NSW GOVERNMENT

NSW Resources Regulator

INVESTIGATION INFORMATION RELEASE

DATE: APRIL 2021

Worker seriously injured by ejected object

Incident date: 11 March 2021

Event: Dangerous incident at a hard rock quarry

Location: Lynwood Quarry, Marulan NSW

Overview

On 11 March 2021, the bucket attachment pin from a PC1250 Excavator bucket was being removed as part of a bucket change out. While assisting in this task, a worker was struck by the pin as it was ejected resulting in a compound fracture to his right lower leg.

The mine

Lynwood Quarry is a hard rock quarry located to the west of Marulan in the Southern Tablelands Region of New South Wales. The quarry is operated by Holcim Australia Pty Ltd, whose ultimate holding company is LafargeHolcim Limited.[1] Lynwood Quarry is Holcim's largest asset.[2]

Lynwood Quarry has development consent to produce up to five million tonnes per annum of quarry product until 2038, while the target resource has an expected life of over 90 years.[3]

The mining method at Lynwood Quarry is drill and blast, truck and shovel. Run of mine material is processed onsite and delivered to clients via truck or rail. Lynwood produced about three million tonnes of aggregate last year which is predominantly used in the Sydney concrete market.[4]

[1] ASIC Current Company Extract Holcim (Australia) Pty Ltd ACN 099 732 297 accessed 26 March 2021
[2] ICAM Investigation Report Holcim Lafarge 2021 p2
[3] Lynwood Quarry Environmental Air Quality Management Plan September 2020 p4
[4] ICAM Investigation Report Holcim Lafarge 2021 p2

The contractor

Divall's is an earthmoving and haulage company based in Goulburn NSW and employs over 250 people.[5] The company has a contract with Lynwood Quarry to undertake preliminary mining activities (stripping) and is also a major customer, purchasing product from Lynwood Quarry for other construction activities.

The contractor has a purpose built, demarcated work area at Lynwood Quarry and maintains its' equipment onsite. The contract between Divall's and HolcimLafarge states that Divall's will adhere to the site's safety management system while onsite at Lynwood Quarry.[6] Supervision of Divall's work is largely undertaken by a Divall supervisor.

The incident

On 11 March 2021 at about 5:30am, Divall's day shift mechanical fitters arrived at the quarry to undertake the task of replacing the bucket on a PC1250 Excavator due to damage to the outer tooth. The bucket is held in position by two pins 140 millimetres diameter, 975 millimetres long and weighing approximately 120-140 kilograms. With the bucket placed on the ground the pins were about 1.9 metres and 2.1 metres from ground height.[7]

The process involved removing the retaining bolts and plate from the end of the pins then pressing the pins from their housing with a drill rod device. The drill rod was welded to a steel box section and slipped onto a fork tine on the wheel loader to provide horizontal force (refer figure 1 below). The task was expected to take three to four hours.

Figure 1 - Intended method to extract excavator pin

[5] www.divalls.com.au accessed 30/3/2021

[6] ICAM Investigation Report Holcim Lafarge 2021

[7] Incident investigation Form Divalls Earth Moving and Bulk Haulage Date of incident 11.03.2021 at 6:07pm Location Lynwood Quarry p2

The excavator had been placed about 2.5 metres in front of the mobile plant maintenance/hot work concrete slab to allow the wheel loader with fork attachment access to the side of the bucket arm. The ground conditions were soft dirt that had become uneven in places due to machine movements involved in the process of removing the bucket pin.[8]

Toolbox talks, pre-start, Take-5 and Safe Work Method Statement reviews were conducted at 6am, then the retaining bolts for both pins were removed. The first (crowd) pin was removed with ease.

At about 7am the fitters attempted to remove the second (bucket) pin. They employed several different methods to remove the bucket pin, including; a rock hammer attached to another excavator; a hydraulic jack; heating the bushes and cooling the pin; oxy-lancing a bush and sledgehammers, all without success. By 5pm, the fitters had managed to move the pin about 75 millimetres. The job was then put on hold by the fitters until the next day, with one fitter placing his lockout lock on the excavator and speaking to the Divall's supervisor (the supervisor). The fitters left site.

Later in the shift, the supervisor decided to have another attempt at the pin removal with the assistance of two workers. At about 6pm two attempts were made using the wheel loader (operated by the supervisor) to remove the bucket pin by pushing the drill rod through the pin holes. Verbal communication and hand signals were used between the machine operators and a worker on the ground designated as a spotter, including the use of radio communication between the wheel loader and excavator.

Following the second attempt, the pin was still stuck, the wheel loader reversed, and the spotter stepped towards the excavator bucket (a witness observed this to be towards the rear of the bucket to view the pins position and was out of the line of sight of wheel loader operator/supervisor). Not seeing the spotter, the supervisor drove the loader forward, again hitting the pin.[9] The pin was ejected, deflecting off the bucket lip. It glanced the spotters shoulder knocking him over and landing on his right leg, causing a compound fracture of his right tibia. The supervisor administered first aid to the worker and contacted emergency personnel and an ambulance.[10]

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[8] Incident investigation Form Divalls Earth Moving and Bulk Haulage Date of incident 11.03.2021 at 6:07pm Location Lynwood Quarry p2

[9] Incident investigation Form Divalls Earth Moving and Bulk Haulage Date of incident 11.03.2021 at 6:07pm Location Lynwood Quarry p3

[10] ICAM Investigation Report Holcim Lafarge 2021 p1 - Executive Summary

Figure 2. The pin lying next to the bucket which deflected off the bucket lip and fell on the spotter.

The investigation

The incident occurred at about 6:00pm on 11 March 2021. The incident was notified to the Regulator later in the evening and the scene was preserved. Upon receiving the incident notification, the Regulator commenced a preliminary investigation that involved speaking to workers, taking photos, reviewing procedures and risk assessments on site. On 15 March 2021, a decision was made by the Regulator to commence an investigation into the cause and circumstances of the incident and consider alleged breaches of the *Work Health and Safety Act 2011* that may have exposed workers to serious risks of death or serious injury.

Recommendations

The investigation is ongoing to determine the causal factors involved in this incident. Arising from the initial investigation, it is recommended mine operators ensure that:

- where a task cannot proceed as planned, ad hoc changes to procedures are avoided. Any changes in procedures should be subject to risk assessment and communicated to all workers affected by the change
- exclusion zones which provide for falling components should be identified, demarcated and managed to ensure workers are not exposed to falling components/equipment. There must be positive communication between all workers involved when any worker enters an exclusion zone

- there is appropriate supervision and monitoring of contractor’s activities on the mine by the mine.

Further information

Please refer to the following guidance materials:

- *Work Health and Safety (Mines and Petroleum sites) Regulations 2014 Cl14(f) and Cl22*

About this information release

The Regulator has issued this information to draw attention to the occurrence of a serious incident in the mining industry. Further information may be published as it becomes available.

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