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24 October 2014

Our Ref: 80707-NCS/Church Hill:ww:af:580050

The Manager
Blueprint Planning Consultants
6 Braeroy Drive
PORT MACQUARIE NSW 2444

Attention: Tony Blue

By email: tony@blueprintplanning.net.au

Dear *Tony,*

Re: NSW Quarry Services and Kempsey Shire Council
Property: Lot 1 DP 914805, Lots 14
and 16, DP 1157615 and Lots 186, 187, 189 DP 754400, Crescent Head Road, Kempsey
known as Church Hill Quarry

Greetings.

I refer to your email dated 20 October 2014 at 11.32am in respect of draft blast conditions.

In this regard I note the blast management plan and control for Church Hill quarry prepared by Dr John Heilig dated 23 July 2014, document no. RPEQ6304. For your convenience for ease of reference I **enclose** a copy of that report. I have provided you with a copy of the resume of Dr Heilig which sets out his broad depth of experience in the mining and quarry industries, his education and reputation as an expert in respect of blasting in those industries. No reasonable person could question the acumen of Dr Heilig in respect of the matters embraced in the report.

I now refer to the four dot points in your email as follows…

Reduction of quarry footprint

Dr Heilig has not proposed that there is a necessity to reduce the quarry footprint.

Testing the effect of blasting at the quarry

Dr Heilig, in his report has very carefully considered the impact of blasting upon the receivers referred to in your correspondence and it is clear from the plans attached to the report that Dr Heilig clearly appreciates the positon of each receiver, relevant to the quarry and relevant to the proposed blasting which is proposed to take place at the quarry.

Further, Dr Heilig has presented material in two parts. The first is upon the basis of calculations made using blast which modelling has been provided by such respected authorities as the United States Bureau of Mines, AS 2187.2-2006 and the Australia and New Zealand Environment Council paper of 1990.

The second is the information generated by actual blasting at the Bates quarry as to the impact of that blasting in respect of vibration and over-pressure, as actually measured as the blasting occurred.

Consequently Dr Heilig's opinions are based not only upon an academic analysis founded upon material provided by respected authorities, but also upon actual measurements taken at a quarry which is made up of almost the exact same material as that at Church Hill, with almost the exact closeness of receivers.

In reading the report of Dr Heilig it would be clear to any reasonable objective person that by following the blast design and management control, very expertly described by Dr Heilig in his report, that there is no expectation that there will be any exceedance of the criteria set by the Environment Protection Authority ("**EPA**"), which will form part of the conditions set out an EPA licence issued by that Authority to measure and manage environmental issues as the quarry operates.

It would seem to me that if there is to be a testing period, then the limitation should simply be that the initial blasting should take place *"towards the southern and western sections of the quarry"*, as in accordance with Dr Heilig's report (page 9), *"when blasting occurs towards the south western limits of extraction, the explosive quantity can increase towards the modelled 100 kilogram level"*.

I propose that the limitations should be that the first blasts at the quarry should take place *"towards the southern and western sections of the quarry"*, however the first blasts should be limited to *"explosive quantities"* of *"around 25 kilograms per blast hole"*, which is the criteria that Dr Heilig sets for the northern and eastern sections of the quarry area (again please see the top of page 9 of the report).

This condition would have two impacts upon the first blasting. The first would be that the blasting is to take place in the *"south western limits of extraction"*, which Dr Heilig in his report identifies as the most robust portion of the quarry to accommodate blasting, and at the same time have a very limited impact upon receivers. The second would be by reducing the explosive quantities to 25% of that proposed by Dr Heilig in that area of the quarry, there could be no chance of any exceedance in the blasting in respect of vibration, over-pressure or flyrock.

Upon such a blast taking place and the results being measured, then I propose that if there is no exceedance and the results show that Dr Heilig is correct in that *"the calculated*

vibration contours are considered to be worst case scenarios", then the explosive quantities would be increased and again the effect of the blast measured to allow for further adjustment.

Dr Heilig in his report has carefully dealt with this issue (page 14), where he has set out in clear terms the manner in which monitoring of blasting activities should take place.

Blasting within 250 metres of a receiver

I agree with your proposal and this would sit perfectly within what I have proposed above, in that, before blasting could take place within 250 metres of any residence, the results of blasting would be in and there would be a clear understanding of the actual impact on vibration, over-pressure and flyrock in respect of that blasting.

Conclusion

The issue of blasting is dealt with in great detail in the conditions set out in the EPA licence.

I suggest that the report of Dr Heilig form part of the development approval conditions requiring adherence by NSWQ to the requirements set out in that report, embellished by my suggestions set out above in relation to the position of, and the explosive quantities relevant to the initial blasts at the quarry.

I presume that you are going to include in the proposed conditions for the operation of this quarry, the conditions that you implemented for the Bates quarry, in respect of the need of the operator to purchase the property of a receiver if there is persistent breach of the conditions of the EPA licence, or the conditions of development approval in relation to dust, noise, vibration, over-pressure and flyrock.

This will provide an ultimate protection to any receiver.

I thank you in anticipation of your consideration of the above.

Regards,

Warren Wells

Encls.

1. Report of Dr John Heilig dated 23 July 2014, document no. RPEQ6304