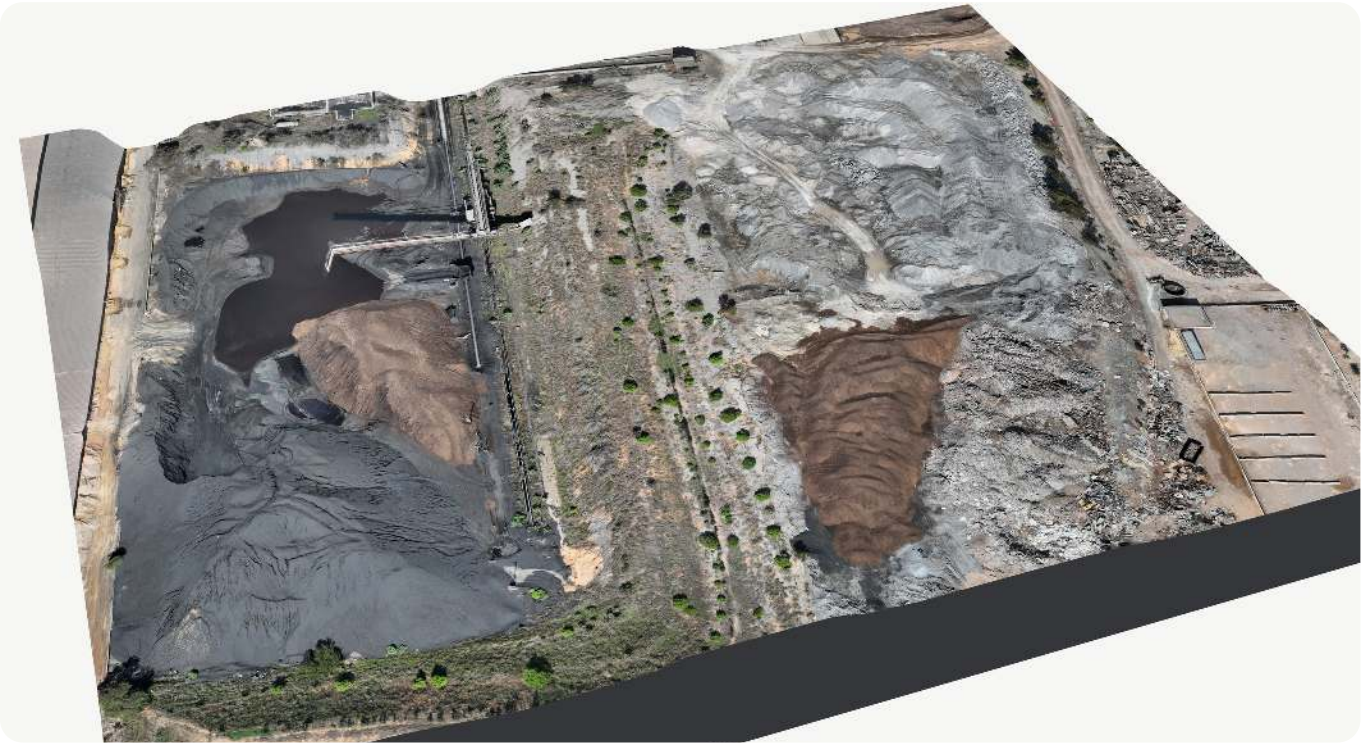
Farness®

NOVEMBER SURVEY

AERIAL SURVEY · STOCKPILE INTELLIGENCE

Stockpile survey report

Your site · industrial stock yard · November survey, compared with October



6	40 760 m³	40 684 t	−2 952 m³
stockpiles	stockpile volume	tonnage (estimate)	since October

Farness® Drone survey of November, compared with October.

Coordinates are a local site grid.

1 · SUMMARY

40 760 m³ in six stockpiles; solid fuel down 4 701 m³ since October

21 487 m³
solid fuel
17 190 t

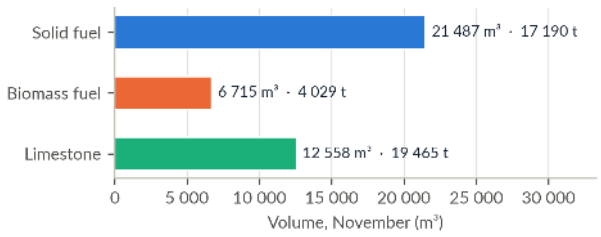
6 715 m³
biomass fuel
4 029 t

12 558 m³
limestone
19 465 t

12.6 m
highest pile
P-01

Pile	Material	Footprint m²	Volume m³	Density t/m³	Tonnage t	Max height m	Change m³
P-01	Solid fuel	4 455	**20 946**	0.80	16 757	12.6	−4 701
P-02	Solid fuel	751	**541**	0.80	433	3.2	–
P-03	Biomass fuel	1 469	**4 140**	0.60	2 484	7.4	+1 039
P-04	Biomass fuel	1 804	**2 575**	0.60	1 545	3.3	+458
P-05	Limestone	1 555	**1 709**	1.55	2 649	3.7	+1 709
P-06	Limestone	6 370	**10 849**	1.55	16 816	5.3	−1 457
Total, 6 stockpiles		**16 404**	**40 760**		**40 684**		**−2 952**

Volume by material



What this survey tells the plant

- **Fuel cover.** Solid fuel fell by 4 701 m³ since October. At that rate the 21 487 m³ in stock lasts about **4.6 months**.
- **Deliveries.** Biomass fuel rose by 1 497 m³ (898 t at 0.60 t/m³), on the north faces of P-03 and P-04.
- **Raw material.** A new limestone pile, P-05 (1 709 m³), was built; 1 457 m³ was reclaimed from the south face of P-06.
- **Unchanged.** P-02 did not move between the surveys.

Tonnage = volume × typical loose bulk density (estimate, to be replaced by the plant's own values).

2 · SITE MAP

Six stockpiles of fuel and raw material on a 259 × 210 m yard



Figure 2.1 · Orthophoto at 5 cm (November), stockpile outlines coloured by material. Local site grid, metres.

What this means for you

Every pile is outlined from its top down to where it meets the ground, so tracks, the pond and machines are left out. The outline, the volume and the material of each pile are in the inventory table on page 2 and on the pile cards on page 7.

3 · HEIGHTS

Height above the floor: P-01 reaches 12.6 m

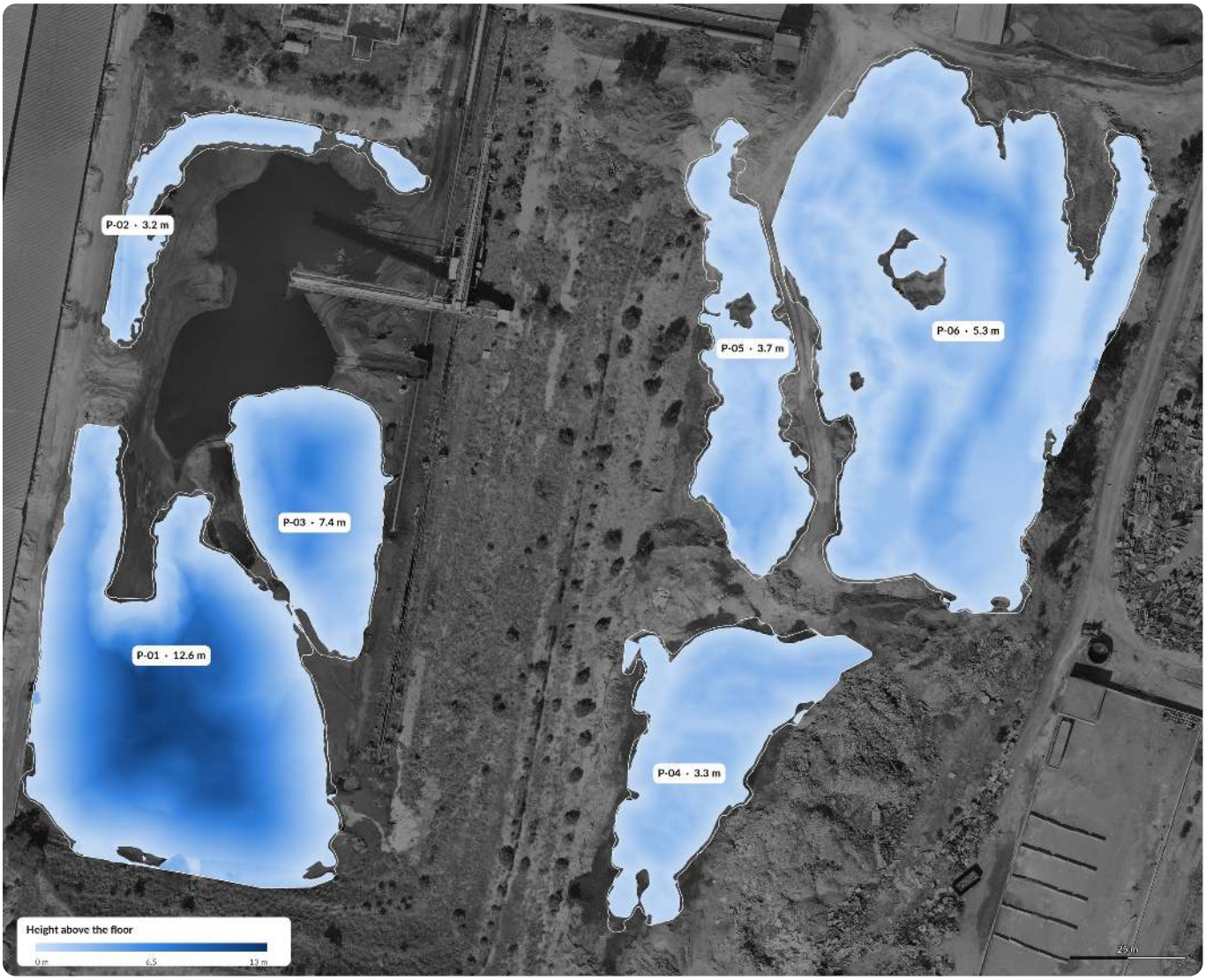


Figure 3.1 · Height of the material above the floor under each pile (2.5 cm surface model). Chips give the maximum height.

What this means for you

The floor under each pile is drawn through the pile's own toe, so a yard that dips or slopes under the pile is followed. Volumes are the sum of these heights over each footprint. Tall faces are where reclaim needs the most care; the next survey shows how they changed.

4 · CHANGE SINCE OCTOBER

Net −2 952 m³ since October: fuel used, biomass and limestone delivered

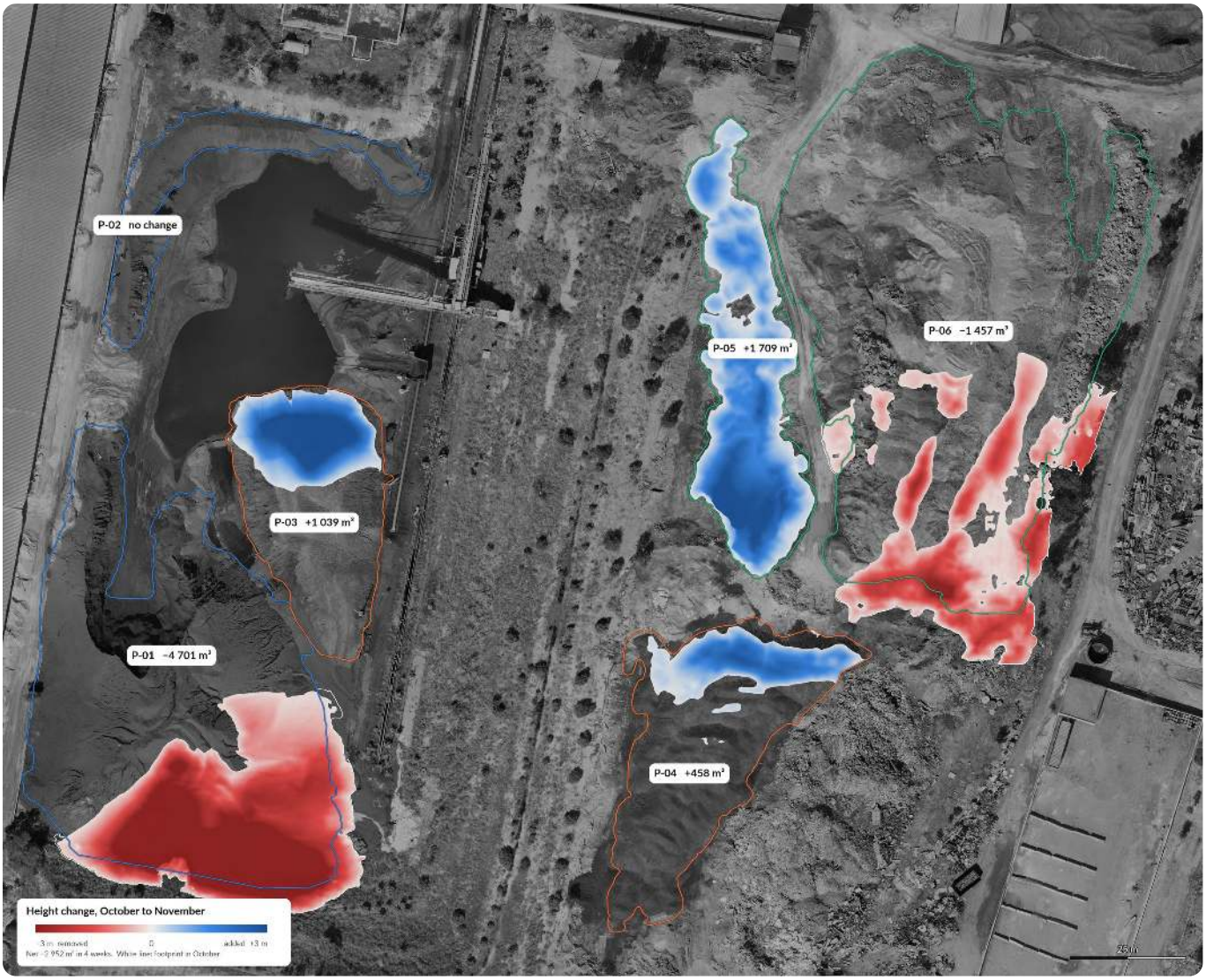
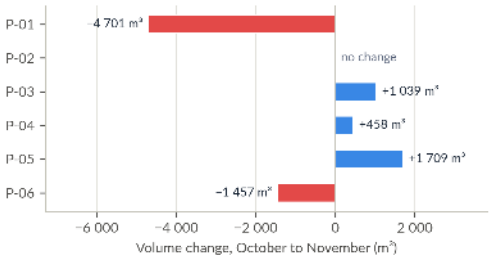


Figure 4.1 · Height change between the two surveys (red: material removed, blue: material added). Changes under 0.10 m not shown.

Pile	Material	October m³	November m³	Added	Removed	Net
P-01	Solid fuel	25 647	20 946	–	4 701	**−4 701**
P-02	Solid fuel	541	541	–	–	**0**
P-03	Biomass fuel	3 101	4 140	1 039	–	**+1 039**
P-04	Biomass fuel	2 117	2 575	458	–	**+458**
P-05	Limestone	0	1 709	1 709	–	**+1 709**
P-06	Limestone	12 306	10 849	–	1 457	**−1 457**
Site		**43 712**	**40 760**	**3 206**	**6 158**	**−2 952**



5 · PILE RECORD · P-01

P-01 · Solid fuel · 20 946 m³

20 946 m³	16 757 t	4 455 m²	12.6 m	−4 701 m³
volume	tonnage (estimate)	footprint	max height	since October

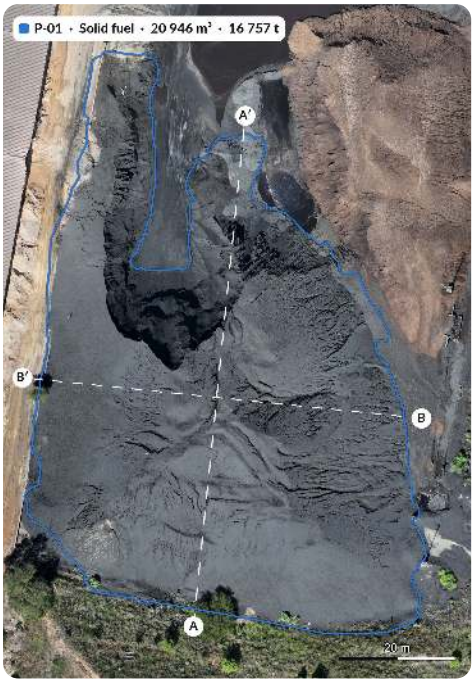




Figure 5.1 · P-01 in 3-D (November).

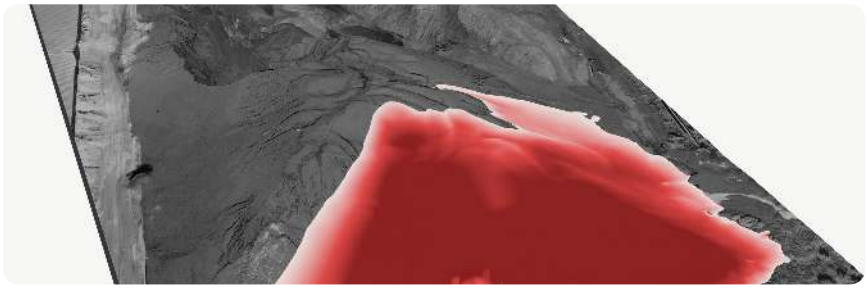


Figure 5.2 · The reclaimed south face, coloured by height change.

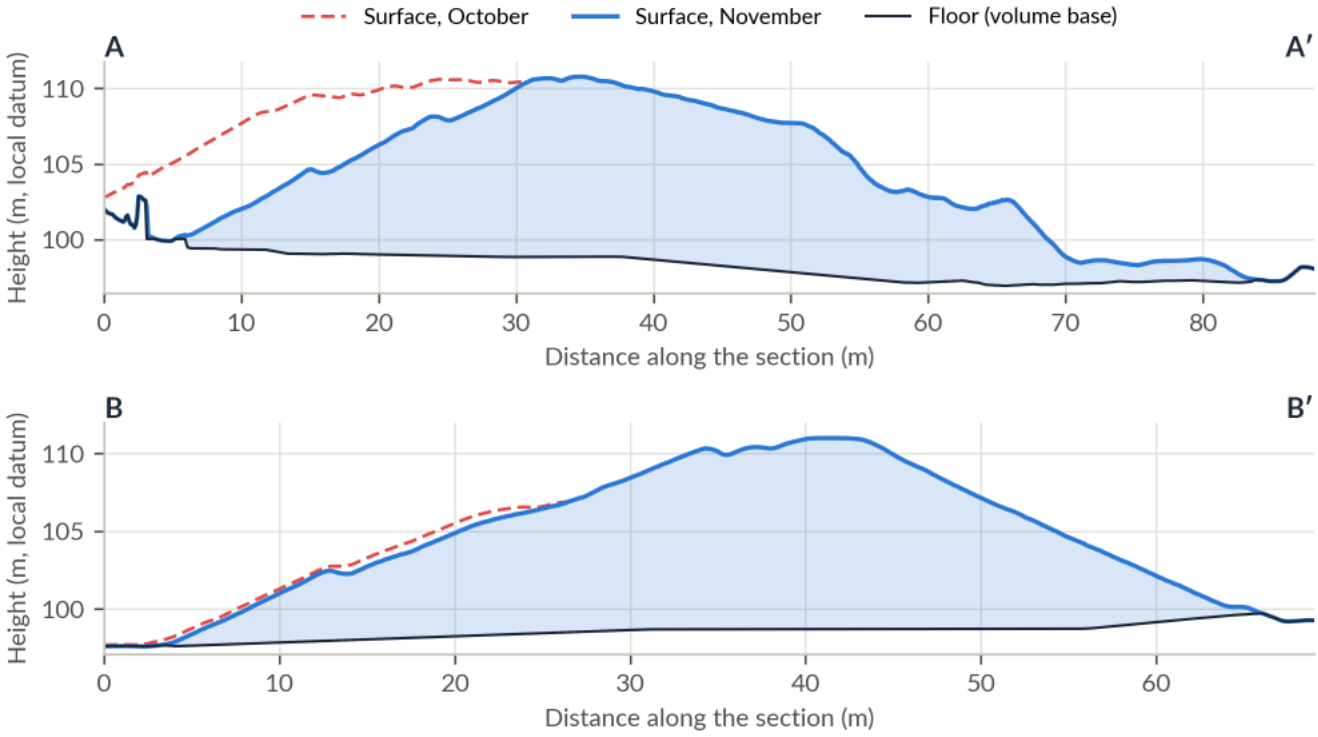


Figure 5.3 · Sections A–A′ (along the pile) and B–B′ (across it): surfaces of both surveys and the floor.

6 · PILE CARDS

Every stockpile at a glance



P-01 Solid fuel

Volume	**20 946 m³**
Tonnage (est.)	16 757 t
Footprint	4 455 m²
Max height	12.6 m
Since October	−4 701 m³



P-02 Solid fuel

Volume	**541 m³**
Tonnage (est.)	433 t
Footprint	751 m²
Max height	3.2 m
Since October	no change



P-03 Biomass fuel

Volume	**4 140 m³**
Tonnage (est.)	2 484 t
Footprint	1 469 m²
Max height	7.4 m
Since October	+1 039 m³



P-04 Biomass fuel

Volume	**2 575 m³**
Tonnage (est.)	1 545 t
Footprint	1 804 m²
Max height	3.3 m
Since October	+458 m³



P-05 Limestone

Volume	**1 709 m³**
Tonnage (est.)	2 649 t
Footprint	1 555 m²
Max height	3.7 m
Since October	+1 709 m³



P-06 Limestone

Volume	**10 849 m³**
Tonnage (est.)	16 816 t
Footprint	6 370 m²
Max height	5.3 m
Since October	−1 457 m³

7 · METHOD AND NOTES

How the figures are made

Survey

Drone photogrammetry: overlapping photos (average 2.9 cm per pixel) are processed into a 3-D model, a surface model at 2.5 cm and an orthophoto at 5 cm.

Outline

Each pile is followed from its top down to where it meets the ground. Ground, tracks, water and machines are left out.

Floor

The floor under a pile is drawn through the pile's own toe, so it follows a yard that dips, slopes or bends under the pile. It is never placed above ground that can be seen.

Volume and tonnage

Volume = sum over 2.5 cm cells inside the outline of (surface − floor). Tonnage = volume × bulk density. The densities used here are typical loose values (estimate): solid fuel 0.80 t/m³, biomass fuel 0.60 t/m³, limestone 1.55 t/m³.

Change

Both surveys share one floor, so the change in each pile is the change in its surface: material added and removed are counted separately, and their difference is the net change.

Words used

Toe	Where the pile meets the ground.
Floor	The ground surface under the pile that the volume is measured from.
Footprint	Area inside the outline, seen from above.
Max height	Highest point of the material above the floor.
Section	A vertical cut through the pile along a line on the map.

Delivered with this report

- Orthophoto (GeoTIFF, 5 cm) and surface models (GeoTIFF, 2.5 cm)
- Stockpile outlines and sections (GeoJSON)
- Inventory and change tables (CSV)
- 3-D models (GLB) and full-resolution images (TIFF)