

TECHNICAL NOTE Addendum to Best Available Techniques and Operating Techniques (SLR, 2022)

Attention: Jake Walker - Environment Agency

Mineral Processing Facility – Updated to BAT Compliance for Area 115 – Primary and Secondary Crushing (21st September 2023)

Drakelands Restoration Limited (DRL) submitted a bespoke environmental permit (EP) application for the operation of the Mineral Processing Facility on the 26th of August 2021. The Environment Agency (EA) duly made the application on the 16th of September 2021 and carried out an initial public consultation closing on the 29th of October 2021. DRL have been issued the following Schedule 5 notices:

- 8th February 2022
 - o Response submitted 29th November 2022
- 3rd February 2023
 - o Response submitted 15th August 2023
- 1st March 2023
 - o Response submitted 15th August 2023

This technical note addresses the points raised in communications between the EA and DRL on the 11th of September 2023 in relation to Best Available Technique (BAT) compliance of Area 115 (Primary and Secondary Crushing). It is assumed that the reader will have knowledge of the submissions and responses to date, and thus this document will look to directly address queries raised by the EA on the date above. For an overview of the process including detail of Area 115, please refer to TW-NTS-8012-517-001 Non-Technical Summary.

Previous BAT Assessment

As outlined in Best Available Techniques and Operating Techniques (SLR, 2022 ref: 416.105511.00010) submitted in response to the Schedule 5 notice issued 8th February 2022, DRL considered it appropriate when determining BAT for Area 115, to use Process Guidance Note (PGN) 3/16(12) - Statutory Guidance for mobile crushing and screening (2012). In accordance with this guidance note, DRL proposed the following mitigation measures:

- Designing all quarry blasts to achieve optimum rock fragmentation.
- Equipment selection
- Location selection – the Jaw Crushers will be located on the RoM pad at approximately 4m below surrounding ground levels.
- 2.4m acoustic barrier located on southern and western boundaries of the crusher area
- RoM design
- Sizing bars/riddling of crusher feed
- Reduced crushing duty.
- Reduced material handling
- Reduced drop heights
- Rubber lined feed hopper



- Rock boxes (rock on rock instead of rock on metal)
- Jaws, embedded within the machine
- Regular inspection of shovel buckets, metal parts and maintenance of drive systems
- Regular maintenance
- Minimise start up and shut down as much as possible
- Training provided to all operators
- Continuous water suppression (summer months)
- Track moisture content – previous ore moisture content was consistently above 3%.
- Monitoring campaigns throughout the year to demonstrate compliance (sand/gravel would not be expected to give rise to emissions of dust)

Reference to PGN 3/08(12) – Statutory Guidance for Quarry Processes was also made within the Schedule 5 Response 1a document dated 29th November 2022 which outlined additional dust mitigation measures in the form of bag filters, enclosed conveying, and reduced drop heights.

A summary of the Area 115 layout can be seen in Figures 1.1-1.3 below:

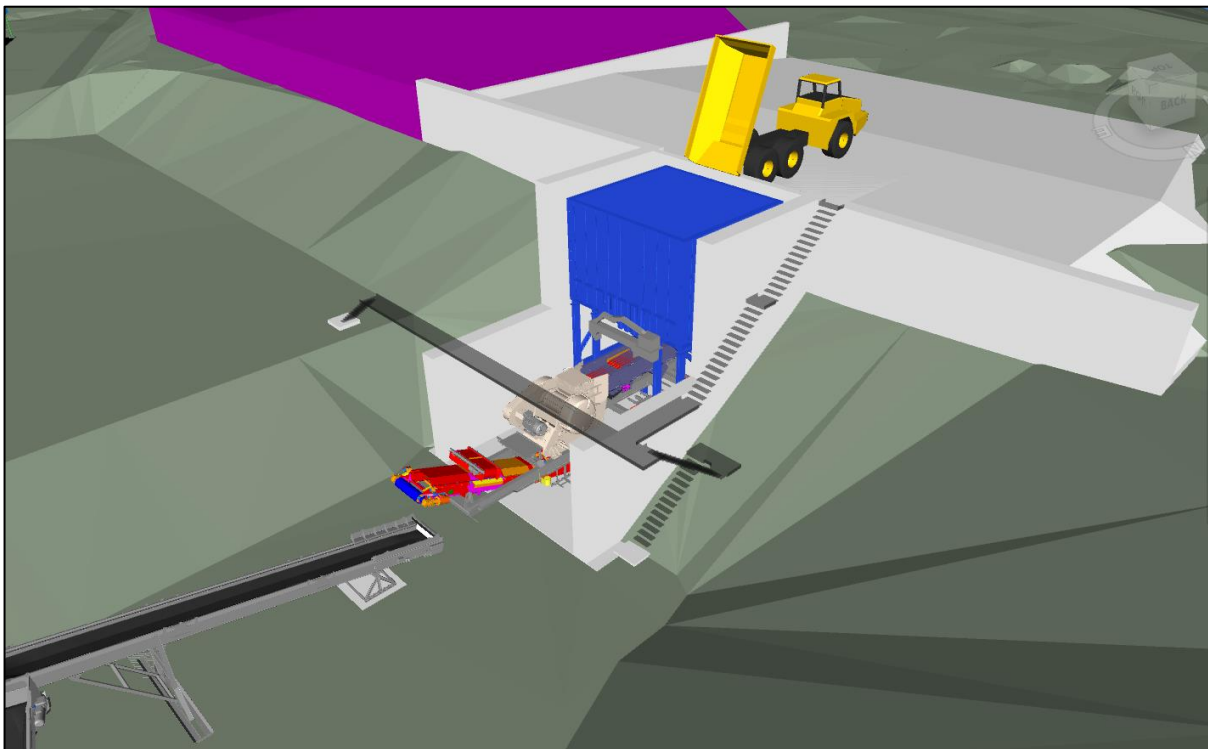


Figure 1.1: Primary Crusher Arrangement



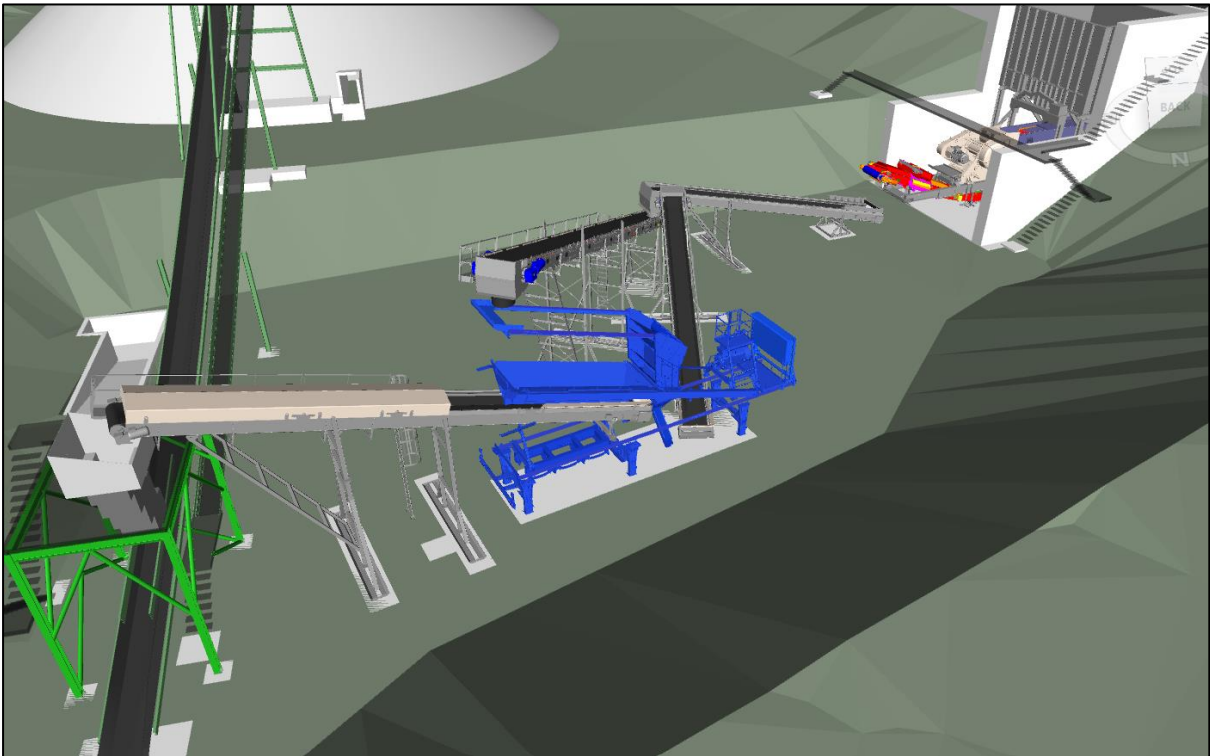


Figure 1.2: Secondary Crusher Arrangement

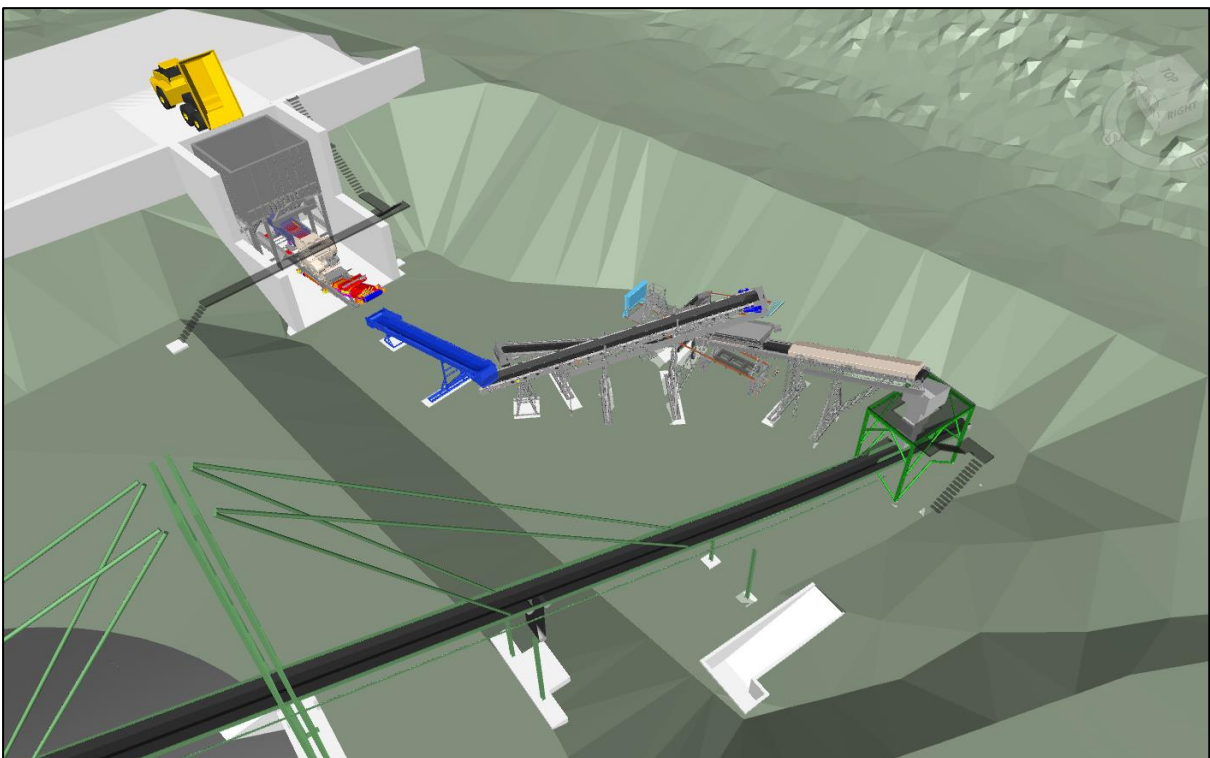


Figure 1.3: Primary and Secondary Crusher Arrangement



Updated BAT Assessment

In communications between DRL and the EA (11th September 2023), the position of the EA is that the previously proposed primary and secondary crushing arrangement and mitigations therein are not BAT compliant. This relates to the use of PGN 3/16(12) for mobile crushing and screening rather than PGN 3/08(12) for Quarry Processes.

The fundamental difference between the two guidance notes in relation to Hemerdon is the requirement, in PGN 3/08(12), for containment to meet emissions limits and provisions. As outlined in Table 5.1 of the guidance note, crushing, grinding, screening and separation activities must have containment within housing, dust abatement in the form of bag / cartridge filters, and dust suppression.

Whilst not referenced within PGN 3/08(12), the added benefit of containing the crushers within Area 115 is that this will provide further mitigation from an audible noise perspective. The contextualised BS 4142:2014+A1:2019 assessment undertaken by SLR (2022 ref: 403.064510.00001) concludes that the operation will be of “*low impact*”, however the acoustic landscape and background noise levels are considered to be “*very low*” under BS 4142:1997 and thus additional audible noise mitigation would be beneficial.

With reference to the above and PGN 3/08(12) Table 5.1, DRL suggest the following modifications to Area 115:

Containment

DRL have designed containment for both the primary and secondary crusher within Area 115. As shown in figure 1.4, the building will be open at the front end allowing for direct tipping from the Run of Mine (ROM) pad into the ROM Feed Bin. At the discharge end of the primary crusher, an opening allows room for the conveyor head taking material to the secondary crusher. As per the mitigations outlined within the BS 4142: 2014+A1:2019 assessment (SLR, 2022), conveyor openings will be inherently reduced as per paragraph 5.1 within PGN 3/08(12). In addition to these openings, the primary crusher building will be fitted with a single roller shutter door and two pedestrian doors. A Standard Operating Procedure (SOP) for the use of the roller shutter doors and mitigating noise leakage has been provided in the Noise Management Plan (WSP, 2023) (Appendix C). As per paragraph 5.5 of PGN 3/08(12), pedestrian doors will be self-closing and thus closed when not in use.

In the instance of the secondary crusher, there will be 3 openings for conveyors with the design for such following the same philosophy as described above. As with the primary crusher building, the secondary crusher building will be fitted with a single roller shutter door and two pedestrian doors that will be operated as above.

Dust Abatement

For control of dust at source, suppression will be included as part of the inherent design of the primary crusher building with spray bars fitted to the rim of the ROM feed bin and on the grizzly as shown in Figure 1.6. Within the secondary crusher building, dust suppression will be included at the head of the screen infeed, as well as the feed from the secondary crusher to 115-CV-20 leading to the secondary crusher product stockpile.





In addition to the containment, each building will be fitted with a dust abatement system as indicated by the green structures in figures 1.4 and 1.5 and grey structures in figure 1.6. This system will contain a bag filter system that will generate a negative air pressure allowing dust to be pulled through the abatement plant. The bag filtration system will be designed to achieve emission levels of less than 50mg/m³. DRL propose to install a continuous indicative monitoring system that will possess the following:

- Audible and visual alarms sited in an appropriate location for operators.
- Automatic recording of alarms.
- Operated, maintained, and calibrated in accordance with the manufacturer' instructions.

It is also proposed that periodic qualitative emissions testing, at a frequency to be agreed with the EA, is carried out to test the efficacy of the abatement system.

Audible Noise Mitigation

Whilst not a requirement of PGN 3/08(12), DRL are proposing to install Kingspan cladding to both the primary and secondary crusher buildings as per the new buildings in Area 125 and 130. Information on this cladding product is outlined within Section 5.4.1 and Appendix 7 of the BS 4142: 2014+A1:2019 assessment (SLR, 2022), however it is anticipated to achieve a transmission loss of 30 dB within the 500Hz frequency band. It is important to note that the installation of Kingspan cladding and containment for the secondary crusher is supplementary to the LFN enclosure as outlined within the Noise Impact Assessment (WSP, 2023) and Noise Management Plan (WSP, 2023).



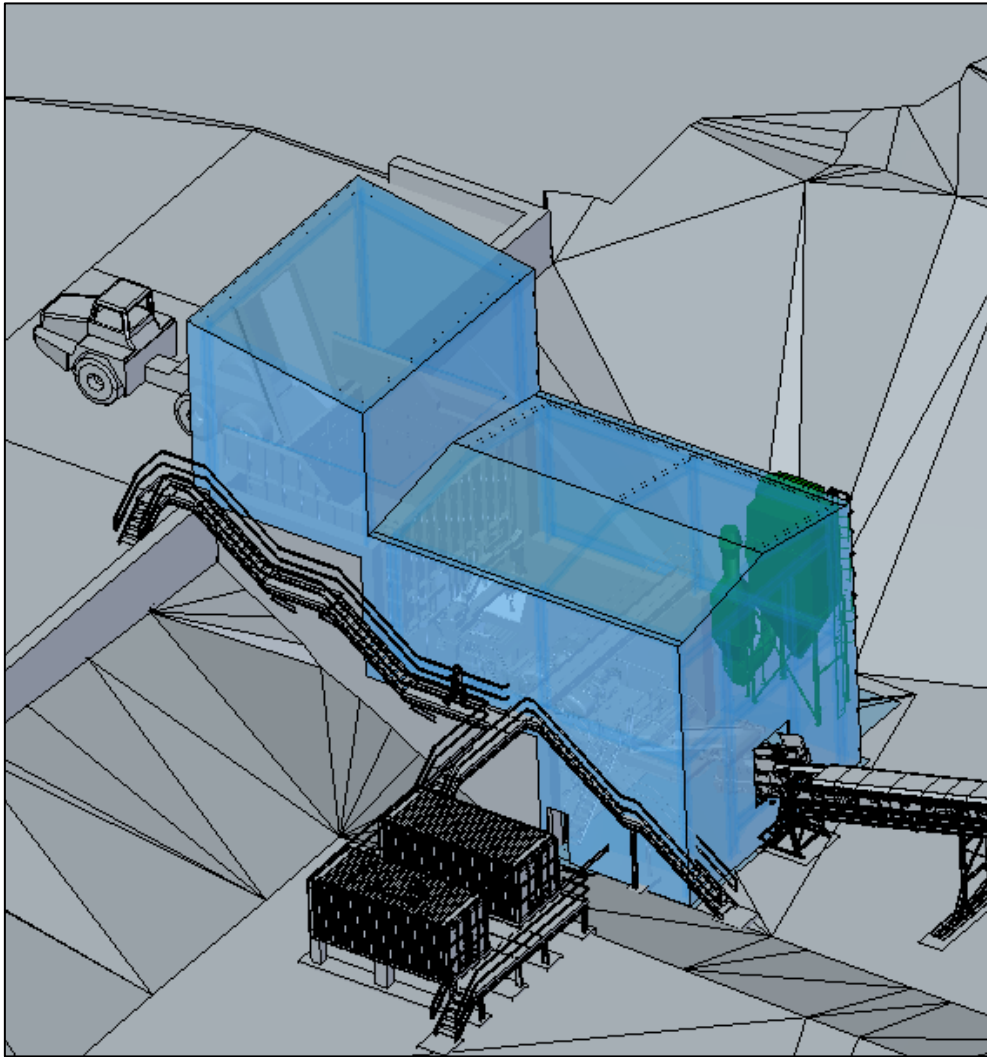


Figure 1.4: Updated Primary Crusher Arrangement



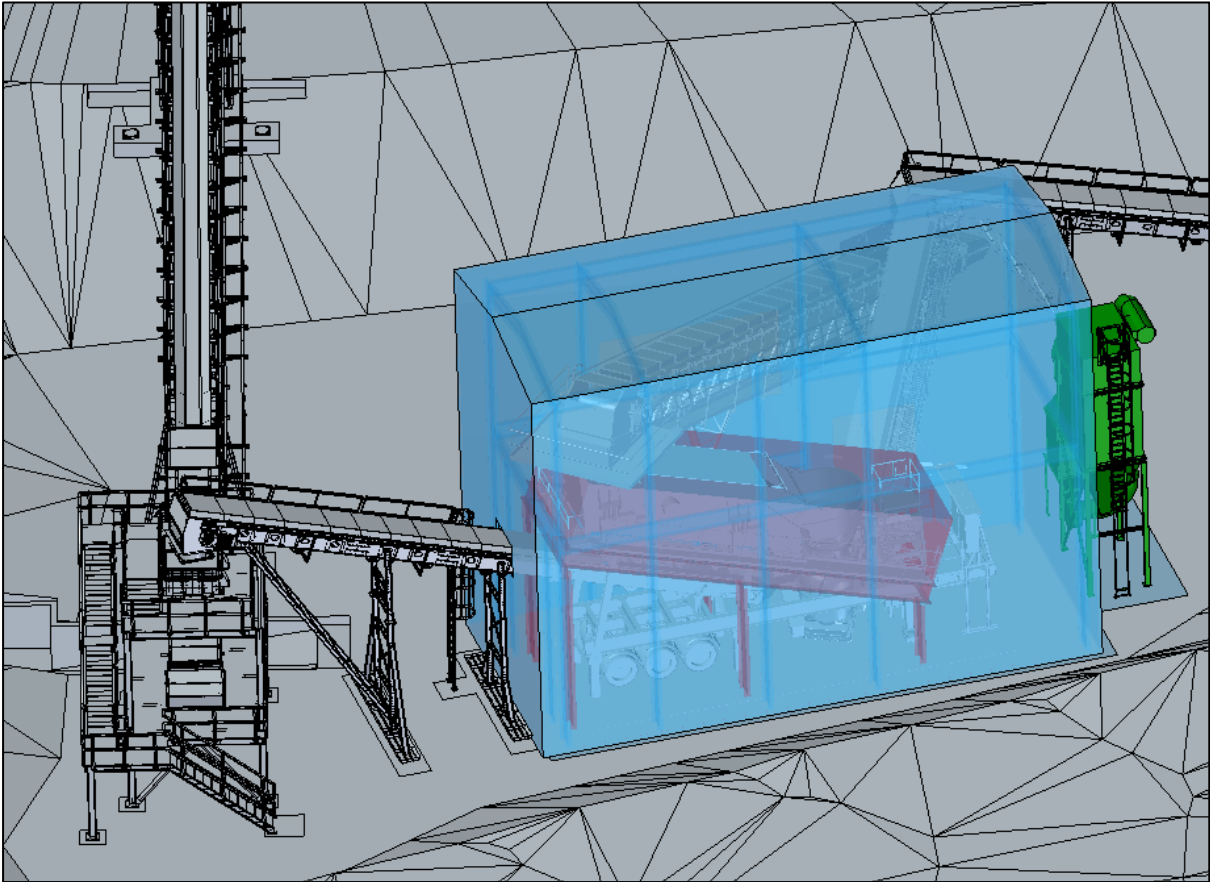


Figure 1.5: Updated Secondary Crusher Arrangement. n.b. the red enclosure within the blue structure represents the proposed Low Frequency Noise (LFN) enclosure.



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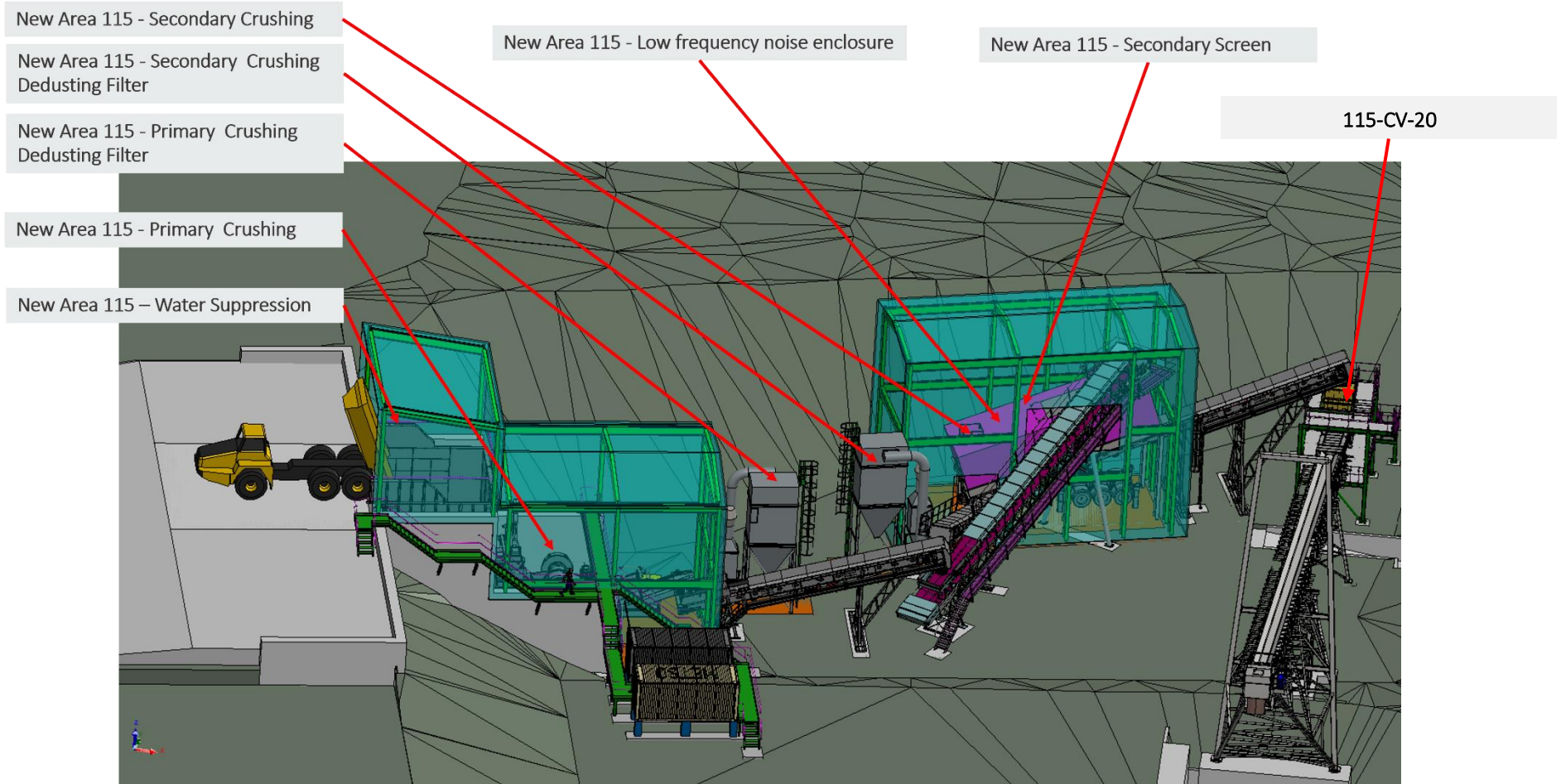


Figure 1.6: Updated Primary and Secondary Crusher Arrangement.

