1520 Channel Hwy Margate
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26/06/2023

RE: White Beach Quarry - Maintaining Environmental Limits Blasting Operations,

To Whom it may concern,

Forze Pty Ltd would like to provide some assistance understanding the environmental results from the trial blasting activities onsite and offer some improvements to keep the results below the required limits in future blasting operations. The actual vibration monitoring results vs modelled where within acceptable limits. The actual overpressure monitoring results exceeded the estimated/modelled overpressure for the blasting activity onsite, note that the modelled levels were below the limits set in the quarry code of practice. Higher overpressure results are most likely causes by premature high pressure gas escape (a lack of confinement of explosives) and/or large instantaneous rock movement.

Blasting development dolerite (first cut of weather dolerite) has a higher risk of exceeding overpressure limits due to the structure of the ground. Large preformed boulders separated by weathered brown seams within the rock can offer an easy route of escape for blast gas before breakage of rock occurs. Overpressure is harder to control on uneven or stepped benches due to variable stemming heights and intersections of material types. Development areas often consist of low bench heights without free faces which promote early gas escape or stemming rejection due to over confinement causing upward push.

Please see attached to this letter four pictures of the blast area that display the most likely contributing factors to the overpressure exceedance:
1) Pre blast face showing weathered brown seams full depth of blast height.
2) Signs of stemming ejection in shallow holes with no free face (over confinement).
3) Signs of early blast gas ejection or escape from split height areas of the bench.
4) Direction of firing and rock movement compared to direction of nearest sensitive site.

Areas for improvement to reduce the likely hood of overpressure exceedance in future blasting onsite:
1) Increase perimeter burdens in blast design around free faces and weathered rock.
2) Minimise the areas of toe blasting, free face these areas if possible.
3) Improve bench preparation to consistent flat areas with suitable bench height.
4) Bench areas prepared with 0 - 0.5 m of crushed quarry material over the uneven hard dolerite.
5) Realign direction of firing and rock movement perpendicular to sensitive site.

If the above process improvements are implemented, we are confident that the environmental monitoring requirements can be maintained below the required limits for blasting operations onsite.

Please let me know if you have any questions.
Best Regards

Nicholas Armstrong
Forze Explosive Services
0408 772 288

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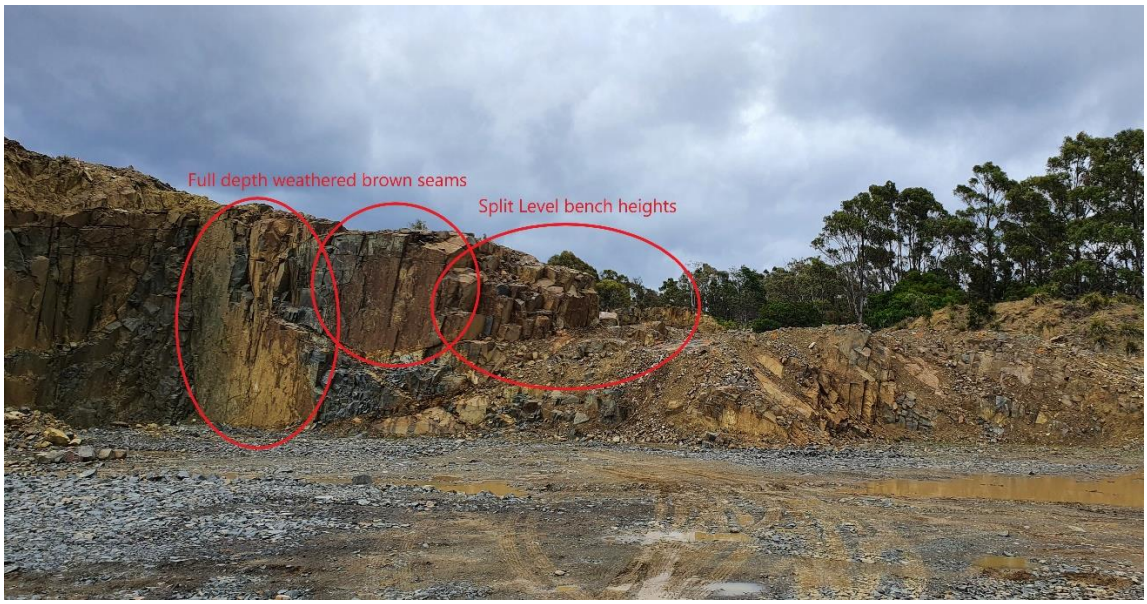
1)



2)

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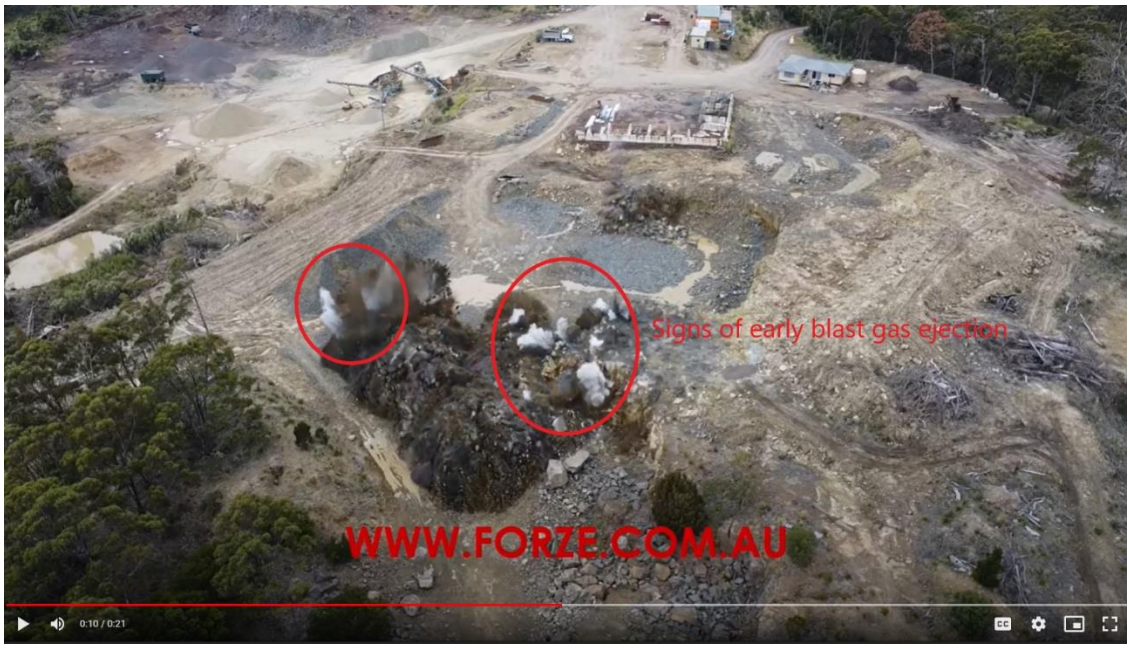
3)



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