XSTRACT
mining consultants

Memorandum

To:	Michael Mills	**c.c.:**	Stefan Mujdrica
Company:	RTA	**From:**	John Surman
Date:	22 March 2016	**Email address:**	Michael.Mills@riotinto.com
Subject:	Gove Bauxite Mine, Bulk Density Measurement Program, November 2015		

KEY OUTCOMES

- A total of 178 density determinations were completed from a total of ten different sampling pits located around the periphery of the Main Plateau at Gove Bauxite Mine, within current reserves.
- Previous Main Plateau overburden/topsoil dry bulk density values, from five different density pits, have been in the range 1.15 t/m^3 to 1.30 t/m^3. Results from the current work indicate that the bulk densities are higher with an average of 1.55 t/m$^{3.}$ However, the high bulk densities could be the result of re-classification of poor grade "Loose Pisolite" material being reclassified as "Overburden";
- In all current density pits where "Loose Pisolites" and "Cemented Soft" were encountered, they occurred as a mixed horizon rather than "Loose Pisolites" distinctly overlying "Cemented Soft". In fact it was commonly the other way round, with a patchy indurated zone of "Cemented Soft" material near the top of "Loose Pisolite" horizons. Previous work has shown an overall thickness weighted mean of 1.52 t/m^3 for "Loose Pisolites", and 1.72 t/m^3 for "Cemented Soft" which are in agreement with the current work;
- "Cemented Hard" was only present in three of the current density pits, where the results were quite consistent (1.88 t/m^3, 1.89 t/m^3, and 1.88 t/m^3), and readily compatible with previous work;
- Lower Nodules from both "soft" and "hard" profiles have previously been found to have similar densities, with a range of 1.40 t/m^3 to 1.75 t/m^3. Current work mostly falls in the same range;
- "Laterite" densities have previously been found to cover a wide range, from 1.31 t/m^3 to 2.15 t/m^3, with a mean of 1.83 t/m^3. The broad range of values is a reflection of variable iron content and highly variable coarse void-space content. Current density values also fall within the same range, with a mean of 1.90 t/m^3.

- Exposure of the bauxite lithologies in the ten sampling pits enabled comparison with lithology predictions from grade-control drilling. Agreement between the two was poor, and this has bearing on resource/reserve estimation methodology. Three out of ten current density pits had "hard" profiles rather than the expected eight out of ten, this could imply that 50% of the reserve tonnes is overestimated to some extent due to inaccurate grade control logging.

1.0 INTRODUCTION AND BACKGROUND

Accurate density determinations for the various Gove bauxite ore lithologies and overlying/underlying low grade lithologies were first carried out in 2002 by Snowden Mining Consultants, with the program run by the current author and the project administered and reviewed by Stefan Mujdrica. Further density determination work was carried out by Snowden (projects administered and reviewed by Stefan Mujdrica) and the current author in 2003, 2007, and 2008. The relevant previous reports are:

- "*Bulk Density Determinations for the Gove Bauxite Deposit (April/May 2002)*", Snowden Mining Industry Consultants report no. 3869, for Nabalco Pty Ltd.
- "*Gove Bauxite Density Data & Interpretation Update (July 2003)*", Snowden Mining Industry Consultants report no. 4302, for Alcan Gove Pty Ltd.
- "*Eldo Bulk Density Program (June 2007)*", Snowden Mining Industry Consultants project no. 4302, for Alcan Gove Pty Ltd.
- "*2008 Bulk Density Program, Gove Main Plateau and Rocky Bay*", Snowden Mining Industry Consultants project no. 4302, for Rio Tinto Alcan Gove Pty Ltd.

Bauxite ore at Gove presents problems for typical density measurement techniques because of the coarse void space often present. The author developed a specific technique for dealing with this problem, which has been used in all density determination work including that reported in this memorandum. This memorandum includes a summary of the technique, and the reader is referred to previous reports noted above for a detailed account with numerous illustrative photographs.

Mining at Gove since 2008 has largely moved beyond previous density sampling locations (with the exception of Eldo Plateau which has not been extensively mined yet). Remaining reserve calculations therefore required additional density work towards the periphery of the Main Plateau. This memo reports on that work, carried out in the field and at the Gove Refinery assay laboratory, in November 2015.

All field work in the mine area was safely completed by John Surman and Scott Sullivan during the period 28th October to 6th November 2015, with greatly appreciated co-operation of all mine staff, particularly the mine shift supervisors and dozer operator Shane Martell.

All crushing, weighing, drying, latex preparation of samples, and sample volume measurement work was safely carried out at the Gove refinery assay laboratory facilities by John Surman during the period 6th to 18th November, with greatly appreciated co-operation of laboratory staff, particularly laboratory manager Jon Regan.

2.0 PLANNING AND DENSITY PIT EXCAVATION

Ten planned density sampling locations were determined by Rio Tinto's Michael Mills as part of resource estimation revision work. As all planned locations were in unmined bauxite areas, they needed to have a large sampling pit excavated into the bauxite horizon by bulldozer. Planned locations were therefore examined in the field by Michael Mills, the author John Surman, and experienced mine-site dozer operator Shane Martell. Final exact sampling pit locations were determined in the field based on logistical and practical dozing considerations. All final pits were close to the originally planned locations, and all on the Main Plateau.

The density-sampling pit numbering scheme was 15GDP-01 to 15GDP-10 inclusive. Table 1 lists the planned locations by mine co-ordinates, mine area, and informal name.

TEST PIT	MINE EASTING	MINE NORTHING	DEPTH (m)	MINE AREA	INFORMAL PIT NAME
15GDP-01	102490	54870	4.5	5-0	Gun Club North
15GDP-02	103460	54180	5.5	5-0	Gun Club East
15GDP-03	97340	51560	4	1-3	Airport West
15GDP-04	98875	50510	5.5	2-4	Airport South
15GDP-05	97460	48765	4.5	1-6	West
15GDP-06	96125	48175	3	1-6	Far West
15GDP-07	97080	46475	3	1-8	Southwest Latram
15GDP-08	104080	45720	4	6-9	South
15GDP-09	107090	45610	3.5	8-9	Southeast
15GDP-10	105400	44525	2.5	7-10	Southeast Tree Rats

TABLE 1: Planned Density Pit Locations on Gove Main Plateau, November 2015

The density sampling pits were excavated with a D11 bulldozer operated by Shane Martell, who did an excellent job. Excavations were guided and supervised in the geological sense by John Surman, working closely with the dozer operator. This ensured that good, relatively undisturbed exposures of the various lithologies/horizons were obtained, and made sure that each excavation went deep enough to sample the "laterite" footwall to the bauxite ore.

Four pits were excavated in areas not yet cleared of trees for eventual bauxite mining. In these situations, excavation was carried out on grade-control drilling access lines where enough clearing had already been done to allow room for density pit excavation. Relevant pits were 15GDP-01, 15GDP-02, 15GDP-03, and 15GDP-10. No mature trees were knocked down during excavation and backfilling of these pits (only small re-growth trees on the cleared drill lines).

Two pits (15GDP-01 & 15GDP-02) were in the Gun Club exclusion area, so these were excavated, sampled and backfilled in a period of two days while Gun Club patrons were denied access. Pits 15GDP-03 (west of the Stuart Highway), 15GDP-04 (close to Gove airport), and 15GDP-10 (close to the Rocky Bay haul road), were all backfilled within ten days of sampling. Pit 15GDP-07, effectively a scrape and rip lines on the edge of mine workings, was graded over. All other pits, being within already cleared mine areas, were left open.

Planning for the work also needed some consumables; graded sand, measuring cylinders, spakfilla, liquid latex, latex gloves, wire basket and supports for volume measurements. These items were procured by the author in Perth and freighted to site via Darwin and the barge to Nhulunbuy. Tools used for small sample pit excavations (by hand) were purchased from a hardware store in Gove (Gove Warehouse at the Captain Cook shopping centre). Some items required for practical water volume displacement/measurement work were also purchased from Gove Warehouse hardware store.

3.0 DENSITY PIT SAMPLING

The bauxite geology exposed in each density sample pit was examined, reviewed and recorded prior to any sampling. Generally, five samples were taken for density determination from each well-defined horizon in each density pit. Relatively "soft" lithologies such as topsoil, loose pisolites, cemented soft, and lower nodules, were sampled as follows ("sand replacement technique"):

- A small pit approximately 12 cm x 12 cm x 10 cm deep was excavated with hand tools and all loosened material collected in a calico bag (approximately 1.5 kg). This sample was used at the lab for dry weight determination.
- The small sample pit was excavated carefully and neatly so that its volume could be accurately measured by backfilling with a dry, free-running, graded quartz sand. A measuring cylinder was used to determine the volume of sand backfill. The graded sand was a quartz sand of size range +1.6 mm to -3.2 mm.
- Dry weight of sample and volume of the small sample pit were subsequently used in density calculation.
- Samples were taken to provide, as far as possible, an even stratigraphic/vertical spread through each "soft" lithology.

Hard lithologies such as Cemented Hard and "laterite" were sampled by collection of five rock samples from each unit, these being of the order of 1.5 kg to 2.0 kg in weight, and specifically chosen to try and represent the textural variability seen in the unit. Samples were collected from ripped hard rock locations and from hard rock material pushed up with the excavated dirt pile or exposed at the side of the excavation. A small additional piece of each hard rock sample (a few hundred grams in weight) was also collected to enable moisture content to be determined. Moisture content as determined from the small sample was used to calculate larger sample dry weight, and the volume of each large sample was also determined using a water displacement technique. Dry weight and volume were then used for density calculation. Latex was used to cover each hard rock sample before volume measurement using water displacement. Hence the overall methodology for hard rock density measurement has often been referred to as the "latex covering technique".

There was a total of 178 density samples taken overall, comprising 121 "sand replacement" samples, and 57 hard rock/"latex covering" samples. Samples of overburden/topsoil and footwall "laterite" were taken because a dilution factor with appropriate density has to be incorporated in the resource estimation block modelling. The work was completed over a period of 24 days, with extensive help at the sampling stage from contract geologist Scott Sullivan.

A comprehensive high resolution photographic record was taken of each density pit, including:

- Panoramic photo of the site before excavation.
- Panoramic photo of the completed excavated density pit.
- Panoramic photos to illustrate the bauxite geology of each density pit.
- Photos to illustrate specific details of the geology where relevant.
- Photos of each individual sample.

- Panoramic photo of the site after backfilling (where relevant).

A portion of each crushed sample used in dry weight determination was also used for assay work at the Gove Refinery assay laboratory. Assays were of percent Total Al_2O_3, Total SiO_2, total Fe_2O_3, Total TiO_2, and CaO. Assay sensitivity was 0.01%, except for CaO at 0.001%. Assay results (finally available on 6th January 2016) were used to confirm or re-assign visual bauxite lithology ID for each sample. This was particularly relevant to topsoil and “Loose Pisolite” samples, where there is a gradational boundary. It is also relevant to the Lower Nodule / “Laterite” boundary, which is also sometimes gradational.

All density pits, and “soft” sample sites within the density pits, were accurately surveyed (mine survey team, using DGPS). Some lithological boundary positions were also surveyed where they were distinct and relatively even. This survey data was then used to prepare accurate pit and sample plans and profiles within a Microsoft Excel spreadsheet.

4.0 DENSITY PIT GEOLOGY

As mentioned in the previous section, the bauxite geology exposed in each density sample pit was examined, reviewed and recorded prior to any sampling. Panoramic photos were taken to illustrate the bauxite geology of each density pit (these have been annotated to indicate important boundaries and geological features), and additional close-up photos were taken to show specific aspects of the local bauxite.

Grade control drilling at a 50 m grid spacing was available for all density pit locations, and bauxite logging from this work (various drilling campaigns and various loggers) was used as a likely indication of the lithologies which would be encountered in each density pit.

Table 2 presents a comparison of predicted lithologies and thicknesses against actual lithologies and thicknesses encountered in each density pit. The predicted data is taken from the nearest grade control drillhole to the final location of each density pit (generally less than 25m from the pit centre), and the relevant grade control drillholes are identified in the table.

TEST PIT	Grade control-logging details interpretation	Actual bauxite litho-logies in density pit	TEST PIT	Grade control-logging details interpretation	Actual bauxite litho-logies in density pit
15GDP-01	AG17900 0.25m OB 0.5m LP 1.25m CS 1m CH 0.75m TUB 2.15m NOD 1.35m LAT	0.5m OB 0.5m LP (reclassified as OB from assays) 2.5m LNOD	15GDP-06	AG10281 0.1m OB 0.15m LP 2.25m CS 2.5m NOD 0.5m LAT	1m LP/CS 2.5m LNOD
15GDP-02	AG23051 0.2m OB 1.7m CS 4.85m CH 1.25m LAT	0.5m OB 2m LP 3m LNOD	15GDP-07	AG5835 0.4m OB 1.6m CS 1.25m NOD 0.25m LAT	OB removed by mining 0.5m CS 2.25m LNOD
15GDP-03	AG22861 0.2m OB 0.75m CS 2.35m CH 1m LAT	0.5m OB 0.5m UNOD 2m LNOD	15GDP-08	AG15717 0.65m OB/LP 0.85m CS 1.75m CH 0.75m NOD 1m LAT	0.5m OB 0.75m LP/CS 3.5m LNOD
15GDP-04	AG15957 0.25m OB 1.75m CS 2m NOD/CH 1.75m NOD 0.75m LAT	0.25m OB 1.5m LP 0.5m UNOD 3.25m LNOD	15GDP-09	AG12856 0.15m OB 2.9m CH 0.45m NOD 0.75m LAT	2m CH 0.8m LNOD
15GDP-05	AG16806 0.2m OB 1.8m CS 1.25m CH 1.25mNOD/CH 0.75m LAT	0.25m OB 0.75m LP(CS) 0.5m UNOD/CH 1.25m CH 0.5m LNOD	15GDP-10	AG15717 0.15m OB 1m CH 1.85m CH/NOD 1.5m LAT	1.4m CH 0.8m LNOD

TABLE 2: Comparative expected versus actual bauxite geology in each density pit

It is noteworthy that the expected geology included eight “hard” bauxite profiles and two “soft” bauxite profiles (15GDP-06 and -07), whereas in reality only three “hard” profiles were encountered (15GDP-05, -09, and -10), and “soft” profiles were dominant. This implies that either one or a combination of the following is possible:

- Bauxite geology is locally very variable;
- Grade control drillhole bauxite logging is inaccurate due to poor logging skills;
- Grade control drillhole bauxite logging is inaccurate due to the fact that bauxite lithologies are difficult to identify in vacuum hole drill chips.

Density pit 15GDP-01 appeared to have a “Loose Pisolite” layer, approximately 0.5 m thick, beneath the approximately 0.25 m of topsoil/overburden. However, assays indicated that the “Loose Pisolite” layer had low alumina and very high silica. Thus all five samples taken from this horizon were re-classified from “Loose Pisolites” to “Topsoil/Overburden”.

No significant “Tubular” bauxite was encountered in any of the density pits, although it was only predicted in 15GDP-02. However, minor occurrences of “Tubular” bauxite were noted in some pits right at the contact with footwall “Laterite”, *beneath* “Lower Nodules”. Based on current mining practice, such material would be left behind as part of the hard “Laterite” floor.

The footwall "Laterite" in density pits 15GDP-02 and 15GDP-10 included compacted "Nodular" material which was easily amenable to "sand replacement" sampling. Hard footwall "Laterite" was 0.5 m or more beneath the contact with "Lower Nodules". Furthermore, the lowest apparent "Lower Nodule" sample collected in 15GDP-02 had assays which resulted in reclassification as "Laterite". It is worth noting that in these locations current mining procedures (breaking up the bauxite by dozing down to the top of the hard "Laterite") would result in dragging a lot of high silica waste into the ore.

5.0 DENSITY MEASUREMENT WORK

Apart from "soft" sample-pit sand volume measurement in the field, all other density measurement work was carried out at the Gove Refinery assay laboratory facilities. Laboratory Manager, Jon Regan, is to be thanked for his assistance and logistical support in this respect.

For "soft" samples, work at the laboratory involved:

- Sample crushing and weighing (accuracy to 1 g);
- Sample drying at 110^{0}C for 24 hours, and weighing immediately afterwards (Xstract notes that there is potential to change the mineralogy of the sample if dried above 105^{0}C);
- Calculation of moisture content, and dry bulk density (dry weight divided by volume).

For "hard" samples, work at the laboratory involved:

- Crushing and weighing of the complementary moisture sample;
- Drying of the moisture sample at 110^{0}C for 24 hours, and weighing immediately afterwards (Xstract notes that there is potential to change the mineralogy of the sample if dried above 105^{0}C);
- Weighing of the brushed-clean hard rock sample;
- Infill of any externally opening voids in the hard rock sample with quick drying plaster filler (Selley's "Spakfilla") to create a solid outer surface for the sample, and weighing once the plaster had dried for 24 hours;
- Coating of the hard rock sample surface with liquid latex to form an impermeable/waterproof layer around the sample, and weighing once the latex had cured/dried. This had to be done in two stages (top half, bottom half) with 24 hours of drying after each stage. The latex covering was applied by hand (wearing latex gloves), as a brush just coagulates cured latex around the brush hairs and becomes useless. Due to the emanation of ammonia during curing/drying of liquid latex, the whole process was carried out in fume cupboards in the laboratory;
- Calculation of latex volume from measured weights (before and after addition to sample) and known latex density (0.95 g/cm^3);
- Immersion of the latex covered hard rock sample in water, with displaced water volume accurately measured (+/- 2ml accuracy);
- Calculation of sample dry bulk density using original sample weight and measured moisture content, and measured volume minus latex volume;
- Four improvised "standards" (regular bricks with volume measurable from length/breadth/height) were put through the latex covering and volume measurement procedures, with water displacement volume measured twice. This enabled an assessment of precision and accuracy of the volume measurement technique.

6.0 DENSITY RESULTS AND ASSOCIATED DATA

Survey data from the density pits and associated samples is presented within the Microsoft Excel spreadsheet "*Pit survey data, plans, profiles Feb2016.xlsx*", which accompanies this memo. There are ten worksheets in this spreadsheet, one for each density pit. Included on each worksheet for each density pit are:

- Original survey data for density pit and sample location, in mine co-ordinates;
- Planned pit location;
- Summary information of the nearest grade-control drillholes;
- A graphical plan of all the above;
- A graphical profile/cross-section of the density pit, "soft" sample locations, and relevant geological boundaries.

All primary, intermediate, and final density data and calculations are presented on a master spreadsheet, "*Gove 2015 Density work spreadsheet Feb2016.xlsx*", which accompanies this memo. There are five worksheets in this spreadsheet:

- "Original Test Pit List";
- "Comparative geology";
- "All density samples";
- "Precision and Accuracy";
- "Sand compaction tests"

The worksheet tab "All density samples" includes for each of the 178 samples, original visual sample ID, brief geological description, measurements, calculations, assay data, comments on expected versus actual assay result with any necessary re-classification, final dry bulk density value, and the average dry bulk density value for each group of samples (usually five) from each major lithology in each density pit. The latter is also presented below in Table 3. On the worksheet, all data relating to hard rock samples is easily identified by a light grey background, and all alumina and silica values out of ore grade are identified by red highlights.

Density Pit	Topsoil/ Overburden	Loose Pisolites & Cemented Soft	Cemented Hard	Lower Nodules	footwall "Laterite"
15GDP-01	1.34 (10)	not present	not present	1.78 (5)	1.83 (5)
15GDP-02	1.58 (5)	1.71 (5)	not present	1.83 (4)	1.88 (6)
15GDP-03	1.55 (5)	not present	not present	1.63 (4)	2.16 (6)
15GDP-04	1.58 (5)	1.57 (5)	not present	1.62 (5)	1.91 (5)
15GDP-05	1.51 (4)	1.59 (6)	1.88 (5)	1.64 (5)	1.84 (5)
15GDP-06	not present	1.68 (5)	not present	1.63 (5)	2.16 (5)
15GDP-07	not present	1.95 (5)	not present	1.49 (5)	1.86 (5)
15GDP-08	1.41 (5)	1.71 (5)	not present	1.57 (4)	1.73 (5)
15GDP-09	not present	not present	1.88 (5)	1.67 (5)	1.93 (5)
15GDP-10	not present	not present	1.89 (5)	1.47 (4)	1.65 (4)
Values are density in tonnes per cubic metre					
number of samples averaged to get listed value in brackets					

TABLE 3: Summary density values for major lithologies in each density pit

The total photo collection accompanying the current work has a file size of just over 3 Gb and cannot be included within this memorandum. However, one of the panoramic photographs from each density pit is included in the Appendix at the end of this document. These photographs are annotated to show "soft" sample locations, geological boundaries, and comments on other relevant geological features. The complete set of photographs pertaining to this work has been made available to Rio Tinto Alcan Gove, in order to provide a visual, fully auditable record of the work.

7.0 DISCUSSION OF RESULTS AND CONTEXT

There was no allowance in the scope of work and budget for this program to thoroughly analyse and assess the results with previous density results and their source data and sample characteristics. However, the overall spacing of density information within the Main Plateau area is still very broad, and it is difficult, at such a wide spacing, to determine trends and patterns in the data. Nevertheless, summary data from previous work has briefly been examined along with data in Table 3, with the following noteworthy observations:

- Previous Main Plateau overburden/topsoil dry bulk density values, from five different density pits, have been in the range 1.15 t/m^3 to 1.30 t/m^3. Thus results from the current work are relatively high, particularly those from pits 15GDP-02, -03, -04, and -05, which between them average 1.55 t/m^3;
- What appeared to be a well-developed "Loose Pisolite" horizon below topsoil in current pit 15GDP-01 turned out to have consistent low alumina and very high silica, resulting in re-classification to "overburden/topsoil". It is therefore important to review mining

procedures and grade control assay data and elevations in this area, when it is eventually mined;

- In all current density pits where "Loose Pisolites" and "Cemented Soft" were encountered, they occurred as a mixed horizon rather than "Loose Pisolites" distinctly overlying "Cemented Soft". In fact it was commonly the other way round, with a patchy indurated zone of "Cemented Soft" material near the top of "Loose Pisolite" horizons. Previous work has shown an overall thickness weighted mean of 1.52 t/m^3 for "Loose Pisolites", and 1.72 t/m^3 for "Cemented Soft". In this context, the results above in Table 3 are in agreement, as the higher values do correspond to those horizons where "Cemented Soft" material was more strongly developed. The highest current value, 1.95 t/m3 in 15GDP-07, seems anomalously high, but did represent consistently cemented material, and it is not as high as one previous "Cemented Soft" value of 2.02 t/m3 from site MP1 (southern Main Plateau);

- "Cemented Hard" was only present in three of the current density pits, where the results were quite consistent (1.88 t/m^3, 1.89 t/m^3, and 1.88 t/m^3), and readily compatible with previous work;

- Lower Nodules from both "soft" and "hard" profiles have previously been found to have similar densities, with a range of 1.40 t/m^3 to 1.75 t/m^3. Current work mostly falls in the same range, with the exception of soft profile "Lower Nodules" from northern density pits 15GDP-01 and -02, respectively 1.78 t/m^3 and 1.83 t/m^3;

- "Laterite" densities have previously been found to cover a wide range, from 1.31 t/m^3 to 2.15 t/m^3, with a mean of 1.83 t/m^3. The broad range of values is a reflection of variable iron content and highly variable coarse void-space content. Current density values also fall within the same range, with a mean of 1.90 t/m^3.

Bauxite mineralogy is dominated by gibbsite and boehmite, respectively of average density 2.34 t/m^3 and 3.04 t/m^3. Gove bauxite is known to be dominated by gibbsite, and this does fit with results to date, after making appropriate allowance for fine and coarse void space which is present. Within the bauxite at Gove, overall results do also still conform to the general premise of greater cementation leading to higher average densities.

The discrepancy between predicted and actual bauxite lithologies in the current density pits has been commented on in section 4. It brings in to question the accuracy and/or quality of bauxite logging during grade-control drilling (particularly something as seemingly straightforward as differentiating between "hard" and "soft" bauxite profiles), and has an obvious bearing on resource/reserve estimation. The writer's understanding is that each of the standard bauxite lithologies is present throughout the block model, with the thickness of each lithology interpolated from grade control drilling. If the lithology is not present, then its thickness in the model is zero. The density applied to each lithology is the average of all density samples taken on that plateau for that lithology (sample locations are too widely spaced for any spatial interpolation). Taking current pit 15GDP-02 as an example, what was predicted to be 1.7 m of "Cemented Soft" underlain by 4.85 m of "Cemented Hard", turned out to be 2.0 m of "Loose Pisolites" underlain by 3.0 m of "Lower Nodules". Higher densities are applied to "Cemented Soft" and "Cemented Hard" compared to "Loose Piolites" and "Lower Nodules". Thus the resource/reserve tonnage will be overstated for that area (this ignores any overall bauxite thickness disagreement). Using a rather broad assessment, namely that three out of ten current density pits had “hard” profiles rather than the expected eight out of ten, this could imply that 50% of the reserve tonnes is overestimated to some extent due to inaccurate grade control logging.

Note that with respect to ore grade limits applied to assay data from the 178 density samples in the current program, figures were advised by Michael Mills by email on 16th January 2016. Ore grade was advised as being >40% alumina and <12% silica, but with the proviso that in the longer term <15% silica may be relevant.

Yours sincerely

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APPENDIX

Photos of density sample pits to show geology and sample locations

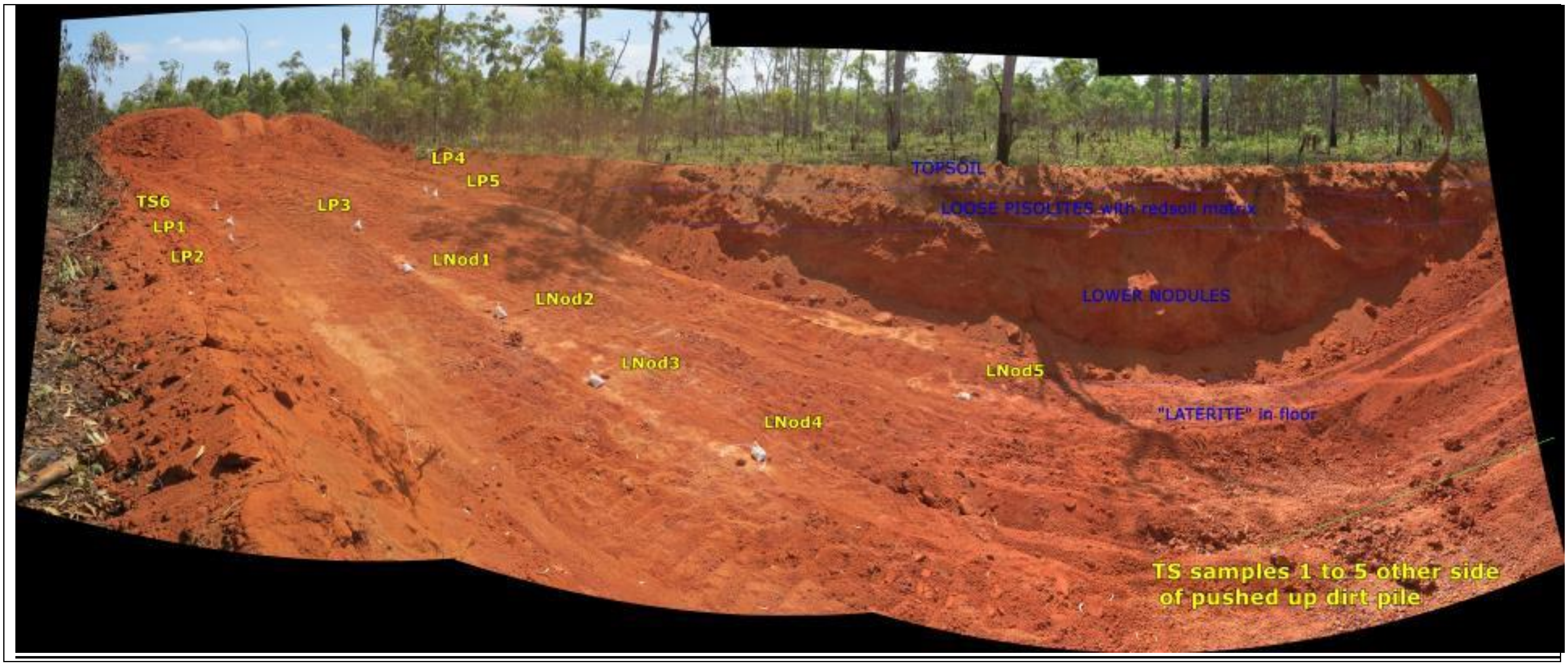

Figure 1 Geology and "soft" sampling locations in density pit 15GDP-01 ("Gun Club north")

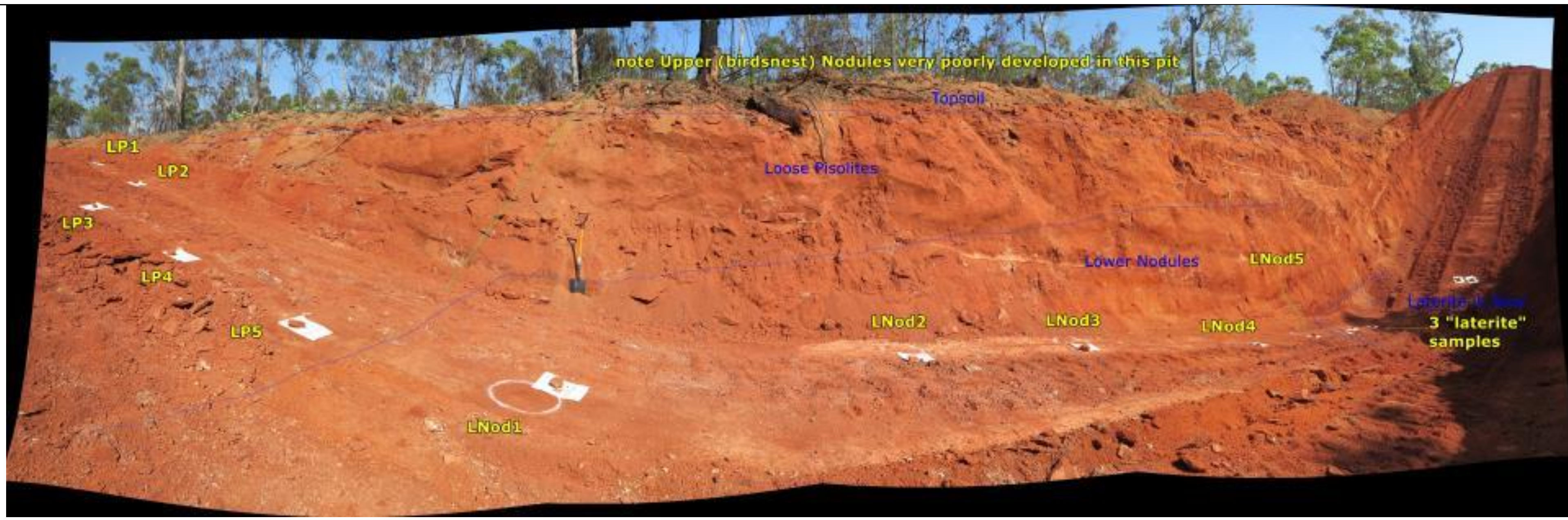

Figure 2 Geology and "soft" sampling locations in upper part of density pit 15GDP-02 ("Gun Club east")

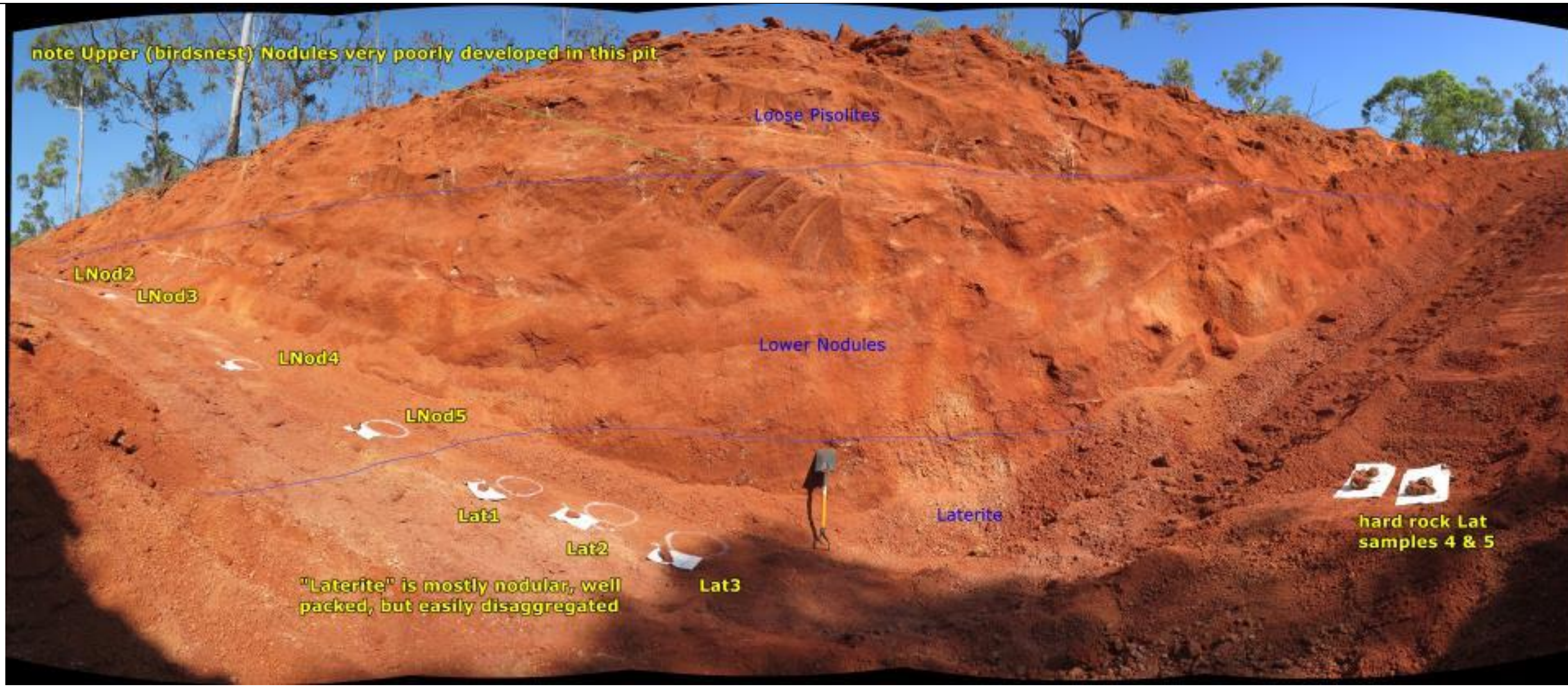

Figure 3 Geology and "soft" sampling locations in lower part of density pit 15GDP-02 ("Gun Club east")

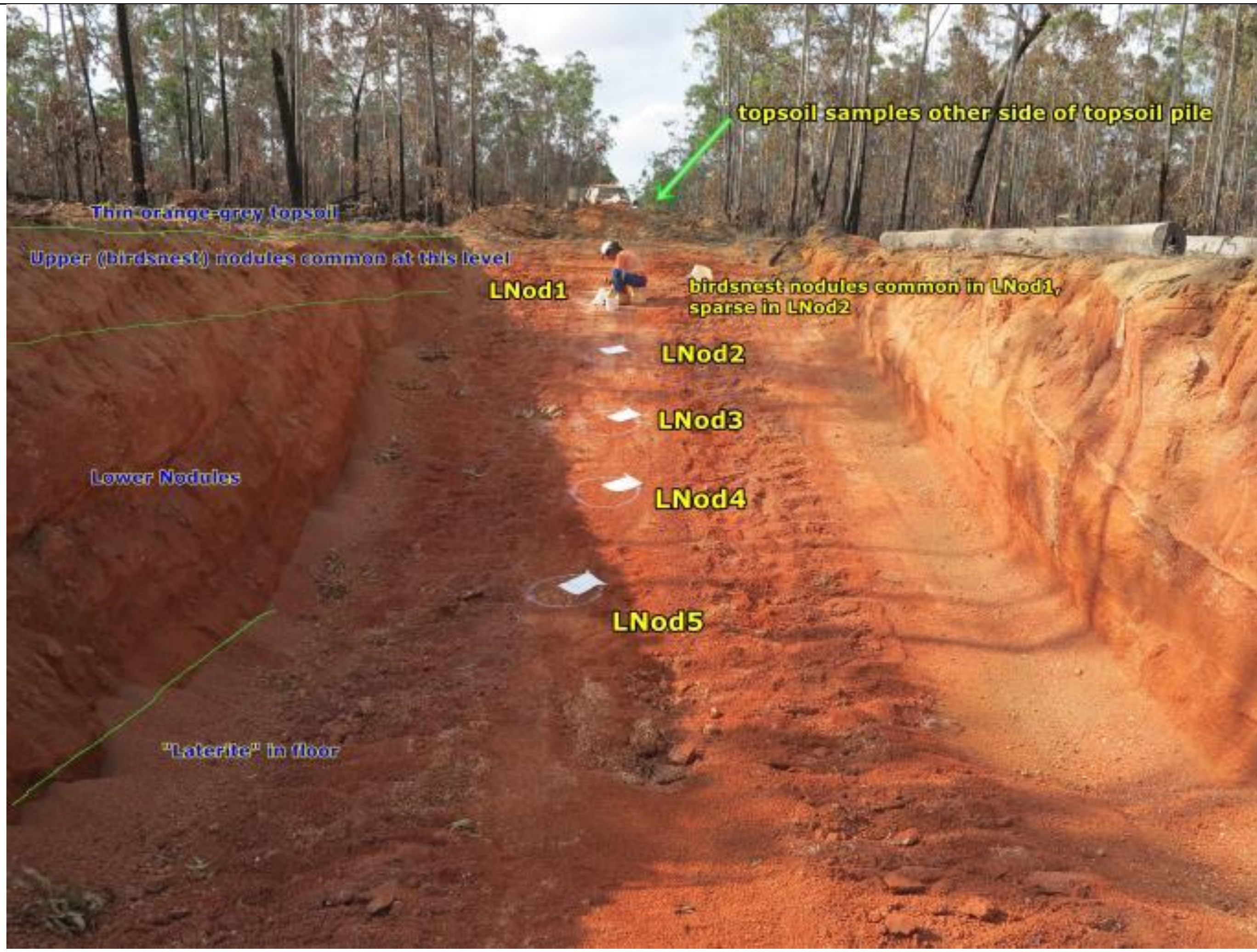

Figure 4 Geology and "soft" sampling locations in lower part of density pit 15GDP-03 ("Airport west")

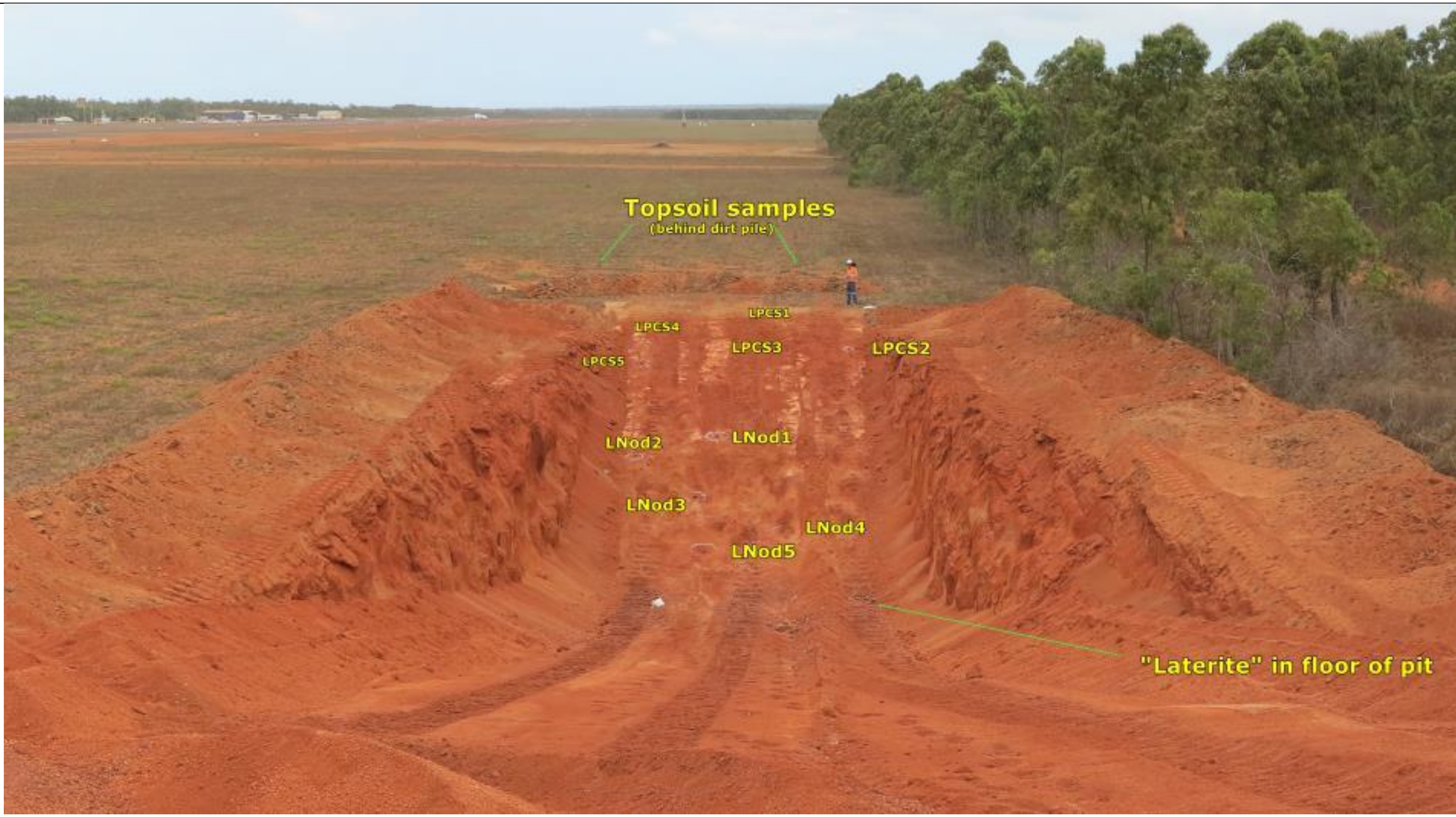

Figure 5 "Soft" sampling locations in density pit 15GDP-04 ("Airport south")

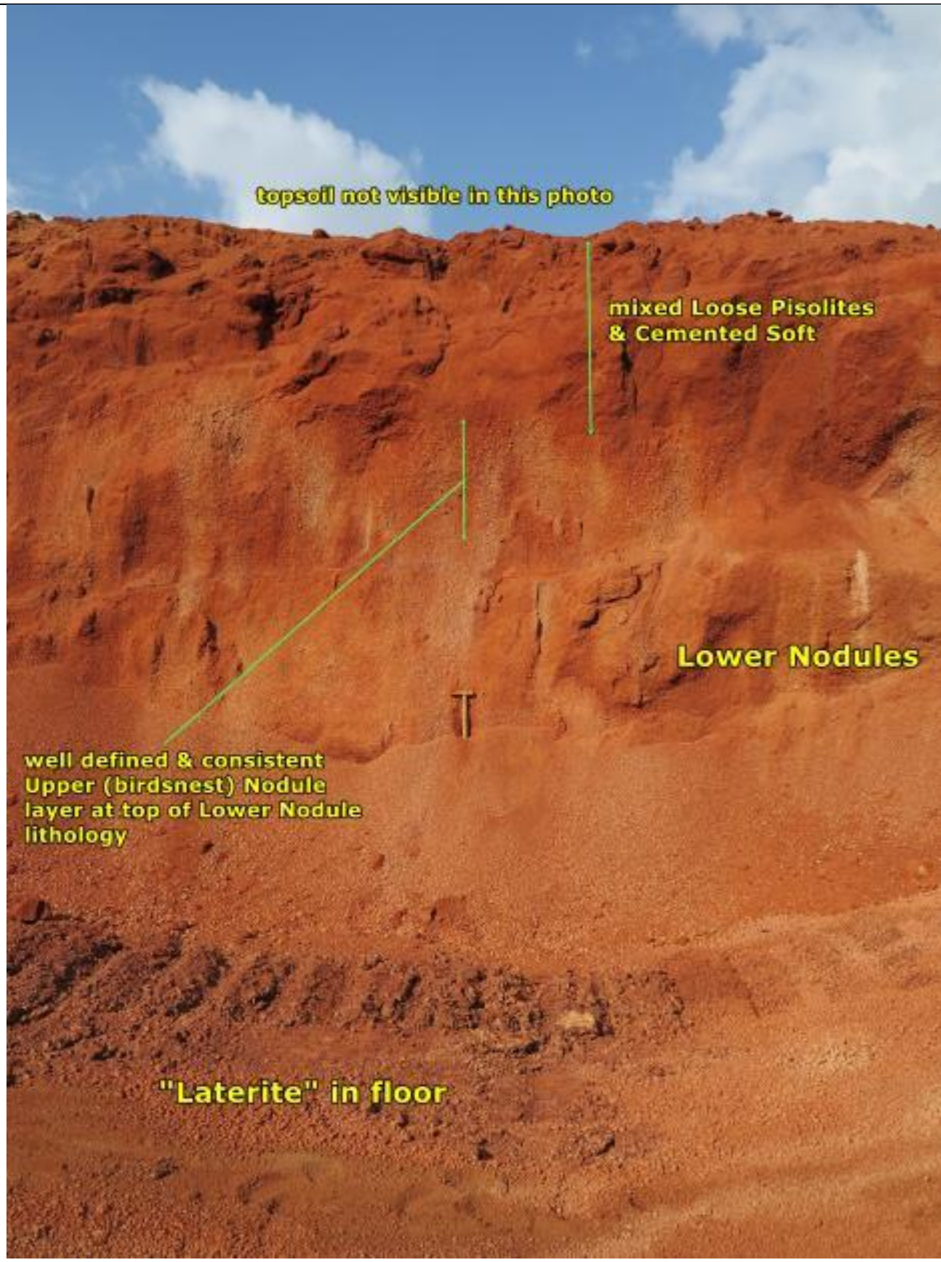

Figure 6 Bauxite geology in density pit 15GDP-04 ("Airport south")

Figure 7 Geology and "soft" sampling locations in density pit 15GDP-05 ("West")

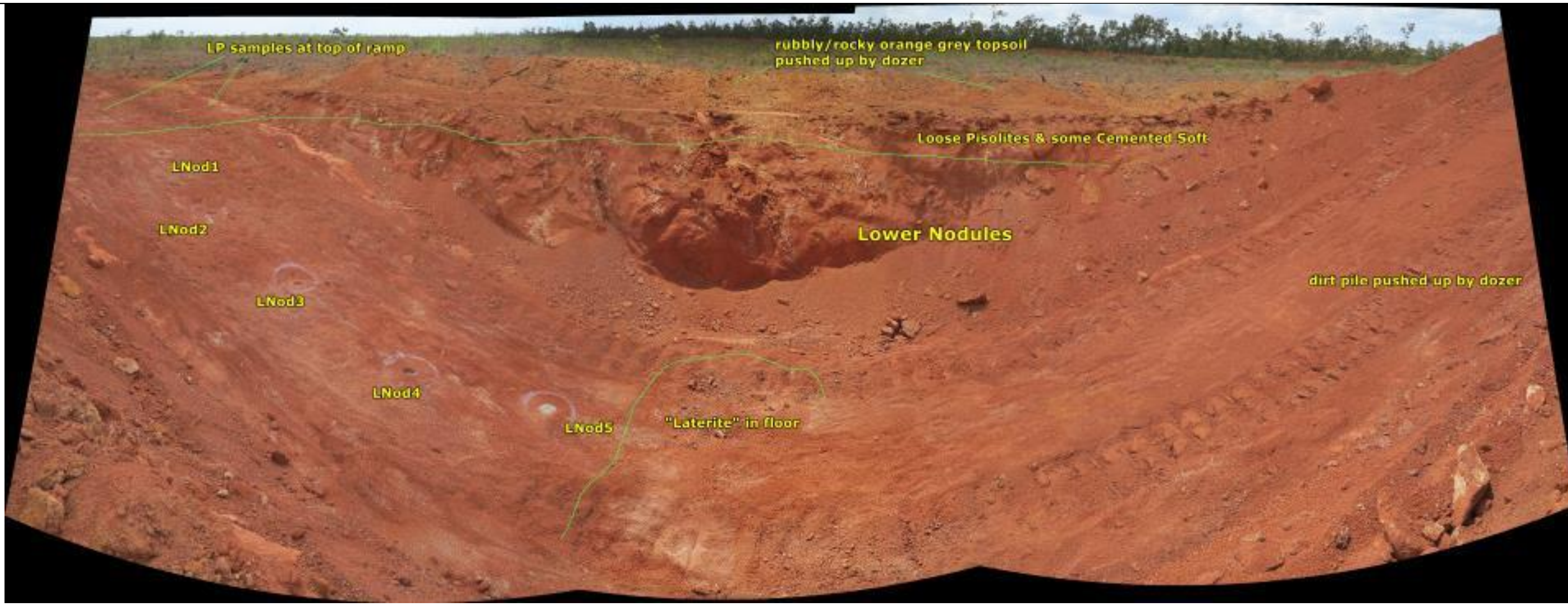

Figure 8 Geology and "soft" sampling locations in density pit 15GDP-06 ("Far west")

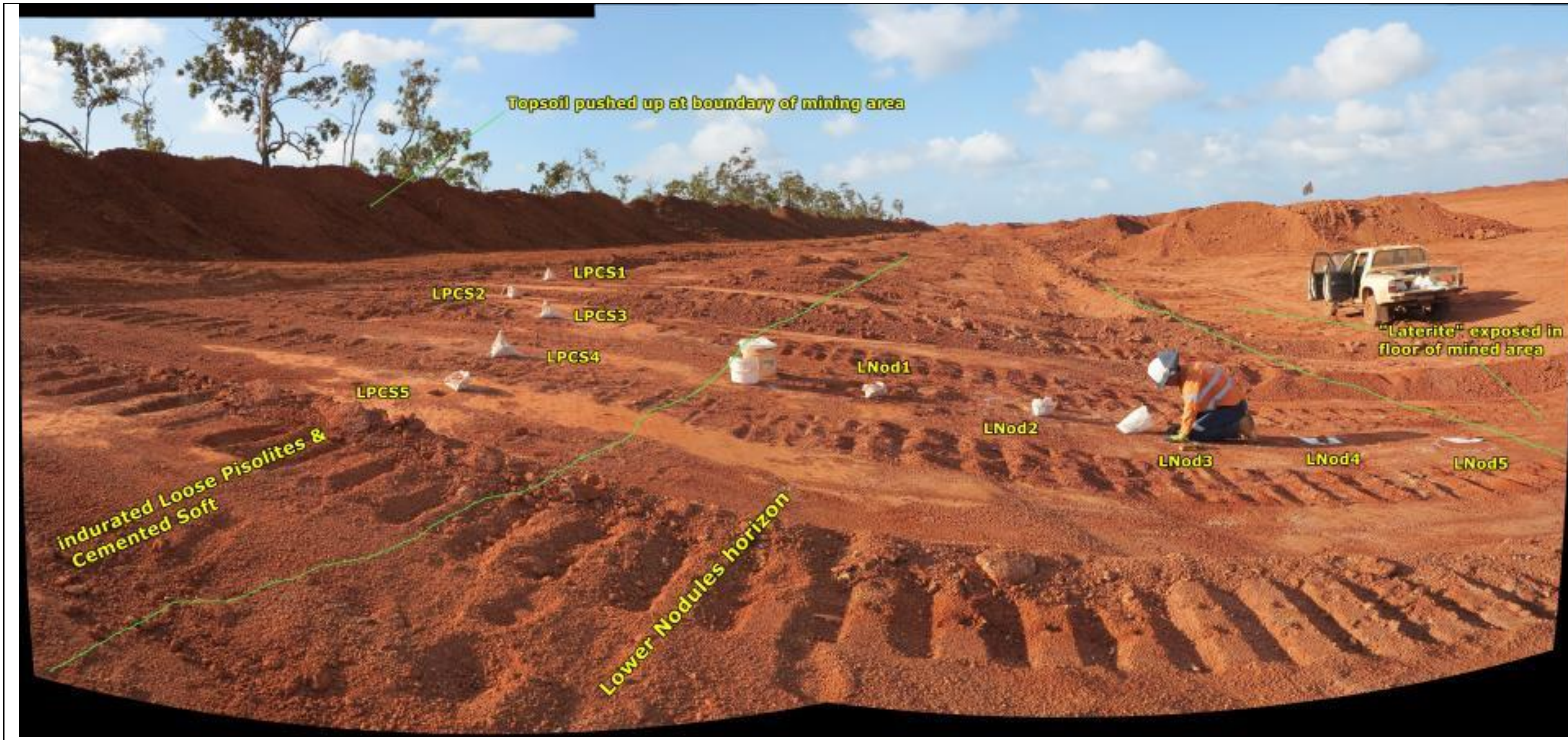

Figure 9 Geology and "soft" sampling locations in density "pit" 15GDP-07 ("Southwest Latram")

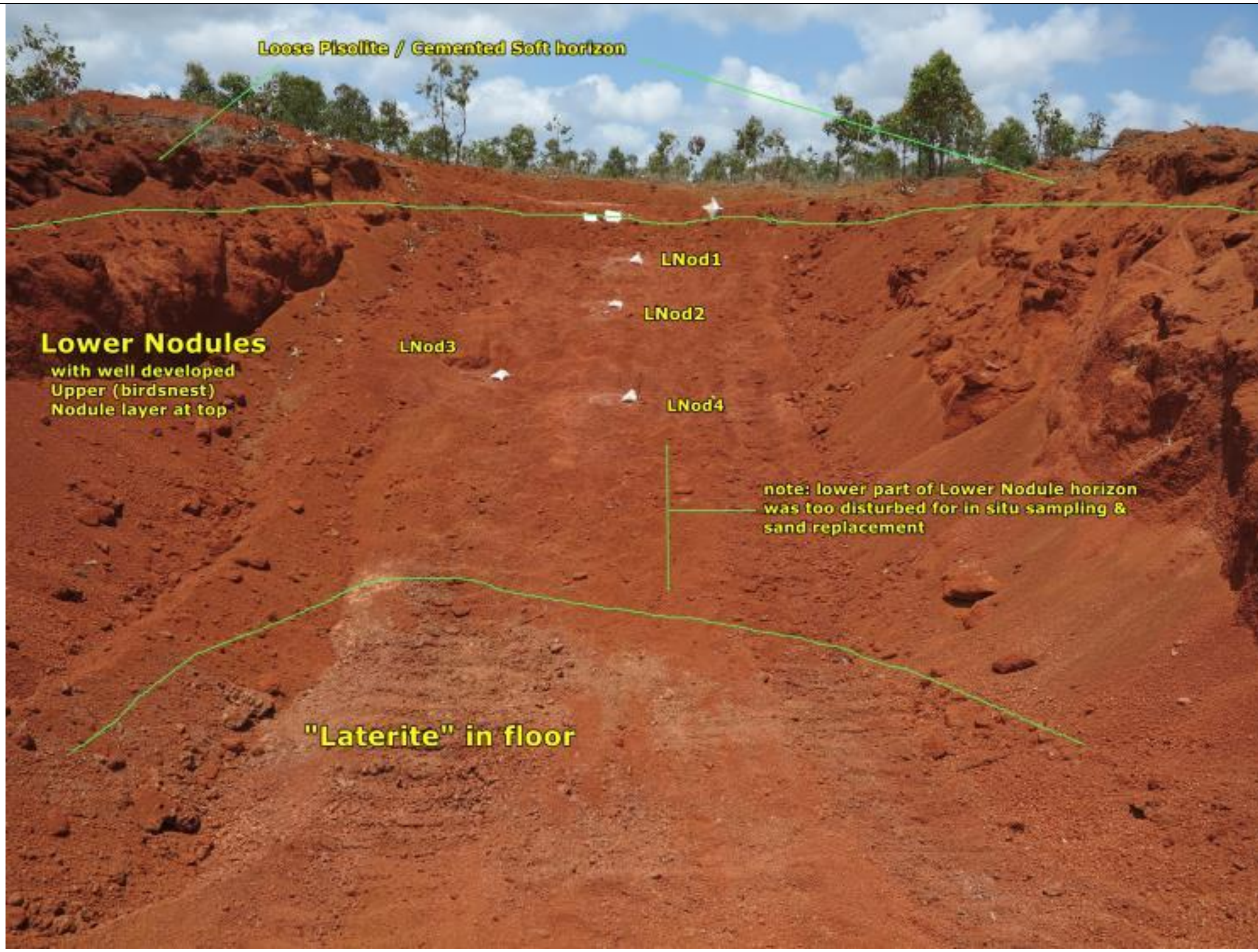

Figure 10 Geology and "soft" sampling locations in density pit 15GDP-08 ("South")

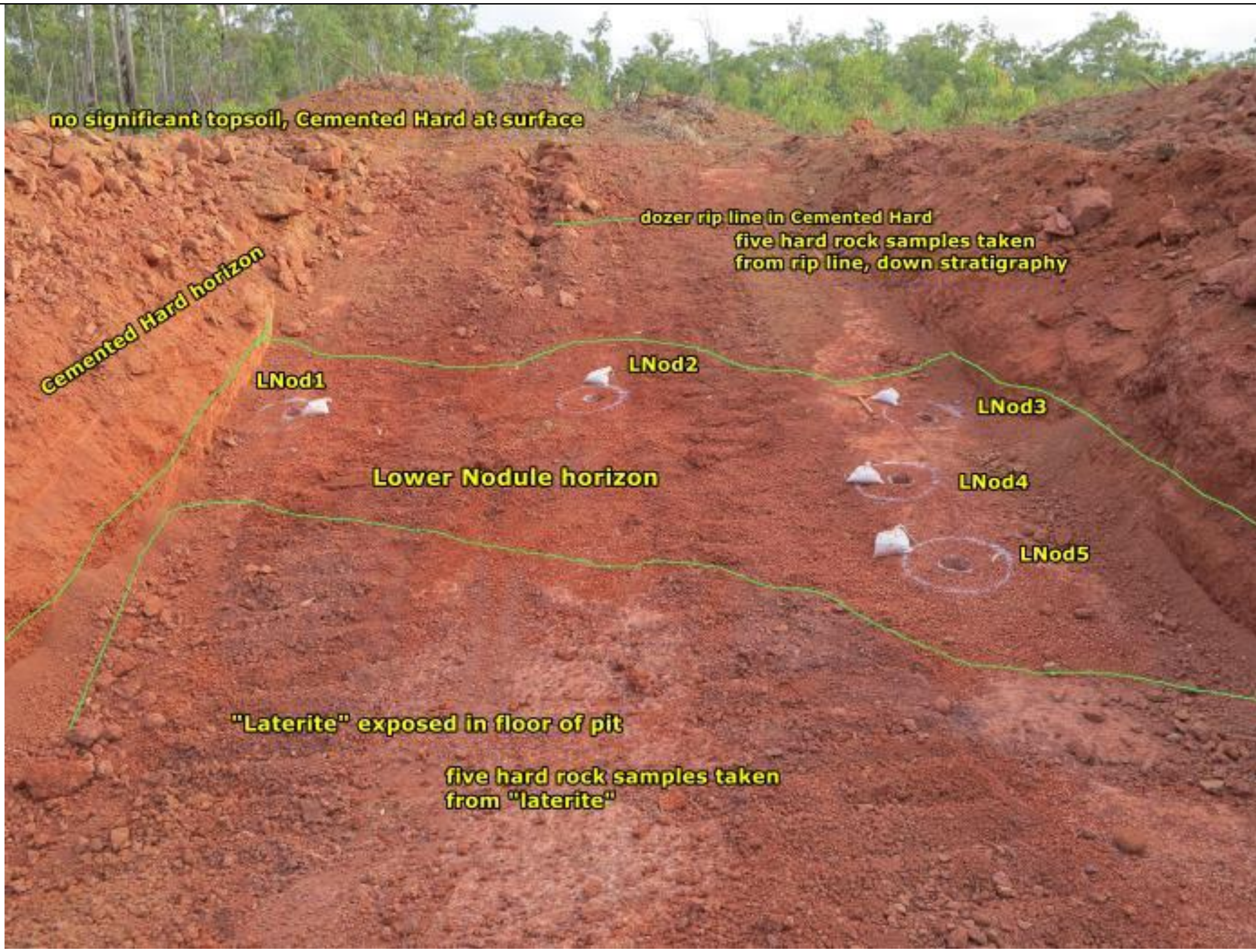

Figure 11
Geology and "soft" sampling locations in density pit 15GDP-09 ("Southeast")

Figure 12 Geology and "soft" sampling locations in density pit 15GDP-10 ("Southeast Tree-rats")