

Matt Dodd <matt.dodd@holcim.com>

Holcim Pakenham GW assessment question

Mark Wakeman <mark@mshgroundwater.com.au>

17 November 2025 at 13:47

To: Matt Dodd <matt.dodd@holcim.com>, Leigh Elliott <leigh.elliott@holcim.com>

Matt and Leigh

Please see my response to community query below:

Query:

' How does the removal of the Basalt actually affect the Ground water and spring function'

Response:

When a quarry excavates basalt below the water table, groundwater naturally drains toward the pit. As the quarry floor is taken deeper and inflowing water is pumped or drained away, groundwater levels immediately behind the pit walls decline. Over time the lowering of groundwater levels spreads outward, forming a “cone of depression” in the groundwater system around the quarry. Given the hydrogeological setting at the proposed Pakenham Quarry extension, groundwater inflows are expected to be low (0.1–0.3 L/s), producing a cone of depression extending roughly 140 m from the pit walls. This is consistent with the limited groundwater inflows observed within the current quarry footprint and the absence of impacts observed during historical and ongoing spring monitoring. It is noted however, that a cone of depression extent of 180–245 metres was used in the Groundwater Impact Assessment (MSH, 2024) to provide a more conservative assessment.

A spring can be affected if this cone of depression extends far enough to reach the groundwater catchment that supplies the spring. If the quarry drawdown overlaps the spring’s source area, the pressure or gradient driving groundwater toward the spring can be reduced, potentially reducing spring flow. Spring flow, however, may also include contributions from rainfall runoff and shallow subsurface flow which are not affected by a quarry's activities.

If the spring is too distant, lies along a different groundwater pathway, or is separated by low-permeability layers, the quarry’s cone of depression does not reach its recharge area and the spring will not be affected.

In summary, spring behaviour only changes where there is a direct hydraulic connection and where quarry induced lowering of groundwater levels extends into the flow system that feeds the spring.

Many thanks

Mark

Mark Wakeman

Owner | Hydrogeologist

MSH Groundwater

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From: Matt Dodd <matt.dodd@holcim.com>

Sent: Friday, 14 November 2025 1:00 PM

To: Mark Wakeman <mark@mshgroundwater.com.au>; Leigh Elliott <leigh.elliott@holcim.com>

Subject: Holcim Pakenham GW assessment question

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