition, the Company Liaison Officer shall investigate and report on any other matters as directed by the Council Liaison Officer concerning or arising out of construction activities. (See periods of construction activities as defined in condition 3.)

(f) The Company Liaison Officer shall give residents who are likely to be
affected and the Council Liaison Officer reasonable (minimum one week's) prior notice of construction activities, indicating likely timing and duration.

(g) Following completion of initial construction activities, and prior to the commencement of other construction activities (ie during operations stage), the Company Liaison Officer shall report six monthly to the Minister on the following:

(i) All complaints received during the previous six-month period, action taken by the licensee and the resolutions, if any;

(ii) Other matters of concern raised by the community;

(iii) Any mediation entered into by the licensee and others with respect to operational matters and the outcome (unless the parties have agreed to keep such confidential).

7C Complaints procedure and mediation

Note: the following is for information purposes only and does not form part of the condition.

- Complainants will be expected to contact the Company Liaison Officer in the first instance (refer condition 7B(a)).

- During construction activities, if a complainant is dissatisfied with the response by the Company Liaison Officer, they shall contact the Council Liaison Officer with the details of the complaint and the Company Liaison Officer's response. Outside the construction activities, complainants shall contact any officer of the Minister.

The licensee shall comply with the following complaints procedure and mediation process:

(a) The Company Liaison Officer shall meet with the complainant and the Council Liaison Officer to discuss the complaint and ways in which the issue can be resolved.

(b) If the parties cannot agree on a resolution, the matter shall be put to mediation.

   (Note: The following is for information purposes only and does not form part of the condition:
   (i) Refer condition 7B(d)(iv) above.
   (ii) Unless the parties agree the outcome of mediation shall not be binding.)

Blasting and vibration

10.

(a) All blasting procedures shall be carried out so as to ensure the safety of persons in the mine and/or in the immediate vicinity of the mine site. The licensee shall notify the Inspector of Quarries of the blasting procedures to be employed and of any changes thereto and the blasting procedures shall
be approved by the Inspector of Quarries. The blasting procedures shall address the following specific items: regular blasting times, warning and all clear signals, control of fly rock, vibration and air blast monitoring and such other matters as the Inspector may direct.

(b) A construction period blasting programme shall be established and be publicly notified in newspapers circulating in the area prior to any such blasting taking place and at regular intervals not exceeding six (6) months thereafter. Changes to the blasting programme will be notified in newspapers circulating in the area at least three (3) days prior to implementation.

The Company Liaison Officer shall also ensure that the blasting programme and changes to the blasting programme are provided to all residents in the immediate area surrounding the mine who in the opinion of the Company Liaison Officer (after consultation with the Council Liaison Officer) are likely to experience the effects of blasting and vibration. The same respective notification time periods shall apply.

(c) Blasting shall be restricted to within the following hours:

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday-Friday</td>
<td>1000-1500</td>
</tr>
<tr>
<td>Saturday</td>
<td>1000-1200</td>
</tr>
</tbody>
</table>

(d) Details of all blasts shall be recorded in accordance with condition 29.

(e) During initial construction as defined in condition 3, but excluding:

- Upgrade of the conveyor system (but not including the creation of the conveyor slot)
- Construction of the pipeline from the Water Treatment Plant to the Ohinemuri River

and for a period of 12 months after initial construction ceases, vibration levels measured in the ground closest to any affected residence excluding those properties owned by the licensee within the area shown on the plan attached hereto shall not exceed 10 mm/s peak particle velocity measured in the frequency range between 3 Hz and 12 Hz, thereafter NZS 4403:1976 Codes of Practice for the Storage, Handling and Use of Explosives shall apply.

With respect to those initial construction activities excluded above the vibration levels measured in the ground closest to any affected residence excluding those properties owned by the licensee within the area shown on the plan attached hereto shall comply with the provisions of Rule 9.4.3 of the Operative Hauraki District Plan.

(f) The peak overall sound pressure level due to air blasts shall not exceed 128dB linear (unweighted), measured at any affected residence excluding those properties owned by the licensee within the area shown on the plan attached hereto.

(g) Except where specifically provided in Condition 10(e) all blasting operations and measurements in relation to such operations shall be carried out in
20. All blasting procedures shall be carried out so as to ensure the safety of persons in the mine and/or in the immediate vicinity of the mine site. The licensee shall notify the Inspector of Quarries of the blasting procedures to be employed and of any changes thereto and the blasting procedures shall be approved by the Inspector of Quarries. The blasting procedures shall address the following specific items: regular blasting times, warning and all clear signals, control of fly rock, vibration and air blast monitoring and such other matters as the Inspector may direct.

(b) No blasting operations shall be carried out without the written approval of the Mine Manager, who shall first satisfy himself that the blasting operations will not cause either danger, damage or undue discomfort to any person or danger to property.

(c) A blasting programme shall be publicly notified in newspapers circulating in the area prior to any blasting taking place and at regular intervals not exceeding six (6) months thereafter. Changes to the blasting programme will be notified in newspapers circulating in the area at least three (3) days prior to implementation.

The Company Liaison Officer shall also ensure that the blasting programme and changes to the blasting programme are provided to all residents in the immediate area surrounding the mine who in the opinion of the Company Liaison Officer (after consultation with the Council Liaison Officer) are likely to experience the effects of blasting and vibration. The same respective notification time periods shall apply.

(d) Blasting shall be restricted to within the following hours:

Monday-Friday 1000-1500
Saturday 1000-1200

(e) Details of all blasts shall be recorded as set out in condition 29.

(f) The peak overall sound pressure level due to air blasts shall not exceed 128dB linear (unweighted), measured at any affected residence excluding those properties owned by the licensee within the area shown on the plan attached hereto.

(g) After the 12 month period referred to in condition 10(e) has expired, vibration levels measured in the ground closest to any affected residence excluding those properties owned by the licensee within the area shown on the plan attached hereto shall comply with the provisions of Rule 9.4.3 of the Operative Hauraki District Plan.

(h) Except where specifically provided in condition 20(f) all blasting operations and measurements in relation to operations shall be carried out in accordance with NZS 4403:1976 Code of Practice for the Storage, Handling and Use of Explosives.
Blasting

29. (a) The licensee shall monitor every blast event over 1 mm/sec in terms of blast location, charge weight per delay, number of holes, initiation timing and measured vibration. Where equipment malfunctions or is not available for recording (e.g. during maintenance), this shall be noted and included in the monitoring report presented to the Minister. Where blasting is to be undertaken in the vicinity of the overpressure sensor, the licensee shall also monitor the overpressure level. The location of the fixed vibration and overpressure sensors shall be undertaken in consultation with the Minister, and changes to the location of these sensors and monitor shall be agreed with the Minister prior to their relocation. The licensee shall deploy a roving monitor to record blast vibrations in the location where complaints regarding vibration have been made. The results of the monitoring shall be provided to the Minister.

(b) The licensee shall, unless otherwise directed to do so by the Minister following consultation with the licensee, provide a summary report to the Minister at the end of each February, May, August and November on the blasting undertaken, and the vibration and overpressure levels recorded, as well as any complaints received.

(c) Monitoring in the ground at the base of the Cornish Pumphouse shall be undertaken when blasting is carried out within a 250 metre radius of the structure. The peak component vibration levels shall not exceed 25 mm/s at frequencies in the range 20 to 30 Hz within the 250 metre radius. A report addressing changes to the building's structural integrity (with particular emphasis on changes that are likely to be caused by blast-induced vibrations within 250 metres) shall be supplied to the Minister on the anniversary of the date of commencement of the extended project. The report shall be prepared by a registered engineer experienced in such work.
APPENDIX B

Vibration Conditions

HDC Land Use Consent No. 97/98-105
3.4 LIAISON OFFICERS

Company Liaison Officer

a) The consent holder shall appoint a person ("the Company Liaison Officer"), subject to the approval of the Hauraki District Council and the Waikato Regional Council to liaise between the consent holder, the community, the Hauraki District Council and the Waikato Regional Council as set out in this consent. The Company Liaison Officer shall have sufficient delegated power to be able to deal immediately with complaints received and shall be required to investigate those complaints as soon as possible after receipt.

b) The name of the Company Liaison Officer together with the contact phone numbers for that person shall be publicly notified in local newspapers by the consent holder prior to the exercising of this consent (at least one month prior, but not more than two months prior to the commencement of construction activities) and at least once a year thereafter.

c) The Company Liaison Officer shall be appointed prior to the exercising of this consent and this position shall be filled at all times during the construction activities as defined in Condition 3.3.

Council Liaison Officer

d) The consent holder shall provide all the reasonable costs associated with the appointment and support of a Council Liaison Officer, to be employed by and be responsible jointly to the Hauraki District Council and Waikato Regional Council during the construction activities as defined in Condition 3.3.

(Note: The following is for information purposes only and does not form part of the condition.

The Council Liaison Officer may either be a new appointment or may be an existing employee. Whether or not the appointee is an existing employee, the Council Liaison Officer's role shall be independent and objective and designed to promote effective gathering of information of effects upon the community from the mining activity; and, in the light of such information, to promote effective liaison with the Company Liaison Officer so that the effects identified may be remedied or mitigated.

The functions and responsibilities of the Council Liaison Officer shall be as follows:

i) liaise between the Company Liaison Officer, members of the community, the Waihi Liaison Forum (or its equivalent), Hauraki District Council and Waikato Regional Council;

ii) report to the Hauraki District Council and Waikato Regional Council on an "as events happen" basis, and weekly on complaints received, actions undertaken by the consent holder and the complainant in respect to complaints, and on any other relevant actions and activities occurring during the week;

iii) ensure that the Company Liaison Officer is providing information to residents in the area around the mine and tailings facilities of the activities that are programmed to be undertaken in the coming week (especially land clearance, construction and blasting), activities that were carried out in the previous week and any other material that will inform the residents of what is programmed to happen in the coming weeks;
iv) facilitate the appointment of a mediator, venue, time etc agreeable to both parties, to undertake the mediation of disputes or concerns between the consent holder and members of the community. Except in those situations where both parties are in agreement, the Council Liaison Officer’s function is not to act as a mediator. The role of mediation is a specialist one that needs to be undertaken by persons experienced and trained in this area.

e) The Company Liaison Officer shall, during construction activities, report weekly to the Council Liaison Officer on all complaints received in the prior week and the action taken to investigate those complaints. In addition, the Company Liaison Officer shall investigate and report on any other matters as directed by the Council Liaison Officer concerning or arising out of construction activities. (See periods of construction activities as defined in condition 3.3)

f) The Company Liaison Officer shall give residents who are likely to be affected and the Council Liaison Officer reasonable (minimum one week's) prior notice of construction activities, indicating likely timing and duration.

g) Following completion of initial construction activities, and prior to the commencement of other construction activities (ie during operations stage), the Company Liaison Officer shall report six monthly to the Hauraki District Council and the Waikato Regional Council on the following:

(i) All complaints received during the previous six month period, action taken by the consent holder and the resolutions, if any;

(ii) Other matters of concern raised by the community;

(iii) Any mediation entered into by the consent holder and others with respect to operational matters and the outcome (unless the parties have agreed to keep such confidential).

3.5 COMPLAINTS PROCEDURE AND MEDIATION

(Note: The following is for information purposes only and does not form part of the condition:

i) Complainants will be expected to contact the Company Liaison Officer in the first instance (refer to Condition 3.4 a)).

ii) During the construction activities, if the complainant is dissatisfied with the response by the Company Liaison Officer, they shall contact the Council Liaison Officer with details of the complaint and the Company Liaison Officer’s response. Outside the construction activities, complainants shall contact the Manager Planning and Environmental Services or any other Officer of Council.)

The consent holder shall comply with the following complaints procedure and mediation process:

a) The Company Liaison Officer shall meet with the complainant and the Council Liaison Officer, to discuss the complaint and ways in which the issue can be resolved.

b) If the parties cannot agree on a resolution, the matter shall be put to mediation.

(Note: The following is for information purposes only and does not form part of the condition:

i. Refer to Condition 3.4 d), Note iv)
ii. Unless the parties agree, the outcome of the mediation shall not be binding.

3.10 BLASTING AND VIBRATION

(a) All blasting procedures shall be carried out so as to ensure the safety of persons in the mine and/or in the immediate vicinity of the mine site. The consent holder shall notify the Health and Safety Inspector (Mining Act) of the blasting procedures to be employed and of any changes thereto and the blasting procedures shall be approved by the Health and Safety Inspector (Mining Act). The blasting procedures shall address the following specific items: regular blasting times, warning and all clear signals, control of fly rock, vibration and air blast monitoring and such other matters as the Inspector may direct.

(b) No blasting operations shall be carried out without the written approval of the Mine Manager, who shall first satisfy himself that the blasting operations will not cause either danger, damage or undue discomfort to any person or danger to property.

(c) A blasting programme shall be publicly notified in newspapers circulating in the area prior to any blasting taking place and at regular intervals not exceeding six (6) months thereafter.

Changes to the blasting programme shall be notified in newspapers circulating in the area at least three (3) days prior to implementation.

The Company Liaison Officer shall also ensure that the blasting programme and changes to the blasting programme are provided to all residents in the immediate area surrounding the mine who in the opinion of the Company Liaison Officer (after consultation with the Council Liaison Officer) are likely to experience the effects of blasting and vibration. The same respective notification time periods shall apply.

(d) Blasting shall be restricted to within the following hours:

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<tr>
<th>Days</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday - Friday</td>
<td>1000-1500</td>
</tr>
<tr>
<td>Saturday</td>
<td>1000-1200</td>
</tr>
</tbody>
</table>

(e) Details of all blasts shall be recorded.

(f) The peak overall sound pressure level due to the air blasts:

i) at any residence within the boundary of the Extended Martha Mine Area as shown on Planning Maps K1 - K5 of the Operative Hauraki District Plan not owned by the Waihi Gold Company; or

ii) at any residence outside the boundary of the Extended Martha Mine Area as shown on Planning Maps K1 - K5 of the Operative Hauraki District Plan except for those residences owned by the Waihi Gold Company in the area shown on the map attached in Appendix F;

shall not exceed 128 dB linear (unweighted).

(g) During initial construction (as defined in Condition 3.3), but excluding:

- upgrade of conveyor system (not including the creation of the conveyor slot), but including use of laydown areas
- construction of pipeline from the Water Treatment Plant to the Ohinemuri River;
- road construction and upgrading associated with the Extended Project;
- construction of a new Scout Hall and a new Radio Club facility,
and for a period of 12 months after initial construction activities cease, vibration levels measured in the ground closest to:

i) any residence within the boundary of the Extended Martha Mine Area as shown on Planning Maps K1 - K5 of the Operative Hauraki District Plan not owned by the Waihi Gold Company; or

ii) any residence outside the boundary of the Extended Martha Mine Area as shown on Planning Maps K1 - K5 of the Operative Hauraki District Plan, except for those residences owned by the Waihi Gold Company in the area shown on the map attached in Appendix F:

shall not exceed 10 mm/s peak particle velocity measured in the frequency range between 3 Hz and 12 Hz, thereafter NZS 4403:1976 Codes of Practice for the Storage, Handling and Use of Explosives shall apply.

(h) After the 12 month period specified in Condition 3.10 (g) has expired, and at all times for those initial construction activities excluded under Condition 3.10 (g) above, vibration levels measured in the ground closest to:

i) any residence within the boundary of the Extended Martha Mine Area as shown on Planning Maps K1 - K5 of the Operative Hauraki District Plan not owned by the Waihi Gold Company; or

ii) any residence outside the boundary of the Extended Martha Mine Area as shown on Planning Maps K1 - K5 of the Operative Hauraki District Plan except for those residences owned by the Waihi Gold Company in the area shown on the map attached in Appendix F:

shall comply with the provisions of Rule 9.4.3 of the Operative Hauraki District Plan.

(i) Except where specifically provided in Condition 3.8(g) all blasting operations and measurements in relation to such operations shall be carried out in accordance with NZS 4403:1976 Code of Practice for the Storage, Handling and Use of Explosives.

3.11 MONITORING AND REPORTING ON BLASTING AND VIBRATION

(a) The consent holder shall monitor every blast event over 1 mm/sec in terms of blast location, charge weight per delay, number of holes, initiation timing and measured vibration. Where equipment malfunctions or is not available for recording (e.g., during maintenance), this shall be noted and included in the monitoring report presented to Council. Where blasting is to be undertaken in the vicinity of the overpressure sensor, the consent holder shall also monitor the overpressure level. The location of the fixed vibration and overpressure sensors shall be undertaken in consultation with Council, and changes to the location of these sensors and monitor shall be agreed with Council prior to their relocation. The consent holder shall deploy a roving monitor to record blast vibrations in the location where complaints regarding vibration have been made. The results of the monitoring shall be provided to Council.

(b) The consent holder shall, unless otherwise directed to do so by the Council following consultation with the consent holder, provide a summary report to the Council at the end of each February, May, August and November on the blasting undertaken, and the vibration and overpressure levels recorded, as well as any complaints received.

(c) Monitoring in the ground at the base of the Cornish Pumphouse shall be undertaken when blasting is carried out within a 250 metre radius of the structure. The peak component vibration levels shall not exceed 25 mm/s
at frequencies in the range 20 to 30 Hz within the 250 metre radius. A report addressing changes to the building's structural integrity (with particular emphasis on changes that are likely to be caused by blast-induced vibrations within 250 metres) shall be supplied to Council on the anniversary of the date of commencement of this consent. The report shall be prepared by a registered engineer experienced in such work.
APPENDIX C

Vibration Conditions

HDC Land Use Consent No. 85.050.326E
Blasting and Vibration

Ground Vibration

11. The activity shall comply with Rule 9.4.3 of the Operative Hauraki District Plan including Standard 9.4.3.3A – Continuous Vibration and Standard 9.4.3.3B – Impulsive Vibration from Blasting as amended by Condition 12 below.

(NOTE: The magnitudes of vibrations from Favona Underground Mine Project activities may be increased by the concurrent Favona Exploration Decline Project and Martha Mine activities. In terms of the Operative Hauraki District Plan, Rule 9.4.2, vibrations from sources other than the Favona Underground Mine Project activities are background vibrations and are additive to vibrations from the Favona Underground Mine Project.)

Impulsive Vibration from Blasting

12. The activity shall comply with the following standard.

<table>
<thead>
<tr>
<th>Time</th>
<th>Maximum number of blast events per period</th>
<th>Maximum ground vibration level (instantaneous vector sum of velocity components) (95% design)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday to Saturday (0700 to 2100)</td>
<td>4</td>
<td>6.0 mm/s</td>
</tr>
<tr>
<td>Monday to Saturday (2100 to 0700 the following day)</td>
<td>4</td>
<td>1.0 mm/s</td>
</tr>
<tr>
<td>Sundays &amp; Public Holidays (0700 to 2100)</td>
<td>4</td>
<td>1.0 mm/s</td>
</tr>
<tr>
<td>Sundays &amp; Public Holidays (2100 to 0700 the following day)</td>
<td>4</td>
<td>1.0 mm/s</td>
</tr>
</tbody>
</table>

Blast Event Duration:

Blast events involving:

- Production blasts only shall have a duration not more than 6 seconds;
- Development blasts only shall have a duration not more than 12 seconds;
- A combination of production and development blasts shall have a duration not more than 18 seconds.

(Note: Blast events of longer than the periods specified above are not permitted.)

A ‘Blast Event’ is defined as;

“An individual or number of linked individual blasts of not more than the total duration periods specified above.”

The maximum number of blast events does not include blast events necessary for safety
and minor maintenance purposes.

The maximum ground vibration (instantaneous vector sum of velocity components) of 1.0mm/s shall apply to all maintenance blast events during the periods that this standard applies, as specified above.

13. The consent holder shall ensure that blast events at the Favona Mine shall not coincide with blast events at the Martha Mine.

14. Deleted

Monitoring

15. Impulsive vibration from all events shall be monitored.

16. The monitoring system shall be automated to allow for the immediate analysis of each blast event.

17. Suitably trained personnel shall conduct monitoring. Equipment used for monitoring, equipment calibration and vibration measurement procedures shall comply with the current Australian Standard AS2187.2 (or equivalent international standards) and equipment manufacturers’ recommendations.

18. Monitoring locations shall be at the three (3) locations shown on Plate C – Amended (dated 20 November 2003) prepared by Heilig & Partners PTY Ltd, appended to this consent as Attachment B.

The monitoring position shall be the point at or within the residence boundary nearest the project area. The monitoring position shall not be on or inside a building or other structure.

19. Before blasting starts, and provided the property owner consents, the consent holder shall complete a structural condition survey for each of the 3 properties selected for monitoring. The survey shall be carried out by an independent structural engineer suitably qualified and experienced in domestic building design and construction. The survey report shall include a visual inspection and video record of all existing built surfaces and defects including concrete access-ways.

20. A roving monitor shall be deployed to record vibrations at locations the subject of complaints.

21. A complete record of each blast event shall be maintained. The record shall include:

(i) Types of measurement instrument used
(ii) Time and duration of blast event
(iii) Location of blasts
(iv) Locations of monitoring positions
(v) Distances for the blasts to the monitoring position and nearest residence
(vi) Distance from monitoring position to nearest residence
(vii) Measured vibration levels
(viii) Total amount of explosive used
(ix) Delay sequence of the blast event
(x) Maximum instantaneous charge
(xi) Volume of rock blasted
(xii) Complaints (including the nature of effects for example rattling window, was the
complainant awoken) and whether the Vibration Mitigation Action Process has been undertaken.

(xiii) Advice as to whether the blast was a safety or minor maintenance blast.
(xiv) Design criteria not covered in items a) to m) above.

Health and Safety

22. All blasting and material storage and handling shall be carried out so as to ensure the safety of persons in the Favona Project Area and adjacent area. The Health and Safety in Employment Act, 1992, the Health and Safety in Employment (Mining Underground) Regulations, 1999 shall be complied with.

The consent holder shall notify the Health and Safety Inspector of the blasting procedures to be employed and of any changes to the procedures.

Vibration Management Plan

23. The consent holder shall, at least 1 month prior to commencement of mining, but not until the results of blasting and community consultation associated with the Favona Exploration Decline Project and any consequent review of the consent conditions for the Favona Underground Mine Project have been completed, submit a vibration management plan for written approval by the Manager – Planning and Environmental Services. The objective of the plan is to provide generic detail on how vibration consent condition compliance will be achieved for the duration of the Favona Underground Project. The plan shall include a blasting programme that sets out in general terms the numbers, times (generally around shift changeovers), duration of blast events, and steps to minimise the duration of blast events, records to be kept and mitigation actions to be implemented in the event of non-compliance.

Management and Reporting

24. a) No blasting operations shall be carried out without the written approval of the Favona Mine Manager. Before blasting commences the Favona Mine Manager shall ensure that the operations will not cause danger, damage and undue discomfort to any person nor danger and damage to property.

b) In the event that blast monitoring shows that the vibration standards have been exceeded, the consent holder shall implement mitigation actions to ensure compliance. Possible mitigation actions include:

i) Limiting the rate of excavation advance
ii) Reducing the blast hole diameter
iii) Reducing the weight of explosives in the blast hole
iv) Using alternative explosive types
v) Using electronic delays to adjust sequencing
vi) Decking
vii) Changing the blast pattern
viii) Drilling and blasting in two passes
ix) Changing the method of mining

c) The consent holder shall provide a report to Council for each blast event where the measured vibration exceeds the specified maximum limits. The reports shall be submitted within five (5) days after the blast event and include the records listed in Condition21 above and mitigation actions taken to limit subsequent blast vibrations
to the maximum limits or less.

d) The consent holder shall provide a summary report to Council at six (6) monthly intervals after commencement of this consent. The report shall include the following:

i) Confirmation of actions taken during the previous reporting period
ii) All vibration related complaints received during the current reporting period and mitigation actions taken by the consent holder
iii) Results of vibration monitoring.

Community Liaison

Liaison Officer

40. Prior to the exercising of the consent, the consent holder shall appoint a person (the ‘Liaison Officer’) and any replacement person subject to the approval of the Hauraki District Council and the Waikato Regional Council (the ‘Councils’) to liaise between the consent holder, the community and the Councils as set out in Attachment C to this consent. The Liaison Officer shall have sufficient delegated power to be able to deal immediately with complaints received and shall be required to investigate those complaints as soon as possible after receipt. A Liaison Officer shall be appointed for the duration of this project.

41. The name of the Liaison Officer together with the contact phone numbers for that person shall be publicly notified in local newspapers by the consent holder prior to the exercising of this consent and at least once a year thereafter.

Complaints Procedure

42. The Standard Operating Procedure for Complaints and as amended by the Vibration Mitigation Action Process shall be used for any complaints received from the community.
APPENDIX D

Vibration Conditions

HDC Land Use Consent No. RC-15774
Blasting and Vibration

8. Ground Vibration

All blasts will be designed at a 95% level of confidence to achieve the vibration levels specified in Condition 9.

9. Impulsive Vibration from Blasting

The activity shall comply with the following standard as measured at the boundary of any residentially zoned site or the notional boundary of any occupied rural dwelling not owned by the consent holder (or related company) or not subject to an agreement with the consent holder (or related company).

In the event that a property is sold and is not subject to an agreement between the consent holder (or related company) and the purchaser or related company, or in the event that there is no longer an agreement between the consent holder and the landowner, the measurement of vibration shall revert to being measured at the boundary of the residentially zoned site or the notional boundary of the occupied rural dwelling.

<table>
<thead>
<tr>
<th>Time</th>
<th>Maximum number of blast events per period(^1)</th>
<th>Maximum ground vibration level (instantaneous vector sum of velocity components - 95% design)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday to Saturday (0700 to 2100)</td>
<td>4</td>
<td>6.0 mm/s</td>
</tr>
<tr>
<td>Monday to Saturday (2100 to 0700 the following day)</td>
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<tr>
<td>Sundays &amp; Public Holidays (2100 to 0700)</td>
<td>4</td>
<td>1.0 mm/s</td>
</tr>
</tbody>
</table>

\(^1\) Note: The Period means the four durations referred to in the column headed “Time”

Blast events involving:

- Production blasts shall have a duration not more than 6 seconds;
- Development blasts shall have a duration not more than 12 seconds; and
- A combination of production and development blasts shall have a duration not more than 18 seconds.

(Note: Blast events of longer than the periods specified above are not permitted.)

A ‘Blast Event’ is defined as:

“An individual or number of linked individual blasts of not more than the total duration periods specified above.”

The maximum number of blast events does not include blast events necessary for safety and minor maintenance purposes.
The maximum ground vibration (instantaneous vector sum of velocity components) of 1.0mm/s shall apply to all maintenance blast events during the periods that this standard applies, as specified above.

10. The consent holder shall ensure that blast events at the Favona Mine shall not coincide with blast events at the Martha Mine.

11. Blasting and Vibration Monitoring and Reporting
   a) Impulsive vibration from all events shall be monitored
   b) The monitoring system shall be automated to allow for the immediate analysis of each blast event.
   c) Suitably trained personnel shall conduct monitoring. Equipment used for monitoring, equipment calibration and vibration measurement procedures shall comply with the current Australian Standard AS2187.2 (or equivalent international standards) and equipment manufacturers’ recommendations.
   d) Unless otherwise confirmed in the Vibration Management Plan (Condition 13) monitoring locations shall be those shown in Figure 5 of the report prepared by Heilig & Partners Pty Ltd being Appendix 5 of the application AEE. The monitoring position shall be as close as practicable to a point on or within the residence boundary nearest the project area. The monitoring position shall not be on or inside a building or structure.
   e) Before blasting starts, and provided the property owner consents, the consent holder shall complete a structural condition survey for each of the properties selected for monitoring. Further, structural condition surveys on this same basis shall be undertaken on all properties not owned by the consent holder and which are located within the 5 mm/s vibration contour shown on Plate No E dated 21 November 2010 prepared by Heilig & Partners (Appendix C. Evidence by John Heilig) and include in Attachment 1 of this consent. The survey shall be carried out by an independent structural engineer suitably qualified and experienced in domestic building design and construction. The survey report shall include a visual inspection and video record of all existing built surfaces and defects including concrete access-ways.
   f) A roving monitor shall be deployed to record vibrations at locations the subject of complaints
   g) In addition to the monitoring locations as specified in Condition 11d, an additional monitoring location shall be established to determine the levels of vibration at the Cyanide Tanks and Ore Kilns on Union Hill. The final position(s) are to be confirmed in the Vibration Management Plan (Condition 13). Any subsequent proposed change in monitoring location shall require a revision to the Vibration Management Plan. The revised Plan shall be submitted for written approval by the Council’s Manager – Planning and Environmental Services as set out in Condition 13 for relocation.
   h) A complete record of each blast event shall be maintained. The record shall include:
      (i) Types of measurement instrument used
(ii) Time and duration of blast event
(iii) Location of blasts
(iv) Locations of monitoring positions
(v) Distances for the blasts to the monitoring position and nearest residence
(vi) Distance from monitoring position to nearest residence
(vii) Measured vibration levels
(viii) Total amount of explosive used
(ix) Delay sequence of the blast event
(x) Maximum instantaneous charge
(xi) Volume of rock blasted
(xii) Complaints (including the nature of effects, for example rattling window, was the complainant awoken) and whether the Vibration Mitigation Action Process has been undertaken.
(xiii) Advice as to whether the blast was a safety or minor maintenance blast.
(xiv) Design criteria not covered in items i) to xii) above.

12. Health and Safety

All blasting and material storage and handling shall be carried out so as to ensure the safety of persons in the Trio Project Area and adjacent area. The Health and Safety in Employment Act 1992 the Health and Safety in Employment (Mining Underground) Regulations 1999 shall be complied with.

The consent holder shall notify the Health and Safety Inspector of the blasting procedures to be employed and of any changes to the procedures.

13. Vibration Management Plan

The consent holder shall, at least 1 month prior to commencement of mining, submit a Vibration Management Plan for written approval by the Council’s Manager – Planning and Environmental Services. The objective of the Plan is to provide detail on how vibration consent condition compliance will be achieved for the duration of the Trio Underground Mine Project. The Plan shall include a blasting programme that sets out in general terms the numbers, times (generally around shift changeovers), duration of blast events, coordination of development and production blasts into one blast event and steps to minimise the duration of blast events, records to be kept (including blast design data), blast design review procedures, procedures to be adopted where vibration levels approach the maximum permitted levels and mitigation actions to be implemented in the event of non-compliance. The mitigation actions shall include procedures to repair any damage to structures identified as having resulted from activities at the Trio Underground Mine. The Plan shall also confirm the permanent monitoring locations to be established in accordance with Conditions 11d) and 11g).

14. Management and Reporting

a) No blasting operations shall be carried out without the written approval of the Trio Mine Manager. Before blasting commences the Trio Mine Manager shall ensure that the operations will not cause danger, damage and undue discomfort to any
person nor danger and damage to property.

b) In the event that blast monitoring shows that the vibration standards have been exceeded, the consent holder shall implement mitigation actions to ensure compliance. Possible mitigation actions include:

(i) Limiting the rate of excavation advance
(ii) Reducing the blast hole diameter
(iii) Reducing the weight of explosive in the blast hole
(iv) Using alternative explosive types
(v) Using electronic delays to adjust sequencing
(vi) Decking
(vii) Changing the blast pattern
(viii) Drilling and blasting in two passes
(ix) Changing the method of mining

c) The consent holder shall provide a report to Hauraki District Council for each blast event where the measured vibration exceeds the specified maximum limits. The reports shall be submitted within five (5) days after the blast event and include the records listed in Condition 11h) above and mitigation actions taken to limit subsequent blast vibrations to the maximum limits or less.

d) The consent holder shall provide a summary report to Council at six (6) monthly intervals after commencement of this consent. The report shall include the following:

(i) Confirmation of actions taken during the previous reporting period
(ii) All vibration related complaints received during the current reporting period and mitigation actions taken by the consent holder
(iii) Results of vibration monitoring.

e) Monitoring records, reports and complaint schedules shall be stored and maintained in a systematic manner. Storage shall be secure and maintained for 12 months after completion of all blasting at the underground mine. Records shall be available for perusal by the Health and Safety Inspector, Council and their representatives.

Liaison Officer

25. At least 1 month prior to the exercising this consent, the consent holder shall appoint a person (the 'Liaison Officer') and any replacement person subject to the approval of the Hauraki District Council and the Waikato Regional Council (the 'Councils') to liaise between the consent holder, the community and the Councils. The Liaison Officer shall have sufficient delegated power to be able to deal immediately with complaints received and shall be required to investigate those complaints as soon as possible after receipt. The Liaison Officer shall be appointed for the duration of this project.

Complaints Procedure
26. The Standard Operating Procedure for Complaints (attached as Attachment 2 to this consent) shall be used for any complaints received from the community.
APPENDIX E

Martha Mine - Blast Vibration Mitigation Plan
Martha Mine
Blast Vibration Mitigation Plan

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Description</th>
<th>Author</th>
<th>Approved</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>April 04</td>
<td>Description of mitigation process</td>
<td>K Rogan</td>
<td></td>
</tr>
<tr>
<td>2.0</td>
<td>April 04</td>
<td>Version sent to HDC</td>
<td>Various</td>
<td>D Ingle</td>
</tr>
<tr>
<td>3.0</td>
<td>May 04</td>
<td>Remove reference to increase charge weight/formatting &amp; doc control</td>
<td>K Rogan</td>
<td>K Rogan</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>P Fransen</td>
<td>D Ingle</td>
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<td>3.1</td>
<td>July 06</td>
<td>Review, minor changes</td>
<td>M Lane</td>
<td>G Grindlay</td>
</tr>
<tr>
<td>3.2</td>
<td>Dec 11</td>
<td>Review, minor changes</td>
<td>R Squire</td>
<td>G Grindlay</td>
</tr>
</tbody>
</table>
1. Purpose

- To meet the requirements of Land Use Consent No. 97/98 – 105, granted by Hauraki District Council, to undertake vibration monitoring and report to council on blast vibration. The relevant clauses are 3.10 and 3.11.

- To ensure blast vibration does not exceed 5 mm/s peak particle vector sum at the nearest privately owned residence and additionally to manage blast vibration to a reasonable practicable level below the 5 mm/s compliance limit.

- To provide a systematic approach that employs world’s best practice to design and implement the blast pattern, including accounting for the results of previous blasts, proximity of underground workings and effects of geological structures.

- To ensure that circumstances that may lead to a breach of consent conditions are identified in a timely manner.

- To accommodate production sequences, safety of personnel and contingent action.

2. Preamble

Empirical studies have related blast vibration levels at a receiver, located a certain distance away from detonation, to explosive energy (charge weight) and geological structures (including man made holes). Distance and geological structures cannot be varied, therefore emphasis in any blast design for limiting vibration levels is the charge weight. Other factors such as blast confinement, direction and timing of firing are known to influence blast vibrations.

3. Blast Design / Vibration Management Process

The flowchart in Appendix A details the blast vibration management process.

Prior to the commencement of drilling on a bench or a designated area:

- The Newmont Senior Geologist provides A3 plans detailing voids, geology and pit boundaries to MCL blast supervisor

- All major underground openings or geological features that may result in changes to the expected vibration levels produced by the blast provided by the Newmont Senior Geologist will be marked on a Bench Blast Plan by the MCL supervisor. When estimating charge weights the MCL supervisor shall account for the presence of such structures in the blast design.

- The details leading to the charge weights per hole or zone will be recorded in the Pre-Blast Approval Sheet. The designed charge weights will take into account the:
  - history of vibration levels in the immediate vicinity,
  - geology,
  - presence of underground voids,
  - location of highwalls, and
  - the distance from monitoring points.

- The Bench Blast Plan, at a scale to fit on an A3 sheet, will be drawn up by the MCL blast supervisor. This plan will detail the charge weights, drilling pattern and firing sequence to be used in the various locations on the bench or area. The boundaries between charge weight zones will be clearly delineated on the plan and in the field by visible marks on the pit wall along with the charge weights to be used on either side of the boundary.

- Both the Newmont Mining Manager or his delegate and the MCL Blast Supervisor or his delegate will approve and sign these plans recorded in the Pre-Blast Approval Sheet. This will signify they agree that all relevant factors have been accounted for in the blast design and that the design will, to the best of their knowledge, not result in an exceedence.
• A copy of the Pre-Blast Approval Sheet will be placed in the Blast Record Book – a copy of which will be retained at both MCL and Newmont.

• At the completion of the blast, a Blast Record Sheet including a surveyed plan at a scale to fit on an A4 sheet shall be drawn up and will have either attached to or annotated on the plan a copy of the blast record detailing all the blast parameters and the maximum blast vibration level PPV (vector sum) recorded at the monitoring geophones. The Surveyor will also annotate the plan with the blast centroid co-ordinates.

• The Blast Record Sheet, Bench Blast Plan, Pre-Blast Approval Sheet vibration records and data sheet will constitute the Blast Record Book. All the blast data, other than the plans, will be entered into the Blasthub\(^1\) vibration monitoring system.

• Any changes or amendments made to the Bench Blast Plan due to excessive blasting vibration levels will be signed by both the Newmont Mining Manager and MCL Supervisors or delegates.

• The Blast Record Book will be used as a predictive tool to enable Newmont and MCL to estimate blast vibration levels at various locations from various explosive charge weights.

4. **Vibration Mitigation Guidelines**

• Blasts will be designed in accordance with the procedure described above. However, the following are guidelines to be used by the Blast Designer (MCL Supervisor) and the Newmont Mine Manager or Pit Supervisor in response to information from adjacent blasts or from uncharacteristic blast vibration levels.

The flowchart attached in Appendix B, shows the guidelines for the response mechanism using information from adjacent blasts, from uncharacteristic blast vibration levels, or from control measures negotiated and agreed between NWG and HDC through the EMMA process established by a Memorandum of Understanding between the two parties in respect of the South Wall Stability Cutback. The flowchart shows that blasts are to be designed to operate in the 3 to 4 mm/s vibration level range and without generating nuisance. If levels fall outside of this range, or if nuisance effects as validated by EMMA occur, then the flowchart details the response mechanism guidelines.

5. **Guidelines for Decreasing Charge Weights**

In the event that two blasts exceed 4.0mm/s, but produce vibration less than 4.5 mm/s and do not generate unacceptable nuisance effects, on a bench or area:

• If two independent causes can be indisputably identified as having led to the two PPV values of between 4.0 mm/s and 4.5 mm/s, and those causes can be directly dealt with, then control measures will be put into place to ensure that the situation is not repeated in subsequent blasts.

• If the cause is unrelated to charge weights, e.g. an underground void, detonator sequencing etc., then the bench or area plan will not require change. If the same cause gives rise to the 4.0 – 4.5 mm/s, then the charge weights will be reduced following consideration of all known data and the information contained in Appendix C relating to the effect of reducing charge weights (typically 10%).

• If the cause cannot be uniquely identified, the remainder of the Blast Plan will have the charge weights reduced by a lesser amount but following the same consideration (typically 5%).

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\(^1\) The Blasthub vibration monitoring system has been utilised as the blast vibration monitoring system at Martha Mine since 2005. The system provides real-time, web-based monitoring that is accessible to both HDC and NWG and includes automatic email notification of blast events that trigger two or more monitors.
• If charging or drilling of a blast pattern has commenced on a later shot, charging will be completed at the design charge weights and/or drilling will be squared-off on the design pattern.

In the event that a blast exceeds 4.5 mm/s or generate unacceptable nuisance effects as validated by EMMA, but produce vibration less than 5 mm/s, on a bench or area:

• If a cause can be indisputably identified, and that cause can be directly dealt with, then control measures will be put into place to ensure that the situation is not repeated in subsequent blasts.

• If the cause is unrelated to charge weights, e.g. detonator sequencing, incorrect charging procedure etc., the bench or area plan will not require change.

• If the cause cannot be uniquely identified, the remainder of the blast plan will have the charge weights reduced following consideration of all known data and the information contained in Appendix C relating to the effect of reducing charge weights (typically 10%).

• If charging or drilling of a blast pattern has commenced on a later shot, charging will be completed at the design charge weights and/or drilling will be squared-off on the design pattern.

In the event of a blast exceeding the consent condition of 5mm/s:

• If a cause can be indisputably identified as having led to the exceedance, and that cause can be directly dealt with, then control measures will be put into place to ensure that the situation is not repeated in subsequent blasts.

• If the cause is unrelated to charge weights, e.g. a timing problem, incorrect loading of holes etc., the bench or area plan will not change. Consideration will be given to disciplinary action in the event of negligence being identified as being the cause of the exceedance.

• If the cause cannot be uniquely identified, the charge weights for the remainder of the Blast Plan will be reduced following consideration of all known data and the information contained in Appendix C relating to the effect of reducing charge weights (typically 20%).

• If charging or drilling of a blast pattern has commenced on a later shot, charging will be completed at the design charge weights and/or drilling will be squared-off on the design pattern. This may result in a smaller than planned shot being fired to minimise the possibility of any repeat exceedance.

6. **Non Compliance with Consent Condition Reporting**

Where a PPV of 5 mm/s or greater is recorded by the blast monitors, a letter detailing the exceedance will be issued via the General Manager or his delegate to the HDC within five working days. This will detail the exceedance, maximum PPV value, the charge weights and number of holes fired, inter-hole delay, location of blast, reason for the exceedance and the action taken under this protocol.
APPENDIX A: BLAST VIBRATION MANAGEMENT PROCESS

Map detailing voids, geology and pit limits
NWG Geology

Blast criteria & prescription defined based on review of previous blast history
NWG Pit Supervisor

Blast Plan prepared
MCL Blast Supervisor

Blast Plan review and approval
Pre-Blast Approval Signed
NWG Mine Manager

Plan communicated and actioned
MCL Blast Crew

Review vibration results
NWG Pit Supervisor

Criteria defined from Blast Records
(Plan & Actuals)
NWG Pit Supervisor

Update Blast Records
(Plan & Actuals)
NWG Mining

Vibration level expected?

Yes

No

Implement Vibration Response Mechanism
Appendix B
APPENDIX B: VIBRATION RESPONSE LEVEL MECHANISM GUIDELINES

MCL Supv. produces the BLAST PLAN with charge weights derived from ref. to BLAST RECORD BOOK

NWG Mine Mgr. approves MCL BLAST PLAN. Blast fired

NOTE: Any requirement to implement control measures to address nuisance effects shall be negotiated and agreed by EMMA

Blast design, charge weights, blast monitor measurements, location and Mine Mgr's directions placed into the BLAST RECORD BOOK

PPV >44m/s AND no nuisance effects?

Y

Both causes identified?

Y

Mine Mgr. may direct CONTROL MEASURE to be put in place

N

Mine Mgr. will direct CHARGE WEIGHT reduced (e.g. by 5%) for subsequent blasts in adjacent area

N

PPV >4.4m/s <4.5m/s AND/ OR causes nuisance?

Y

Is this the second occurrence?

Y

Cause can be identified?

Y

Mine Mgr. may direct CONTROL MEASURE to be put in place

N

Verbal notification given to HDC by Mining Mgr. or delegate

N

Cause related to charge weight?

Y

Mine Mgr. will direct CHARGE WEIGHTS reduced (e.g. by 20%) for subsequent blasts in adjacent area

Y

Are causes similar?

Y

Mine Mgr. will direct CONTROL MEASURE to be put in place

N

Cause related to charge weight?

Y

General Mgr. notifies HDC detailing exceedence value, reason for exceedence and CONTROL MEASURE within 48hrs

N

Mine Mgr. will direct CONTROL MEASURE to be put in place
APPENDIX C: RELATIONSHIP BETWEEN EXPLOSIVE CHARGE WEIGHT AND BLAST VIBRATION LEVEL USING EMPIRICAL RELATIONSHIP

Source: Heilig and Partners Pty Ltd)

1. A 20% reduction in explosive weight will reduce the vibration level 15% (i.e. 5 mm/s to 4.25 mm/s at the same distance).

2. A 10% reduction in explosive weight will reduce the vibration level 7% (i.e. 5 mm/s to 4.65 mm/s at the same distance).

3. A 5% reduction in explosive weight will reduce the vibration level 3% (i.e. 5 mm/s to 4.85 mm/s at the same distance).
APPENDIX F

NWG SOP NWO-INT-009-CRM-S7

Public Notification of Blasting Programme
Public Notification of Blasting Programme

1. Purpose
The purpose of this procedure to ensure Waihi residents are kept fully informed of the Newmont Waihi Gold (NWG) blasting programme so they are aware of the times of the day that blasting is likely to take place.

2. Scope
This procedure references to Hauraki District Council Landuse Consent Condition 3.10(c), and has relevance to staff at the NWG site with responsibility for public consultation.

3. Procedures

- In accordance with Resource Consents and Conditions Hauraki District Council Landuse Consent 97/98 - 105 3.10(c) and Variation to Conditions of Mining Licence 32 2388 10(b) - the Company Liaison Officer (CLO) will ensure that the blasting programme and / or any changes to the blasting programme are provided to all residents in the immediate area surrounding the mine who are likely to experience the effect of blasting and vibration.

- The blasting programme shall be publicly notified in newspapers circulating in the local area prior to any changes in blasting taking place and also at regular intervals not exceeding six (6) months thereafter.

- Changes to the blasting programme shall be notified in newspapers circulating in the area at least three (3) days prior to implementation.

- The Company Liaison Officer will advise the General Manager or his delegate and Embankment / Pit Manager when six (6) monthly notifications are due. Due dates are the first week in June and first week in December annually.

- In addition to the public notification in local newspapers the CLO or delegate will personally notify (either by telephoning or visiting) specific residents residing in close proximity to blasting locations. This applies to both Martha and Favona operations.

Responsibilities:
Company Liaison Officer

- Advise General Manager or his delegate and the Embankment / Pit Manager when notifications are due
- Arrange advertising accordingly.

Records:

- Public Notifications File in CLO’s office
- Electronic \.\..\Liaison Officer\Blast Notification Phone Lists\Blast Notification.xls

References:
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APPENDIX G

NWG SOP NWO-INT-009-CRM-S06

Managing Public Complaints
Managing Public Complaints

1. Purpose
   - To ensure public complaints are managed in a sensitive, timely and consistent manner and to identify corrective actions where appropriate.
   - To ensure compliance with Martha Mine Extended Project Resource Consents and Conditions, Hauraki District Council 3.4(a)(g), Waikato Regional Council 13.0 Schedule 1, 7.0.
   - To ensure compliance with Favona Exploration Decline Land Use Consents and Conditions, Hauraki District Council 21.

2. Scope

This procedure relates to staff at the Newmont Waihi Gold (NWG) site who are in the position to receive complaints from members of the public.

3. Authority

The Company Liaison Officer (CLO) has the delegated authority to request the immediate implementation of the noise and/or vibration mitigation process, and/or to stop an activity or item of plant if, in the opinion of the CLO having followed the procedure set out below, such action is required in response to the complaint.

4. Procedures

Receiving & responding calls
   - Complaints are received via the company community engagement phone or at reception. HDC and EW calls are also logged.
   - In the event of the Security Gatehouse or any other contractors or staff receiving a complaint from the community, they should advise them to contact the CLO or delegate on the free phone number 0800 NEWMONT or 0800 639 6668. This requirement is communicated to all NWG employees and contractors during the General Site Induction.
   - Due to abusive phone calls that have been received in the past any calls received with blocked ID will not be answered, rather the caller will be asked to leave a message and a telephone number so they can be called back.
   - All calls are recorded on the Complaints form (NWO-CRM-019-F1).
   - Callers are treated politely and with sensitivity.
   - The form prompts the CLO or delegate to record necessary information as per the consent condition. It is important to get as much information as possible to enable an effective investigation to occur.
   - Thank the caller and advise them the company will notify them as soon as possible when the problem has been investigated and what action will be taken (if any).
• Issues that could seriously affect the running of the operation are reported to the General Manager or his designate.

• Residents making complaints will be referred to the Newmont Waihi Gold Grievance Mechanisms and Flowcharts that are available on the website (www.marthamine.co.nz). If the resident does not have access to a computer a hard copy will be provided.

Investigation and action

• The complaint will be investigated and an action or response decided upon.

Noise

  • Noise complaints are followed up immediately if reasonable to do so (within an hour of the complaint being received or at the same time the next day)
  • The Environmental Manager and /or Environmental Technician is informed and a decision is made to measure the noise if practicable (e.g. noise monitoring may not be practicable if the wind speed is greater than 5.0mm/sec).

Vibration

  • Vibration complaints are checked by accessing Blast Hub
  • Exceedences (levels over 5 mm/s for the Martha Operation and 6mm/s daytime limit and 1mm/s night time limit for the Favona operation) are required to be investigated in more detail and a response from the mining department recorded as to what mitigation action is planned.
  • A written explanation of vibration exceedences is provided to the HDC by the Mining Manager.

Other Complaints

• Complaints other than those relating to noise or vibration are investigated by the environmental or relevant department depending on the issue.

• Part of the investigation could include a visit to the complainant to discuss the problem, especially if the effect they are feeling is temporary; or if requested, a meeting could be arranged between the complainant and the General Manager, or relevant departmental Manager.

• The CLO should be present at any meeting that relates to community complaints.

• It is important to record on the form the decision for internal corrective or preventive action and the response made to the complainant.

• Follow-up may be required to determine if an action was effective. This will depend on the issue and agreed time-frame to carry out the action.

• All actions relating to complaints are managed through the complaints database system.

Database

• Once the complaints form is completed the information is entered into the Access Database for reporting and analysis purposes at a later date. The complaints form is available from the database managed by the CLO.

• It is important that records are complete, accurate, and brief where possible (details are still available on the hardcopy). The complaints form should be filled out to capture as much relevant information as possible.
Reporting

- Complaints are communicated by the CLO at the next morning production meeting, reported monthly in the site monthly report, the APAC ESR Regional Monthly Report and reviewed at quarterly management reviews.

- The CLO is required to provide six-monthly reports with regard to both the Martha and Favona Mine operations to Hauraki District Council and Waikato Regional Council that include the following information:
  - all complaints received during the previous six-month period;
  - action taken by the consent holder and the resolutions if any;
  - other matters of concern raised by the community;
  - any mediation entered into by the consent holder and others with respect to operational matters and the outcome (unless parties have agreed to keep such matters confidential).

- It is anticipated that complainants will contact the CLO in the first instance. If, for any reason, they are dissatisfied with the response by the CLO, they may then contact the Manager Planning and Environmental Services or any other Officer of either the Hauraki District Council or the Waikato Regional Council.

- The CLO and/or General Manager may meet with the complainant and Council concerned to discuss the complaint and ways in which the issue can be resolved. If the parties cannot agree on a resolution, the matter shall be put to mediation.

5. Document Control

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APPENDIX H

Memorandum of Understanding

Martha Mine South Wall Stability Cutback Project
MEMORANDUM OF UNDERSTANDING

between

WAIHI GOLD COMPANY LIMITED (trading as Newmont Waihi Gold)

and

HAURAKI DISTRICT COUNCIL

Dated: 4/8/06
BACKGROUND

1. This Memorandum of Understanding is entered into between Hauraki District Council ("the Council") and Waihi Gold Company Ltd, trading as Newmont Waihi Gold ("Newmont").

2. The Council is a territorial authority constituted under the Local Government Act 2002.

3. Newmont is the holder of the necessary mining licence and resource consents for the Martha Mine in Waihi (ML 32 2388, Land Use Consent No.97/98-105, and a number of regional consents from Environment Waikato which is not a party to this Memorandum of Understanding). Newmont (and its predecessors) has been undertaking mining operations in Waihi for approximately 18 years.

4. The current mine plan for the Martha Mine pit is due for completion in June 2006. In preparation for the end of mining, Newmont has been developing its final mine rehabilitation plans and checking the closure requirements of the mining licence and land use consent.

5. A stability cutback of the south wall of the Martha Mine pit will be undertaken to comply with condition 36 of ML 32 2388. The stability cutback works will bring operations back to the surface of the pit for a period of time. The stability cutback will take approximately 3 to 3 ½ years to complete, starting at the pit rim and working down the pit wall. Rehabilitation works at the surface of the pit will also be undertaken during the period that the stability cutback works are taking place. Details of the stability cutback works are outlined in the South Wall Stability Cutback Project Description dated 11 May 2006 ("the Project Description").

6. In recognition that the effects of operations at the Martha Mine are moving back to the surface of the pit and may be more noticeable to the Waihi community, the Council and Newmont have agreed to enter into this Memorandum of Understanding.

STATEMENT OF INTENT

7. The intention of this Memorandum of Understanding is to express the commitment on the part of both the Council and Newmont to continue to act in a socially responsible manner. The parties commit to respond in a timely manner, and engage in meaningful dialogue, when issues relating to potential nuisance effects on members of the Waihi community arise with respect to the Martha pit during its final years of operation and rehabilitation.

COMMITMENTS OF THE PARTIES

8. The parties commit to the establishment of a project-focused working party to be called the "Effects Management & Mitigation Alliance" ("EMMA"). EMMA will be constituted by representatives from both the Council and Newmont, and at a minimum, will include the Manager Planning and Environmental Services for the Council and the External Relations Manager for Newmont. Consideration may be given to the involvement of a community representative. Technical advisors may also be appointed by either the Council or Newmont to take part in EMMA's discussions where appropriate.

9. The parties commit to meaningfully discuss in a timely manner, any issues and legitimate complaints arising from activities being undertaken in relation to the
Martha pit. Initially complaints will be responded to through the processes set out in the mitigation and management plans, regardless of whether consent limits are exceeded.

10. The parties commit to promptly implement any agreed actions to address issues or legitimate complaints, whether that be by way of amendments to the management and mitigation plans for the Martha Pit, or by other means.

11. The parties agree to meet through the forum of EMMA to address how a complaint, that is seen to be vexatious, is to be addressed, and to discuss technical issues relating to effects and actual or proposed mitigation responses.

12. In relation to the stability cutback works, Newmont commits, in particular, to the following:

(a) To undertake the stability cutback works in general accordance with the Project Description, and the current (at the time) management, monitoring and mitigation plans approved by the Council;

(b) To continue to use the state-of-the-art real-time blast vibration monitoring system, Blasthub, and to continue the Council’s on-line access to this system;

(c) To develop and implement noise and vibration management plans for the stability cutback activities that reflect the operating practices existing at the time of signing this Memorandum of Understanding, and include the existing monitoring and mitigation plans. The management, monitoring and mitigation plans will detail the initial mitigation responses to be taken by Newmont to deal with any possible nuisance effects and regardless of whether consent limits are exceeded;

(d) To modify the management and mitigation plans to reflect the agreements negotiated through EMMA or otherwise agreed with the Council, and to implement the modifications, in a timely manner;

(e) To monitor and manage the effects of noise, vibration and dust in accordance with the current (at the time) management and mitigation plans;

(f) To continue to employ a dedicated Company Liaison Officer to keep members of the community informed about the Company’s activities, deal with complaints and to liaise, as necessary, with EMMA;

(g) To keep HDC fully informed of its activities and report regularly to the Council on its performance;

13. The Council commits to identifying an employee to act as the Council Liaison Officer (in accordance with conditions 3.4 of Land Use consent No. 97/98 – 105 and 7B of ML 32 2388). The Council Liaison Officer is the person to whom all complaints and issues raised by the Waihi community are to be directed in the first instance. The Council Liaison Officer will liaise with the Company Liaison Officer and, as necessary, with EMMA.
The above intention and commitments are agreed to by the Council and Newmont as shown by the signatures below:

Adriaan van Versen  
General Manager for  
Newmont Waihi Gold

Langley Cavers  
Chief Executive Officer for  
Hauraki District Council