DETAILED MATERIALS INVESTIGATION FOR A RAILWAY CORRIDOR WEST OF LAKE WOODS, NORTHERN TERRITORY.

VOLUME 1

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CENTRAL ENGINEERING SERVICES
81 ELDER STREET,
P.O. BOX 3370, ALICE SPRINGS, N.T.
Phone 52 4092

ENGINEERING GEOLOGIST

GREG MULES

FOR
DEPARTMENT OF MINES AND ENERGY.

Australian National

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1.0 INTRODUCTION

At the request of the Geological Survey of the Northern Territory a materials search within a 15 km corridor west of Lake Woods, was commenced on 10th May, 1982. The Geological Survey was acting on behalf of Australian National Railways, the design and construction authority for the Darwin to Alice Springs Railway.

The search was to determine the availability of near-surface gravels which might be suitable as a select-fill zone for a railway enbankment constructed of surface sandy material. Available quantities were to be determined with some degree of certainty and representative bulk samples were required for testing.

The Geological Survey provided aerial photos at scale 1:50,000 from which a photomosaic was prepared. Also available were images from Landsat at scale 1:250,000, aerial photo interpretation maps (Mules, 1982) and a report on previous investigation (Soiltech, 1982).

This report presents the results of a 7 week field programme and tests carried out on 8 bulk samples.

2.0 REGIONAL SETTING

2.1 Physiography

The investigated corridor is some 240 km in length extending from the northern boundary of Newcastle Waters Station to the Short Range, and passing 25 km west of Lake Woods, Elliot . It lies within the sand dune terrain of the Tanami Desert which has encroached on black soil plains to the east and low rocky outcrop to the south and north, Fig. 1.

West of Lake Woods a dominating broad frontal dune transects the project area from west to north-east parallel to the Lake and is suggested to represent a paleo-shoreline of a lake which has since retreated to the east. (B.M.R., NEWCASTLE WATERS).

North of the dune, wind blown sand has piled into a gently undulating terrain covered by thick mulga scrub.

South of the dune, low longitudinal dunes and irregular transverse dunes are covered by wattle, eucalypts and spinifex. Low gravelly rises and rocky ridges outcrop further south on the flanks of the Ashburton and Short Ranges.

Black soil plains border Lake Woods and occur patchily on the eastern margin of the corridor and support growths of Mitchell and Flinders grass.

2.2 Geology

The area has been mapped at scale 1:250 000 by workers of the Bureau of Mineral Resources (B.M.R.) with results and explanatory notes being published as the NEWCASTLE WATERS, SOUTH LAKE WOODS AND TENNANT CREEK sheets. These results have been condensed onto a composite sheet at scale 1:1,000,000 for the B.M.R. report on the WISO BASIN. A section of that sheet is presented as Fig. 1 of this report and was compiled by the Geological Survey.

This work shows the surface geology of the project area to be

predominantly superficial deposits of Quaternary aeolian sands (Qs) with isolated clay pans (Ql). In the southern section, distinctive outcrops of rocks of Proterozoic and Palaeozoic age have been mapped. Specifically these are sandstones, siltstones and conglomerates of the Tomkinson Creek Beds (Pt), the fossiliferous siltstones, cherts, silicified limestone and sandstones of the Gum Ridge Formation and tholeiitic basalt, minor sandstone and breccia of the Helen Springs Volcanics.

The results of the present investigation and of previous aerial photo interpretation (Mules, 1982), support the B.M.R. mapping but adds more detail in the southern section where further outcrop and low gravelly rises have been identified, Figs. 6-8. Here extensive surface laterite gravels and isolated outcrops of rocks of the Tomkinson Creek Beds occur in sections previously mapped as aeolian sand.

Some areas in the north, previously identified as gravelly rises were remapped as distinctly coloured clayey sands.

Black soil plains (Czb) marginal to Lake Woods were noted to be covered by patchy superficial deposits of ironstone and sandstone gravels and cobbles.

3.0 INVESTIGATION TECHNIQUES

3.1 Approach

In the absence of surface expression of near-surface gravels a sample grid of approximately 5 km was decided upon. North of the dune previous investigations indicated no gravels within a depth of 3 m (Soiltech, 1982). Landsat images suggested calcrete at shallow depths south of the dune. This was supported by previous investigations. Areas to the south, where rock outcrops or is covered by a thin layer of sand, were outlined from Landsat images and aerial photo interpretation.

All targets were marked onto the aerial photo mosaic and tied into the sampling grid. Scout auger drilling to 5 m depth was carried out at these nominated sample points. Where substantial gravel stata were intercepted within potentially economic depths a surrounding pattern of a further 2 or 3 holes was drilled at 500 m spacings. Areas which continue to hold promise were then trenched using either excavator or backhoe to obtain a geological log and representative bulk sample of the strata.

Where gravels were abundant, such areas were explored approximately every 10 km to prove a minimum of 20,000 cu. metres in each area.

3.2 Method of Investigation

Surveying

The access track and all connecting tracks were accurately plotted onto the aerial photomosaics during a light aircraft reconnaissance.

From its northern end the track was pegged at 5 km intervals measured on a vehicle odometer. Auger locations marked on the aerial photos were measured for distance and bearings from known points on the track. Appropriate compass bearings were sighted and the required distance of traverse measured on a vehicle odometer.

Plotted locations of auger holes and trenches are considered accurate to within 300 m. In places, accuracy was improved where features were

clearly recognized on the aerial photos or where holes were located on the access track.

Scout Augering

Using an hydraulic drive Proline auger mounted on a Toyota four wheel drive fitted with puncture-proof tyres, the scout programme as outlined in Section 3.1, continued throughout the field period.

Holes of 165 mm diameter were drilled to 5 m depth or refusal. Some holes were continued to a depth of 6 metres. Each change of strata was measured, described and given a visual classification. No samples were taken during scout augering.

Trenching

Using a tracked John Deere 690 excavator and a John Deere 400 backhoe, a logging and sampling programme was undertaken in the last 3 weeks of the field period. At selected areas a trench was excavated to a depth that proved sufficient quantities of suitable gravel or to refusal. One or two holes were excavated in each area.

A log was made of the trenches and bulk samples selected to allow testing to provide results representative of materials within the region.

Testing

Testing was undertaken on 4 sand and 7 gravel samples in compliance with ASA standards and included Mechanical Analysis, determination of Atterberg Limits, Linear Shrinkage and Compaction Tests of 4 of the gravel samples.

Results are presented on standard forms in Vol. 1 of this report.

Tested soils have been classified in accordance with the Unified Soils Classification while more detailed descriptions are available from the relevant trench log or auger hole.

4.0 INVESTIGATION RESULTS

4.1 Presentation

The results of the investigation are presented as a combination of plans, logs, test results and area descriptions.

Plans at aerial photo scale show auger hole and trench locations and summarize visual classifications of intersected strata. These are presented in Vol. 2 as Figs. 2-8.

Logs of auger holes and trenches are presented in Vol. 2 as are results of tests carried out on representative sand and gravel samples.

Descriptions of selected areas proven to feasibility stage are presented in Section 4.3 and include plans of the investigation programme (Figs. 9-18).

4.2 Stratigraphy and Distribution

The distribution of shallow stratigraphic types can be conveniently divided into three sections. The northern section extends from 00 km to 75 km, the central section from 75 km to 140 km and the southern section from 140 km to 240 km and are described below.

The irregular dune terrain in the north typically has silty surface sands with sands of increased clay content and in situ density to depths greater than 5 m. The sequence thins to the north where, in places, calcrete and laterite strata occur at 3 to 5 metres depth. At the northern most end, rock and laterite gravels outcrop outside the project area.

The central section is confined by the frontal dune on the west and the black soil plains associated with Lake Woods on the east. The stratigraphic sequence is typically of loose surface sand grading into clayey sands above an apparently continuous deposit of weathered calcrete gravels. The upper surface of the calcrete layer is weathered to varying degrees, producing silty clays. Less weathered calcrete at depth, produce silty gravels with high strength particles.

Isolated occurrences of surface calcrete-ironstone gravel grade into nodular calcrete deposits showing varying degrees of weathering.

Approaching the southern area at 120 km, a typical stratigraphic section is of aeolian sand with an increasing (with depth) clay content and the development of weakly cemented ironstone nodules. Below this is a calcrete deposit with a highly weathered upper surface producing silty clays grading into high strength silty gravels.

The northern boundary of the southern section is marked by the appearance of dune sand covering weathered rock and corresponds with the southern-most occurrence of calcretes. The dune sand is generally uniform in nature to depths of 5 metres. Some increase in in situ density and clay content with depth, was noted in places.

Where rock outcrops, slopes may be covered by rocky gravel scree or nodular laterite gravels. The deposits are typically thin, grading into high strength rock or cemented laterite. Between rock outcrops, colluvial deposits of a sand, laterite and rocky gravel mix were noted. Such areas predominate south of a Trigonometric Station at 172 km.

4.2 Borrow Areas

Plans at scale 1:10,000 are presented for each selected area, showing the investigation programme and summarizing the results. Average depths to the top of the gravel deposits are indicated, as are assumed minimum thicknesses. The latter are usually taken as the maximum intersection obtained and assumes a near horizontal upper surface to the gravels.

Potential volumes have been calculated. The location of the areas are indicated by bearings and distances from points along access tracks.

AREA 'A' - DISTANCE 7 KILOMETERS

A very gently sloping area with no significant airphoto pattern. Prominent occurrence of patches of a medium height, small leafed mulga within the area.

Area 'A' is located 2.4 km west of the 7.2 km distance along the access track and is indicated on Fig. 2. Details of the investigation programme and summary results are shown on Fig. 9.

An area of 1,625,000 sq. m. was proven to feasibility stage with four auger holes (AH 10 ÷ 13) and one trench (T1). With an average depth of 3.0 m of overburden and assuming a continuous gravel layer at least 2 m thick, the area could produce 3,250,000 cu. m. of gravelly material.

The gravels are a mix of silty sand and low to high strength weathered calcrete nodules grading into calcretes with nodules of a predominantly high strength. Some cemented sand concretions of low strength are present. Only minor low plasticity fines are indicated however breakdown of weathered calcrete may increase the percentage of fines.

Overburden consists of poorly sorted sands with medium-low plasticity fines and is of generally consistent thickness across the area.

AREA 'B' - DISTANCE 13 KILOMETERS

The area consists of broad depressions covered by light grey silty sand forming a distinct light coloured aerial photo pattern over an area of 2.5 sq. km. A distinctive vegetation association was noted.

Area 'B' is located on the access track at distance 13 km and is indicated on Fig. 2. Details of the investigation programme and summary results are shown on Fig. 10.

An area of 600,000 sq. m. was proven to feasibility stage with three auger holes (AH 23 - 25) and two trenches (T2 and T3). With an average depth of 2.9 m of overburden and assuming a continuous gravel layer at least 2.4 m thick, the area could produce 1,000,000 cu. m. of gravel.

The gravels are a mix of silty sands and low to high strength calcrete nodules grading into weathered calcretes with nodules of a predominantly high strength. Minor low plasticity fines are indicated however breakdown of weathered calcrete may increase the percentage of fines.

Overburden consists of silty sands with minor clays of low plasticity. T3 suggests that overburden may be thinnest in the eastern section of the area.

AREA 'C' - DISTANCE 68 KILOMETERS

This area was originally thought to contain gravels at depth, but follow-up trenching has proven unproductive. The intersection of dense material during scout augering suggested calcrete gravels may be present. The aerial photo pattern and the topography suggested a large area where groundwater levels are seasonally shallow. This was thought an ideal environment for calcrete deposition and with the prospect of finding gravels on the northern side of the steep dune a total of 3 trenches were excavated in this area (T4, T5, T6). These intersected dense to very dense mottled silty sands which may represent completely weathered calcretes but no high strength gravels were located. The investigation in this area is summarized in Fig. 11.

AREA 'D' - DISTANCE 75 KILOMETERS

Located at the windward toe of the frontal dune, the area comprises a series of low parallel dunes and interdune depressions. Typical vegetation is spinifex and scattered eucalypt trees.

Area D is located at 75 km on the eastern side of the track and is indicated on Fig. 3. Details of the investigation programme and summary results are shown on Fig. 12.

An area of 1 sq. km was proven to feasibility stage with four auger holes (AH 46, AH 54 - 56) and a backhoe trench (T7). With an average depth of 1.4 m of overburden and assuming a minimum thickness of 1.8 m, the area could produce 1,800,000 cu. m. of gravel.

The calcrete gravels are weathered at the top of the deposit producing a silty gravel with low strength nodules. Below 2.0 m however a less weathered material of higher strength is encountered with 30 - 40% of the gravel fraction being of medium strength or stronger.

Overburden consists of loose to medium dense sand grading into the silty weathered calcrete. Depths of overburden are considerably increased over low dunes (AH 54).

AREA 'E' - DISTANCE 80 KILOMETERS

A very gently undulating sandy terrain dominated by a spinifex and scattered eucalypt vegetation.

Area E is located on the track at 80 km and is indicated on Fig. 4. Details of the investigation programme and summary results are shown on Fig. 13.

An area of 80,000 sq. m. was proven to feasibility stage by one auger hole (AH 47) and two backhoe trenches (T8 and T9). With an average depth of 2.2 m of overburden and assuming a continuous gravel layer of 1.7 m minimum thickness, the area could produce 136,000 cu. m. of gravels.

The deposit is a silty gravel of medium to high strength nodular calcrete. There is little plasticity, as most of the fines are silts derived from the weathering of calcrete. The degree of weathering decreases with depth.

Overburden consists of loose to medium dense sand grading into silty sand above the gravel deposit. Thickness of sand overburden is uniform however depths to suitable gravel material may vary across the area.

AREA 'F' - DISTANCE 90 KILOMETERS

A flat terrain of spinifex and scattered eucalypt vegetation. Patches of medium grained surface gravels occur in this area and, increasingly so, to the east.

Area F is located 3.3 km east of the 90 km mark on the access track from Benaud Bore and is indicated on Fig. 4. Details of the investigation programme and summary results are shown on Fig. 14.

An area of 1 sq. km was proven to feasibility stage with 4 auger holes (AH 50 - 53) and one backhoe trench (T10). With an average depth of 0.9 m of overburden and assuming a continuous gravel layer of 1.9 m minimum thickness, this area could produce 1,900,000 cu. m. of gravelly material.

In general, the gravels are of medium to high strength weathered calcrete nodules with non-plastic sand and silt fines. In places, sandy surface gravels occur as medium to high strength nodular ironstone considered to be derived from the underlying calcrete.

Overburden is thin consisting of loose to medium dense aeolian sand.

AREA 'G' - DISTANCE 98 KILOMETERS

A low ridge of surface gravels, sparsely grassed and supporting isolated eucalypt trees, is distinguishable on aerial photos from more densely vegetated surrounds.

Area G is located 4.6 km from the 95 km mark of the access track on a bearing of 110° and is indicated on Fig. 4. Details of the investigation programme and summary results are shown on Fig. 15.

An area of 70,000 sq. m was proven to feasibility stage with one auger hole (AH 93) and two trenches (T11 and T12). With an average depth of 0.8 m of overburden and assuming a continuous layer of 2.6 m minimum thickness, this area could produce 1,820,000 cu. m. of gravelly material.

Surface and near surface sandy gravels are typically of medium to high strength nodular ironstone derived from high strength silty calcrete gravels at depth.

Overburden, where present, is of loose to dense aeolian sand. Approximate area of surface gravels is 10,500 sq. m. Further similar deposits may be present on a north-south strike along this low ridge.

AREA 'H' - DISTANCE 115 KILOMETERS

A flat terrain of spinifex and scattered eucalypt trees with no significant aerial photo pattern.

Area H is located 3.4 km on a bearing of 067° from 115 km on the access track and is indicated on Fig. 5. Details of the investigation programme and summary results are shown on Fig. 16.

An area of 570,000 sq. m. was proven to feasibility stage with 3 auger holes (AH 103 - 105) and one backhoe trench (T15). With an average depth of 1.4 m of overburden and assuming a continuous gravel layer of 2.2 m minimum thickness, this area could produce 1,254,000 cu. m. of gravelly material.

The gravel is high to very high strength nodular calcrete with a percentage of silty sand and minor plastic fines.

Overburden is of loose to medium dense aeolian sand.

AREA 'I' - DISTANCE 130 KILOMETERS

A gently undulating dune terrain with patchy wattle growth and regrowth and isolated eucalypt trees, this area shows no significant aerial photo pattern.

Area I is located at 130 km on the access track and is indicated on Fig. 5. The investigation programme and summary results are shown on Fig. 17.

An area of 200,000 sq. m. was proven to feasibility stage with 3 auger holes (AH 113 - 115) and one backhoe trench (T14). With an average depth of 3.1 m of overburden and assuming a minimum gravel thickness of 1.2 m, this area could produce 240,000 cu. m. of gravel.

The stratigraphy appears consistent across the area with a surface layer of aeolian sand grading into a gravel of well rounded cemented sand nodules of low strength. Below this is a silty clay presumably developed from the weathering of high strength nodular calcrete gravels which occur deeper.

AREA 'J' - DISTANCE 137 KILOMETERS

A gently undulating dune terrain with patchy wattle and scattered eucalypt trees, this area also shows no significant aerial photo pattern.

Area J is located at 137 km on the access track and is indicated on Fig. 6 while the investigation programme and summary results are shown on Fig. 18. . This is the most southerly intersection of calcrete gravels encountered during the investigation programme.

An area of 200,000 sq. m. was proven to feasibility stage with one auger hole (AH 117) and two trenches (T16 and T17). With an average depth of 1.0 m of overburden and assuming a minimum gravel thickness of 2.0 m this area could produce 400,000 cu. m. of gravelly material.

Beneath a layer of aeolian sand are nodular calcrete gravels of high strength, well graded and containing a high proportion of silty and low plastic fines.

AREA 'K' - DISTANCE 172 KILOMETERS

A distinctive trough between outcropping rock, the area supports stunted wattle and eucalypt and open grass with surface gravels. Surrounding terrain is sandy with tall wattle and eucalypt.

Area K is located 6 km west from the access track along the track towards the Trig. Station and is indicated on Fig. 7.

An area of 70,000 sq. m. of surface gravels was proven to feasibility stage with one backhoe trench (T20). A depth of 2 m of gravel was proven showing this area could produce up to 140,000 cu. m. of material.

The gravels are typically a mixture of colluvial pisolitic laterite gravels and angular quartzite cobbles of low to high strength.

Nearby rocky ridges demonstrate the abundance of in situ laterite and residual gravels, particularly on lower slopes. However, the natural sorting and mixing found in colluvial deposits make such areas better prospects for suitable gravels.

AREA 'L' - DISTANCE 177 KILOMETERS

Low rocky ridges and laterite rises covered by spinifex and grass with scattered eucalypt trees. The area forms two distinctive aerial photo patterns with a sharp boundary separating the Gum Ridge Formation and the Helen Springs Volcanics.

Located 1.8 km from 177 km on bearing 068^{o} the area is shown on Fig. 7. A surface extent in excess of 2 sq. km was observed and proven to feasibility stage with three auger holes (AH 155 - 157) A depth of 0.5 m was drilled to refusal indicating this area could produce in excess of 1,000,000 cu. m. With deep ripping this volume could be greatly increased.

The gravel is of high strength material of either lateritic or residual origin with low percentages of sandy fines with little plasticity. Pisolitic laterites appear to have developed in the Helen Springs Volcanics (AH 157) while angular chert, quartzite and ironstone gravels occur on the Gum Ridge Formation (Ah 155 - 156). Some reworking of the gravels is expected and colluvial deposits are likely to occur between the low gravelly rises.

AREA 'M' - DISTANCE 192.5 KILOMETERS

A low rise of surface gravels with spinifex and isolated eucalypts, the area was developed to feasibility stage with three auger holes 250 m apart (AH145 - 147). The area is shown on Fig. 7 and extends for in excess of 2 sq. km. With laterite gravels from the surface to 1.5 m, this area could provide in excess of 3,000,000 cu. m. of gravelly material.

The gravels, from the surface, are medium to high strength silty laterites with minor low plasticity fines.

AREA 'N' - DISTANCE 225 KILOMETERS

An extensive deposit of surface rocky gravels occurs along the track approaching a bore and black soil plains. The area was proven to feasibility stage with one auger hole (AH 162) and one trench (T27).

In excess of 2 sq. km and with a depth of 1.5 m the area could provide more than 3,000,000 cu. m. of gravelly material. The area is shown in Fig. 8.

The gravels consist of residual cherts and ironstone particles of high strength with a percentage of sand with minor plastic fines. Some larger cobbles are present.

AREA 'O' - DISTANCE 238 KILOMETERS

A low gravelly rise covered by wattle and spinifex forming a distinctive aerial photo pattern.

Area O is located predominantly east of distance 236 to 240 km flanking the Short Range and is indicated in Fig. 8.

An area in excess of 2.0 sq. km was noted on the ground and can be seen from aerial photos.

The area was proven to feasibility stage with two trenches (T25-26) and one auger hole (AH 133). . With a maximum intersection of 2 m from the surface, the area could produce in excess of 4,000,000 cu. m. of lateritic gravels.

The deposit grades from loose sandy gravels to a cemented laterite gravel which breaks out with difficulty. Break-down of sandy horizons produces a fine fraction of low plasticity.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The results of the investigation demonstrate the general availability of high strength gravels within the corridor of study.

Deep, subsurface, calcrete gravels are available as far south as the 14 km distance. South of this and extending to the windward toe of the frontal dune at 75 km, a thick deposit of aeolian sand provides no prospect of suitable deposits of gravelly material.

South of the frontal dune, apparently continuous shallow subsurface and isolated surface calcrete occurs to 140 km. The degree of weathering of the calcretes is variable across the area and hence quality may be patchy. However, results indicated that deposits of high strength gravels were generally shallower in the eastern section of the corridor, bordering Lake Woods.

Beyond the calcretes to the Trig. Station at 172 km, a blanket of dune sand covers residual gravels at uneconomic depths.

Numerous laterite and residual gravels occur south from the Trig. Station and, in places, colluvial deposits of naturally mixed sand and gravel are available.

One section of thick dune sand occurs between 195 and 210 km, however surrounding surface deposits of gravel are abundant.

The quality of gravelly deposits varies throughout the project area both in particle gradings and strength as well as origin and composition.

The northern calcretes and those south of the frontal dune appear to be ancient deposits beneath a layer of aeolian sand and are presently undergoing degradation by chemical weathering. The high degree of weathering has reduced the particle strength and increased the percentage of fines in the upper layer of all calcrete deposits. Break down of weathered particles by wetting and mechanical impact was noted during testing. Less weathered calcretes develop gravels with high strength, coarse grained particles and low percent fines. Mixing of the entire calcrete strata should, in general, produce a graded gravel with low plastic fines which could be suitable as a protective select-fill.

The southern laterite and residual gravels are thin but occur extensively on the surface. They consist of medium to very high strength particles ranging from fine gravels to cobbles. Some breakdown of sandy laterites was noted during testing but plasticity and linear shrinkage are generally low (Lab. No. 158 and 160).

Deep ripping within these deposits will greatly increase the available volume and would be likely to produce gravels of increased particle strength but reduced fines.

The surface sandy material which is ubiquitous throughout the project area is a medium to fine grained, non plastic sand easilly worked and compacted. Plasticity generally increases with depth however, and below 1.5 m is a clay sand which has a moderately high shrinkage and may be difficult to work due to its sticky nature.

Except in the case of dune sands, the loose surface material was generally thin being underlain by medium dense to dense sands with considerable bearing capacity. Dune sands were noted to be very loose to medium dense where encountered.

Further investigations should attempt to more clearly define the physical characteristics of the various gravel types revealed by this study. In particular attempts could be made to test strata mixtures to obtain an optimal combination for the various stratigraphic sequences. The clayey sands may need to be mixed with silty surface sands and the upper weathered calcretes with deeper sections of the deposits in order to obtain materials which best satisfy design and construction specifications.

Borrow areas could be sampled in greater detail to more clearly define quantities, and variations in overburden depth. This is particularly so for the calcretes south of the dune where low sand dunes and a variable degree of weathering combine with an apparent thinning of overburden to the east to give scope for optimizing the economic recovery of gravel from that area by more detailed investigations.

The investigation has highlighted the value of using a bucket-type excavator in support of a scout augering programme to allow an appreciation of the in situ nature of the deposits. Auger samples

were sometimes proven unrepresentative of the in situ material and at times were unable to penetrate the upper surface of the calcrete gravels. The excavator trenches also gave an appreciation of the break-out effort required during excavation and of the workability of the excavated material.

REFERENCES

TENNANT CREEK, Explanatory notes, 1:250,000
Geological Series, B.M.R., 1978.

NEWCASTLE WATERS, Explanatory notes, 1:250,000
Geological Series, B.M.R. 1969.

SOUTH LAKE WOODS, Explanatory notes, 1:250,000
Geological Series, B.M.R.

MULES, G.J., Katherine - Tennant Creek Terrain
Appraisal, 1982.

SOILTECH, Report on High Strength Embankment Material for
Possible Railway Routes West of Lake Woods,
Northern Territory, 1982.

81, Elder Street,
PO Box 3370

W.S. 1

CENTRAL ENGINEERING SERVICES

51 Railway Terrace.
Alice Springs N.T.
ph. 525755
524092

REPORT OF FIELD DENSITY TEST RESULTS

TO: Dept. of Mines & Energy

REPORT No: 820071

ATTENTION: R. Hindrichs

1. In accordance with your request dated signed by Field Density tests have been carried out in accordance with AS1289 E3.1 using the sand replacement method & sand cone apparatus. The density sand used passed 1.18mm and was retained on 600 µm sieves. Compaction testing was done to AS1289 E1.1/E2.1. Dry density ratio was calculated to AS1289 E4.1.

2. The following information was supplied in connection with the samples.

CONTRACT NO: 81/124
CONTRACTOR : Central Engineering
FEATURE: Materials Investigation
SAMPLED BY: D.D. & G.M

PROJECT: Lake Woods Corridor
LOCATION: a sketch is/is not attached
DIAMETER OF HOLES: (mm)
DATE SAMPLED:

3. The test results and details of locations are shown below.

Laboratory Reference No. CE82	157	158	159	160				
Project Reference No.								
Chainage								
Offset from centre-line (m)								
Material type (S) sub grade (B) base course (F) fill								
Position from surface (mm)								
~~Standard~~/Modified Maximum Dry Density (P_d) (t/m³)	2.36	1.77	1.98	2.14				
~~Standard~~/Modified Optimum Moisture Content (w_o) (%)	8.0	3.0	12.0	8.0				
Field Dry Density (P_f) (t/m³)								
Moisture Content in Laboratory (w_f) (%)								
Moisture Variation (w_v) (%)								
Dry Density Ratio (R_D) (%)								

REMARKS

Prepared by

Checked by

Distribution

1. Lab. File
2.
3.

for O.I.C. Materials Laboratory

2/8/1982

81, Elder Street,
PO Box 3370

W.S. 3

CENTRAL ENGINEERING SERVICES

51 Railway Terrace
Alice Springs N.T.
ph. 525755
524092

REPORT OF TEST RESULTS ON SOILS

To: Dept. of Mines & Energy

Report No.: 820071

Attention: R. Hinrichs

1. In accordance with your request dated and signed by the following tests have been carried out to the methods specified by AS 1289-1977

2. The following information was supplied in connection with the samples

CONTRACT NO.: 81/124
CONTRACTOR : Central Engineering
FEATURE: Materials Investigation
SAMPLED BY: D.D. & G.M.

PROJECT: Lake Woods Corridor
LOCATION: Various
MATERIAL TYPE: Various
DATE SAMPLED:

3. Test results are set out below.

Laboratory Reference No. C.E.82		157	158	159	160		
Suppliers No.		T2	AH156	T3	AH133		
Chainage / Depth	m	1.5-3	0-0.5	1.6-2.8	0.2-1.8		
Depth / Chainage	Km	13	175	13	137		
Mechanical Analysis Percentage Passing A.S.Sieve	75.0mm						
	63.0mm	100	100				
	37.5mm	97	99	100			
	26.5mm	92	94	97			
	19.0mm	83	83	94	100		
	13.2mm	68	68	91	95		
	9.50mm	55	57	89	87		
	6.70mm	43	50	87	75		
	4.75mm	36	45	85	65		
	2.36mm	29	38	80	54		
	1.18mm	26	36	77	48		
	600µm	24	36	74	42		
	425µm	22	36	72	39		
	300µm	20	34	67	34		
	212µm						
	150µm	15	23	42	23		
	75µm	11	13	27	11		
Dust Ratio (75/425µm)%		48	37	38	29		
*Liquid Limit (Standard/Subsidiary Method)		29	NO	31	NO		
*Plastic Limit		15	NO	13	NO		
*Plasticity Index		14	NP	18	NP		
*Linear Shrinkage (% on 250mm mould)		7.0	0.5	8.0	1.5		
Determination of Soil Particle Density Passing/Retained 2.36mm/Combined							
Unified Soils Classification		GW-GC	GM	SC	SW-SM		

REMARKS: All samples wet/dry sieved

*Air/Oven dried at 45°C

Prepared by: K.McP.
Checked by:

K. McPherson
for OIC Materials Laboratory
2/8/1982

Distribution:
1 Lab File
2
3

81, Elder Street,
PO Box 3370

W.S. 3

CENTRAL ENGINEERING SERVICES

~~51 Railway Terrace~~
Alice Springs N.T.
ph. ~~xxxxxx~~ 524092

REPORT OF TEST RESULTS ON SOILS

To: Dept. of Mines & Energy

Report No: 820071

Attention: R. Hinrichs

1. In accordance with your request dated and signed by the following tests have been carried out to the methods specified by AS 1289-1977

2. The following information was supplied in connection with the samples

CONTRACT NO.: 81/124
CONTRACTOR: Central Engineering
FEATURE: Materials Investigation
SAMPLED BY: D.D. & G.M.

PROJECT: Lake Woods Corridor
LOCATION: Various
MATERIAL TYPE: Various Sand, Sand/clay
DATE SAMPLED:

3. Test results are set out below.

Laboratory Reference No.	C.E.82	161	162	163	164		
Suppliers No.		T1	T11	T6	T9		
Chainage	km	7.2	98	75	80		
Depth	m	1.6-3	0.3-1.5	0-0.3	0.3-1.5		
Mechanical Analysis Percentage Passing A.S.Sieve	75·0mm						
	63·0mm						
	37·5mm						
	26·5mm						
	19·0mm						
	13·2mm						
	9·50mm						
	6·70mm						
	4·75mm						
	2·36mm		100		100		
	1·18mm	100	99		99		
	600µm	99	90	100	97		
	425µm	98	80	98	92		
	300µm	92	69	91	82		
	212µm						
	150µm	57	45	47	51		
	75µm	39	25	34	28		
Dust Ratio (75/425µm)%		40	31	35	30		
*Liquid Limit (Standard/Subsidiary Method)		30	27	N.O.	23		
*Plastic Limit		10	11	N.O.	10		
*Plasticity Index		20	16	N.P.	13		
*Linear Shrinkage (% on 250mm mould)		9.0	8.0	0.5	5.5		
Determination of Soil Particle Density Passing/Retained 2·36mm/Combined							

REMARKS: All samples wet/dry sieved

*Air/Oven dried at 105°C

Prepared by: K. McP.
Checked by:

K. McPhersa
for OIC Materials Laboratory
2/9/1982

Distribution:
1 Lab File
2
3

81, Elder Street,
PO Box 3570

WS.3

CENTRAL ENGINEERING SERVICES

51 Railway Terrace
Alice Springs N.T.
ph. 525755
524092

REPORT OF TEST RESULTS ON SOILS

To: Dept. of Mines & Energy

Report No: [illegible]

Attention: R. Hinrichs

1. In accordance with your request dated and signed by the following tests have been carried out to the methods specified by AS 1289-1977

2. The following information was supplied in connection with the samples:

CONTRACT NO.: 81/124
PROJECT: Lake Woods Corridor
CONTRACTOR: Central Engineering
LOCATION: Various
FEATURE: Materials Investigation
MATERIAL TYPE: Various Sand, Sand/cla
SAMPLED BY: D.D. & G.M.
DATE SAMPLED:

3. Test results are set out below.

Laboratory Reference No.	C.E.82	161	162	163	164		
Suppliers No.		T1	T11	T6	T9		
Chainage	km	7.2	98	75	80		
Depth	m	1.6-3	0.3-1.	50-0.3	0.3-1.5		
Mechanical Analysis Percentage Passing A.S.Sieve	75·0mm						
	63·0mm						
	37·5mm						
	26·5mm						
	19·0mm						
	13·2mm						
	9·50mm						
	6·70mm						
	4·75mm						
	2·36mm		100		100		
	1·18mm	100	99		99		
	600µm	99	90	100	97		
	425µm	98	80	98	92		
	300µm	92	69	91	82		
	212µm						
	150µm	57	45	47	51		
	75µm	39	25	34	28		
Dust Ratio (75/425µm)%		40	31	35	30		
*Liquid Limit (Standard/Subsidiary Method)		30	27	N.O.	23		
*Plastic Limit		10	11	N.O.	10		
*Plasticity Index		20	16	N.P.	13		
*Linear Shrinkage (% on 250mm mould)		9.0	8.0	0.5	5.5		
Determination of Soil Particle Density Passing/Retained 2·36mm/Combined							

REMARKS: All samples wet/dry sieved

*Air/Oven dried at XX°C

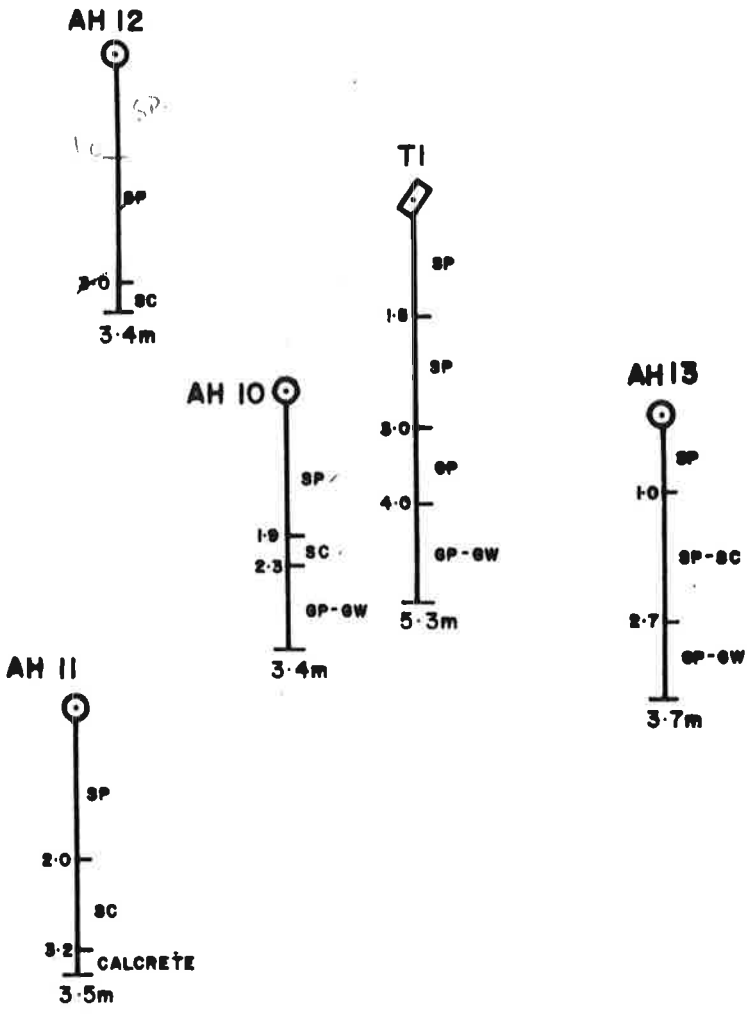
Prepared by: K. McP.
Checked by:

K. McPherson
for OIC Materials Laboratory
2/9/1982

Distribution:
1 Lab File
2
3

AREA = 1625000m^2
AVERAGE DEPTH = 3·0m
MINIMUM THICKNESS = 2·0m
VOLUME = 3 250000m^3

LOCATION = FROM 7·2 Km ON TRACK, BEARING 274° FOR 2·4 Km



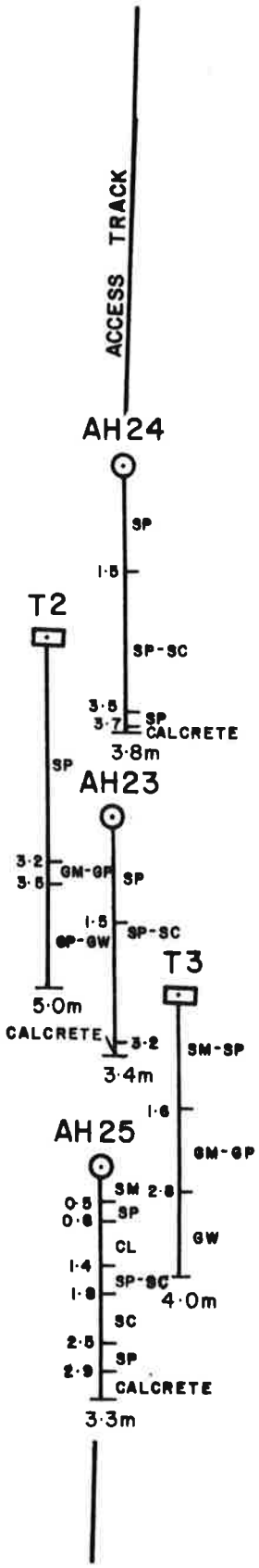
AREA 'A'

SCALE 1:10000

FIG 9

AREA = 600 000 m^2
AVERAGE DEPTH = 2·9m
MINIMUM THICKNESS = 2·4m
VOLUME = 1 440 000 m^3

LOCATION = 13 Km ON TRACK

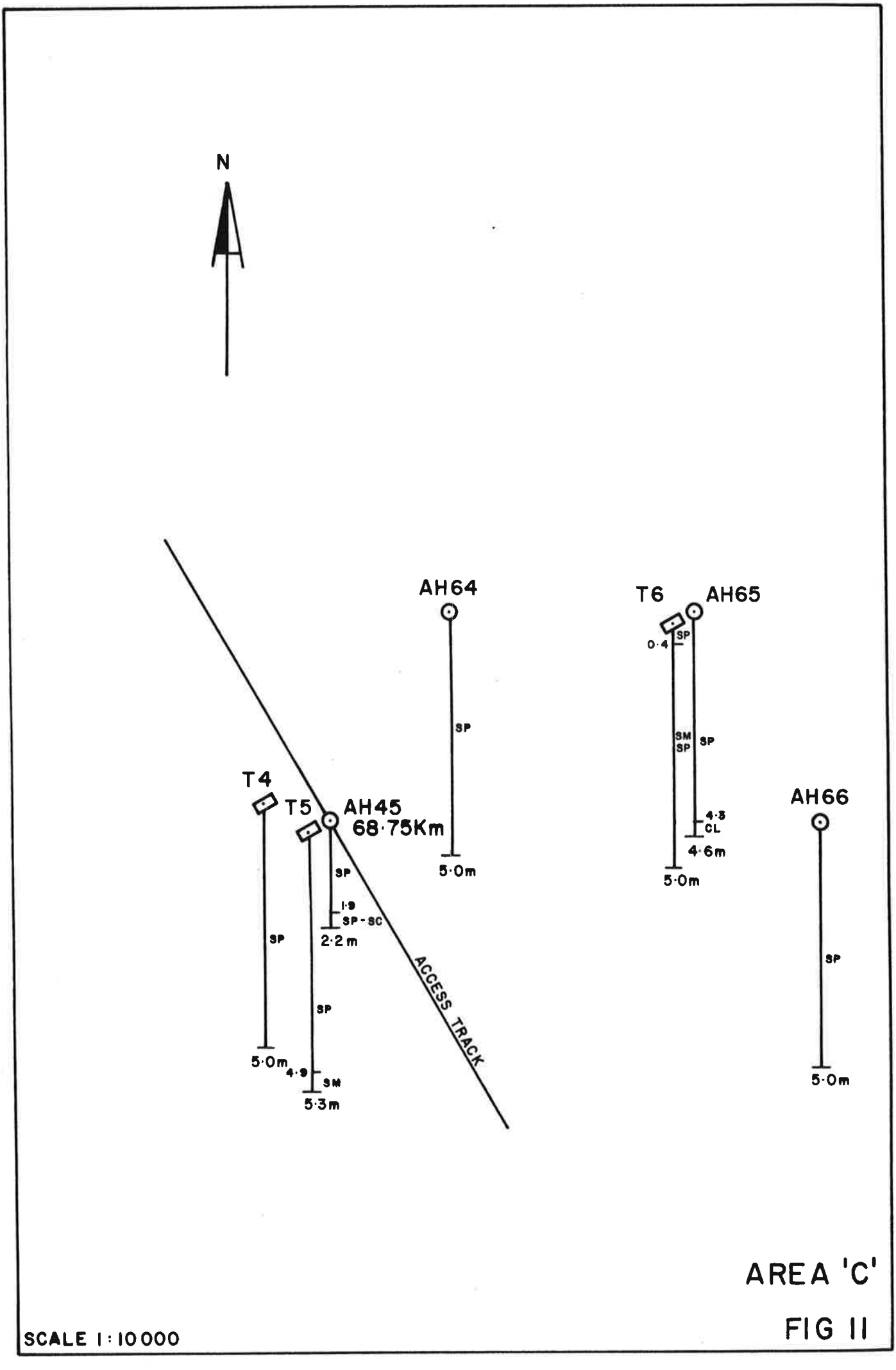


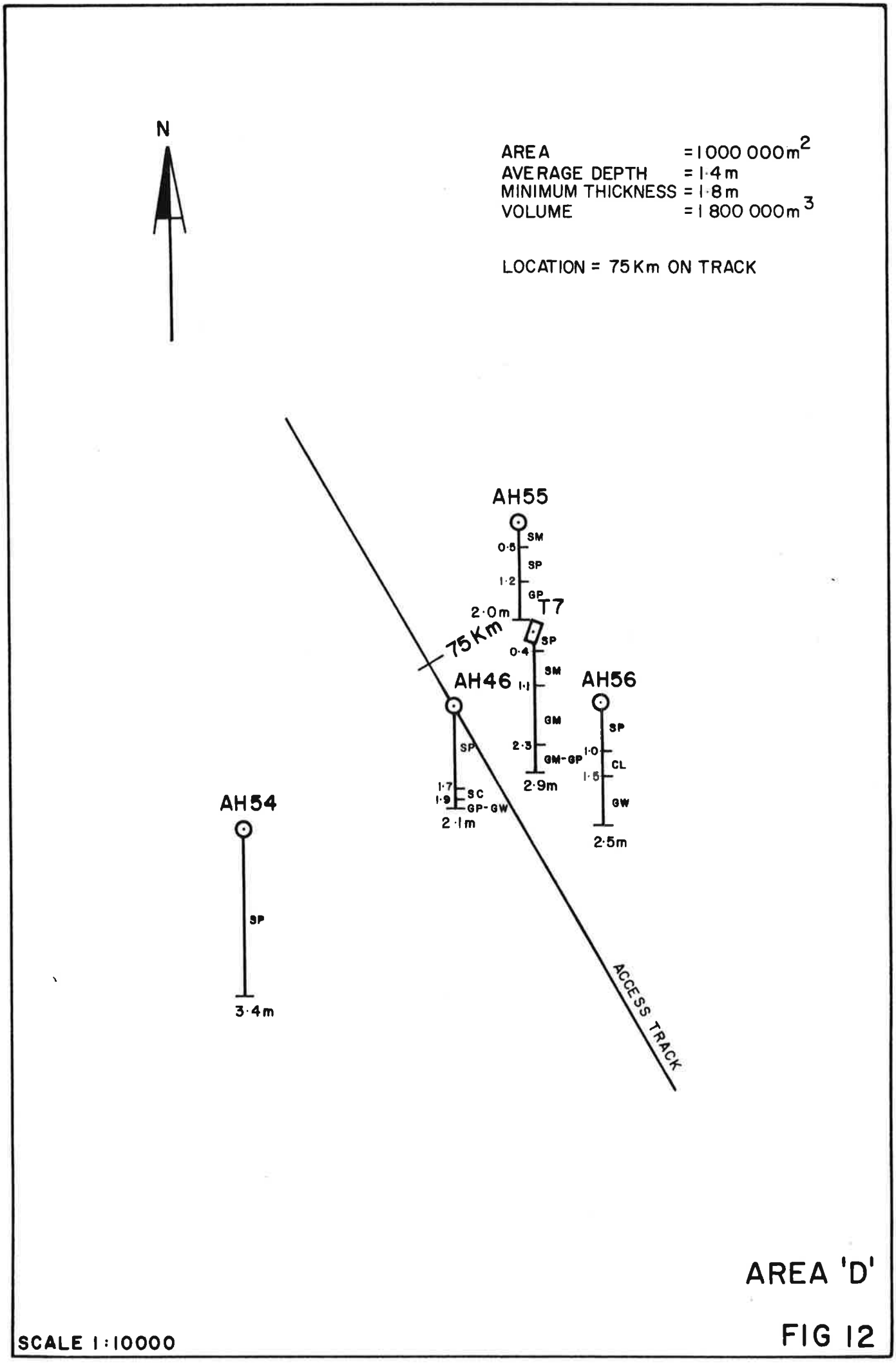
N

AREA 'B'

FIG 10

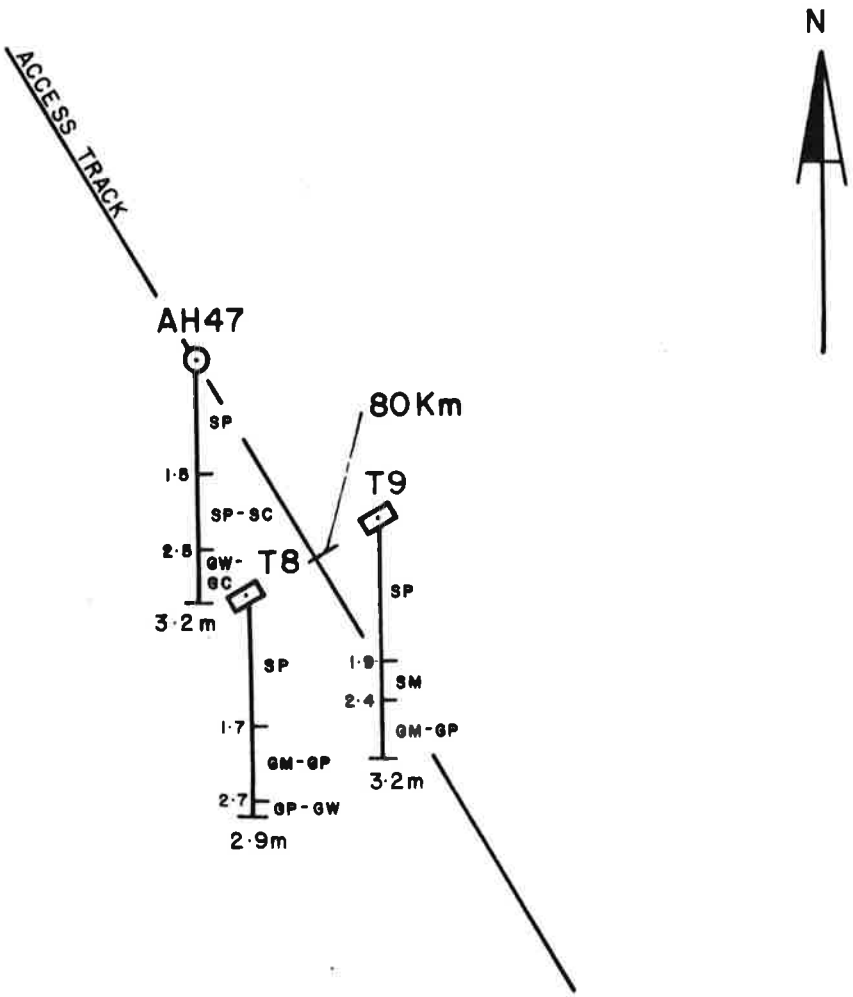
SCALE 1:10000


N
AH64
SP
5·0m
T6
AH65
0·4
SP
SM
SP
SP
4·3
CL
4·6m
5·0m
AH66
SP
5·0m
T4
T5
AH45
68·75Km
SP
1·9
SP-SC
2·2m
SP
5·0m
SP
4·9
SM
5·3m
ACCESS TRACK
AREA 'C'
FIG II
SCALE 1:10000


N
AREA = 1 000 000m²
AVERAGE DEPTH = 1·4m
MINIMUM THICKNESS = 1·8m
VOLUME = 1 800 000m³
LOCATION = 75Km ON TRACK
AH55
SM
0·8
SP
1·2
GP
2·0m
T7
SP
0·4
SM
1·1
GM
2·3
GM-GP
2·9m
75Km
AH46
SP
1·7
1·9
SC
GP-GW
2·1m
AH56
SP
1·0
CL
1·5
GW
2·5m
AH54
SP
3·4m
ACCESS TRACK
AREA 'D'
SCALE 1:10000
FIG 12

AREA = 80 000m^2
AVERAGE DEPTH = 2·2 m
MINIMUM THICKNESS = 1·7m
VOLUME = 136 000m^3

LOCATION = 80 Km ON TRACK



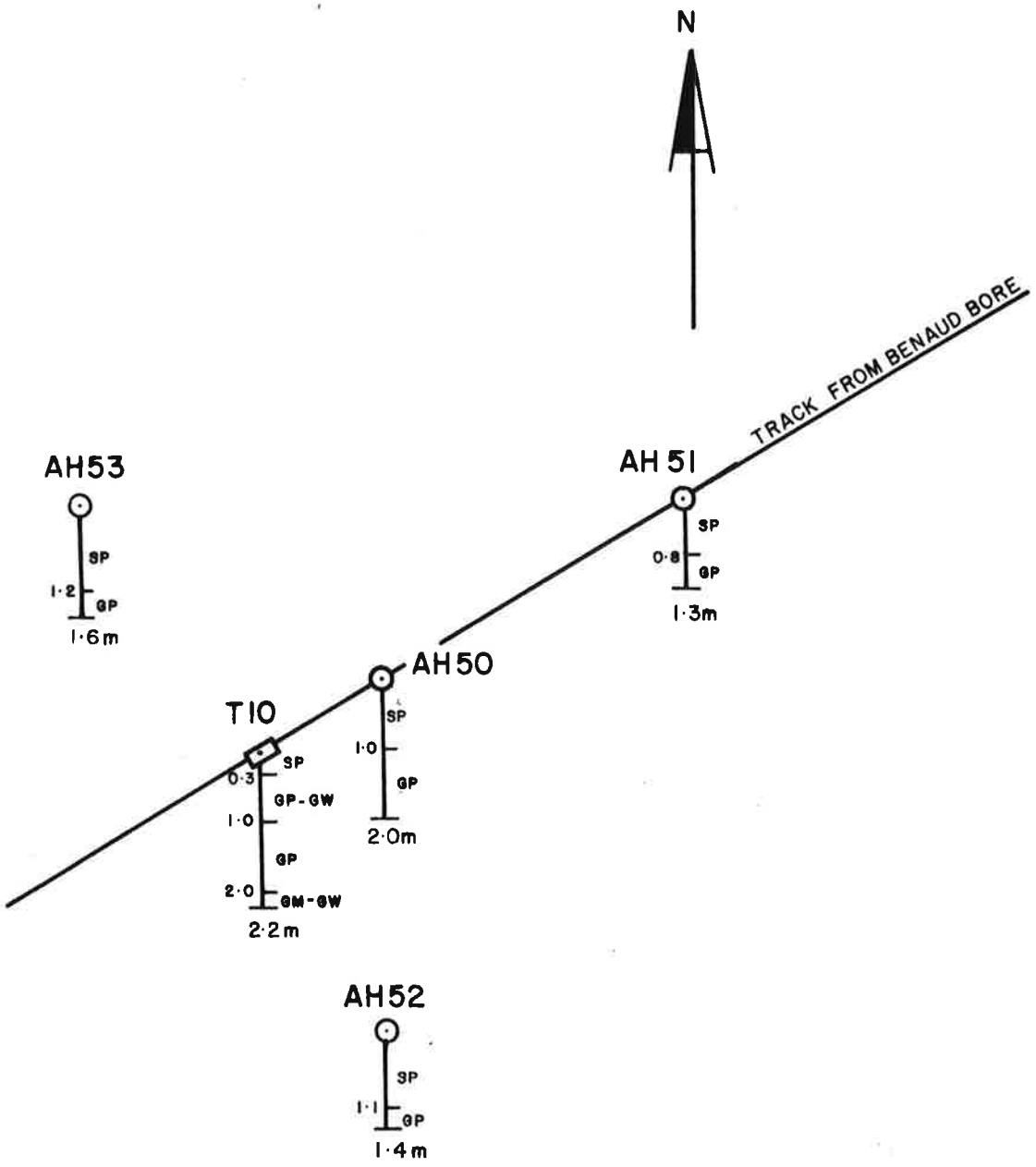
AREA 'E'

FIG 13

SCALE 1:10000

AREA = 1000 000m^2
AVERAGE DEPTH = 0·9m
MINIMUM THICKNESS = 1·9m
VOLUME = 1900 000m^3

LOCATION = 3·3Km EAST OF 90Km
ON TRACK TO BENAUD BORE



AREA 'F'

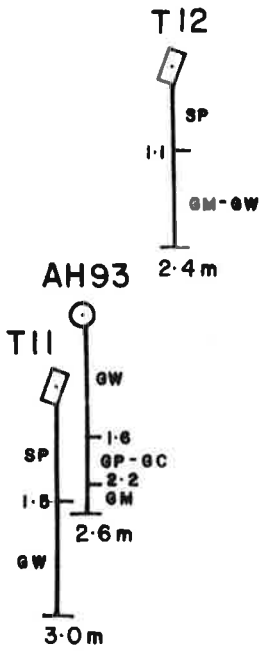
SCALE 1:10000

FIG 14

AREA = 70 000 m^2
AVERAGE DEPTH = 0·8m
MINIMUM THICKNESS = 2·6m
VOLUME = 182 000 m^3

LOCATION = FROM 95 Km ON MAIN TRACK
BEARING 110° FOR 4·6 Km

N



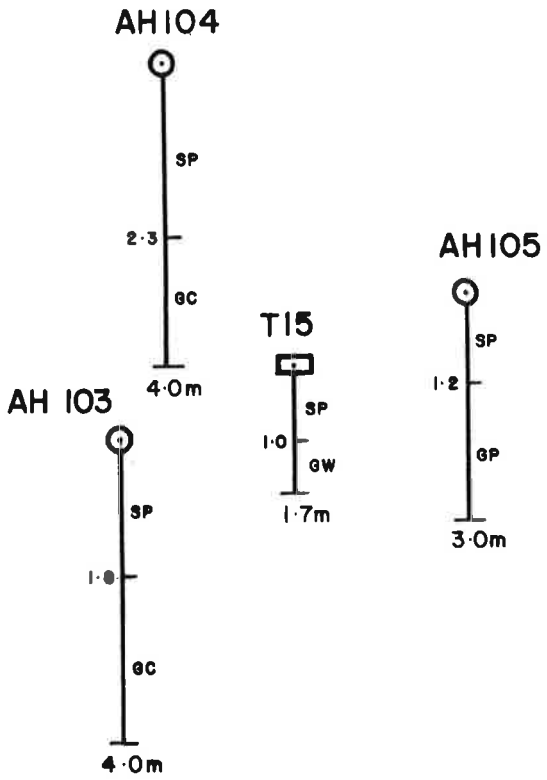
AREA 'G'

SCALE 1 : 10000

FIG 15

AREA = 570 000 m^2
AVERAGE DEPTH = 1·4 m
MINIMUM THICKNESS = 2·2 m
VOLUME = 1 254 000 m^3

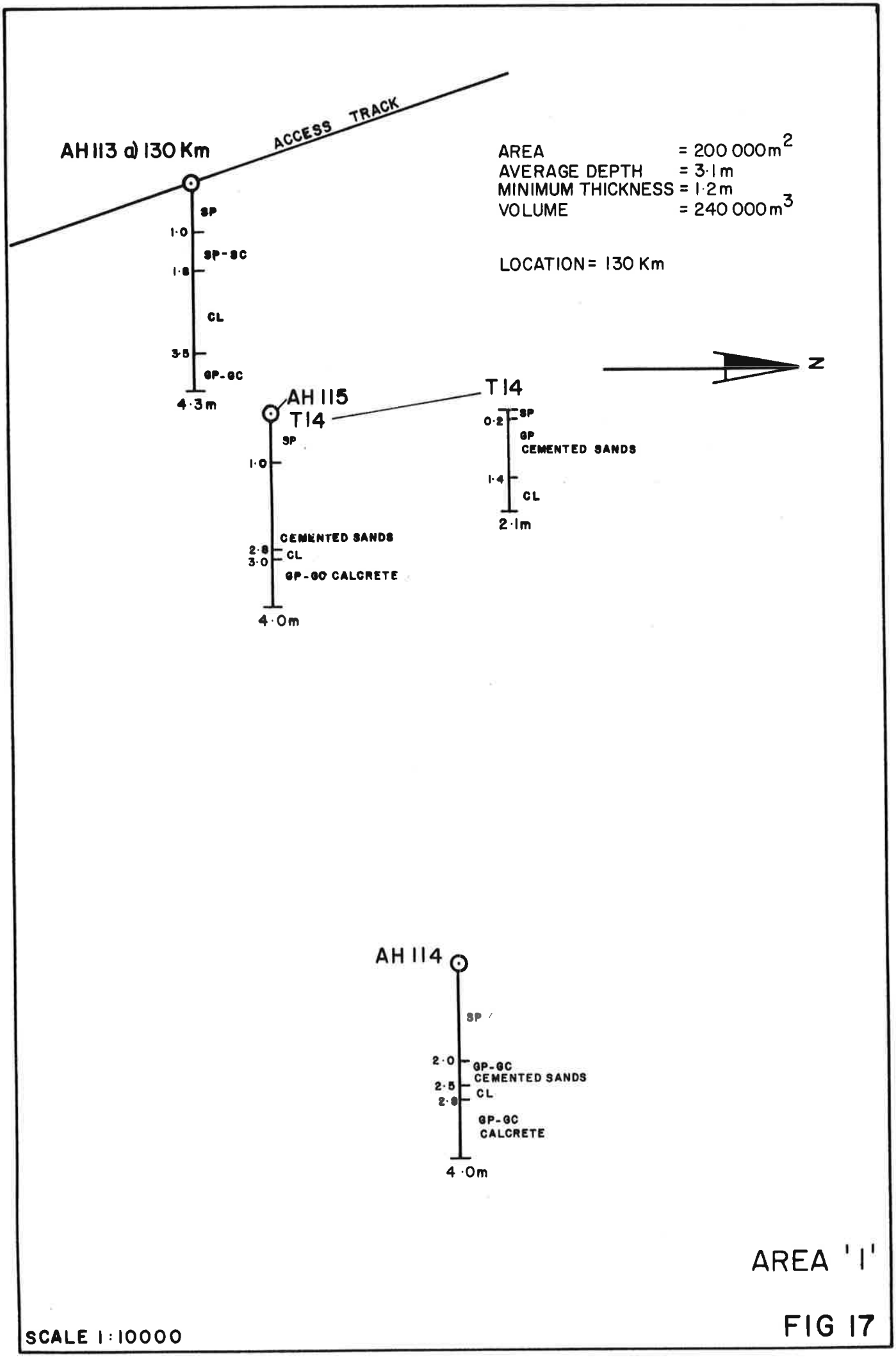
LOCATION = FROM 115 Km ON TRACK
BEARING 67° FOR 3·4 Km



AREA 'H'

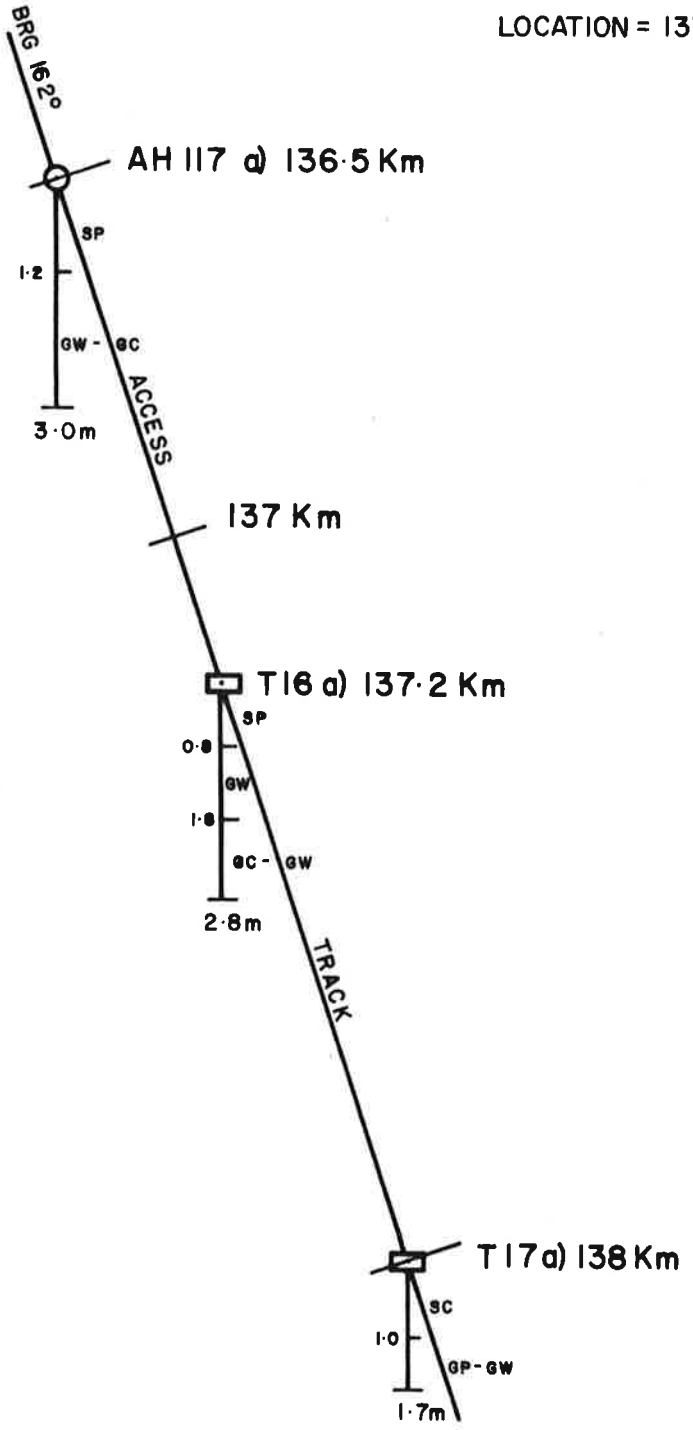
SCALE 1:10000

FIG 16


AH113 a) 130 Km
ACCESS TRACK
SP
1·0
SP-SC
1·8
CL
3·5
GP-GC
4·3m
AREA = 200 000m²
AVERAGE DEPTH = 3·1m
MINIMUM THICKNESS = 1·2m
VOLUME = 240 000m³
LOCATION = 130 Km
N
AH 115
T14
SP
1·0
CEMENTED SANDS
2·8
CL
3·0
GP-GC CALCRETE
4·0m
T14
0·2
SP
GP
CEMENTED SANDS
1·4
CL
2·1m
AH 114
SP
2·0
GP-GC
CEMENTED SANDS
2·5
CL
2·8
GP-GC
CALCRETE
4·0m
AREA 'I'
SCALE 1:10000
FIG 17

AREA = 200 000 m^2
AVERAGE DEPTH = 1·0m
MINIMUM THICKNESS = 2·0m
VOLUME = 400 000 m^3

LOCATION = 137 Km



AREA 'J'

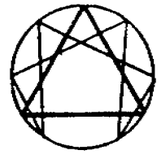
SCALE 1 : 10000

FIG 18

DETAILED MATERIALS INVESTIGATION FOR A RAILWAY CORRIDOR WEST OF LAKE WOODS, NORTHERN TERRITORY.

VOLUME 2

CENTRAL ENGINEERING SERVICES
81 ELDER STREET,
P.O. BOX 3370, ALICE SPRINGS, N.T.
Phone 52 4092



ENGINEERING GEOLOGIST
GREG MULES

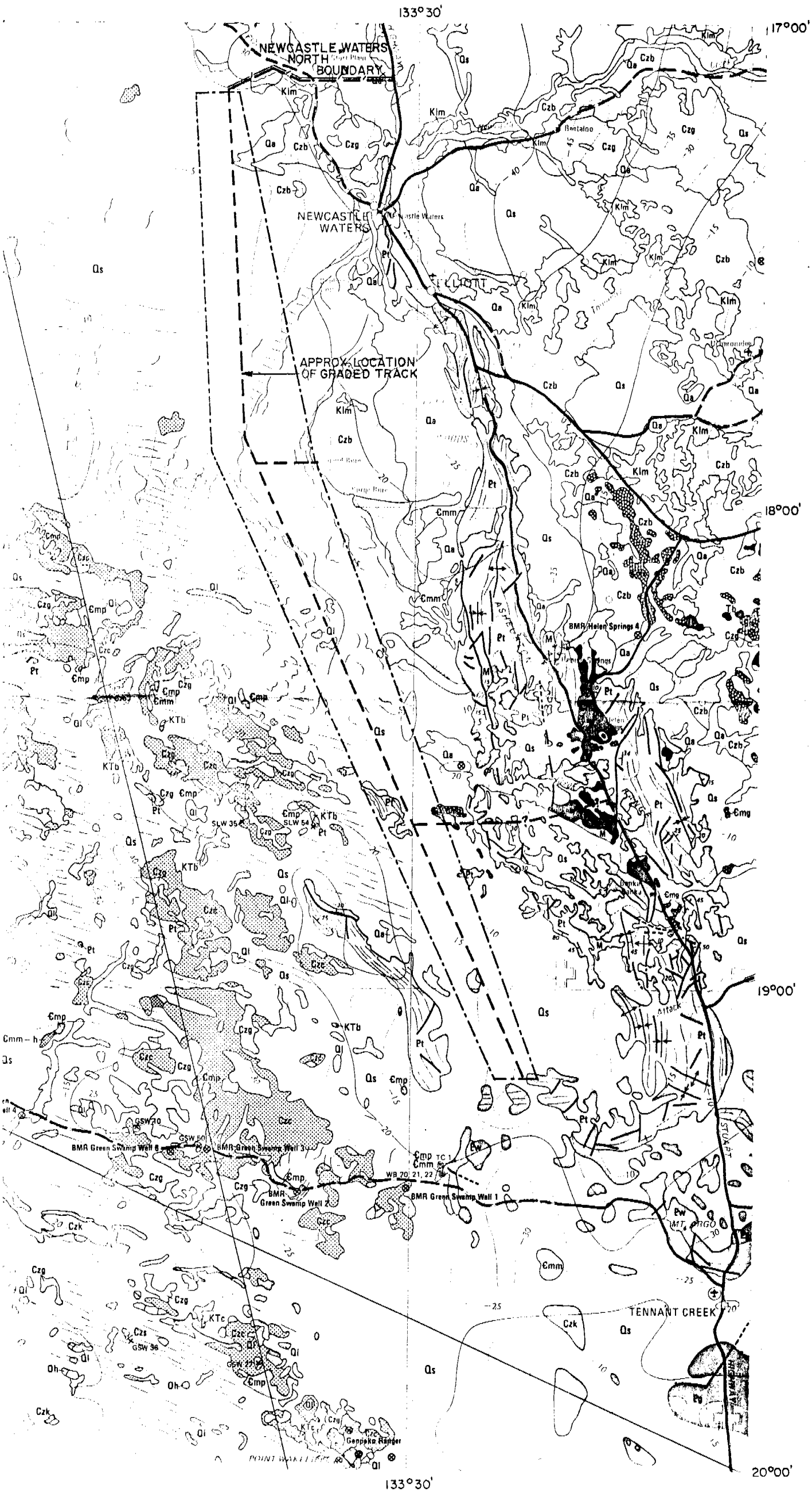
FOR
DEPARTMENT OF MINES AND ENERGY.

Australian National

ALICE SPRINGS-DARWIN RAILWAY PROJECT

Proposed Materials Investigation Corridor and Road Location

LAKE WOODS AREA



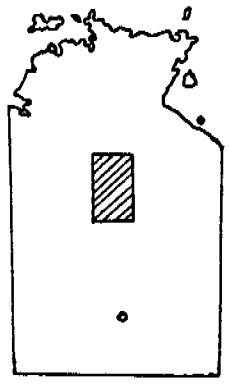
SCALE 1:1 000 000

N

LEGEND

Qa	*Sand, silt, clay, gravel: alluvial*
Qs	*Sand; minor silt, clay: mainly aeolian*
Ql	*Sand, silt, clay, evaporites: lacustrine*
Czb	*Sand, silt, clay: black soil*
Czc	*Sand, silt, clay, gravel: colluvial*
Czg	*Gravel, sand, silt, clay; residual gravel generally developed over laterite crust; some laterite outcrops*
Czk	*Limestone, dolomite, sandy in parts, chalcedonic concretions: calcrete*
M	*Undivided sandstone, siltstone; rare cobble and boulder conglomerate*
Klm	*Saccharoidal sandstone, pebble and cobble conglomerate, claystone, siltstone, medium sandstone, micaceous siltstone and claystone: probable lacustrine and marine*
Cmp	*Undivided Cmp_1, Cmp_2*
Cmp_2	*Fine, angular, well sorted sandstone, red-brown, laminated claystone*
Cmp_1	*White calcareous claystone, silty in parts*
	Solid geology only
	Dolomitic to slightly dolomitic red brown laminated siltstone, micaceous in parts, finely crystalline dolomite, fine to very fine sandstone, dolomitic in parts; rare calcareous siltstone, claystone
	Dolomite; rare sandstone, siltstone
Cmm	*Limestone, partly dolomitic, partly stromatolitic, calcareous mudstone*
	Sandstone, dolomitic siltstone, dolomite, dolomitic limestone with chert nodules
	Limestone, dolomitic limestone, siltstone
	Fossiliferous siltstone, chert, silicified limestone; some sandstone, leached calcareous sandstone
€la	*Tholeiitic basalt; minor agglomerate, sandstone, siltstone, chert*
	Tholeiitic basalt; minor sandstone, breccia
Pt	*Sandstone; minor siltstone, pebble conglomerate*
Pw	*Sedimentary rocks, tuff, acid volcanics, intrusive rocks*
Pg	*Sedimentary rocks, metamorphosed in part, acid and basic vo*

MAINROAD
TRACK
INVESTIGATION AREA BOUNDARY
FENCE



Geology after BMR "WISO BASIN" 1:1 000 000

NORHERN TERRITORY
DEPARTMENT OF MINES & ENERGY

Eng. Geologist: R. HINRICHS
Drawn: A.v.O.
Date: 6·4·1982

Drg. No. **ASR 01/011**

FIG. 1

NORTHERN TERRITORY GEOLOGICAL SURVEY
CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 1
Page of

PROJECT ALICE SPRINGS-DARWIN RAILWAY
FEATURE MATERIALS SEARCH
LOCATION WEST OF LAKE WOODS
HOLE SIZE 165mm TO: TO: TO:

COORDINATES X.....m. Y..see Fig.m.
SYSTEM

SURFACE ELEVATION.....m.
DIP
BEARING
DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL #	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown.		1 2 3 4 5		SAND, m.-f.gr., dry, non plastic	SP			
5.0m				END HOLE				

Excavation Method ..AUGER.....
Make.....
Type.....
Operator.....
Commenced.....
Completed.....

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
FrSt - Fresh, with limonite stained joints
Fr - Fresh

Soil Classification System: Unified.
(...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged Date
.....
Drawn .....
Checked.....

NORTHERN TERRITORY GEOLOGICAL SURVEY
CENTRAL ENGINEERING SERVICES

HOLE NO. AH 2

Page of

GEOLOGICAL LOG

PROJECT ALICE SPRINGS-DARWIN RAILWAY
FEATURE MATERIALS SEARCH
LOCATION WEST OF LAKE WOODS
HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X ..... m
Y See Fig. m.
SYSTEM .....

SURFACE ELEVATION ..... m.
DIP .....
BEARING .....
DATUM .....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING CW HW MW SW Fr	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange Brown		1 2		SAND, m.-f.gr., dry, non plastic	SP			
AEOLIAN SAND Red, Brown		4		SAND, m.-f.gr., dry, non plastic	SP			
4.5M		5		END HOLE				

Excavation Method AUGER
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified.
(....) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged Date
.....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY
CENTRAL ENGINEERING SERVICES

HOLE NO. AH 3

Page of

GEOLOGICAL LOG

PROJECT. DARWIN-ALICE SPRINGS RAILWAY
FEATURE. MATERIAL SEARCH
LOCATION. WEST OF LAKESWOOD.
HOLE SIZE ..... TO: ..... TO: ..... TO: .....

CO-ORDINATES X ..... m. Y ..... m.
SYSTEM .....

SURFACE ELEVATION ..... m.
DIP .....
BEARING .....
DATUM .....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING CW HW MW SW Fr St Fr	DEPTH metres	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange Brown				SAND, m.-f.gr., dry, non plastic	SP			
AEOLIAN Sand Red brown				SAND, m.-f.gr., moist, non plastic	SP			
AEOLIAN SAND Red Brown				Clayey sand, m.-f.gr., moist, low plasticity	SP-SC			
4.8M		5		END HOLE				

Excavation Method .AUGER.....
Make.....
Type.....
Operator.....
Commenced.....
Completed.....

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
FrSt - Fresh, with limonite stained joints
Fr - Fresh

@ Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged Date
.....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 4

Page of

PROJECT: DARWIN-ALICE SPRINGS RAILWAY

FEATURE: MATERIAL SEARCH

LOCATION: WEST OF LAKESWOOD.

CO-ORDINATES X.....m. Y.....m.

SYSTEM .....

HOLE SIZE .....TO:.....TO:.....TO:.....

SURFACE ELEVATION.....m.

DIP.....

BEARING.....

DATUM.....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr St, Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown				SAND, m.-f.gr., dry, non plastic	SP			
AEOLIAN SAND Red brown				SAND, m.-f.gr., dry, becoming moist, low plasticity	SP			
LATERITE Red brown		5		Sandy gravel, moist, 30% gravel, max. size 10mm low plasticity	GP-GC			
5 OM				END HOLE				

Excavation Method AUGER

Make.....

Type.....

Operator.....

Commenced.....

Completed.....

WEATHERING.

CW – Completely weathered

HW – Highly weathered

MW – Moderately weathered

SW – Slightly weathered

Fr St – Fresh, with limonite stained joints

Fr – Fresh

* Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged Date

.....

Drawn .....

Checked.....

NORTHERN TERRITORY GEOLOGICAL SURVEY
CENTRAL ENGINEERING SERVICES

HOLE NO. AH 5

Page of

GEOLOGICAL LOG

PROJECT DARWIN-ALICE SPRINGS
FEATURE MATERIALS SEARCH
LOCATION WEST OF LAKESWOOD
HOLE SIZE ..... TO: ..... TO: ..... TO: .....

CO-ORDINATES X ..... m
Y See plans m
SYSTEM .....

SURFACE ELEVATION ..... m
DIP .....
BEARING .....
DATUM .....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING CW HW MW SW Fr	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown				SAND m.-f.gr., dry, non plastic	SP			
AEOLIAN SAND Red Brown				SAND, m.-f.gr., dry, non plastic to low plasticity	SP			
5.0M		5		END HOLE				

Excavation Method AUGER
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified.
(...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY
CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 6

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL
FEATURE MATERIALS SEARCH
LOCATION WEST OF LAKE WOODS
HOLE SIZE ..... TO: ..... TO: ..... TO: .....

CO-ORDINATES X ..... m
Y See plan m
SYSTEM .....

SURFACE ELEVATION ..... m
DIP .....
BEARING .....
DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (Fr, Fr St, SW, MW, HW, CW)	DEPTH (metres)	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown					SAND, m.-f.gr., dry, non plastic	SP			
AEOLIAN SAND Red Brown					SAND, m.-f.gr., Moist, low plasticity	SP			
4.7M					END HOLE				
		5							

Excavation Method ..AUGER.....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
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Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH7

Page of

PROJECT DARWIN-ALICE SPRINGS RAILWAY

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKESWOOD

HOLE SIZE ..... TO: ..... TO: ..... TO: .....

CO-ORDINATES X ..... m. Y see plan m.

SYSTEM .....

SURFACE ELEVATION ..... m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING Fr. SlFr. MW HW CW	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown				SAND, m.-f.gr., dry becoming moist, non plastic	SP			
AEOLIAN SAND Red Brown				Clayey sand, m.-f.gr., moist, low plasticity	SC			
LATERITE Red Brown				Gravelly sand, m.-f.gr., 10% gravel max. size 7.5mm, low plasticity	SC			
5.0M		5		END HOLE				

Excavation Method AUGER

Make .....

Type .....

Operator .....

Commenced .....

Completed .....

WEATHERING.

CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified. ( ) means Laboratory Classification.

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NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 8

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PROJECT. DARWIN-ALICE SPRINGS RAILWAY

FEATURE. MATERIALS SEARCH

LOCATION WEST OF LAKESWOOD.

HOLE SIZE ..... TO: ..... TO: ..... TO: .....

CO-ORDINATES X ..... m. Y See Plan m.

SYSTEM .....

SURFACE ELEVATION ..... m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING CW HW MW SW Fr St Fr	DEPTH metres	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown					SAND, m.-f.gr., dry, non plastic	SP			
Ferruginous cement 4.2M		4							
					END HOLE				
		5							

Excavation Method ..AUGER.....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified.
( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
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NORTHERN TERRITORY GEOLOGICAL SURVEY
CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 9
Page of

PROJECT. DARWIN-ALICE SPRINGS RAILWAY
FEATURE. MATERIALS SEARCH.
LOCATION WEST OF LAKESWOOD.
HOLE SIZE..... TO:.....

CO-ORDINATES X.....m. Y. see plan m.
SYSTEM .....
TO:..... TO:.....

SURFACE ELEVATION.....m.
DIP.....
BEARING.....
DATUM.....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING C W H W M W S W F r S t F r	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown				SAND, m.-f.gr., dry, non plastic	SP			
AEOLIAN SAND Red brown		4		SAND, m.-f.gr., moist, low plasticity	SC			
Ferruginous cement 4.3M				END HOLE				
		5						

Excavation Method AUGER.....
Make.....
Type.....
Operator.....
Commenced.....
Completed.....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
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NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 10

Page of

PROJECT: DARWIN-ALICE SPRINGS RAILWAY
FEATURE: MATERIALS SEARCH
LOCATION: WEST OF LAKEWOODS
HOLE SIZE: TO: TO: TO:

CO-ORDINATES X .....m. Y see plan ...m.
SYSTEM

SURFACE ELEVATION .....m.
DIP
BEARING
DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr St, Fr)	DEPTH (metres)	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL (Date)
AEOLIAN SAND Orange brown		1			Sand, m.-f.gr., dry, non plastic	SP			
AEOLIAN SAND Red brown		2			Sand, m.-f.gr., dry, non plastic	SP			
AEOLIAN SAND Red brown					Clayey sand, m.-f.gr., moist, 10%, gravel max. size 10mm, low plasticity	SC			
CALCRETE GRAVEL Lt. brown-white		3			Silty gravel, max. size 25mm, low plasticity	GP-Gw			
3.4m					END HOLE				
		4							
		5							

Excavation Method
Make
Type
Operator
Commenced
Completed

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified.
(...) means Laboratory Classification.

ENGINEERING GEOLOGY.
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Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 11

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOODS

CO-ORDINATES X.....m. Y. see plans m.

SYSTEM .....

HOLE SIZE .....TO:.....TO:.....TO:.....

SURFACE ELEVATION.....m.

DIP.....

BEARING.....

DATUM.....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING Fr, FrSt, SW, MW, HW, CW	DEPTH metres	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown					Sand, m.-f.gr., dry, non plastic	SP			
AEOLIAN SAND Red brown					Sand, m-f.gr., moist, low plasticity	SC			
CALCRETE GRAVELS Red brown 3.5m					Clayey sand, m.-f.gr., Moist 15% gravel max size 10mm, low plasticity	SC			
					END HOLE				

Excavation Method .....
Make.....
Type.....
Operator.....
Commenced.....
Completed.....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified. (....) means Laboratory Classification.

ENGINEERING GEOLOGY.
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NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 12

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOODS

CO-ORDINATES X.....m. Y see plans..m.

SYSTEM.....

HOLE SIZE.....TO:.....TO:.....TO:.....

SURFACE ELEVATION.....m.

DIP.....

BEARING.....

DATUM.....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING CW HW MW SW Fr St Fr	DEPTH metres	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown				Sand, m,-f.gr.,dry, non plastic.	SP			
AEOLIAN SAND Red brown				CLAYEY SAND, m-fgr. moist, low plasticity	SC			
Cememted sands 3.4m				END HOLE				

Excavation Method.....
Make.....
Type.....
Operator.....
Commenced.....
Completed.....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
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NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 13

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH...

LOCATION WEST OF LAKE WOODS

HOLE SIZE ..... TO: ..... TO: ..... TO: .....

CO-ORDINATES X.....m. Y. see plans m.

SYSTEM .....

SURFACE ELEVATION.....m.

DIP.....

BEARING.....

DATUM.....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structure	DEGREE OF WEATHERING CW HW MW SW Fr St Fr	DEPTH (metres)	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SANDS Brown					SAND, m-f.gr., dry, non plasticity.	SP			
AEOLIAN SAND Red brown					CLAYEY SAND, m.-f.gr., moist, low-med plasticity	SC-SP			
CALCRETE GRAVEL Light brown-white 3.7M					Gravel, moist, max. size 15mm, low Plasticity.	GP-GW			
					END HOLE				

Excavation Method .....
Make.....
Type.....
Operator.....
Commenced .....
Completed .....

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
Fr St - Fresh, with limonite stained joints
Fr - Fresh

@ Soil Classification System: Unified.
( ) means Laboratory Classification.

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NORTHERN TERRITORY GEOLOGICAL SURVEY
CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 14
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PROJECT DARWIN-ALICE SPRINGS RAIL
FEATURE MATERIALS SEARCH
LOCATION WEST OF LAKE WOODS
HOLE SIZE 150 mm TO: ..... TO: ..... TO: .....

CO-ORDINATES X ..... m.
Y see plan ..... m.
SYSTEM .....

SURFACE ELEVATION ..... m.
DIP .....
BEARING .....
DATUM .....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING W. St. / Fr. St. / Fr. / SW / MW / HW / CW	DEPTH (metres)	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown					Sand, m-f.gr., dry. non plastic	SP			
AEOLIAN SAND Red brown					Clayey sand, m,-f.gr., moist, low plasticity	SP- SC			
4.5 m					END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified.
(...) means Laboratory Classification.

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NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 15

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOODS

HOLE SIZE 150 mm TO: TO: TO:

CO-ORDINATES X .....m.
Y see plan m.

SYSTEM .....

SURFACE ELEVATION .....m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING CW HW MW SW Fr St Fr	DEPTH (metres)	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND orange brown					Sand, m.-f.gr., dry, non plastic	SP			
AEOLIAN SAND Red brown					Clayey sand, m.-f.gr., moist, low-med. plasticity	SC			
Calcareous cemented sand 3.0m					END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
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NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 16

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PROJECT. DARWIN-ALICE SPRINGS RAIL
FEATURE. MATERIALS SEARCH
LOCATION WEST OF LAKE WOODS
HOLE SIZE 150 mm TO: ..... TO: ..... TO: .....

CO-ORDINATES X ..... m.
Y. see plan m.
SYSTEM .....

SURFACE ELEVATION ..... m.
DIP .....
BEARING .....
DATUM .....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING CW HW MW SW Fr	DEPTH metres	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL #	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown				Sand, m.-f.gr., dry. non plastic	SP			
AEOLIAN SAND Red brown				Clayey sand, m.-f.gr., Dry, low plasticity	SP-SC			
AEOLIAN SAND Red brown				Clayey sand, m.-f.gr., moist, low-med. plasticity	SC			
CALCRETE GRAVEL Red brown				as above 15-20% gravel max size 20mm	SC			
4.5m				END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

Soil Classification System: Unified.
( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
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NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

HOLE NO. AH 17

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GEOLOGICAL LOG

PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOODS

HOLE SIZE 150 mm TO: TO: TO:

CO-ORDINATES X .....m. Y see plan ...m.

SYSTEM .....

SURFACE ELEVATION .....m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING CW HW MW SW Fr	DEPTH (metres)	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown					Sand m.-f.gr. dry, non plastic	SP			
AEOLAIN SAND Red brown					Clayey sand, m.-f. gr., moist low-med plasticity.	SC			
Cemented sand 4.8m									
					END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
Fr St - Fresh, with limonite stained joints
Fr - Fresh

* Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
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NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 18

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PROJECT: DARWIN-ALICE SPRINGS RAIL

FEATURE: MATERIALS SEARCH

LOCATION: WST OF LAKE WOODS

HOLE SIZE: 150 mm TO: ..... TO: ..... TO: .....

CO-ORDINATES X: ..... m. Y: see plan m.

SYSTEM: .....

SURFACE ELEVATION: ..... m.

DIP: .....

BEARING: .....

DATUM: .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (Fr, FrSt, CW, HW, MW, SW)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown				Sand, m.-f.gr., dry. non plastic	SP			
AEOLIAN SAND Brown				Sand, m.-f.gr. dry, low plasticity	SC			
CLAY Lt. brown				Silty clay, 10-15% sand dry, med plasticity	CL			
SAND Lt. brown				Sand, m.-f. gr., dry non plastic	SP			
CEMENTED SAND				Sand m.f. grain, dry non plastic	SP			
3.9m				END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
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NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 19

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOODS

HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X .....m. Y SEE PLAN m.

SYSTEM .....

SURFACE ELEVATION .....m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW HW MW SW Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL ⊕	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND RED BROWN		1 2 3 4		SAND, m-f.gr.dry, non plastic	SP			
				Gravelly sand, m-f.gr., dry non plastic; 10-15% gravel, well rounded max size 10mm				
LATERITE GRAVEL Red brown 5.0m		5 6		END HOLE	SP			

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr W – Fresh, with limonite stained joints
Fr – Fresh

⊕ Soil Classification System: Unified. (....) means Laboratory Classification.

ENGINEERING GEOLOGY.
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Drawn .....
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NORTHERN TERRITORY GEOLOGICAL SURVEY
CENTRAL ENGINEERING SERVICES

HOLE NO. AH 20

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GEOLOGICAL LOG

PROJECT: DARWIN-ALICE SPRINGS RAIL
FEATURE: MATERIALS SEARCH
LOCATION: WEST OF LAKE WOODS
HOLE SIZE: 150mm TO: TO: TO:

CO-ORDINATES: X .....m. Y: SEE PLAN m.
SYSTEM:

SURFACE ELEVATION: .....m.
DIP:
BEARING:
DATUM:

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr St, Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL (a)	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL
AEOLIAN SAND Red brown		1 2 3 4 5		Sand, m.-f.gr., dry, non-plastic	SP			
5.0m				END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

(a) Soil Classification System: Unified.
(...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM., D.D. Date
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY
CENTRAL ENGINEERING SERVICES

HOLE NO. AH 21

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GEOLOGICAL LOG

PROJECT DARWIN-ALICE SPRINGS RAIL
FEATURE MATERIALS SEARCH
LOCATION WEST OF LAKE WOODS
HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X .....m
Y SEE PLAN m

SURFACE ELEVATION .....m.
DIP .....
BEARING .....
DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (R, CW, HW, MW, SW, Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1 2 3 4		Sand, m.-f.gr., dry, non-plastic	SP			
Weakly cemented sand 4.7m		5		END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
Fr St - Fresh, with limonite stained joints
Fr - Fresh

@ Soil Classification System: Unified. (....) means Laboratory Classification.

ENGINEERING GEOLOGY.
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Drawn .....
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NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 22

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PROJECT DARWIN-ALICE SPRINGS RAIL
FEATURE MATERIALS SEARCH
LOCATION WEST OF LAKE WOODS
HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X .....m. Y SEE PLAN m.
SYSTEM

SURFACE ELEVATION .....m.
DIP
BEARING
DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (R, C, H, M, S, F)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1 2 3		Sand, m.-f.gr., dry, non plastic	SP			
Weakly cemented sand 3.5m		4 5		END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM, DO Date
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NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 23

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PROJECT DARWIN-ALICE SPRINGS RAIL
FEATURE MATERIALS SEARCH
CO-ORDINATES X .....m. Y SEE PLAN m.
LOCATION WEST OF LAKE WOODS
SYSTEM .....
HOLE SIZE 150mm TO: ..... TO: ..... TO: .....
SURFACE ELEVATION .....m.
DIP .....
BEARING .....
DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (Fr St, SW, MW, HW, CW)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Red brown		1		Sand, m.-f.gr., dry., non plastic	SP			
AS ABOVE		2		Clayey sand, m.-f.gr. moist, low-med. plasticity	SP-SC			
		3		Gravels max. size 25mm, well rounded, med. sphericity; no plastic fines				
CALCRETE GRAVEL Lt. brown/white 3.4m								
		4		END HOLE				
		5						

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM.DO Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 24

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOODS

HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X .....m. Y SEE PLAN m.

SYSTEM .....

SURFACE ELEVATION .....m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING CW HW MW SW Fr	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUNDWATER LEVEL Date
AEOLIAN SAND Orange brown		1		Sand, m.-f.gr., dry, non plastic	SP			
AEOLIAN SAND Red brown		2		Clayey sand, m.-f.gr. moist, low - med. plasticity	SP-SC			
CALCRETE GRAVEL Lt. brown/white, med grained, well rounded med. sphericity 3.8m		3		Clayey gravel, mas. size 25mm; med. plasticity fines	GP-GC			
		4						
		5						

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
Fr SI - Fresh, with limonite stained joints
Fr - Fresh

* Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM.00 Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 25

Page of

PROJECT: DARWIN-ALICE SPRINGS RAIL MATERIALS SEARCH
FEATURE:
LOCATION: WEST OF LAKE WOODS
HOLE SIZE: 150mm TO: TO: TO:
CO-ORDINATES: X SEE PLAN m. Y m.
SYSTEM:
SURFACE ELEVATION: m.
DIP:
BEARING:
DATUM:

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, consolidation, colour, structures)	DEGREE OF WEATHERING (C D S R F)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, grading, maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL	SAMPLE NUMBER	TESTS	WATER LEVEL DATE
COLLUVIAL SAND Lt. grey				Silty sand, f.gr., dry, non plastic	SM			
AS ABOVE Lt. brown				Sand, m.-f.gr., dry, low plasticity	SP			
COLLUMIAL CLAY Lt. brown		1		Silty clay, med. plasticity, dry	CL			
AEOLIAN SAND Orange brown				Clayey sand, m.-f.gr. moist, low - med plasticity	SC			
AS ABOVE Red brown		2		Clayey sand, m.-f.gr. moist, low - med. plasticity	SC			
AS ABOVE				Sand, m.f.gr., dry, non plastic	SP			
CALCRETE Lt. brown/white, med gr. rounded nodules		3		Gravel, max size 25 - 30mm				
		4		END HOLE				
		5						
		6						

Excavation Method:
Make:
Type:
Operator:
Commenced:
Completed:

WEATHERING.
CW- Completely weathered
HW- Highly weathered
MW- Moderately weathered
SW- Slightly weathered
Fr (B)- Fresh, with limonite stained joints
Fr - Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged Date
Drawn
Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY
CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 26

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL
FEATURE MATERIALS SEARCH
LOCATION WEST OF LAKE WOODS
HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X .....m. Y. SEE PLAN m.
SYSTEM .....

SURFACE ELEVATION .....m.
DIP .....
BEARING .....
DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL*	SAMPLE NUMBER	TESTS	GROUNDWATER LEVEL Date
AEOLIAN SAND Red brown		1 2 3 4 5		Sand, m.-f.gr., dry, non plastic	SP			
				END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged Date
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Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY
CENTRAL ENGINEERING SERVICES

HOLE NO. AH 27

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GEOLOGICAL LOG

PROJECT DARWIN-ALICE SPRINGS RAIL
FEATURE MATERIALS SEARCH
LOCATION WEST OF LAKE WOODS
HOLE SIZE 150mm

COORDINATES X ..... m
Y SEE PLAN m
SYSTEM .....
RL ..... TD ..... TD .....

SURFACE ELEVATION ..... m
DIP .....
BEARING .....
DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, consolidation, colour, structures)	METRES OF PENETRATION	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, principal constituent size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL	SAMPLE NUMBER	TESTS	WATER LEVEL
AEOLIAN SAND Red brown	1		Sand, m.-f.gr., dry non plasti c	SP			
AS ABOVE	2 3 4 5		AS ABOVE moist, minor plastic fines	SP			
			END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING
DW– Completely weathered
HW– Highly weathered
MW– Moderately weathered
SW– Slightly weathered
F/SW– Fresh, with isolated stained joints
F– Fresh

Soil Classification System: Unified.
( ) means Laboratory Classification.

ENGINEERING GEOLOGY
Logged Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 28

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOODS

HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X ..... m. Y SEE PLAN m.

SYSTEM .....

SURFACE ELEVATION ..... m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, consistency, colour, structures)	DEGREE OF WEATHERING	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL DATE
AEOLIAN SAND Orange brown to red brown		1 2 3 4		Sand, m.-f.gr., dry, non plastic	SP			
WEAKLY CEMENTED		5		END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY
CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 29

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PROJECT DARWIN-ALICE SPRINGS RAIL
FEATURE MATERIALS SEARCH
LOCATION WEST OF LAKE WOODS
HOLE SIZE 150mm TO: TO: TO:

COORDINATES X ..... m. SEE PLAN m.
SYSTEM .....

SURFACE ELEVATION ..... m.
DIP .....
BEARING .....
DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, consistency, colour, structure)	DEGREE OF WEATHERING (X S M W D)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general appearance also, in situ moisture and density, plasticity, [field test data])	GROUP & SYMBOL	SAMPLE NUMBER	TESTS	GROUNDWATER LEVEL
AEOLIAN SAND Red brown		1 2 3 4		Sand, m.-f.gr., dry, non plastic	SP			
WEAKLY CEMENTED		5		END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW– Completely weathered
HW– Highly weathered
MW– Moderately weathered
SW– Slightly weathered
F (S)– Fresh, with [insert] stained joints
F – Fresh

Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged Date
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Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 30

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOODS

HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X .....m. Y SEE PLAN m.

SYSTEM .....

SURFACE ELEVATION .....m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1 2 3 4 5		Sand, m.-f.gr., dry, non plastic	SP			
				END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
Fr(I) - Fresh, with limonite stained joints
Fr - Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged Date
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Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 31

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PROJECT DARWIN - ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

CO-ORDINATES X ..... m. Y SEE PLAN m.

LOCATION WEST OF LAKE WOODS SYSTEM .....

HOLE SIZE 150mm TO: ..... TO: ..... TO: .....

SURFACE ELEVATION ..... m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (C W H M I F)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1 2 3 4 5		Sand, m.-f.gr., dry, non plastic	SP			
5.0m				END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
Fr St - Fresh, with limonite stained joints
Fr - Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 32

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

CO-ORDINATES X .....m. Y SEE PLAN m.

LOCATION WEST OF LAKE WOODS SYSTEM .....

HOLE SIZE 150mm TO: ..... TO: ..... TO: .....

SURFACE ELEVATION .....m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (C W M S F Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL ⊕	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1 2 3 4 5		Sand, m.-f.gr., dry, non plastic	SP			
5.0m				END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

⊕ Soil Classification System: Unified. (....) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 33

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOODS

HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X .....m. Y SEE PLAN m.

SYSTEM .....

SURFACE ELEVATION .....m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW HW MW SW Fr Sl Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Origin name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1 2 3 4 5		Sand, m.-f.gr., dry non plastic	SP			
5.0m				END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
Fr Sl - Fresh, with limonite stained joints
Fr - Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged Date
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Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 77

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOODS

HOLE SIZE 150mm

CO-ORDINATES X.....m. Y.....m.

SYSTEM .....

TO: ..... TO: ..... TO: .....

SURFACE ELEVATION.....m.

DIP.....

BEARING.....

DATUM.....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (R Y S Z)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Red brown		1 2 3 4		Samd. m.-f.gr., dry, non plastic	SP			
Weakly cemented				moist, low plasticity				
LATERITIC GRAVEL 4.2M				Gravel END HOLE - REFUSAL				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
Pr St - Fresh, with limonite stained joints
Pr - Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM.DO Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 78

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

CO-ORDINATES X m. SEE PLAN Y m.

LOCATION WEST OF LAKE WOODS

SYSTEM

HOLE SIZE 150mm TO: TO: TO:

SURFACE ELEVATION m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, [field test data]	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	WATER LEVEL
AS ABOVE				AS ABOVE	SP			
6.0m				END HOLE				

Excavation Method

Make

Type

Operator

Commenced

Completed

WEATHERING.

CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Pr St – Fresh, with limonite stained joints
Pr – Fresh

@ Soil Classification System: Unified. (....) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 79

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOODS

HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X SEE PLAN m. Y m.

SYSTEM

SURFACE ELEVATION m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL ①	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL DATE
AEOLIAN SAND Red brown		1 2 3 4		Sand, m.-f.gr., dry, non plastic	SP			
5.0m		5		END HOLE				

Excavation Method

Make

Type

Operator

Commenced

Completed

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

① Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY
CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 80
Page of

PROJECT DARWIN-ALICE SPRINGS RAIL
FEATURE MATERIALS SEARCH
LOCATION WEST OF LAKE WOODS
HOLE SIZE 150mm TO: TO: TO:
CO-ORDINATES X SEE PLAN E
Y m. N
SYSTEM
SURFACE ELEVATION m.
DIP
BEARING
DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (S, E, V, H, M, S, F)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP & SYMBOL	SAMPLE NUMBER	TESTS	GROUNDWATER LEVEL Date
AEOLIAN SAND Red brown		1 2 3 4 5		Sand, m.-f.gr., dry non plastic	SP			
5.0m				END HOLE				

Excavation Method
Make
Type
Operator
Commenced
Completed

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (....) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged G.M.DD Date
Drawn
Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 81

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PROJECT: DARWIN-ALICE SPRINGS RAIL

FEATURE: MATERIALS SEARCH

LOCATION: WEST OF LAKE WOODS

HOLE SIZE: 150mm

CO-ORDINATES: X ..... m. Y SEE PLAN m.

SYSTEM: ..... TO: ..... TO: .....

SURFACE ELEVATION: ..... m.

DIP: .....

BEARING: .....

DATUM: .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL (Date)
AEOLIAN SAND Red brown		1 2 3 4 5		Sand, m.-f.gr., dry, non plastic	SP			
Weakly cemented								

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM.DD Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 81

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOODS

HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X.....m. Y.SEE PLAN

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL DATE
AS ABOVE				AS ABOVE				
6.0m				END HOLE				

Excavation Method

Make

Type

Operator

Commenced

Completed

WEATHERING.

CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged GMDR Date

Drawn

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NORTHERN TERRITORY GEOLOGICAL SURVEY

HOLE NO. AH 82

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GEOLOGICAL LOG

PROJECT Darwin-Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Woods

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW HW MW SW FrSt Fr)	DEPTH (metres)	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
Aeolian Sand Red brown		1 2 3			Sand, m.-f.gr., dry non plastic.	SP			
Weakly cemented		4 5			Dry, non plastic End of hole	SP			

Excavation Method

Make

Type

Operator

Commenced

Completed

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 160

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

CO-ORDINATES X .....m. Y SEE PLAN

SURFACE ELEVATION .....m.

DIP .....

BEARING .....

DATUM .....

LOCATION WEST OF LAKE WOODS SYSTEM .....

HOLE SIZE 165mm TO: ..... TO: ..... TO: .....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING Fr, Fr St, SW, MW, HW, CW	DEPTH metres	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test date	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1			Sand, m.-f.gr., dry, non plastic	SP			
AS ABOVE		2			AS ABOVE Low plastic fines	SP			
		3							
AS ABOVE Red brown		4			AS ABOVE LOW- med plastic fines, moist	SC			
5.0m		5			END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW- Completely weathered
HW- Highly weathered
MW- Moderately weathered
SW- Slightly weathered
Fr St- Fresh, with limonite stained joints
Fr - Fresh

* Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM.OD Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 161

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOODS

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X .....m. Y SEE PLAN m.

SYSTEM .....

SURFACE ELEVATION .....m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (Fr St, Fr, SW, MW, HW, CW)	DEPTH (metres)	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1 2 3			Sand m.-f.gr., dry, non plastic to low plastic fines	SP			
AS ABOVE Red brown		4			AS ABOVE med.-low plastic fines, moist	SC			
5.0m		5			END HOLE				

Excavation Method AUGER

Make .....

Type .....

Operator .....

Commenced .....

Completed .....

WEATHERING.

CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
FrSt - Fresh, with limonite stained joints
Fr - Fresh

* Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged GM.DO Date .....

Drawn .....

Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. T 1

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL
FEATURE MATERIALS SEARCH
LOCATION 7.2km
HOLE SIZE ..... TO: ..... TO: ..... TO: .....

CO-ORDINATES X ..... m. Y FIG. 9 m.
SYSTEM .....

SURFACE ELEVATION ..... m.
DIP .....
BEARING .....
DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (Fr, Fr St, SW, MW, HW, CW)	DEPTH metres	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange bro wn		1			Sand, m.-f.gr., dry non plastic	SP			
AEOLIAN SAND Orange brown		2 3			Clayey sand, m.-f.gr moist, low plasticity	(SC)			
CALCRETE GRAVELS Red brown-white rounded, low-med sphericity, low-high strength, HW-MW nodules.		4			SILTY GRAVEL, 30% m.-gr., with cobbles, max. size 150mm; 10% low plastic fines; m.-f.gr., silty sand	c GM-GP			
CALCRETE GRAVELS Brown-white, rounded angular, med-low sphericity, low-high strength, HW-MW nodules		5			SANDY GRAVEL, 60% m.-c.gr., max size 100mm; 10% low strength cemented sand; 20-30% m.-f.gr. sand; dry, non plastic	GP-GW			

Excavation Method EXCAVATOR
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
FrSt - Fresh, with limonite stained joints
Fr - Fresh

* Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. T 1

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION 7.2km

CO-ORDINATES X ..... m. Y FIG. 9 m.

SYSTEM .....

HOLE SIZE ..... TO: ..... TO: ..... TO: .....

SURFACE ELEVATION ..... m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (Fr, FrSt, SW, MW, HW, CW)	DEPTH (metres)	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AS ABOVE					AS ABOVE				
5.3m		6			END HOLE STRATA CONTINUING				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. T 2

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PROJECT DARWIN-ALICE SPRINGS RAIL MATERIALS SEARCH

FEATURE

LOCATION 14km

HOLE SIZE TO: TO: TO:

CO-ORDINATES X FIG. 10 m. Y m.

SYSTEM

SURFACE ELEVATION m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr St, Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Dk. orange brown, loose even texture, organic matter				Sand, m.-f.gr., dry non plastic	SP			
AEOLIAN SAND Red brown, med. dense, even texture				Sand, m.-f.gr., moist minor, low plastic fines	SP			
AS ABOVE Dense				Sand, m.-f.gr., dry, non plastic	SP			
CALCRETE GRAVEL Mot. red brn-brn-white, dense with well rounded, med.-high strength, HW-MW nodules				SILTY GRAVEL, 50% m.-c.gr., max. size 30mm 50% silty sand, f.gr. dry, non plastic	GM-GP			
CALCRETE GRAVEL Mt. red brn-brn-white, v. dense with rounded med-v. high strength HW-SW nodules				GRAVEL, 70% m.-c.gr. max. size 40mm; 30% silty sand, f.gr. dry, non plastic	GP-GW			
5.0m				END HOLE-STRATA CONT'D				

Excavation Method EXCAVATOR
Make
Type
Operator
Commenced
Completed

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged Date
Drawn
Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. T 3

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION 14km

CO-ORDINATES X FIG. 10 m. Y m.

SYSTEM

SURFACE ELEVATION m.

DIP

BEARING

DATUM

HOLE SIZE TO: TO: TO:

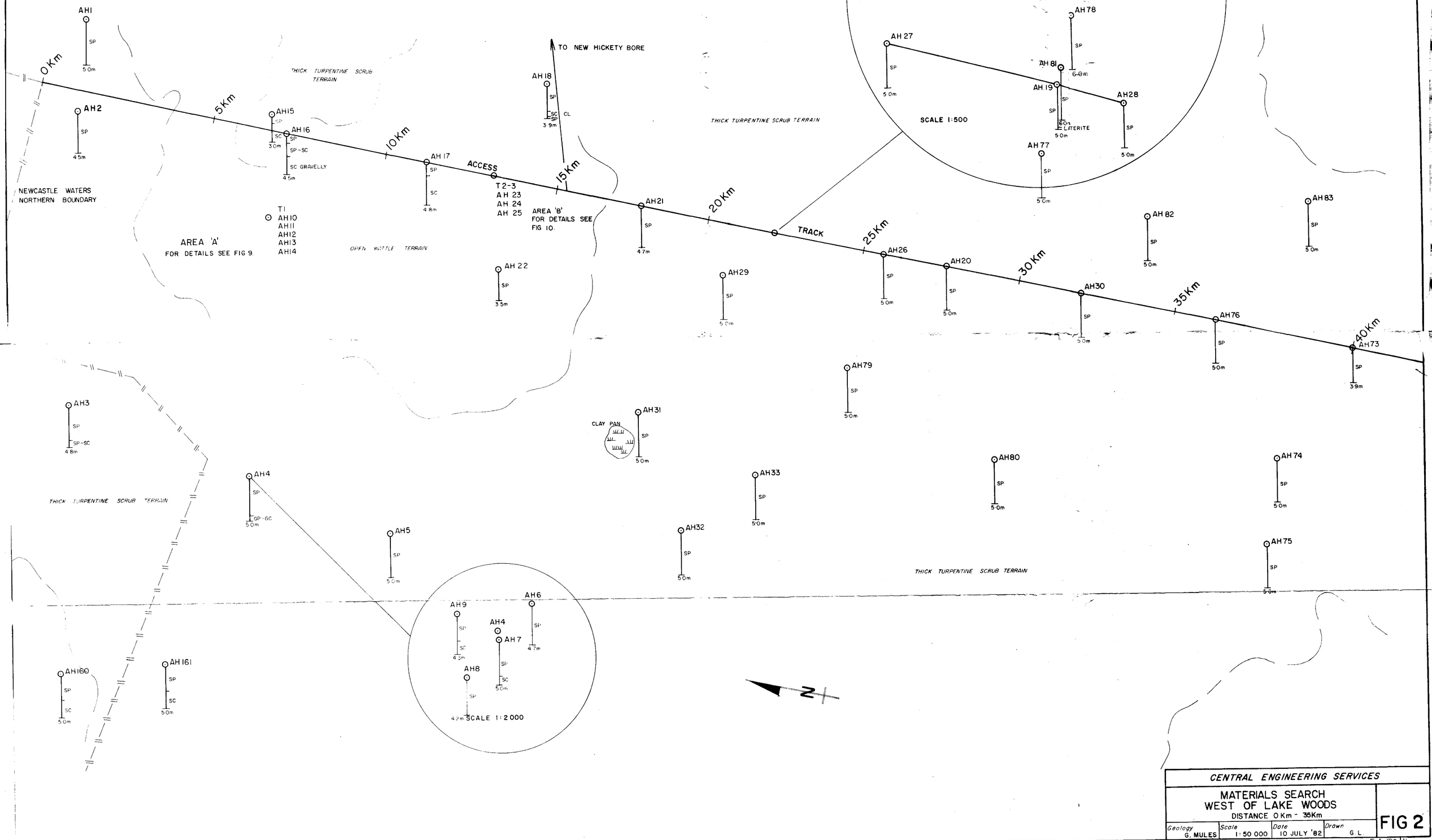
GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW HW MW SW Fr St Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
COLLUVIAL SAND, grey Loose, even texture organic matter.				SILTY SAND, f.gr., dry non plastic	SM			
AS ABOVE Yellow brown		1		SILTY SAND, f.-m.gr. dry, minor low plastic fines	SM-SP			
CALCRETE GRAVEL Mt. red brn-brn-white, med. dense with well rounded to angular, elongate-med. sphericity, med v.high strength, CW-SW nodules.		2		SILTY GRAVELS, 30-40% m.-c.gr. max size 50mm 20-30% silt; minor low plastic fines, dry	GM-GP			
CALCRETE GRAVEL As above except mot. Lt. brn-brn-white, dense		3		SANDY GRAVEL, 60-70% f.c.gr. max size 40mm 30% f.-c.gr. silty sand, dry, non plastic	GW			
4.0m		4		END HOLE STRATA CONTINUING				
		5						

Excavation Method EXCAVATOR
Make
Type
Operator
Commenced
Completed

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM Date
Drawn
Checked



CENTRAL ENGINEERING SERVICES

MATERIALS SEARCH
WEST OF LAKE WOODS
DISTANCE 0 Km - 35Km

FIG 2

Geology	Scale	Date	Drawn
G. MULES	1:50 000	10 JULY '82	G.L.

CS 82/11

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 34

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOODS

HOLE SIZE 150mm TO: TO: TO:

COORDINATES X m. Y m. SEE PLAN

SYSTEM

SURFACE ELEVATION m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (R S H M W C)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL
AEOLIAN SAND Orange brown		1		Sand, m.-f.gr., dry, non plastic	SP			
AEOLIAND SAND Red brown		2		as above low plasticity	SP			
AS ABOVE		3		Clayey sand, m.-f.gr moist, med. plasticity	SC			
4.9m		4		END HOLE				
		5						

Excavation Method

Make

Type

Operator

Commenced

Completed

WEATHERING.

CW- Completely weathered

HW- Highly weathered

MW- Moderately weathered

SW- Slightly weathered

Fr St- Fresh, with limonite stained joints

Fr- Fresh

@ Soil Classification System: Unified. (....) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY
CENTRAL ENGINEERING SERVICES

HOLE NO. AH 35
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GEOLOGICAL LOG

PROJECT DARWIN-ALICE SPRINGS RAIL
FEATURE MATERIALS SEARCH
LOCATION WEST OF LAKE WOODS
HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X .....m. Y SEE PLAN m.
SYSTEM

SURFACE ELEVATION .....m.
DIP
BEARING
DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown				Sand, m.-f.gr., dry non plastic	SP			
AEOLIAN SAND Red brown		1 2 3		AS ABOVE	SP			
WEAKLY CEMENTED		4						
5.0m		5		END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged Date
.....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 36

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOODS

HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X .....m. Y SEE PLAN m.

SYSTEM .....

SURFACE ELEVATION .....m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING C W M S Fr	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL & DATE
AEOLIAN SAND Orange brown				Sand, m.-f.gr., dry, non plastic	SP			
AEOLIAN SAND Red brown		1 2 3 4		AS ABOVE	SP			
WEAKLY CEMENTED 5.0m		5		END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (....) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 37

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOODS

HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X ..... m. Y SEE PLAN

SYSTEM .....

SURFACE ELEVATION ..... m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL
AEOLIAN SAND Orange brown		1		Sand, m.-f.gr., dry non plastic	SP			
WEAKLY CEMENTED		2 3 4		AS ABOVE	SP			
5.0m		5		END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged Date
.....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 38

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOODS

HOLE SIZE 150mm TO: ... TO: ... TO: ...

CO-ORDINATES X ... m. Y SEE PLAN m.

SYSTEM ...

SURFACE ELEVATION ... m.

DIP ...

BEARING ...

DATUM ...

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (C W, H W, M W, S W, Fr Bl, Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Proper name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Red brown		1 2 3 4 5		Sand, m.-f.gr., dry non plastic	SP			
5.0m				END HOLE				

Excavation Method ...
Make ...
Type ...
Operator ...
Commenced ...
Completed ...

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr Bl – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged Date ...
Drawn ...
Checked ...

NORTHERN TERRITORY GEOLOGICAL SURVEY

central engineering services

GEOLOGICAL LOG

HOLE NO. AH 39

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PROJECT DARWIN-ALICE SPRINGS RAIL
FEATURE MATERIALS SEARCH
LOCATION WEST OF LAKE WOODS
HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X .....m. Y SEE PLAN

SYSTEM .....

SURFACE ELEVATION .....m.
DIP .....
BEARING .....
DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Origin name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP @ SYMBOL	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL DATE
AEOLIAN SAND Red brown		1 2 3		Sand, m.-f.gr., moist, low plasticity	SP			
AS ABOVE WEAKLY CEMENTED				AS ABOVE DRY, NON PLASTIC	SP			
3.2m		4 5		END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System : Unified.
(....) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GADQ Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 40

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOODS

HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X .....m. Y SEE PLAN m.

SYSTEM .....

SURFACE ELEVATION .....m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (R S X D C)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL ⊕	SAMPLE NUMBER	TESTS	GROUNDWATER LEVEL Date
AEOLIAN SAND Orange brown		1		Sand, f.gr., dry non plastic	SP			
AEOLIAN SAND Red brown		2 3		Sand, m.-f.gr., dry non plastic	SP			
3.5m		4 5		END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

⊕ Soil Classification System: Unified. (....) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged Date
.....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

HOLE NO. AH 41

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CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

PROJECT: DARWIN-ALICE SPRINGS RAIL

FEATURE: MATERIALS SEARCH

LOCATION: WEST OF LAKE WOODS

HOLE SIZE: 150mm TO: TO: TO:

CO-ORDINATES: X ....m. Y SEE PLAN

SYSTEM:

SURFACE ELEVATION: ....m.

DIP:

BEARING:

DATUM:

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1		Sand, f.gr., dry non plastic	SP			
AEOLIAN SAND Red brown		2		Sand, m.-f.gr., dry non plastic	SP			
AS ABOVE		3		Clayey sand, m.-f.gr, moist, minor low plasticity fines	SP-SC			
AS ABOVE WEAKLY CEMENTED				Sand, m.-f.gr., dry, non plastic	SP			
3.2m		4		END HOLE				
		5						

Excavation Method

Make

Type

Operator

Commenced

Completed

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged GM.00 Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 42

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOODS

HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X .....m. SEE PLAN Y .....m.

SYSTEM .....

SURFACE ELEVATION .....m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr St, Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1		Sand, m.-f.gr., dry non plastic	SP			
AEOLIAN SAND Red brown Weakly cemented		2 3 4 5		as above	SP			
5.0m				END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (....) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM DO Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 43

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOODS

HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X .....m. Y SEE PLAN m.

SYSTEM .....

SURFACE ELEVATION .....m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING CW HW MW SW Fr	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1 2		Sand, m.-f.gr., dry non plastic	SP			
AEOLIAN SAND Red brown Weakly cemented		3		AS ABOVE	SP			
3.6m		4 5		END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM.DO Date
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH44

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PROJECT DARWIN-ALICE SPRINGS RAIL MATERIALS SEARCH

FEATURE

LOCATION WEST OF LAKE WOODS

HOLE SIZE 150mm TO:

CO-ORDINATES X ..... m. Y SEE PLAN m.

SYSTEM

TO:

TO:

SURFACE ELEVATION ..... m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structure	DEGREE OF WEATHERING C W H W M W S W F R	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP & SYMBOL	SAMPLE NUMBER	TESTS	GROUNDWATER LEVEL DATE
AEOLIAN SAND Orange brown		1 2 3		Sand, f.gr., dry, non plastic	SP			
AEOLIAN SAND Red brown		4		AS ABOVE	SP			
4.5m		5		END HOLE				

Excavation Method

Make

Type

Operator

Commenced

Completed

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr Bl – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged GM&D Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 45

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL
FEATURE MATERIALS SEARCH
LOCATION WEST OF LAKE WOODS
HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X .....m. Y SEE PLAN m.
SYSTEM

SURFACE ELEVATION .....m.
DIP .....
BEARING .....
DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, limit test data)	GROUP SYMBOL	SAMPLE NUMBER	TESTS	WATER LEVEL
AEOLIAN SAND Lt. orange brown		1	Sand, m.-f.gr., dry, non plastic	SP			
AEOLIAN SAND Orange brown		2	AS ABOVE moist, minor low plasticity fines	SP			
AS ABOVE			Clayey sand, m.-f.gr. moist, low-med plasticity	SP-SC			
2.2m		3 4 5	END HOLE - REFUSAL				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
FrSt - Fresh, with limonite stained joints
Fr - Fresh

@ Soil Classification System: Unified. (....) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged G.M.DD Date
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 64

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOODS

HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X .....m. Y SEE PLAN m.

SYSTEM .....

SURFACE ELEVATION .....m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW HW MW SW Fr)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL ●	SAMPLE NUMBER	TESTS	GROUNDWATER LEVEL Date
AEOLIAN SAND Lt. orange brown		1	Sand, m.-f.gr., dry non plastic	SP			
Weakly cemented		2					
		3					
		4					
5.0m		5	END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

● Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM.00 Date .....
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NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 65

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PROJECT DARWIN-ALICE SPRINGS RAIL
FEATURE MATERIALS SEARCH
LOCATION WEST OF LAKE WOODS
HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X .....m. Y SEE PLAN m.

SURFACE ELEVATION .....m.
DIP .....
BEARING .....
DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
COLLUVIAL SAND Yellow brown		1 2 3 4		Sand, f.gr., dry, non plastic	SP			
COLLUVIAL CLAYS Lt. brown				Silty sand, low plas. 20% f.-m.gr. sand	CL			
4.6m		5		END HOLE - REFUSAL				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
FrSt - Fresh, with limonite stained joints
Fr - Fresh

@ Soil Classification System: Unified. (....) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM.DO Date
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NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 66

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOODS

HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X .....m. Y SEE PLAN m.

SYSTEM .....

SURFACE ELEVATION .....m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown to red brown		1 2 3 4 5		Sand, m.-f.gr., dry, non plastic	SP			
5.0m				END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (....) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM.OD Date
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 67

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOODS

HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X .....m. Y SEE PLAN m.

SYSTEM

SURFACE ELEVATION .....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL ⊕	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Red brown		1 2 3 4 5		Sand, m.-f.gr., dry non plastic	SP			
5.0m				END HOLE				

Excavation Method

Make

Type

Operator

Commenced

Completed

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

⊕ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged GM. DD Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 68

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PROJECT DARWIN-ALICE SPRINGS RAIL MATERIALS SEARCH

FEATURE

LOCATION WEST OF LAKE WOODS

HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES x .....m. see plan y .....m.

SYSTEM

SURFACE ELEVATION .....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown to red brown		1 2 3 4		Sand, m.-f.gr., dry, non plastic	SP			
Weakly cemented 5.0m		5		END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr SI – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (....) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM.DD Date
Drawn
Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 70

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PROJECT: DARWIN-ALICE SPRINGS RAIL MATERIALS SEARCH

FEATURE:

LOCATION: WEST OF LAKE WOODS

HOLE SIZE: 150mm TO: TO: TO:

CO-ORDINATES: X .....m. Y SEE PLAN m.

SYSTEM:

SURFACE ELEVATION: .....m.

DIP:

BEARING:

DATUM:

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Pr, Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Red brown		1 2 3 4 5		Sand, m.-f.gr., dry non plastic	SP			
Weakly cemented								
5.0m				END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Pr St – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (....) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GALDD Date
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

HOLE NO. AH 71

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CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

PROJECT DARWIN-ALICE SPRINGS RAIL — CO-ORDINATES X .....m. Y.GRID PLAN — SURFACE ELEVATION .....m.

FEATURE MATERIALS SEARCH — SYSTEM ..... — DIP .....

LOCATION WEST OF LAKE WOODS — BEARING .....

HOLE SIZE 150mm. TO: ..... TO: ..... TO: ..... — DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Red brown		1 2 3 4 5		Sand, m.-f.gr., dry, non plastic	SP			
5.0m				END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM DD. Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 72

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOODS

HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X .....m. Y .....m. SET PLAN

SURFACE ELEVATION .....m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW HW MW SW Fr Sl Fr Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Red brown		1 2 3 4		Sand, m.-f.gr dry, non plastic	SP			
Weakly cemented 5.0m		5		Low plasticity END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr Sl – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM.JD. Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 73

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PROJECT: DARWIN-ALICE SPRINGS RAIL MATERIALS SEARCH

FEATURE:

LOCATION: WEST OF LAKE WOODS

HOLE SIZE: 150mm TO: TO: TO:

CO-ORDINATES X: m. Y: m. SEE PLAN

SYSTEM:

SURFACE ELEVATION: m.

DIP:

BEARING:

DATUM:

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Red brown		1 2 3		Sand, m.-f.gr., dry, non plastic	SP			
Weakly cemented				low plasticity				
3.9m		4 5		END HOLE				

Excavation Method

Make

Type

Operator

Commenced

Completed

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 74

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOODS

CO-ORDINATES X.....m. Y SEE PLAN m.

SYSTEM .....

HOLE SIZE 150mm TO:..... TO:..... TO:.....

SURFACE ELEVATION.....m.

DIP.....

BEARING.....

DATUM.....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING R S E D C	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Red brown		1 2 3		Sand, m.-f.gr., dry non plastic	SP			
Weakly cemented		4		low plasticity, moist				
5.0m		5		END HOLE				

Excavation Method .....
Make.....
Type.....
Operator.....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM.OD Date
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH75

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

CO-ORDINATES X ..... m. Y SEE PLAN m.

LOCATION WEST OF LAKE WOODS

SYSTEM .....

HOLE SIZE 150mm TO: ..... TO: ..... TO: .....

SURFACE ELEVATION ..... m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (R, C, A, S, F, Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Red brown		1 2 3		Sand, M.-f.gr., dry, non plastic	SP			
Weakly cemented		4 5		Moist, low plasticity				
5.0m				END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GMDD Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 76

Page ... of ...

PROJECT DARTIE-ALICE SPRINGS RAIL MATERIALS SEARCH

FEATURE WEST OF LAKE WOODS

LOCATION ...

HOLE SIZE 150 mm

CO-ORDINATES X ..... m. Y ..... m. SYSTEM ...

TO: ... TO: ... TO: ...

SURFACE ELEVATION ..... m.

DIP ...

BEARING ...

DATUM ...

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, Field test data)	GROUP @ SYMBOL	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL
AEOLIAN SAND Red brown		1 2 3 4 5.0m 6		Sand, m.-f.gr., dry, non plastic moist, low plasticity END HOLE	SP			

Excavation Method ...
Make ...
Type ...
Operator ...
Commenced ...
Completed ...

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GWL DD Date ...
Drawn ...
Checked ...

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 69

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL — CO-ORDINATES X ..... m. SEE PLAN — SURFACE ELEVATION ..... m.

FEATURE MATERIALS SEARCH — Y ..... m. — DIP .....

LOCATION WEST OF LAKE WOODS — SYSTEM ..... — BEARING .....

HOLE SIZE 150mm — TO: ..... TO: ..... TO: ..... — DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW HW MW SW Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Yellow brown		1		Sand, f.gr., dry, non plastic	SP			
AEOLIAN SAND Brown		2		Clayey sand, m.-f.gr. dry, low med. plasticity	SC			
AEOLIAN SAND Red brown Weakly cemented		3 4		Sand, m.-f.gr., dry, low plasticity	SP			
4.0m		5		END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM.DO Date
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

HOLE NO. AH 83

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GEOLOGICAL LOG

PROJECT Darwin-Alice Springs Rail
FEATURE Materials Search
LOCATION West of Lake Woods
HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.
SYSTEM

SURFACE ELEVATION.....m.
DIP
BEARING
DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (Fr, FrSt, SW, MW, HW, CW)	DEPTH (metres)	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND-WATER LEVEL Date
Aeolian Sand Red brown		1 2 3 4			Sand, m.-f.gr., dry, non plastic	SP			
					End of Hole				

Excavation Method
Make
Type
Operator
Commenced
Completed

WEATHERING.
CW- Completely weathered
HW- Highly weathered
MW- Moderately weathered
SW- Slightly weathered
FrSt- Fresh, with limonite stained joints
Fr- Fresh

* Soil Classification System: Unified.
( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged Date
Drawn
Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

HOLE NO. AH 84

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GEOLOGICAL LOG

PROJECT Darwin-Alice Springs Rail

FEATURE Materials Search

LOCATION West of Lake Woods

HOLE SIZE 165mm TO ..... TO ..... TO .....

CO-ORDINATES X ..... m Y ..... m SYSTEM .....

SURFACE ELEVATION ..... m

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr St, Fr)	DEPTH metres	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
Aeolian Sand Red brown		1 2 3 4 5			Sand, m.-f.gr., dry Non plastic.	SP			
					End of Hole				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified.
( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

HOLE NO. AH 85

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GEOLOGICAL LOG

PROJECT Darwin-Alice Springs Rail

FEATURE Materials Search

LOCATION West of Lake Woods

HOLE SIZE 165mm TO TO TO

CO-ORDINATES X .....m. Y .....m.

SYSTEM .....

SURFACE ELEVATION .....m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr St, Fr)	DEPTH metres	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
Aeolian Sand Red brown		1 2 3			Sand, m.-f.gr., dry Non Plastic.	SP			
Weakly cemented		4			Low Plasticity	SP			
					End of Hole 4.6m				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified.
( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. T 4

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION 68km

HOLE SIZE ..... TO: ..... TO: ..... TO: .....

CO-ORDINATES X ..... m. Y ..... m. FIG 11

SYSTEM .....

SURFACE ELEVATION ..... m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr St, Fr)	DEPTH (metres)	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown, loose to 0.3m then dense open even texture, surface organic matter.		1 2			SAND, m.-f.gr. dry, non plastic	SP			
AEOLIAN SAND Mottled orange brn-red brn-Lt. brn-grey dense to v.dense, uneven texture, minor lamination and vertical jointing 5.0m		3 4 5			SAND, m.-f.gr. dry (moist on joints), 10-20% silt, minor low plastic fines. END HOLE-STRATA CONT'D	SP			

Excavation Method EXCAVATOR

Make .....

Type .....

Operator .....

Commenced .....

Completed .....

WEATHERING.

CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
Fr St - Fresh, with limonite stained joints
Fr - Fresh

* Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged GM Date .....

Drawn .....

Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

HOLE NO. T 5

Page of

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

PROJECT DARWIN-ALICE SPRINGS RAIL
FEATURE MATERIALS SEARCH
LOCATION 68km
HOLE SIZE ..... TO: ..... TO: ..... TO: .....

CO-ORDINATES X ..... m. Y FIG. 11 m.
SYSTEM .....

SURFACE ELEVATION ..... m.
DIP .....
BEARING .....
DATUM .....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING	DEPTH metres	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Brown to orange brown, loose with organic matter to o.3m, then dense open and even texture		1		SAND, m.-f.gr. dry non plastic	SP			
COLLUVIAL SAND Mottled red brn-orange brn-brn-grey dense to v.dense, weakly cemented (low strength), vertical and horizontal joints		2 3 4		SAND, f.gr., dry, non plastic	SP			
COLLUVIAL SAND Lt. brown-red brown v. dense. 5.0m		5		SILTY SAND, f.gr. dry, non plastic END HOLE-STRATA CONT	SM			

Excavation Method EXCAVATOR
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified.
( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM Date
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. T 6

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION 68km

HOLE SIZE ..... TO: ..... TO: ..... TO: .....

CO-ORDINATES X ..... m. Y FIG. 11 m.

SYSTEM .....

SURFACE ELEVATION ..... m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (Fr, Fr St, SW, MW, HW, CW)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Lt. brown, loose, open even texture, organic matter.				SAND, m.-f.gr., dry non plastic	(SM)			
COLLUVIAL SAND Yellow brown, med. dense to dense, open even texture.		1 2 3		SILTY SAND, f.gr., dry, minor low plastic fines	SM-SP			
COLLUVIAL SAND Mottles yell. brn-red brn-brn-grey, dense to v. dense, weakly cemented (low strength), uneven texture. 5.0m		4 5		SILTY SAND, f.gr., dry, low plasticity END HOLE-STRATA CONT'D	SM-SP			

Excavation Method EXCAVATOR

Make .....

Type .....

Operator .....

Commenced .....

Completed .....

WEATHERING.
CW- Completely weathered
HW- Highly weathered
MW- Moderately weathered
SW- Slightly weathered
FrSt- Fresh, with limonite stained joints
Fr- Fresh

* Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged GM Date .....

Drawn .....

Checked .....

OPEN EUCALYPT TERRAIN

OPEN EUCALYPT TERRAIN

FRONTAL

DUNE

AH82 SP 5.0m

AH83 SP 5.0m

AH84 SP 5.0

35Km

AH76

ACCESS

40Km

AH85 3.9m

45Km

AH34 SP SC 4.9m

AH35 SP 5.0m

50Km

AH39 SP 3.2m

AH40 SP 3.5m

55Km

AH41 SP SP-SC SP 3.2m

AH36 SP 5.0m

AH37 SP 5.0m

AH72 SP 5.0m

AH70 SP 5.0m

AH68 SP 5.0

60Km

AH42 SP 5.0m

TRACK

65Km

AH43 SP 3.6m

AH44 SP 4.5m

CLAY PAN

AH65 T6

AH67

AH64

AH45

T4 T5

70Km

AREA 'C' FOR DETAILS SEE FIG 11.

AH60 SP GP 4.0m

AH58 SP GP 3.8m

AH55 T7

AH56

AH46

AH54

75Km

AH74 SP 5.0m

AH75 SP 5.0m

THICK TURPENTINE SCRUB TERRAIN

AH38 SP 5.0m

AH71 SP 5.0m

CLAY PAN

AH69 SP SC SP 4.0m

OPEN EUCALYPT TERRAIN

N

CENTRAL ENGINEERING SERVICES

MATERIALS SEARCH
WEST OF LAKE WOODS
DISTANCE 35 km - 70 Km

GEOLOGY	SCALE	DATE	DRAWN
G. MULES	1: 50 000	10 JULY '82	G.L.

FIG 3

GS82 11

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 46

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL MATERIALS SEARCH

FEATURE

LOCATION WEST OF LAKE WOODS

HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X SEE PLAN m. Y m.

SYSTEM

SURFACE ELEVATION m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, consistency, colour, structures)	DEGREE OF WEATHERING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL ●	SAMPLE NUMBER	TESTS	WATER LEVEL
AEOLIAN SAND Orange brown			Sand, m.-f.gr., dry non plastic	SP			
AEOLIAN SAND Red brown			AS ABOVE Low plasticity	SP			
			Clayey sand, m.-f.gr., 15 - 20% m.-gr. gravel; med. plasticity				
CALCRETE SANDS			Gravel, 60% m.-c.gr. max size 30mm. 15% med. plasticity fines	SC			
CALCRETE GRAVEL				GP-GW			
2.1m			END HOLE - REFUSAL				

Excavation Method

Make

Type

Operator

Commenced

Completed

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

● Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GMDO Date
Drawn
Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 47

Page of

PROJECT: DARWIN-ALICE SPRINGS RAIL MATERIALS SEARCH

FEATURE:

LOCATION: WEST OF LAKE WOOD

HOLE SIZE: 150mm TO: TO: TO:

CO-ORDINATES X: .....m. Y: SEE PLAN m.

SYSTEM:

SURFACE ELEVATION: .....m.

DIP:

BEARING:

DATUM:

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (L, R, A, S, C)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown				Sand, m.-f.gr., dry non plastic	SP			
AS ABOVE		1		AS ABOVE Low plasticity	SP			
AS ABOVE		2		Clayey sand, m.f.gr. moist, low med. plasticity	SP-SC			
CALCRETE SAND Lt. brown				Clayey sand, 15-20% f-m.gr. gavels, low-med. plasticity	SC			
CALCRETE GRAVEL Lt. brown - white		3		Sandy gravel, 50% f.-c.gr. max size 30mmg. 15% med. plas fines.	GW*GC			
3.2m		4		END HOLE - REFUSAL				
		5						

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
FrSt - Fresh, with limonite stained joints
Fr - Fresh

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ENGINEERING GEOLOGY.
Logged GM.DD Date
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 48

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL
FEATURE MATERIALS SEARCH
LOCATION WEST OF LAKE WOOD
HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X .....m. Y SEE PLAN m.

SURFACE ELEVATION .....m.
DIP .....
BEARING .....
DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (C R E E R)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Origin name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL DATE
AEOLIAN SAND Lt. orange brown		1 2		Sand, m.-f.gr., dry, non plastic to low plasticity	SP			
AEOLIAN SAND Red brown				Clayey sand, low-med plasticity	SP-SC			
CALCRETE GRAVEL Lt. brown - white		3		Sandy gravel, 30% m.gr. max size 20mm, 60% silty sand; low plas	GP			
3.1m		4 5		END HOLE - REFUSAL				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

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ENGINEERING GEOLOGY.
Logged GA.00 Date
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Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 49

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOOD

HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X ..... m. Y SEE PLAN m.

SYSTEM .....

SURFACE ELEVATION ..... m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr St, Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, [field test data])	GROUP & SYMBOL	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1		Sand, m.-f.gr., dry becomming moist, non plastic	SP			
AS ABOVE		2		Clayey sand, m.-f.gr. moist, low-med plasticity	SP-SC			
CALCRETE GRAVEL Lt. brown - white		3		Sandy gravel, 60% m.-c.gr. 30% silty sand; minor low plasticity fines.	GM-GP			
3.0m		4		END HOLE - REFUSAL				
		5						

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
Fr St - Fresh, with limonite stained joints
Fr - Fresh

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ENGINEERING GEOLOGY.
Logged GAL DD Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 50

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOODS

HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X .....m. Y SEE PLAN m.

SYSTEM .....

SURFACE ELEVATION .....m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL DATE
AEOLIAN SAND Orange brown		1		Sand, m.-f.gr., dry, non plastic	SP			
CALCRETE GRAVEL Lt. brown - white		2		Sandy gravel, m.-c.gr. max size 40mm; non plastic	GP			
2.0m		3 4 5		END HOLE - REFUSAL				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
Fr SI - Fresh, with limonite stained joints
Fr - Fresh

@ Soil Classification System: Unified. (....) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged PM.00 Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 51

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL
FEATURE MATERIALS SEARCH
LOCATION WEST OF LAKE WOODS
HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X .....m. Y SEE PLAN m.
SYSTEM .....

SURFACE ELEVATION .....m.
DIP .....
BEARING .....
DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, consolidation, colour, structures)	DEGREE OF WEATHERING (C W H W M W S W F R)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown				Sand, m.-f.gr., dry, non plastic	SP			
CALCRETE GRAVELS Lt. brown - white		1		Sandy gravel	GP			
1.3m		2 3 4 5		END HOLE - REFUSAL				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
FrSt - Fresh, with limonite stained joints
Fr - Fresh

@ Soil Classification System: Unified.
(...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM.DO Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 52

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOODS

HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X.....m. Y SEE PLAN.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1		Sand, m.-f.gr. dry non plastic	SP			
CALCRETE GRAVEL Lt. brown - white				Sandy gravel	GP			
1.4m		2 3 4 5		END HOLE - REFUSAL				

Excavation Method

Make

Type

Operator

Commenced

Completed

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
Fr St - Fresh, with limonite stained joints
Fr - Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged GM.DO Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 53

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL
FEATURE MATERIALS SEARCH
LOCATION WEST OF LAKE WOODS
HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X .....m. Y SEE PLAN m.
SYSTEM

SURFACE ELEVATION .....m.
DIP
BEARING
DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW HW MW SW Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Lt. orange brown		1		Sand, m.-f.gr., dry non plastic	SP			
CALCRETE GRAVEL Lt. brown - white				Sandy gravel	GP			
1.6m		2 3 4 5		END HOLE - REFUSAL				

Excavation Method
Make
Type
Operator
Commenced
Completed

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
FrSt - Fresh, with limonite stained joints
Fr - Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GA.OO Date
Drawn
Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 54

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL
FEATURE MATERIALS SEARCH
LOCATION WEST OF LAKE WOODS
HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X .....m. Y SEE PLAN m.

SURFACE ELEVATION .....m.
DIP .....
BEARING .....
DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, consistency, colour, structures)	DEGREE OF WEATHERING	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Origin name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL ⊕	SAMPLE NUMBER	TESTS	GROUNDWATER LEVEL DATA
AEOLIAN SAND Orange brown		1 2		Sand, m.-f.gr., dry non plastic	SP			
		3		moist, low plasticity	SP			
3.4m		4 5		END HOLE - AUGERS JAMMED				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr SI – Fresh, with limonite stained joints
Fr – Fresh

⊕ Soil Classification System: Unified. (....) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM.DD Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 55

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PROJECT DARWIN-ALICE SPRINGS RAIL
FEATURE MATERIALS SEARCH
LOCATION WEST OF LAKE WOOD
HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X.....m. Y:SEE PLAN m.
SYSTEM

SURFACE ELEVATION.....m.
DIP.....
BEARING.....
DATUM.....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (X Z A A S)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, [field test data])	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	WATER LEVEL DATE
AEOLIAN SAND Brown			Silty, sand, f.gr., dry non plastic	SM			
AEOLIAN SAND Red brown		1	Sand m.-f.gr., dry non plastic	SP			
CALCRETE GRAVELS Lt. brown - white		2	Sandy gravels, f.-m.gr., max. size 15mm minor low plasticity fines	GP			
2.0m		3 4 5	END HOLE - REFUSAL				

Excavation Method .....
Make.....
Type.....
Operator.....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM.DD Date
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 56

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL
FEATURE MATERIALS SEARCH
LOCATION WEST OF LAKE WOODS
HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X .....m. Y SEE PLAN m.
SYSTEM .....

SURFACE ELEVATION .....m.
DIP .....
BEARING .....
DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (R S D E)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1		Sand, m.-f.gr., dry, non plastic	SP			
CALCRETE CLAYS Brown				Sandy clay, med. plasticity, 30% m.-f.gr., sand	CL			
CALCRETE GRAVEL Brown - white		2		Sandy gravel	GW-GP			
2.5m		3 4 5		END HOLE - REFUSAL				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (....) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GR.DD Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 57

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL
FEATURE MATERIALS SEARCH
LOCATION WEST OF LAKE WOODS
HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X.....m. SEE PLAN Y.....m.
SYSTEM

SURFACE ELEVATION.....m.
DIP.....
BEARING.....
DATUM.....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1 2		Sand, m.-f.gr., dry, non plastic	SP			
AS ABOVE				Clayey sand, m.-f.gr. moist, med. plasticity	SP-SC			
Brown				Clayey sand med plas.	SC			
CALCRETE GRAVELS Lt. brown - white		3		Sandy gravel, f.-m. gr., max. size 20mm, non plastic	GP			
3.1m		4 5		END HOLE - REFUSAL				

Excavation Method .....
Make.....
Type.....
Operator.....
Commenced.....
Completed.....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GMDD Date
Drawn .....
Checked.....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 58

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOODS

HOLE SIZE 150mm

CO-ORDINATES X .....m. Y SEE PLAN

SYSTEM .....

FROM: ..... TO: ..... TO: .....

SURFACE ELEVATION .....m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (XW SW SlW MW HW CW)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL ●	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown Weakly cemented		1 2		Sand, m.-f.gr., dry, non plastic	SP			
CALCRETE GRAVEL Lt. brown - white		3		Sandy gravel, low to very high strength Ms-Frst fragments, max. size 10mm.	GP			
3.8m		4 5		END HOLE - REFUSAL				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

● Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM.DD Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 59

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PROJECT DARWIN-ALICE SPRINGS RAIL
FEATURE MATERIALS SEARCH
LOCATION WEST OF LAKE WOODS
HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X SEE PLAN m.
Y m.
SYSTEM

SURFACE ELEVATION m.
DIP
BEARING
DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structure)	DEGREE OF WEATHERING (C W H M S F)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Brown to orange brown		1 2	Sand, m.-f.gr., dry non plastic	SP			
CALCRETE GRAVEL Lt. brown - white		3 4	Sandy gravel, f.-c.gr., max size 30mm, MW-SW low - high strength fragments	GW			
4.0m		5	END HOLE - REFUSAL				

Excavation Method
Make
Type
Operator
Commenced
Completed

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
Fr St - Fresh, with limonite stained joints
Fr - Fresh

* Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
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NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 60

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PROJECT: DARWIN-ALICE SPRINGS RAIL
FEATURE: MATERIALS SEARCH
LOCATION: WEST OF LAKE WOODS
HOLE SIZE: 150 mm

CO-ORDINATES: X .....m. Y: SEE PLAN m.
SYSTEM: ..... TO: ..... TO: .....

SURFACE ELEVATION: .....m.
DIP: .....
BEARING: .....
DATUM: .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (E, S, R, M, F)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Origin name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP @ SYMBOL	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown Weakly cemented		1 2		Sand, m.-f.gr., dry, non plastic	SP			
CALCRETE GRAVEL Lt. brown - white		3 4		Sandy gravel, m.-c.gr., max. size 35mm, MW-SQ high strength fragments	GP			
4.0m		5		END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
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NORTHERN TERRITORY GEOLOGICAL SURVEY

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GEOLOGICAL LOG

HOLE NO. AH 61

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PROJECT DARWIN-ALICE SPRINGS RAIL MATERIALS SEARCH

FEATURE

LOCATION WEST OF LAKE WOODS

HOLE SIZE 150mm TO: TO: TO:

COORDINATES X ..... m. Y SEE PLAN m.

SYSTEM

SURFACE ELEVATION ..... m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, colour, structure)	DEGREE OF WEATHERING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Grain size, general engineering data, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS
AEOLIAN SAND Orange brown		1	Sand, m.-f.gr., dry becoming moist, non plastic to low plasticity	SP		
AS ABOVE		2	Clayey sand, m.-f.gr, moist, low-med plas.	SP-SC		
AS ABOVE Weakly cemented		3	Sand, m.-f.gr., dry, low plasticity	SP		
3.7m		4	END HOLE - REFUSAL			
		5				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING:
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
F – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified. (....) means Laboratory Classification.

ENGINEERING GEOLOGY.
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NORTHERN TERRITORY GEOLOGICAL SURVEY

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GEOLOGICAL LOG

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOODS

HOLE SIZE 150mm TO: TO: TO:

CO-ORDINATES X .....m. Y SEE PLAN m.

SYSTEM .....

SURFACE ELEVATION .....m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Brown to orange brown		1 2 3		Sand, m.-f.gr., dry, non plasticity	SP			
		4		low plasticity				
CALCRETE GRAVEL Lt. brown - white 5.0m		5		Silty gravels, low strength CW-HW becoming MW-SW END HOLE	GM			

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified.
(...) means Laboratory Classification.

ENGINEERING GEOLOGY.
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NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 63

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PROJECT DARWIN-ALICE SPRINGS RAIL
FEATURE MATERIALS SEARCH
CO-ORDINATES X .....m. Y SEE PLAN m.
LOCATION WEST OF LAKE WOODS
SYSTEM .....
HOLE SIZE 150mm TO: ..... TO: ..... TO: .....

SURFACE ELEVATION .....m.
DIP .....
BEARING .....
DATUM .....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING R C H M S W F	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Lt. Brown		1		Sand, m.gr., dry non plastic	SP			
CALCRETE CLAYS Lt. brown				Silty clay, med plasticity, 30% m.gr., sand, dry.	CL			
CALCRETE GRAVEL Lt. brown - white		2 3 4		Silty gravel, f.-c.gr max. size 35mm, high strength.	GM-GW			
4.0m		5		END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
FrSt - Fresh, with limonite stained joints
Fr - Fresh

@ Soil Classification System: Unified. (....) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GMDD Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY
CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 86
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PROJECT. DARWIN-ALICE SPRINGS RAILWAY
FEATURE. MATERIALS SEARCH.
LOCATION WEST OF LAKEWOODS.
HOLE SIZE 165 mm. TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.
SYSTEM
SURFACE ELEVATION.....m.
DIP
BEARING
DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (C W H M S F)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Lt. orange brown		1		SAND m.-f.gr., dry, non plastic minor plastic fines	SP			
CALCRETE GRAVEL Lt. brn -white		2 3 4		GRAVEL m.-e.gr., max size 30mm, minor plastic fines	GP-GW			
4.0m		5		END HOLE				

Excavation Method ..AUGER.....
Make.....
Type.....
Operator.....
Commenced.....
Completed.....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM.DD. Date
Drawn
Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY
CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 87

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PROJECT . DARWIN-ALICE SPRINGS RAILWAY
FEATURE . MATERIALS SEARCH .
LOCATION . WEST OF LAKEWOODS
HOLE SIZE 165 mm . TO: ..... TO: ..... TO: .....

CO-ORDINATES X ..... m. Y ..... m.
SYSTEM .....

SURFACE ELEVATION ..... m.
DIP .....
BEARING .....
DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (R S C M H W)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUNDWATER LEVEL Date
AEOLIAN SAND Lt. orange brown		1		SAND, m.-f.gr., dry, non plastic	SP			
				minor plastic fines				
CALCRETE GRAVEL Brown-white		2 3 4		GRAVEL, m.gr., max. size 20mm, non plastic	GP			
4.0m		8		END HOLE				

Excavation Method ... AUGER ....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (....) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM.DD Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 88

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PROJECT DARWIN-ALICE SPRINGS RAILWAY

FEATURE MATERIALS SEARCH

LOCATION WEST OF LOCKWOODS

HOLE SIZE 165 mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING R C H M L C S	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Lt. orange brown		1		SAND m.-f.gr., dry, non plastic	SP			
CALCRETE GRAVEL Brown-white		2 3		GRAVEL m.-c.gr., max. size 20mm, non plastic	GP			
3.0m		4 5		END HOLE				

Excavation Method ..AUGER.....
Make.....
Type.....
Operator.....
Commenced.....
Completed.....

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
FrSt - Fresh, with limonite stained joints
Fr - Fresh

@ Soil Classification System: Unified. (....) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged Date
GM.DD.
Drawn
Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 90

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PROJECT DARWIN-ALICE SPRINGS RAILWAY

FEATURE MATERIALS SEARCH...

LOCATION WEST OF LAKEWOODS.

HOLE SIZE 165 mm .. TO: ..... TO: ..... TO: .....

CO-ORDINATES X.....m. Y.....m.

SYSTEM .....

SURFACE ELEVATION.....m.

DIP.....

BEARING.....

DATUM.....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW HW MW SW Fr Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1		SAND m.of.gr., dry, non plastic low plasticity	SP			
AEOLIAN AND RESIDUAL SAND Dk. orange brow-brown		2		CLAYEY SAND, m.-f.gr., med-low plasticity fines, moist	SC			
CALCRETE GRAVEL Brown-white med-high strength particles		3		GRAVEL c.gr, max. size 30mm, med. plastic fines	GP-GC			
3.7m		4 5		END HOLE				

Excavation Method .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM.DD Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY
CENTRAL ENGINEERING SERVICES

HOLE NO. AH 91

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GEOLOGICAL LOG

PROJECT DARWIN-ALICE SPRINGS RAILWAY
FEATURE MATERIALS SEARCH
LOCATION WEST OF LAKEWOODS
HOLE SIZE 165 mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.
SYSTEM
SURFACE ELEVATION.....m.
DIP
BEARING
DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr St, Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL*	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown to dk. orange brown		1		SAND m.-f.gr., dry, non plastic moist low plasticity	SP			
AEOLIAN SAND Red brown		2		as above low-med plasticity	SC			
CALCRETE GRAVEL Brown-white		3		GRAVEL, c.gr., max. size 30mm, med. plastic fines	GP- GC			
3.1m		4 5		END HOLE				

Excavation Method ...AUGER....
Make
Type
Operator
Commenced
Completed

WEATHERING.
CW- Completely weathered
HW- Highly weathered
MW- Moderately weathered
SW- Slightly weathered
Fr St- Fresh, with limonite stained joints
Fr- Fresh

* Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM.DD. Date
Drawn
Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

HOLE NO. AH 92

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CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

PROJECT DARWIN-ALICE SPRINGS RAILWAY

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKEWOODS

HOLE SIZE 165 mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM .....

SURFACE ELEVATION.....m.

DIP.....

BEARING.....

DATUM.....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING R C W M S G	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1 2 3		SAND m.-f.gr., dry. non plastic	SP			
CALCRETE GRAVEL Brown-white, low strength (10% high strength) particles 5.0m		5		GRAVEL f.-m.gr., max. size 10mm, low plastic silty fines END HOLE	GM-GP			

Excavation Method AUGER

Make.....

Type.....

Operator.....

Commenced.....

Completed.....

WEATHERING.
CW- Completely weathered
HW- Highly weathered
MW- Moderately weathered
SW- Slightly weathered
FrSt- Fresh, with limonite stained joints
Fr- Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged GM.DD. Date

Drawn.....

Checked.....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 93

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PROJECT: DARWIN-ALICE SPRINGS RAILWAY

FEATURE: MATERIALS SEARCH

LOCATION: WEST OF LAKEWOODS

HOLE SIZE: 165 mm TO:

CO-ORDINATES: X.....m. Y.....m.

SYSTEM:

TO:

TO:

SURFACE ELEVATION:.....m.

DIP:

BEARING:

DATUM:

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (Fr, FrSt, SW, MW, HW, CW)	DEPTH (metres) / CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
IRONSTONE-CALCRETE GRAVELS Brown, low-med. strength		1		GRAVEL 50% m.-c.gr., max. size 40mm, minor low plastic fines	GW			
as above med.-high strength		2		Gravel 60% m.gr., max. size 20mm, med. plastic fines	GP-	GC		
CALCRETE GRAVEL Brown-white, high strength				SILTY GRAVEL	GM			
2.6m		3 4 5		END HOLE				

Excavation Method ... AUGER

Make

Type

Operator

Commenced

Completed

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
FrSt - Fresh, with limonite stained joints
Fr - Fresh

* Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged G.M.DO Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 94

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PROJECT.. DARWIN-ALICE SPRINGS RAILWAY

FEATURE.. MATERIALS SEARCH.

LOCATION.. WEST OF LAKEWOODS

HOLE SIZE 165 mm TO:..... TO:..... TO:.....

CO-ORDINATES X.....m. Y.....m.

SYSTEM.....

SURFACE ELEVATION.....m.

DIP.....

BEARING.....

DATUM.....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING	DEPTH metres	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND		1		SAND, m.-f.gr., dry, low plastic fines	SP			
CALCRETE GRAVEL Brown-white		2 3 4		GRAVEL 30-40% mf.-m.gr., max. size 20mm, 10-20% low-med. plastic fines	GC			
4.0m		5		END HOLE				

Excavation Method ..AUGER.....
Make.....
Type.....
Operator.....
Commenced.....
Completed.....

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
Fr St - Fresh, with limonite stained joints
Fr - Fresh

@ Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GMDD Date
Drawn.....
Checked.....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 95

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PROJECT: DARWIN-ALICE SPRINGS RAILWAY

FEATURE: MATERIALS SEARCH

LOCATION: WEST OF LAKEWOODS

HOLE SIZE 165 mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (Lt, Lt/Mt, Mt, Mt/Ht, Ht, Ht/Ct, Ct)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1 2 3		SAND, m.-f.gr., dry, minor plastic fines	SP			
RESIDUAL SAND Lt. brown		4		CLAYEY SAND, m.-f.gr. dry, low plastic fines	SC			
CALCRETE SANDS Brown, low-med strength particles 5.0m		5		CLAYEY SAND f.-c.gr., 5-10% m.gr. gravel max size 20mm, low-med. plastic fines END HOLE	SC			

Excavation Method: AUGER

Make

Type

Operator

Commenced

Completed

WEATHERING.

CW – Completely weathered

HW – Highly weathered

MW – Moderately weathered

SW – Slightly weathered

FrSt – Fresh, with limonite stained joints

Fr – Fresh

* Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged GM. DD Date

Drawn

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NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. T 7

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PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION 75km

HOLE SIZE ..... TO: ..... TO: ..... TO: .....

CO-ORDINATES X ..... m. Y FIG. 12 m.

SYSTEM .....

SURFACE ELEVATION ..... m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr St, Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Red brown, loose open even texture, organic matter				SAND, m.f.gr., dry non plastic	SP			
RESIDUAL SAND Mottled lt. brn-red brn, med. dense, open even texture.		1		SILTY SAND, f.gr slightly moist, low plasticity	SM			
CALCRETE GRAVEL Mottled red brn-white dense with rounded low=high strength, CW-SW nodular calcrete.		2		SILTY GRAVEL 50-60% f.c.gr. max size 30mm 20-30% silty non plastic fine. (Increase percent and strength of gravel with depth)	GM			
CALCRETE GRAVEL Mottled brn-orange brn-white, dense to v.dense with rounded to sub-angular low-v.high strength HW-SW nodular calcrete		3		SILTY GRAVEL 70-80% f.-c.gr. max size 60mm 10-20% silty non plas fines SILTY GRAVEL 60% f.-cgr. 30% med strength; 10% high strength cobbles; 20% silty sand; non plas.	GM GM-GP			
2.9m		4		END HOLE - REFUSAL STRATA CONTINUING				
		5						

Excavation Method BACKHOE

Make .....

Type .....

Operator .....

Commenced .....

Completed .....

WEATHERING.

CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
FrSt - Fresh, with limonite stained joints
Fr - Fresh

* Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged G.M. Date

Drawn .....

Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. T 8

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL X.....m. SURFACE ELEVATION.....m.

FEATURE MATERIALS SEARCH CO-ORDINATES FIG. 13 Y.....m. DIP.....

LOCATION 80km SYSTEM..... BEARING.....

HOLE SIZE.....TO:.....TO:.....TO:..... DATUM.....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING	DEPTH (metres)	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Brown, loose, open even texture, organic matter					SAND, m.-f.gr., dry non plastic	SP			
AEOLIAN SAND Mottled lt brn-orange brn-red brn, med. dense to dense open even texture, vertical jointing		1			SAND, m.-f.gr., dry 20% silt; minor low plastic fines	SP			
CALCRETE GRAVEL Mottled brn-yell brn-orange brn-white, dense to v.dense with subangular, med-high strength calcrete nodules		2			SILTY GRAVEL, 30-40% f.-m.gr., max size 20mm 20-30% silt; 10-20% f.gr., sand, non plastic	GM-GP			
CALCRETE IRONSTONE As above except brn lt brn rounded nodules		3			GRAVEL, 60-70% f.-m.gr. 20-30% m.-f.gr. sand, minor silt, non plastic	GP-GW			
2.0m		4			END HOLE STRATA CONTINUING				
		5							

Excavation Method BACKHOE
Make.....
Type.....
Operator.....
Commenced.....
Completed.....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged G.M Date
Drawn.....
Checked.....

NORTHERN TERRITORY GEOLOGICAL SURVEY

HOLE NO. T9

Page of

GEOLOGICAL LOG

PROJECT DARWIN-ALICE SPRINGS RAIL
FEATURE MATERIALS SEARCH
LOCATION 80km
HOLE SIZE ..... TO: ..... TO: ..... TO: .....

CO-ORDINATES X ..... m. Y FIG 13 m.
SYSTEM .....

SURFACE ELEVATION ..... m.
DIP .....
BEARING .....
DATUM .....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING C M H S F	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL [1]	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL DATE
AEOLIAN SAND Brown-orange brown, med. dense-dense (loose to 0.3m) open even texture.		1		SAND, m.-f.gr., dry non plastic	SP (SC)			
				low plasticity				
RESIDUAL SAND Brown-yell brown dense, even texture		2		SILTY SAND, f.gr., dry, minor low plasticity	SM			
CALCRETE GRAVEL Mottled brown-white, dense-v. dense with angular med.-high strength MW calcrete nodules.		3		SILTY GRAVEL, 50% f.-c.gr; 20% f.gr. sand 20-30% silt; minor low plasticity fines	GM-GP			
3.2m		4		END HOLE STRATA CONTINUING				
		5						

Excavation Method BACKHOE
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

[1] Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. T10

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL MATERIALS SEARCH

FEATURE

LOCATION 90km

CO-ORDINATES X.....m. Y. FIG. 14

SYSTEM

HOLE SIZE.....TO:.....TO:.....TO:.....

SURFACE ELEVATION.....m.

DIP.....

BEARING.....

DATUM.....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING C F S R A	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, [field test data]	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL
AEOLIAN SAND RED BRN, LOOSE OPEN TEXT				SAND, m.-f.gr. dry non plastic	SP			
CALCRETE IRONSTONE Red brn, med. dense with well rounded med.-high strength ironstone nodules		1		SANDY GRAVEL, 60% f.-m.gr., max. size 20mm, 20-30% m.-f.gr. sand, non plastic	GP-GW			
CALCRETE GRAVELS Brn-grey-white, dense mix of calcrete and ironstone nodules med.-high strength				GRAVEL, 70-80% f.-c.gr. max. size 20mm, minor cobbles to 130mm; 10% f.gr. sand; non plastic	GP			
CALCRETE GRAVELS Mott. brn-yell. brn-white, med. dense-dense with med- v. high strength nodules		2		GRAVEL, 60% f.-c.gr. 10% f.gr. sand; 20-30% silt; minor low plastic fines	GM-GW			
2.2m		3 4 5		END HOLE - REFUSAL STRATA CONTINUING				

Excavation Method BACKHOE

Make.....

Type.....

Operator.....

Commenced.....

Completed.....

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
Fr St - Fresh, with limonite stained joints
Fr - Fresh

@ Soil Classification System: Unified. (....) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged GM Date

Drawn.....

Checked.....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. T11

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

CO-ORDINATES X .....m Y FIG. 15 m

SURFACE ELEVATION .....m.

DIP .....

BEARING .....

LOCATION 98km

SYSTEM .....

HOLE SIZE ..... TO: ..... TO: ..... TO: .....

DATUM .....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING CW HW MW SW FrSt Fr	DEPTH metres	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Brown to orange brn med. dense to dense (loose to 0.3m), open even texture		1			SAND, m.-f.gr., dry minor, low plastic fines from 0.3m	SP (SC)			
CALCRETE IRONSTONE Brown, very dense with well rounded high strength ironstone nodules		2 3			GRAVEL, 70-80% f.-c.gr., max. size 40mm, 10-15% silt, minor, low plastic fines. Minor calcrete nodules.	GW			
3.0m		4 5			END HOLE STRATA CONTINUING				

Excavation Method BACKHOE

Make .....

Type .....

Operator .....

Commenced .....

Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged GM Date

Drawn .....

Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. T 12

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION 98km

HOLE SIZE ..... TO: ..... TO: ..... TO: .....

CO-ORDINATES X ..... m. Y FIG. 15m.

SYSTEM .....

SURFACE ELEVATION ..... m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr)	DEPTH (metres)	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN DAND Red brn-brown, med. dense-dense, open even texture.		1			SAND, m.-f.gr., dry, minor, low plastic fines	SP			
CALCRETE GRAVEL Brown-white, dense-v. dense with rounded to sub angular, low-high strength HW-SW calcrete nodules		2			SILTY GRAVEL, 60-70% f.-c.gr., max. size 50mm, 10-20% m.-f.gr. silty sand, minor low plastic fines.	GM-GW			
2.4m		3 4 5			END HOLE STRATA CONTINUING				

Excavation Method BACKHOE

Make .....

Type .....

Operator .....

Commenced .....

Completed .....

WEATHERING.

CW – Completely weathered

HW – Highly weathered

MW – Moderately weathered

SW – Slightly weathered

Fr St – Fresh, with limonite stained joints

Fr – Fresh

* Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged GM. Date

Drawn .....

Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. T 13

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION 105km

HOLE SIZE ..... TO: ..... TO: ..... TO: .....

CO-ORDINATES X ..... m. Y ..... m.

SYSTEM .....

SURFACE ELEVATION ..... m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING CW HW MW SW Fr St Fr	DEPTH metres	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Brown, med. dense to dense weakly cemented, open even texture		1			SAND, m.-f.gr., dry, non plastic	SP			
mottled red brn-yell brn-brn.					SILTY GRAVEL 50% f.-c gr. max size 100mm, 40-50% sandy silt, low plastic	GM-GW			
CALCRETE GRAVELS BRN-white, dense to [illegible]		2			END HOLE STRATA CONTINUING				
		3							
		4							
		5							

Excavation Method BACKHOE

Make .....

Type .....

Operator .....

Commenced .....

Completed .....

WEATHERING

CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged GM. DD. Date

Drawn .....

Checked .....

TO NEWCASTLE WATERS

TRACK

ACCESS

TRACK

BENAUD BORE

AH88
SP
GP
3·0m

OPEN EUCALYPT TERRAIN

AH57
SP
SP-SC
GW
3·1m

AH93
T12
T11.

AREA 'G'
FOR DETAILS SEE FIG 15.

AH51
AH50
T10
AH53
AH52

AREA 'F'
FOR DETAILS SEE FIG 14.

TRACK

105Km
T13
AH87
SP
GP
4·0m

AH60
SP
GP
4·0m.

AH58
SP
SP
4·0m
GP
3·8m

AH59
SP
GW

100Km
AH92
AH91
SP
SP-SC
GP-GC
3·1m

AH90
SP
SC
GP-GC
5·0m
3·7m
GM-GP

95Km
TRACK
AH86
SP
GP-GW
4·0m

90Km
AH49
SP
SP-SC
GM-GP
3·0m

FRONTAL

85Km
AH62
AH48
AH61
SP
SP
SP-SC
GP
3·1m
GM
3·7m
5·0m

ACCESS

80Km
T8
T9
AH47

AREA 'E'
FOR DETAILS SEE FIG 13.

AH95
SP
SP-SC
SC GRAVELLY
5·0m

OPEN EUCALYPT AND WATTLE TERRAIN

CLAY PAN

AH63
SP
CL
GW-GM
4·0m

CLAY PAN

AH89
SP
GP-GC
5·0m

AH94
SP
GC
4·0m

AH56
AH55
75Km
T7
AH46
AH54

AREA 'D'
FOR DETAILS SEE FIG 12.

CLAY PAN

70Km
T6
AH65
AH67
AH64
AH44
AH45
T4
T5

AREA 'C'
FOR DETAILS SEE FIG 11.

SP
4·5m

DUNE

DUNE

FRONTAL

OPEN EUCALYPT TERRAIN

N

CENTRAL ENGINEERING SERVICES

MATERIALS SEARCH
WEST OF LAKE WOODS
DISTANCE 70 km – 100 km.

GEOLOGY	SCALE	DATE	DRAWN
G. MULES	1:50 000	10 JULY '82	G.L.

FIG 4

GS82/11

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 89

Page of

PROJECT. DARWIN-ALICE SPRINGS RAILWAY

FEATURE. MATERIALS SEARCH.

LOCATION. WEST OF LAKEWOODS

HOLE SIZE 165 mm. TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

TO:

TO:

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Lt. brown		1		SAND m.-f.gr., dry non plastic minor low plasticity	SP			
CALCRETE GRAVEL Brown, low strength HW fragments		2 3 4 5		GRAVEL m.gr., max. size 15mm, 15-20% low-med plastic fines	GP-GC			
5.0m				END HOLE				

Excavation Method AUGER

Make

Type

Operator

Commenced

Completed

WEATHERING.

CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
FrSt - Fresh, with limonite stained joints
Fr - Fresh

Soil Classification System: Unified.
(...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged GM.DD. Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 96

Page of

PROJECT . DARWIN-ALICE SPRINGS RAILWAY

FEATURE . MATERIALS SEARCH .

LOCATION . WEST OF LAKEWOODS

HOLE SIZE 165 mm . TO: ..... TO: ..... TO: .....

CO-ORDINATES X ..... m. Y ..... m.

SYSTEM .....

SURFACE ELEVATION ..... m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING CW HW MW SW Fr St Fr	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1		SAND, m.-f.gr., dry. minor low plastic fines	SP			
CALCRETE GRAVEL Brown-white, med.-high strength particles		2 3		GRAVEL 20-30%, f.-m.gr., max. size 15mm 10% low plastic fines	GP			
3.0m		4 5		END HOLE				

Excavation Method . AUGER .....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
Fr St - Fresh, with limonite stained joints
Fr - Fresh

* Soil Classification System: Unified.
( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM.DD Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 97

Page of

PROJECT DARWIN-ALICE SPRINGS RAILWAY CO-ORDINATES X.....m. SURFACE ELEVATION.....m.

FEATURE MATERIALS SEARCH Y.....m. DIP.....

LOCATION WEST OF LAKEWOODS SYSTEM..... BEARING.....

HOLE SIZE 165 mm TO:..... TO:..... TO:..... DATUM.....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW HW MW SW FrSt Fr)	DEPTH metres	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1			SAND m.-f.gr., dry. non plastic low plasticity	SP			
AEOLIAN SAND Orange brown		2			CLAYEY SAND, m-f.gr, 5% gravel, max size 15mm, moist, low-med. plasticity	SC			
RESIDUAL CLAY		3			SANDY CLAY low-med. plasticity, 30-40% sand, minor gravel, moist	CL			
3.5m		4 5			END HOLE				

Excavation Method AUGER

Make.....

Type.....

Operator.....

Commenced.....

Completed.....

WEATHERING.

CW- Completely weathered
HW- Highly weathered
MW- Moderately weathered
SW- Slightly weathered
FrSt- Fresh, with limonite stained joints
Fr- Fresh

* Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged GM.DD Date.....

Drawn.....

Checked.....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 98

Page of

PROJECT DARWIN-ALICE SPRINGS RAILWAY CO-ORDINATES X.....m. SURFACE ELEVATION.....m.

FEATURE MATERIAL SEARCH Y.....m. DIP.....

LOCATION WEST OF LAKESWOOD. SYSTEM..... BEARING.....

HOLE SIZE 165 mm TO:..... TO:..... TO:..... DATUM.....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING Fr St / Fr / SW / MW / HW / CW	DEPTH metres	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Lt. brown		1			SILTY SAND, m.f.gr. dry, non plastic	SM			
AEOLIAN SAND Lt. brown with well rounded, low strength nodules		2 3			CLAYEY SAND, f.-m.gr. 5-10% f.-m. gr. gravel, 20% med. 20% med. plastic fines	SC			
RESIDUAL CLAYS Brown with minor high strength calerete nodules		4			CLAY med plastic 5-10%m.-c.gr. gravel to 25mm gravel to 25mm, moist	CL			
5.0m		5			END HOLE				

Excavation Method AUGER

Make.....

Type.....

Operator.....

Commenced.....

Completed.....

WEATHERING.

CW – Completely weathered

HW – Highly weathered

MW – Moderately weathered

SW – Slightly weathered

FrSt – Fresh, with limonite stained joints

Fr – Fresh

* Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged Date

.....

Drawn.....

Checked.....

NORTHERN TERRITORY GEOLOGICAL SURVEY

HOLE NO. AH 99

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CENTRAL ENGINEERING SERVICES
GEOLOGICAL LOG

PROJECT DARWIN-ALICE SPRINGS RAIL
FEATURE MATERIALS SEARCH
LOCATION WEST OF LAKE WOODS
HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X .....m. Y SEE PLAN
SYSTEM .....

SURFACE ELEVATION .....m.
DIP .....
BEARING .....
DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL (a)	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Lt. brown				Silty sand, f.gr., dry non plastic	SM			
AS ABOVE		1		Sand m.-f.gr., dry low plastic fines	SP			
RESIDUAL CLAYS Brown with high strength calcrete nodules		2 3 4 5		Sandy clay, med. plasticity, 20-30% m.-f.gr. sand, 5% gravel to 20mm moist	CL			
5.0m				END HOLE				

Excavation Method AUGER
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr SI – Fresh, with limonite stained joints
Fr – Fresh

(a) Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM.DD Date
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH100

Page of

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Wood

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (R S E A F)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL
AEOLIAN SAND Orange brown		1		SAND, m.-f.gr., dry, non plastic.	SP			
		2		low plasticity				
CEMENTED SAND GRAVEL Brown with weakly cemented sand nodules		3		CLAYEY GRAVEL 30-40% gravels, max.size 25mm 40-50% sand, low-med. plasticity.	GP-GC			
3.1m		4		END HOLE				
		5						

Excavation Method AUGER

Make

Type

Operator

Commenced

Completed

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged Date

Grid D@

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

HOLE NO. AH 101

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CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

PROJECT DARWIN-ALICE SPRINGS RAIL x.....m. SURFACE ELEVATION.....m.

FEATURE MATERIALS SEARCH CO-ORDINATES SEE PLAN m. DIP.....

LOCATION WEST OF LAKE WOODS SYSTEM..... BEARING.....

HOLE SIZE 165mm TO:..... TO:..... TO:..... DATUM.....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr St, Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
RESIDUAL CLAY Brown with minor high strength calcrete nodules		1 2 3 4 5		Silty clay, low plastic, S-10% gravel max. size 15mm, 10% f.gr. sand	ML-CL			
5.0m				END HOLE				

Excavation Method AUGER
Make.....
Type.....
Operator.....
Commenced.....
Completed.....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified.
( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GMDD. Date
Drawn.....
Checked.....

NORTHERN TERRITORY GEOLOGICAL SURVEY

HOLE NO. AH 102

Page of

CENTRAL ENGINEERING SERVICES
GEOLOGICAL LOG

PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH CO-ORDINATES X ..... m Y SEE PLAN m.

LOCATION WEST OF LAKE WOODS SYSTEM .....

HOLE SIZE 165mm TO: ..... TO: ..... TO: .....

SURFACE ELEVATION ..... m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING CW HW MW SW Fr St Fr	DEPTH (metres)	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1 2			Sand m.-f.gr., dry to moist to med. plastic	SP			
RESIDUAL CLAY Dk. brown		3			Sandy clay	SC-CL			
RESIDUAL CLAYEY SAND Yellow brown with med.-high strength calcrete nodules					Clayey sand, m.-f.gr. 10-15% m.-c.gr. gravel max. size 30mm, med. plasticity	SC			
3.5m		4 5			END HOLE				

Excavation Method AUGER

Make .....

Type .....

Operator .....

Commenced .....

Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged GMDD. Date .....

Drawn .....

Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

HOLE NO. AH 103

Page of

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

PROJECT DARWIN-ALICE SPRINGS RAIL X.....m. SURFACE ELEVATION.....m.

FEATURE MATERIALS SEARCH CO-ORDINATES Y SEE PLAN m. DIP.....

LOCATION WEST OF LAKE WOODS SYSTEM..... BEARING.....

HOLE SIZE 165mm TO:..... TO:..... TO:..... DATUM.....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING (CW HW MW SW Fr St Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1		Sand m.f.gr., dry non plastic	SP			
CALCRETE GRAVEL Lt. brown-white with high strength calcrete nodules		2 3 4		Clayey gravel 60-70% f.-c.gr. gravel max. size 35mm, med. plastic clays	GC			
4.0m		5		END HOLE				

Excavation Method AUGER
Make.....
Type.....
Operator.....
Commenced.....
Completed.....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM.DO Date
Drawn.....
Checked.....

NORTHERN TERRITORY GEOLOGICAL SURVEY

HOLE NO. AH 104

Page of

CENTRAL ENGINEERING SERVICES
GEOLOGICAL LOG

PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOODS

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X .....m. Y SEE PLAN m.

SYSTEM .....

SURFACE ELEVATION .....m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW HW MW SW FrSt Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Lt. brown		1 2		Sand m.-f.gr., dry, non plastic low plasticity	SP			
CALCRETE GRAVEL Lt. brown-white with high strength calcrete nodules.		3 4		Clayey Gravel 60-70% f.-c.gr. gravel, max size 35mm med. plastic clay	GC			
4.0m		5		END HOLE				

Excavation Method AUGER
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified.
( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GMDD Date
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 105

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL CO-ORDINATES X .....m. SURFACE ELEVATION .....m.

FEATURE MATERIALS SEARCH Y SEE PLAN DIP .....

LOCATION WEST OF LAKE WOODS SYSTEM ..... BEARING .....

HOLE SIZE 165mm TO: ..... TO: ..... TO: ..... DATUM .....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING R C F S E T	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1		Sand m.-f.gr., dry, non plastic	SP			
CALCRETE GRAVEL Brown with high strength calcrete nodules		2 3		Gravel 60% m.gr. with 20-30% m.-f.gr. sand low plastic fines	GP			
3.0m		4 5		END HOLE				

Excavation Method AUGER
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
Fr St - Fresh, with limonite stained joints
Fr - Fresh

@ Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM.DD. Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 106

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKE WOODS

HOLE SIZE 165mm TO TO TO

CO-ORDINATES X .....m. Y SEE PLAN m.

SYSTEM .....

SURFACE ELEVATION .....m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW HW MW SW Fr St Fr)	DEPTH (metres)	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1			Sand m.-f.gr., dry non plastic	SP			
AS ABOVE		2			AS ABOVE med. plasticity	SC			
SANDY CLAY Brown with minor cemented sand nodules of low strength		4			Sandy clay, low-med. plasticity, 5-10% gravel.	CL			
4.1m		5			END HOLE				

Excavation Method AUGER

Make .....

Type .....

Operator .....

Commenced .....

Completed .....

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
FrSt - Fresh, with limonite stained joints
Fr - Fresh

* Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged GM.DD Date .....

Drawn .....

Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH107

Page of

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Woods

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING CW HW MW SW FrSt Fr	DEPTH metres	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1			SAND, m.-f.gr., dry, non plastic.	SP			
AEOLIAN SAND Orange brown		2			SAND, m.-f.gr., moist, low-med. plasticity.	SC			
AEOLIAN SAND Orange brown with cemented sand nodules		3			GRAVELLY SAND, m.-f.gr., moist, max. size gravel 7mm, low plastic	GC			
3.2m		4			END HOLE				
		5							

Excavation Method AUGER

Make

Type

Operator

Commenced

Completed

WEATHERING.
CW- Completely weathered
HW- Highly weathered
MW- Moderately weathered
SW- Slightly weathered
FrSt- Fresh, with limonite stained joints
Fr- Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged DD Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH108

Page of

PROJECT: Darwin - Alice Springs Rail

FEATURE: Material Search

LOCATION: West of Lake Wood

HOLE SIZE: 165mm TO: TO: TO:

CO-ORDINATES X: m. Y: m. SYSTEM

SURFACE ELEVATION: m.

DIP:

BEARING:

DATUM:

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW HW MW SW Fr St Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1		SAND, m.-f.gr., dry non plastic.	SP			
Red brown		2 3		moist, low plasticity				
3.6m		4 5		END HOLE				

Excavation Method ...AUGER...
Make.....
Type.....
Operator.....
Commenced.....
Completed.....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified.
(..) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged DD Date
Drawn.....
Checked.....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH109

Page of

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Woods

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW HW MW SW FrSt Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1 2 3		SAND, m.-f.gr., dry, non plastic.	SP			
3.8m		4 5		END HOLE				

Excavation Method AUGER

Make

Type

Operator

Commenced

Completed

WEATHERING.

CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
FrSt - Fresh, with limonite stained joints
Fr - Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged DD Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH110

Page of

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Woods

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW HW MW SW Fr St Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1		SAND, m.-f.gr., dry minor low plastic.	SP			
AEOLIAN SAND Dk. brown-yellow brown with weakly cemented sand nodules		2 3		GRAVELLY SAND, f.-c.gr., moist, 15-20% gravel to 20mm, low-med. plasticity.	SC			
3.1m		4 5		END HOLE				

Excavation Method AUGER

Make

Type

Operator

Commenced

Completed

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
Fr St - Fresh, with limonite stained joints
Fr - Fresh

@ Soil Classification System: Unified.
(...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged DD Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH111

Page of

PROJECT: Darwin - Alice Springs Rail

FEATURE: Material Search

LOCATION: West of Lake Woods

CO-ORDINATES X.....m. Y.....m.

SYSTEM.....

HOLE SIZE.....TO:.....TO:.....TO:.....

SURFACE ELEVATION.....m.

DIP.....

BEARING.....

DATUM.....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW HW MW SW Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL*	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Brown - grey				SILTY SAND, f.gr., dry, non plastic.	SM			
AECLIAN SAND Lt. brown		1 2 3		SAND, m.-f.gr., dry, minor plastic fines.	SP			
AEOLIAN SAND Orange brown with weakly cemented sand nodules.				SAND, m.-f.gr., moist, low-med. plasticity.	SC			
3.9m		4 5		END HOLE				

Excavation Method ...AUGER....

Make.....

Type.....

Operator.....

Commenced.....

Completed.....

WEATHERING.

CW - Completely weathered

HW - Highly weathered

MW - Moderately weathered

SW - Slightly weathered

FrSt - Fresh, with limonite stained joints

Fr - Fresh

* Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged DD Date

Drawn.....

Checked.....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH112

Page of

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Woods

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown				SAND, m.-f.gr., dry, minor plasticity	SP			
AEOLIAN SAND Brown with weakly cemented sand nodules		1 2 3		GRAVELLY SAND, m.-f.gr., 30-50% low-med. strength gravel, max. size 20mm, med. plasticity minor gravels	GC			
3.0m		4 5		END HOLE				

Excavation Method ...AUGER....

Make.....

Type.....

Operator.....

Commenced.....

Completed.....

WEATHERING.

CW – Completely weathered

HW – Highly weathered

MW – Moderately weathered

SW – Slightly weathered

Fr St – Fresh, with limonite stained joints

Fr – Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged DD. Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH113

Page of

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Woods

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1		SAND, m.-f.gr., dry, minor low plastic fines	SP			
AEOLIAN SAND Brown				CLAYEY SAND, m.-f.gr., moist, low-med. plasticity.	SC			
RESIDUAL CLAYS Red brown - lt. brown with high strength calcrete nodules.		2 3		GRAVELLY CLAYS, med. plasticity, 15-25% gravels, max. size 35mm, 15% m.-f.gr. sand.	CL			
CALCRETE GRAVEL Lt. brown-white with high strength calcrete nodules		4		CLAYEY GRAVEL 50-60% c.gr., max. size 40mm. med. plastic fines and silt.	GP-GC			
4.3m		5		END HOLE				

Excavation Method ...AUGER....
Make.....
Type.....
Operator.....
Commenced.....
Completed.....

WEATHERING.
CW- Completely weathered
HW- Highly weathered
MW- Moderately weathered
SW- Slightly weathered
Fr St- Fresh, with limonite stained joints
Fr- Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged DD Date
Drawn
Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CEN AL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH114

Page of

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Woods

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr St, Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown with weakly cemented sand nodules.		1 2		SAND, m.-f.gr., dry to moist, low plasticity 20% gravel, max. size 10mm.	SP			
AEOLIAN SAND Dk. brown with weakly cemented sand nodules.				GRAVELLY CLAY SAND, m.-f.gr., 30-40% m.gr. gravel, low-med. plasticity.	GP-GC			
CALCRETE GRAVEL Lt. brown-white with high strength calcrete nodules.		3 4		CLAYEY GRAVEL, 50-60% m.-c.gr., low plastic fines, minor sand.	GP-GC			
4.0m		5		END HOLE				

Excavation Method AUGER

Make

Type

Operator

Commenced

Completed

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged DD.GM Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH115

Page of

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Woods

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW HW MW SW Fr St Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP & SYMBOL	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1		SAND, m.-f.gr., dry non plastic.	SP			
AEOLIAN SAND Orange brown with weakly cemented sand nodules		2		GRAVELLY SAND, m.-f.gr., 50% m.-c.gr., gravel, non plastic.	SP			
RESIDUAL CLAY Brown with calcrete		3		CLAY, med. plasticity 20% silt, 10-15% gravel.	CL			
CALCRETE GRAVEL Lt. brown-white with high strength calcrete nodules.		4		CLAYEY GRAVEL, f.-m.gr., max. size 40mm, 10% sand, low-med. plastic fines.	GP-GC			
4.0m		5		END HOLE				

Excavation Method AUGER

Make

Type

Operator

Commenced

Completed

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
FrSt - Fresh, with limonite stained joints
Fr - Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged DD.GM Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH116

Page of

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Woods

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr St, Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1		SAND, m.-f.gr., dry, minor low plastic fines.	SP			
AEOLIAN SAND Orange brown with weakly cemented sand nodules.		2		SAND, m.-f.gr., moist, 10-20% gravel, low-med. plasticity.	SC			
RESIDUAL CLAYS Brown				SILTY CLAY, med. plasticity, 20% sand, 30-40% silt.	CL			
CALCRETE GRAVEL Lt. brown-white with high strength calcrete nodules.		3 4		CLAYEY GRAVEL, 50% f.-c.gr., max. size 40mm, med plastic fines and silt, moist.	GP-GC			
5.0m		5		END HOLE				

Excavation Method ...AUGER....
Make.....
Type.....
Operator.....
Commenced.....
Completed.....

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
Fr St - Fresh, with limonite stained joints
Fr - Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged DD, GM Date
Drawn
Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. T 15

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION 115km

CO-ORDINATES X ..... m. Y FIG 16 m.

SYSTEM .....

HOLE SIZE ..... TO: ..... TO: ..... TO: .....

SURFACE ELEVATION ..... m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structure)	DEGREE OF WEATHERING (C, H, M, S, F, Pr, Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Brown-red brown, med. dense (loose to 0.4m) open even texture.		1		SAND, m.-f.gr., dry non plastic	SP			
CALCRETE GRAVELS Brown-white, dense. with angular high strength calcrete nodules				GRAVEL, f.-c.gr max. size 100mm; 15-20% m.gr. sand, 10-15% silty non plastic fines	GW			
1.7m		2 3 4 5		END HOLE STRATA CONTINUING				

Excavation Method BACKHOE

Make .....

Type .....

Operator .....

Commenced .....

Completed .....

WEATHERING.

CW – Completely weathered

HW – Highly weathered

MW – Moderately weathered

SW – Slightly weathered

Fr St – Fresh, with limonite stained joints

Fr – Fresh

@ Soil Classification System: Unified. (.....) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged GM Date .....

Drawn .....

Checked .....

BLACK SOIL PLAIN

AH148 SP 5.0m

AH149 SP 5.0m

AH150 SP 5.0m

TOMKINSON CR. FLOODOUT

AH153 SP 5.0m

AH152 SP 5.0m

TO MUCKATY

ACCESS

135Km

AH117 SP GW-GC 3.0m

T17 T16

AREA 'J' FOR DETAILS SEE FIG. 18

140Km

ACCESS

145Km

T18 AH118 SP SP-SC GP 4.0m

150Km

AH119 SP 5.0

155Km

AH120 SP 4.5m

160Km

AH121 SP 4.8m

TRACK

165Km

AH122 SP 5.0m

170Km

AH123 SP 5.0m

WATERHOLE Sacred Site S3

ROCKY RIDGE

AH124 SP GP 1.1m

T19

TRACK

T20

TRIG. STATION

AH151 SP 5.0m

ROCK OUTCROP AND LATERITE RISES

FRONTAL DUNE

N

CENTRAL ENGINEERING SERVICES

MATERIALS SEARCH
WEST OF LAKE WOODS
DISTANCE 135km-170Km

GEOLOGY	SCALE	DATE	DRAWN
G. MULES	1: 50 000	10 JULY '82	G. L.

FIG 6

GS80/11

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH117

Page of

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Wood

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m. SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown-red brown		1		SAND, m.-f.gr., dry, non plastic to low plastic.	SP			
CALCRETE GRAVEL Brown white with high strength calcrete nodules.		2 3		CLAYEY GRAVEL, 60-70% m.-x.gr., max. size 50mm, 20% sand, mod. plastic fines.	GW-GC			
3.0m		4 5		END HOLE				

Excavation Method ... AUGER

Make

Type

Operator

Commenced

Completed

WEATHERING

CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged DD.GM Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH118

Page of

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Woods

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING CW HW MW SW FrSt Fr	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown to red brown		1 2 3		SAND m.-f.gr., dry to moist, non plastic to low plasticity.	SI			
AEOLIAN SAND Red brown with weakly cemented sand nodules.				CLAYEY SAND, m.-f.gr., 10% gravel, moist, low-med. plasticity.	SC			
QUARTZITE GRAVEL		4		SANDY GRAVEL	GP			
4.0m		5		END HOLE				

Excavation Method ...AUGER....
Make.....
Type.....
Operator.....
Commenced.....
Completed.....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged G.M.D.D. Date
Drawn
Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH110

Page of

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Woods

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (R, H, E, D, C, T)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP & SYMBOL	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL (Date)
AEOLIAN SAND Orange brown		1		SAND, m.-f.gr., dry minor low plastic.	SP			
AEOLIAN SAND Dk. brown-yellow brown with weakly cemented sand nodules		2 3		GRAVELLY SAND, f.-c.gr., moist, 15-20% gravel to 20mm, low-med. plasticity.	SC			
3.1m		4		END HOLE				

NORTHERN TERRITORY GEOLOGICAL SURVEY
CENTRAL ENGINEERING SERVICES

HOLE NO. AH119

Page of

GEOLOGICAL LOG

PROJECT Darwin - Alice Springs Rail
FEATURE Material Search
LOCATION West of Lake Woods
HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.
SYSTEM

SURFACE ELEVATION.....m.
DIP
BEARING
DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL
AEOLIAN SAND Orange brown to red brown		1 2 3 4 5		SAND, m.-f.gr. dry, non plastic to low plastic fines, minor gravels.	SP			
5.0m				END HOLE				

Excavation Method ... AUGER
Make
Type
Operator
Commenced
Completed

WEATHERING
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY
Logged GLD Date
Drawn
Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH120

Page of

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Woods

HOLE SIZE 165mm TO:

CO-ORDINATES X.....m. Y.....m. SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

TO: TO:

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general appearance also, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown			SAND, m.-f.gr., dry to moist, non plastic.	SP			
			Minor cemented sand nodules.				
4.5m			END HOLE				

Excavation Method AUGER

Make

Type

Operator

Commenced

Completed

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM.DD Date
Drawn
Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH121

Page of

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Woods

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m. SYSTEM

SURFACE ELEVATION.....m.

DIP.....

BEARING.....

DATUM.....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Origin name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL	SAMPLE NUMBER	TESTS	WATER LEVEL
AEOLIAN SAND Orange brown		1		SAND, m.-f.gr., dry, non plastic.				
		2		minor plastic fines				
		3						
		4						
4.8m		5		END HOLE				

Excavation Method ...AUGER....

Make.....

Type.....

Operator.....

Commenced.....

Completed.....

WEATHERING.

CW – Completely weathered

HW – Highly weathered

MW – Moderately weathered

SW – Slightly weathered

FrSt – Fresh, with limonite stained joints

Fr – Fresh

@ Soil Classification System: Unified. (....) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged G.M.D.D. Date

Drawn.....

Checked.....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH122

Page of

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Wood

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structure)	DEGREE OF WEATHERING (C W, H W, M W, S W, Fr St, Fr)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL ●	SAMPLE NUMBER	TESTS	GROUNDWATER LEVEL DATE
AEOLIAN SAND Orange brown			SAND, m.-f.gr., dry to moist, non plastic.	SP			
5.0m			END HOLE				

Excavation Method ...AUGER...

Make.....

Type.....

Operator.....

Commenced.....

Completed.....

WEATHERING.

CW – Completely weathered

HW – Highly weathered

MW – Moderately weathered

SW – Slightly weathered

Fr St – Fresh, with limonite stained joints

Fr – Fresh

● Soil Classification System: Unified.

(...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged GR. DD. Date

Drawn.....

Checked.....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH123

Page of

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Wood

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m. SYSTEM

SURFACE ELEVATION.....m. DIP..... BEARING..... DATUM.....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, consolidation, colour, structures)	DEGREE OF WEATHERING (C, H, M, S, F, R)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL	SAMPLE NUMBER	TESTS	WATER LEVEL
AEOLIAN SAND Orange brown			SAND, m.-f.gr.,dry, non plastic.	SP			
5.0m		END HOLE					

Excavation Method AUGER

Make.....

Type.....

Operator.....

Commenced.....

Completed.....

WEATHERING.

CW - Completely weathered

HW - Highly weathered

MW - Moderately weathered

SW - Slightly weathered

Fr St - Fresh, with limonite stained joints

Fr - Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged G.M.D. Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY
CENTRAL ENGINEERING SERVICES

HOLE NO. AH 148

Page of

GEOLOGICAL LOG

PROJECT DARWIN-ALICE SPRINGS RAILWAY
FEATURE MATERIALS SEARCH
LOCATION WEST OF LAKEWOODS
HOLE SIZE ..... TO: ..... TO: ..... TO: .....

CO-ORDINATES X ..... m. Y ..... m.
SYSTEM .....

SURFACE ELEVATION ..... m.
DIP .....
BEARING .....
DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr St, Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL #	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown-red brown		1 2 3 4 5		SAND, m.-f.gr., dry non plastic	SP			
				Minor cemented nodules				
5.0m				END HOLE				

Excavation Method ... AUGER
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

Soil Classification System: Unified. (....) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged D.D. Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY
CENTRAL ENGINEERING SERVICES

HOLE NO. AH 149

Page of

GEOLOGICAL LOG

PROJECT. DARWIN-ALICE SPRINGS RAILWAY
FEATURE. MATERIALS SEARCH
LOCATION WEST OF LAKEWOODS.
HOLE SIZE ..... TO: ..... TO: ..... TO: .....

CO-ORDINATES X.....m. Y.....m.
SYSTEM .....

SURFACE ELEVATION.....m.
DIP.....
BEARING.....
DATUM.....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (Fr, FrSt, SW, MW, HW, CW)	DEPTH (metres)	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown- red brown		1 2 3 4 5			SAND m.-f.gr., dry, non plastic Minor cemented nodules END HOLE	SP			

5.0m

Excavation Method ....AUGER.....
Make.....
Type.....
Operator.....
Commenced.....
Completed.....

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
FrSt - Fresh, with limonite stained joints
Fr - Fresh

* Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged D.D. Date
Drawn .....
Checked.....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 150

Page of

PROJECT DARWIN-ALICE SPRINGS RAILWAY

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKEWOODS.

HOLE SIZE ..... TO: ..... TO: ..... TO: .....

CO-ORDINATES X ..... m. Y ..... m.

SYSTEM .....

SURFACE ELEVATION ..... m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (Fr, SW, MW, HW, CW)	DEPTH (metres)	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Yellow brown		1 2 3 4 5			SAND m.-f.gr, dry non plastic	SP			
5.0m					END HOLE				

Excavation Method ... AUGER ...

Make .....

Type .....

Operator .....

Commenced .....

Completed .....

WEATHERING.

CW - Completely weathered

HW - Highly weathered

MW - Moderately weathered

SW - Slightly weathered

Fr St - Fresh, with limonite stained joints

Fr - Fresh

@ Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged DO Date .....

Drawn .....

Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 151

Page of

PROJECT. DARWIN-ALICE SPRINGS RAILWAY

FEATURE. MATERIALS SEARCH.

LOCATION WEST OF LAKEWOODS.

CO-ORDINATES X.....m. Y.....m.

SYSTEM .....

HOLE SIZE .....TO:.....TO:.....TO:.....

SURFACE ELEVATION.....m.

DIP.....

BEARING.....

DATUM.....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING RS FR SW MW HW CW	DEPTH (metres)	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Yellow brown		1 2 3 4 5			SAND m.-f.gr., dry, non plastic	SP			
5.0m					END HOLE				

Excavation Method .AUGER.....
Make.....
Type.....
Operator.....
Commenced.....
Completed.....

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
Fr SI - Fresh, with limonite stained joints
Fr - Fresh

@ Soil Classification System: Unified. (....) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged DD Date
Drawn .....
Checked.....

NORTHERN TERRITORY GEOLOGICAL SURVEY
CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 152

Page of

PROJECT: DARWIN–ALICE SPRINGS RAILWAY
FEATURE: MATERIALS SEARCH
LOCATION: WEST OF LAKEWOODS
HOLE SIZE ..... TO: ..... TO: ..... TO: .....

CO-ORDINATES X ..... m. Y ..... m.
SYSTEM .....

SURFACE ELEVATION ..... m.
DIP .....
BEARING .....
DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr St, Fr)	DEPTH (metres)	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Red brown		1 2 3 4 5			SAND m.–f.gr., dry, non plastic	SP			
5.0m					END HOLE				

Excavation Method ... AUGER ...
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified.
(...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged D.D. Date
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

HOLE NO. AH 153

Page of

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

PROJECT . DARWIN–ALICE SPRINGS RAILWAY
FEATURE . MATERIALS SEARCH
LOCATION . WEST OF LAKEWOODS
HOLE SIZE ..... TO: ..... TO: ..... TO: .....

CO-ORDINATES X ..... m. Y ..... m.
SYSTEM .....

SURFACE ELEVATION ..... m.
DIP .....
BEARING .....
DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr St, Fr)	DEPTH (metres)	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Red brown		1 2 3 4 5			SAND m.-f.gr., dry, non plastic	SP			
5.0m					END HOLE				

Excavation Method . AUGER
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged DD Date
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. T 16

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION 137km

HOLE SIZE TO: TO: TO:

CO-ORDINATES X m. Y FIG 17 m.

SYSTEM

SURFACE ELEVATION m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING RS FR SW MW HW CW	DEPTH metres	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Brown-red brown med. dense (loose to 0.4m), even open texture.					SAND, M.*F.GR., DRY minor, low plastic fines	SP			
CALCRETE GRAVEL Mottled brown-white med. dense to dense with rounded to sub angular, low-v.high strength weathered nodules		1			GRAVEL 60-70%, f.-c.gr. max. size 40mm; 10% silt; 5% low plasticity fines	GW			
CALCRETE GRAVEL Lt. brown-grey-white med. dense-dense with rounded-sub-angular, med.-v. high strength nodules		2			CLAYEY GRAVEL, 50% f.-c.gr max. size 60mm, 70% cobbles, 10-15% f.-c.gr. sand, 10-15% low plastic fines, minor silts	GC-GW			
2.8m		3 4 5			END HOLE STRATA CONTINUING				

Excavation Method BACKHOE

Make

Type

Operator

Commenced

Completed

WEATHERING.
CW- Completely weathered
HW- Highly weathered
MW- Moderately weathered
SW- Slightly weathered
Fr St- Fresh, with limonite stained joints
Fr- Fresh

* Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged GM. Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. T 17

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

CO-ORDINATES X.....m. Y.....m.

SURFACE ELEVATION.....m.

DIP.....

BEARING.....

LOCATION 138km

SYSTEM.....

HOLE SIZE.....TO:.....TO:.....TO:.....

DATUM.....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr St, Fr)	DEPTH (metres)	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Red brown, dense even texture.		1			CLAYEY SAND, m.-f.gr. dry, low plasticity	SC			
CALCRETE GRAVELS Mottled red brown-white with rounded-subangular, high to v. high strength nodules.					GRAVEL, f.-c.gr., low plastic fines	GP-GW			
1.7m		2 3 4 5			END HOLE STRATA CONTINUING				

Excavation Method BACKHOE

Make.....

Type.....

Operator.....

Commenced.....

Completed.....

WEATHERING.

CW – Completely weathered

HW – Highly weathered

MW – Moderately weathered

SW – Slightly weathered

Fr St – Fresh, with limonite stained joints

Fr – Fresh

* Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged D.D Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. T 18

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

CO-ORDINATES X.....m. Y.....m.

SURFACE ELEVATION.....m.

DIP.....

BEARING.....

LOCATION 145km

SYSTEM.....

DATUM.....

HOLE SIZE.....TO:.....TO:.....TO:.....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING CW HW MW SW Fr	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown, med. dense (loose to 0.4m) open even texture		1 2 3		SAND m.-f.gr., dry non plastic	SP			
AEOLIAN SAND Red brn, med. dense				CLAYEY SAND, m.-f.gr., moist, 15% low plas. fines	SP Sc			
RESIDUAL CLAY Yell. brn, med. dense dense, uneven texture with minor quartzite				CLAY low-med plas. 10-15% sand; 5-10% high strength gravel, max size 40mm	CL			
3.7m		4 5		END HOLE STRATA CONTINUING				

Excavation Method BACKHOE

Make.....

Type.....

Operator.....

Commenced.....

Completed.....

WEATHERING.

CW – Completely weathered

HW – Highly weathered

MW – Moderately weathered

SW – Slightly weathered

Fr St – Fresh, with limonite stained joints

Fr – Fresh

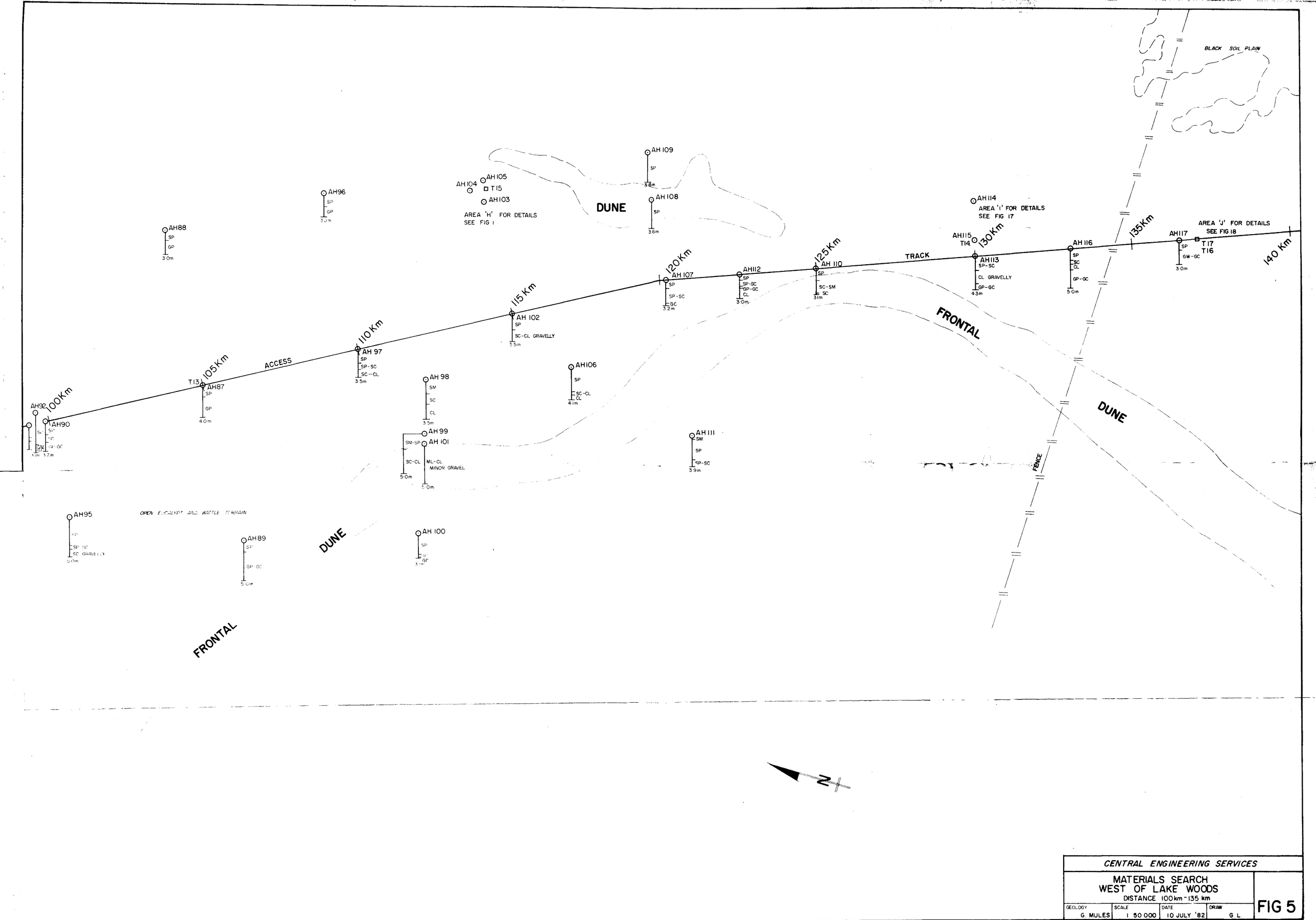
@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged GM Date

Drawn.....

Checked.....



CENTRAL ENGINEERING SERVICES

MATERIALS SEARCH
WEST OF LAKE WOODS
DISTANCE 100km - 135 km

GEOLOGY	SCALE	DATE	DRAW
G. MULES	1 50 000	10 JULY '82	G L

FIG 5

GS82/11

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH124

Page of

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West or Lake Woods

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, consolidation, colour, structures)	DEGREE OF WEATHERING	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
RESIDUAL SAND Grey brown				SAND, m.-f.gr., dry, minor plastic fines.	SP			
RESIDUAL GRAVEL Lt. brown with sandstone and chert particles	HW-MW	1		GRAVEL, max. size 35mm, v.high strength.	GP			
1.1m				END HOLE				

Excavation Method ...AUGER....

Make.....

Type.....

Operator.....

Commenced.....

Completed.....

WEATHERING.

CW - Completely weathered

HW - Highly weathered

MW - Moderately weathered

SW - Slightly weathered

Fr SI - Fresh, with limonite stained joints

Fr - Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged GALDO. Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH125

Page of

PROJECT: Darwin - Alice Springs Rail

FEATURE: Material Search

LOCATION: West or Lake Wood

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m. SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING C H M S F	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Origin name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUNDWATER LEVEL Date
AEOLIAN SAND Orange brown			SAND, m.-f.gr., dry, non plastic.	SP			
5.0m			END HOLE				

Excavation Method: AUGER

Make

Type

Operator

Commenced

Completed

WEATHERING.

CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged GA, DO. Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH126

Page of

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Woods

CO-ORDINATES X.....m. Y.....m.

SYSTEM .....

SURFACE ELEVATION.....m.

DIP.....

BEARING.....

DATUM.....

HOLE SIZE.....TO:.....TO:.....TO:.....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING R C F S E	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL
AEOLIAN SAND Orange brown				SAND, m.-f.gr., dry, non plastic.	SP			
5.0m				END HOLE				

Excavation Method ...AUGER....

Make.....

Type.....

Operator.....

Commenced.....

Completed.....

WEATHERING.

CW – Completely weathered

HW – Highly weathered

MW – Moderately weathered

SW – Slightly weathered

Fr St – Fresh, with limonite stained joints

Fr – Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged G.M.DO Date

Drawn.....

Checked.....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH127

Page of

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Woods

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (S, CW, HW, MW, SW, Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, liquid limit data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown				SAND, m.-f.gr., dry, non plastic.				
5.0m				END HOLE				

Excavation Method AUGER

Make

Type

Operator

Commenced

Completed

WEATHERING.

CW – Completely weathered

HW – Highly weathered

MW – Moderately weathered

SW – Slightly weathered

Fr SI – Fresh, with limonite stained joints

Fr – Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged DD.GM Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

HOLE NO. AH128

Page of

GEOLOGICAL LOG

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Woods

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr St, Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	WATER LEVEL DATE
AEOLIAN SAND Orange brown		1 2 3 4 5		SAND, m.-f.gr., dry, non plastic.	SP			
				END HOLE AT 6.0m				

Excavation Method AUGER

Make

Type

Operator

Commenced

Completed

WEATHERING.

CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
Fr St - Fresh, with limonite stained joints
Fr - Fresh

@ Soil Classification System: Unified. (....) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged GM.DD Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH129

Page of

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Wpod

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (R, E, D, C, S, F)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1 2		SAND, f.gr., moist non plastic	SP			
Lt. brown		3		dry	SP			
3.5m		4 5		END HOLE				

Excavation Method AUGER

Make

Type

Operator

Commenced

Completed

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged GHDD Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AE143

Page of

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Woods

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING CW HW MW SW Fr St Fr	DEPTH metres	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown					SAND, m.-f.gr., dry becoming moist, non plastic.	SP			
Iron stone nodules					gravelly, low plastic	GP			
CLAY Lt. brown					SILTY CLAY, low-med. plasticity, moist.	CL			
3.5m					END HOLE				

Excavation Method ...AUGER...

Make.....

Type.....

Operator.....

Commenced.....

Completed.....

WEATHERING.

CW – Completely weathered

HW – Highly weathered

MW – Moderately weathered

SW – Slightly weathered

Fr St – Fresh, with limonite stained joints

Fr – Fresh

* Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged DD Date

Drawn.....

Checked.....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH144

Page of

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Wood

HOLE SIZE 165mm TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr Bl, Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown				SAND, m.-f.gr., dry becoming moist, non plastic.	SP			
5.0m				END HOLE				

Excavation Method AUGER

Make

Type

Operator

Commenced

Completed

WEATHERING.
CW- Completely weathered
HW- Highly weathered
MW- Moderately weathered
SW- Slightly weathered
Fr Bl- Fresh, with limonite stained joints
Fr - Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged DD Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

HOLE NO. AP145-147

Page of

GEOLOGICAL LOG

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Wood

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW HW MW SW Fr St Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL (date)
LATERITE GRAVEL Brown with rounded laterite nodules.		1		SILTY GRAVEL, m.-c. gr., max. size 30mm minor low plasticity.	GM			
1.5m		2 3 4 5		END HOLE				

Excavation Method AUGER

Make

Type

Operator

Commenced

Completed

WEATHERING.

CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged DD Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 154

Page of

PROJECT DARWIN-ALICE SPRINGS RAILWAY

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKEWOODS

CO-ORDINATES X.....m. Y.....m.

SYSTEM .....

SURFACE ELEVATION.....m.

DIP.....

BEARING.....

DATUM.....

HOLE SIZE.....TO:.....TO:.....TO:.....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW HW MW SW Fr St Fr)	DEPTH (metres)	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Yellow brown		1 2 3 4			SAND m.-f.gr., dry, non plastic	SP			
4.0m		5			END HOLE				

Excavation Method ...AUGER....

Make.....

Type.....

Operator.....

Commenced.....

Completed.....

WEATHERING.

CW- Completely weathered

HW- Highly weathered

MW- Moderately weathered

SW- Slightly weathered

Fr St- Fresh, with limonite stained joints

Fr- Fresh

* Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged DD Date

Drawn.....

Checked.....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 155

Page of

PROJECT: DARWIN-ALICE SPRINGS RAILWAY

FEATURE: MATERIALS SEARCH

LOCATION: WEST OF LAKEWOODS

CO-ORDINATES X.....m. Y.....m.

SYSTEM .....

HOLE SIZE.....TO:.....TO:.....TO:.....

SURFACE ELEVATION.....m.

DIP.....

BEARING.....

DATUM.....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING CW HW MW SW Fr St Fr	DEPTH metres	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
RESIDUAL GRAVEL Brown with ironstone and chert fragments					GRAVEL max. size 75mm m.f.gr. sand, minor low plastic fines	GP			
0.5m					END HOLE - REFUSAL				

Excavation Method ...AUGER....

Make.....

Type.....

Operator.....

Commenced.....

Completed.....

WEATHERING.

CW - Completely weathered

HW - Highly weathered

MW - Moderately weathered

SW - Slightly weathered

Fr St - Fresh, with limonite stained joints

Fr - Fresh

* Soil Classification System: Unified. (....) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged DD Date

Drawn.....

Checked.....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 156

Page of

PROJECT DARWIN-ALICE SPRINGS RAILWAY

FEATURE MATERIALS SEARCH

LOCATION WEST OF LAKEWOODS

HOLE SIZE ..... TO: ..... TO: ..... TO: .....

CO-ORDINATES X .....m. Y .....m.

SYSTEM .....

SURFACE ELEVATION .....m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (RW, CW, HW, MW, SW, Fr)	DEPTH (metres)	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
RESIDUAL GRAVELS Brown with ironstone and chert fragments					GRAVEL max. size 75mm m.-fr.gr. sand, minor low plastic fines	GP			
0.5m		1 2 3 4 5			END HOLE-REFUSAL				

Excavation Method AUGER

Make .....

Type .....

Operator .....

Commenced .....

Completed .....

WEATHERING

CW – Completely weathered

HW – Highly weathered

MW – Moderately weathered

SW – Slightly weathered

Fr St – Fresh, with limonite stained joints

Fr – Fresh

@ Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged DD. Date

Drawn .....

Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY
CENTRAL ENGINEERING SERVICES

HOLE NO. AH 157

Page of

GEOLOGICAL LOG

PROJECT. DARWIN-ALICE SPRINGS RAILWAY
FEATURE. MATERIALS SEARCH.
LOCATION WEST OF LAKEWOODS.
HOLE SIZE ..... TO: ..... TO: ..... TO: .....

CO-ORDINATES X ..... m. Y ..... m.
SYSTEM .....

SURFACE ELEVATION ..... m.
DIP .....
BEARING .....
DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr)	DEPTH (metres)	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
LATERITE GRAVEL Red brown with rounded laterite fragments.					SANDY GRAVEL, with m.-f.gr., sand, dry, non plastic	GW			
0.7m					END HOLE-REFUSAL				

Excavation Method . AUGER.....
Make.....
Type.....
Operator.....
Commenced.....
Completed.....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified.
( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged D.D Date .....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

HOLE NO. AH163

Page of

GEOLOGICAL LOG

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Woods

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X .....m. Y .....m.

SYSTEM .....

SURFACE ELEVATION .....m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
GRAVELLY SAND Brown with laterite nodules		1		GRAVELLY SAND m.-f.gr., 10-20% gravel, low plasticity	SP			
LATERITE GRAVEL Brown		2 3		SANDY GRAVEL, low plasticity	GW			
3.0m		4 5		END HOLE				

Excavation Method ...AUGER....
Make .....
Type .....
Operator .....
Commenced .....
Completed .....

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
Fr St - Fresh, with limonite stained joints
Fr - Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged Date
.....
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. T 19

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION 172km

CO-ORDINATES X.....m. Y.....m.

SYSTEM .....

HOLE SIZE.....TO:.....TO:.....TO:.....

SURFACE ELEVATION.....m.

DIP.....

BEARING.....

DATUM.....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING RW CW HW MW SW Fr	DEPTH metres	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Grey-orange brown, v. loose-loose, even texture		1		SAND, m.-f.gr., dry non plastic	SP			
1.6m		2 3 4 5		END HOLE- REFUSAL BASE OF HOLE ON CEMENTED LATERITE				

Excavation Method .BACKHOE...
Make.....
Type.....
Operator.....
Commenced.....
Completed.....

WEATHERING.
CW- Completely weathered
HW- Highly weathered
MW- Moderately weathered
SW- Slightly weathered
Fr St- Fresh, with limonite stained joints
Fr- Fresh

* Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged GM Date
Drawn.....
Checked.....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. T 20

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL

FEATURE MATERIALS SEARCH

LOCATION 172km

CO-ORDINATES X.....m. Y.....m.

SYSTEM .....

SURFACE ELEVATION.....m.

DIP.....

BEARING.....

DATUM.....

HOLE SIZE.....TO:.....TO:.....TO:.....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW HW MW SW Fr St Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND, lt brn loose, even texture				SAND, m.-f.gr., dry non plastic	SP			
COLLUVIAL GRAVEL Brn. dense, even texture with laterite gravels and quartzite cobbles				GRAVEL 70% f.-c.gr. max size 100mm 20% sand, 10% silt, non plastic	GW			
AS ABOVE		1		GRAVEL 60% f.-c.gr with high proportion of med. strength quartzite cobbles; 20% sand, non plastic	GW			
2.0m		2		END HOLE STRATA CONTINUING				
		3						
		4						
		5						

Excavation Method BACKHOE

Make.....

Type.....

Operator.....

Commenced.....

Completed.....

WEATHERING.

CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged GM Date

Drawn.....

Checked.....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. T 21

Page of

PROJECT DARWIN-ALICE SPRINGS RAIL MATERIALS SEARCH

FEATURE 174km

LOCATION

HOLE SIZE TO: TO: TO:

CO-ORDINATES X m. Y m.

SYSTEM

SURFACE ELEVATION m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW HW MW SW Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
SAND Grey, loose even texture				SILTY SAND m.-f.gr. dry, minor gravel, non plastic	SM-SP			
WEATHERED CONGLOMERATE Grey, med dense-dense with low-high strength cherty fragments		1		GRAVEL 70% f.-c.gr. max size 100mm, 30% silty sand	GW			
1.0m		2 3 4 5		END HOLE- REFUSAL				

Excavation Method BACKHOE

Make

Type

Operator

Commenced

Completed

WEATHERING.

CW- Completely weathered
HW- Highly weathered
MW- Moderately weathered
SW- Slightly weathered
FrSt- Fresh, with limonite stained joints
Fr- Fresh

@ Soil Classification System: Unified.
(...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged GM Date

Drawn

Checked

TO MUCKATY

ACCESS

WATERHOLE
Sacred Site
S4

ROCK OUTCROP AND LATERITE RISES

AH156
GP
0·5m

AH155
GP
0·5m

AREA 'L'

AH154
SP
4·0m

AH157
GW
0·7m

AH145
AH146
AH147
GM
1·5m

AREA 'M'

AH144
SP
5·0m

165 Km

AH122
SP
5·0m

ACCESS

170Km

AH123
SP
5·0m

WATERHOLE
Sacred Site
S3

T21
AH124
SP
GP
1·1m

ROCKY RIDGE

175Km

180Km

AH125
SP
5·0m

185 Km

AH126
SP
5·0m

190Km

AH127
SP
5·0m

TRACK

195Km

AH128
SP
6·0m

200Km

AH129
SP
3·5m

AH143
SP
GP
3·5m

AH141
205Km
SP
5·0m

AH148
SP
5·0m

PARALLEL DUNES

T19

TRACK

ROCK OUTCROP AND LATERITE RISES

AH163
GW
1·0m

AREA 'K'

T20

TRIG STATION

ROCK OUTCROP AND LATERITE RISES

N

GS82/11

CENTRAL ENGINEERING SERVICES

MATERIALS SEARCH
WEST OF LAKE WOODS
DISTANCE 170 km - 205 km.

GEOLOGY	SCALE	DATE	DRAWN
G. MULES	1:50 000	10 JULY '82	G. L.

FIG 7

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

Darwin - Alice Springs Rail

HOLE NO. AH130

Page of

PROJECT Springs Rail

FEATURE Material Search

LOCATION West of Lake Wood

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m. SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW HW MW SW Fr St Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown - red brown		1 2		SAND, m.-f.gr., dry becoming moist, non plastic to minor low plasticity.	SP			
CLAYS Brown with ironstone HW gravels		3 4		GRAVELLY CLAYS low-med. plasticity, 10-40% low strength ironstone gravels, sandy.	CL			
IRONSTONE GRAVEL Brown with HW ironstone particles of low-med. strength. 5.0m		5		CLAYEY GRAVEL 80% m.gr., av. size 10mm, low-med. plasticity. END HOLE	GP-GC			

Excavation Method AUGER

Make

Type

Operator

Commenced

Completed

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
Fr St - Fresh, with limonite stained joints
Fr - Fresh

* Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged DP Date
Drawn
Checked

AH131

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH131

Page of

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Wood

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (Fr, Fr St, SW, MW, HW, CW)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL*	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown				SAND, m.-f.gr., dry, non plastic.	SP			
LATERITE GRAVEL		1 2		SANDY GRAVEL, m.-f.gr., max. size 10mm, minor low plasticity.	GP-GM			
2.0m		3 4 5		END HOLE				

Excavation Method ...AUGER...

Make

Type

Operator

Commenced

Completed

WEATHERING.

CW – Completely weathered

HW – Highly weathered

MW – Moderately weathered

SW – Slightly weathered

Fr St – Fresh, with limonite stained joints

Fr – Fresh

* Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged DD Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH132

Page of

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Wood

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING C W H W M W S W F r W F r	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
CEMENTED SURFACE LATERITE				UNABLE TO PENETRATE				

Excavation Method AUGER

Make

Type

Operator

Commenced

Completed

WEATHERING.

CW – Completely weathered

HW – Highly weathered

MW – Moderately weathered

SW – Slightly weathered

Fr St – Fresh, with limonite stained joints

Fr – Fresh

@ Soil Classification System: Unified.

(..) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

HOLE NO. AP133

Page of

GEOLOGICAL LOG

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Woods

HOLE SIZE 165mm

CO-ORDINATES X.....m. Y.....m.

SYSTEM.....

TO:..... TO:..... TO:.....

SURFACE ELEVATION.....m.

DIP.....

BEARING.....

DATUM.....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (Fr, FrSt, SW, MW, HW, CW)	DEPTH (metres)	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown					SAND, m.-f.gr., dry, non plastic.	SP			
LATERITE GRAVEL		1			SANDY GRAVEL, m.-f.gr., minor low plastic fines, dry.	GP			
1.8m		2 3 4 5			[illegible]				

Excavation Method ...AUGER...

Make.....

Type.....

Operator.....

Commenced.....

Completed.....

WEATHERING

CW – Completely weathered

HW – Highly weathered

MW – Moderately weathered

SW – Slightly weathered

FrSt – Fresh, with limonite stained joints

Fr – Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged DD Date

Drawn.....

Checked.....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH134

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PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Wood

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING Fr, FrSt, SW, MW, HW, CW	DEPTH metres	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1 2			SAND, m.-f.gr., moist, non plastic.	SP			
LATERITE GRAVEL Brown		3 4			SANDY GRAVEL, m.-f.gr., moist, minor low plasticity.	GW			
4.0m		5			END HOLE				

Excavation Method AUGER

Make

Type

Operator

Commenced

Completed

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
FrSt - Fresh, with limonite stained joints
Fr - Fresh

* Soil Classification System: Unified.
( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged DD Date
Drawn
Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AB135

Page of

Darwin - Alice Springs Rail

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Wood

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr St, Fr)	DEPTH (metres)	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1 2			SAND, m.-f.gr., moist, SP non plastic.				
NODULAR GRAVEL Brown-white with nodules possibly calcrete.		3 4			SANDY GRAVEL m.-f.gr, minor low plasticity.	GW			
GRAVELLY CLAY Brown with weathered nodules					GRAVELLY CLAY low plasticity, 20% weathered gravels.	CL			
4.5m		5			END HOLE				

Excavation Method ... AUGER...
Make.....
Type.....
Operator.....
Commenced.....
Completed.....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged DD Date
Drawn
Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH136

Page of

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Wood

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr St, Fr)	DEPTH (metres)	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND					SAND, m.-f.gr., dry becoming moist, non plastic.	SP			
5.0m					END HOLE				

Excavation Method ...AUGER...

Make.....

Type.....

Operator.....

Commenced.....

Completed.....

WEATHERING.

CW – Completely weathered

HW – Highly weathered

MW – Moderately weathered

SW – Slightly weathered

Fr St – Fresh, with limonite stained joints

Fr – Fresh

* Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged DD Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH132

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PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Woods

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING Fr St / Fr / SW / MW / HW / CW	DEPTH metres	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
LATERITE GRAVEL Brown					GRAVELLY SAND, m.-f.gr., 30-40% gravel, non plastic.	SW-SP			
1.0m					[illegible] SOIL				

Excavation Method AUGER

Make

Type

Operator

Commenced

Completed

WEATHERING.

CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
FrSt - Fresh, with limonite stained joints
Fr - Fresh

* Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH138

Page of

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Wood

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW HW MW SW Fr St Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
LATERITE GRAVEL Brown		1		GRAVELLY SAND, m.-f.gr., 30-40% gravels, non plastic	SW- SP			
as above				SANDY GRAVEL, m.-f.gr., non plastic.	GW			
1.5m		2 3 4 5		END HOLE				

Excavation Method ....AUGER...

Make.....

Type.....

Operator.....

Commenced.....

Completed.....

WEATHERING.

CW - Completely weathered

HW - Highly weathered

MW - Moderately weathered

SW - Slightly weathered

FrSt - Fresh, with limonite stained joints

Fr - Fresh

* Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged DD Date

Drawn.....

Checked.....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

HOLE NO. AH139

Page of

GEOLOGICAL LOG

PROJECT: Darwin - Alice Springs Rail

FEATURE: Material Search

LOCATION: West of Lake Woods

HOLE SIZE: 165mm TO: TO: TO:

CO-ORDINATES: X .....m. Y .....m.

SYSTEM:

SURFACE ELEVATION .....m.

DIP:

BEARING:

DATUM:

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr St, Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1 2		SAND, m.-f.gr., dry, non plastic.	SP			
LATERITE GRAVEL Brown		3 4		SANDY GRAVEL, f.-c.gr., non plastic.	GW			
4.0m		5		END HOLE				

Excavation Method: AUGER

Make:

Type:

Operator:

Commenced:

Completed:

WEATHERING

CW - Completely weathered

HW - Highly weathered

MW - Moderately weathered

SW - Slightly weathered

Fr St - Fresh, with limonite stained joints

Fr - Fresh

Soil Classification System: Unified.

( ) means Laboratory Classification.

ENGINEERING GEOLOGY

Logged: DD Date:

Drawn:

Checked:

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 140

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PROJECT. DARWIN-ALICE SPRINGS RAILWAY

FEATURE. MATERIALS SEARCH.

LOCATION WEST OF LAKEWOODS.

CO-ORDINATES X.....m. Y.....m.

SYSTEM.....

HOLE SIZE.....TO:.....TO:.....TO:.....

SURFACE ELEVATION.....m.

DIP.....

BEARING.....

DATUM.....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING CW HW MW SW Fr St Fr	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Red brown		1 2 3 4 5		SAND m.-f.gr., dry, non plastic	SP			
5.0m				END HOLE				

Excavation Method ...AUGER....
Make.....
Type.....
Operator.....
Commenced.....
Completed.....

WEATHERING.
CW- Completely weathered
HW- Highly weathered
MW- Moderately weathered
SW- Slightly weathered
Fr St- Fresh, with limonite stained joints
Fr- Fresh

* Soil Classification System: Unified.
(....) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged D.D. Date .....
Drawn .....
Checked.....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH141

Page of

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Wood

HOLE SIZE 165mm TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW HW MW SW Fr St Fr)	DEPTH (metres)	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown					SAND, f.gr., dry becoming moist, non plastic.	SP			
5.0m					END HOLE				

Excavation Method AUGER

Make

Type

Operator

Commenced

Completed

WEATHERING.

CW – Completely weathered

HW – Highly weathered

MW – Moderately weathered

SW – Slightly weathered

Fr St – Fresh, with limonite stained joints

Fr – Fresh

* Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged DD Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH142

Page of

PROJECT: Darwin - Alice Springs Rail

FEATURE: Material Search

LOCATION: West of Lake Wood

HOLE SIZE: 165mm TO: TO: TO:

CO-ORDINATES X: m. Y: m.

SYSTEM:

SURFACE ELEVATION: m.

DIP:

BEARING:

DATUM:

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (St, FrSt, Fr, SW, MW, HW, CW)	DEPTH (metres)	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown to red brown					SAND, f.gr., dry becoming moist, non plastic.	SP			
5.0m					END HOLE				

Excavation Method: AUGER

Make:

Type:

Operator:

Commenced:

Completed:

WEATHERING.

CW – Completely weathered

HW – Highly weathered

MW – Moderately weathered

SW – Slightly weathered

FrSt – Fresh, with limonite stained joints

Fr – Fresh

* Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged: DD Date:

Drawn:

Checked:

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 158

Page of

PROJECT: DARWIN-ALICE SPRINGS RAILWAY

FEATURE: MATERIALS SEARCH

LOCATION: WEST OF LAKEWOODS

CO-ORDINATES: X.....m. Y.....m.

SYSTEM .....

HOLE SIZE .....TO:.....TO:.....TO:.....

SURFACE ELEVATION.....m.

DIP.....

BEARING.....

DATUM.....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING Fr, Fr St, SW, MW, HW, CW	DEPTH (metres)	CASING	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Red brown		1 2 3 4 5			SAND, m.-f.gr., dry, non plastic	SP			
5.0m					END HOLE				

Excavation Method ...AUGER....
Make.....
Type.....
Operator.....
Commenced.....
Completed.....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged DO Date
Drawn
Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY
CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH 159
Page of

PROJECT. DARWIN-ALICE SPRINGS RAILWAY
FEATURE. MATERIALS SEARCH
LOCATION. WEST OF LAKEWOODS
HOLE SIZE ..... TO: ..... TO: ..... TO: .....

CO-ORDINATES X.....m. Y.....m.
SYSTEM .....

SURFACE ELEVATION.....m.
DIP.....
BEARING.....
DATUM.....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW HW MW SW FrSt Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Red brown		1 2 3 4 5		SAND, m.-f.gr., dry, non plastic	SP			
5.0m				END HOLE				

Excavation Method .....AUGER..
Make.....
Type.....
Operator.....
Commenced.....
Completed.....

WEATHERING.
CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
FrSt - Fresh, with limonite stained joints
Fr - Fresh

* Soil Classification System: Unified.
( ) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged DD Date
Drawn .....
Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. AH162

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Darwin - Alice Springs Rail

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION West of Lake Wood

HOLE SIZE 165mm TO: TO: TO:

CO-ORDINATES X.....m. Y.....m.

SYSTEM

SURFACE ELEVATION.....m.

DIP

BEARING

DATUM

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING FR FrSt SW MW HW CW	CASING	DEPTH metres	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
RESIDUAL GRAVEL Brown with rocky particles.			1		SANDY GRAVEL, f.-c.gr., minor low plasticity.	GW			
1.0m			2 3 4 5		END HOLE				

Excavation Method AUGER

Make

Type

Operator

Commenced

Completed

WEATHERING.

CW – Completely weathered

HW – Highly weathered

MW – Moderately weathered

SW – Slightly weathered

FrSt – Fresh, with limonite stained joints

Fr – Fresh

@ Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged DD Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

HOLE NO. T22

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CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION 217 km

CO-ORDINATES X.....m. Y.....m.

SYSTEM .....

HOLE SIZE.....TO.....TO.....TO.....

SURFACE ELEVATION.....m.

DIP.....

BEARING.....

DATUM.....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (Fr, FrSt, SW, MW, HW, CW)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL*	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
RESIDUAL GRAVELS Brown with high strength ironstone and siliceous sandstone				GRAVEL, well graded, sandy, non plastic	GW			
as above with cobbles of low strength sandstone		1		GRAVEL with cobbles and boulders to 300 mm, sandy, non plastic	GP			
1.5m		2 3 4 5		END HOLE STRATA CONTINUING				

Excavation Method BACKHOE

Make.....

Type.....

Operator.....

Commenced.....

Completed.....

WEATHERING.
CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified
(...) means Laboratory Classification.

ENGINEERING GEOLOGY.
Logged Date
Drawn
Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

HOLE NO. T23

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CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION 227.3 km

CO-ORDINATES X.....m. Y.....m.

SYSTEM .....

HOLE SIZE .....TO.....TO.....TO.....

SURFACE ELEVATION.....m.

DIP.....

BEARING.....

DATUM.....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr St, Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL*	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1 2		SAND, m.-f.gr., dry non plastic	SP			
LATERITE GRAVEL Orange brown with high strength laterite particles		3		SANDY GRAVEL, m.-f.gr., dry, v.low plasticity	GP-GW			
3.5m		4 5		END HOLE STRATA CONTINUING				

Excavation Method BACKHOE

Make.....

Type.....

Operator.....

Commenced.....

Completed.....

WEATHERING.

CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged Date

Drawn

Checked

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. T24

Page of

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION 231.6 km

HOLE SIZE ..... TO: ..... TO: ..... TO: .....

CO-ORDINATES X ..... m. Y ..... m.

SYSTEM .....

SURFACE ELEVATION ..... m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION Type of deposit or material, mineral composition, particle shape, cementation, colour, structures	DEGREE OF WEATHERING AL ST MW SW FrSt Fr	DEPTH metres	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL Group name, general maximum size, in situ moisture and density, plasticity, field test data	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
AEOLIAN SAND Orange brown		1 2		SAND, m.-f.gr., dry, minor low plasticity	SP			
LATERITE GRAVELS Brown with high strength laterite particles.		3		SANDY GRAVEL, Moist, minor low plasticity	GP-GW			
3.1m		4 5		END HOLE STRATA CONTINUING				

Excavation Method BACKHOE

Make .....

Type .....

Operator .....

Commenced .....

Completed .....

WEATHERING.

CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged Date

Drawn .....

Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. T25

Page of

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION 237 km

HOLE SIZE ..... TO: ..... TO: ..... TO: .....

CO-ORDINATES X ..... m. Y ..... m.

SYSTEM .....

SURFACE ELEVATION ..... m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr St, Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL @	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
ABOLIAN SAND Brown with minor laterite gravels.		1		SAND 81% m.-f.gr., dry, low plasticity, minor gravels.	SP			
		2						
LATERITE GRAVEL Brown with med. strength laterite particles, stratified.				SANDY GRAVEL, m.-f.gr., low plasticity.	GW			
CEMENTED SAND AND GRAVEL weathered laterite particles, stratified.		3		GRAVELLY SAND, low plasticity	SP			
3.0m		4		END HOLE STRATA CONTINUING.				
		5						

Excavation Method BACKHOE

Make .....

Type .....

Operator .....

Commenced .....

Completed .....

WEATHERING

CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
FrSt – Fresh, with limonite stained joints
Fr – Fresh

@ Soil Classification System: Unified. (...) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged Date .....

Drawn .....

Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

HOLE NO. T26

Page of

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION 239.5 km

CO-ORDINATES X.....m. Y.....m.

SYSTEM .....

HOLE SIZE ..... TO: ..... TO: ..... TO: .....

SURFACE ELEVATION .....m.

DIP .....

BEARING .....

DATUM .....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (RW, CW, HW, MW, SW, Fr St, Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
LATERITE GRAVEL Brown				SANDY GRAVEL, m.-g.gr., low plasticity.	GW			
STRATIFIELD LATERITE Brown weakly cemented and weathered particles		1		SANDY GRAVEL, m.-f.gr., low plasticity	GW			
1.0m		2 3 4 5		END HOLE STRATA CONTINUING				

Excavation Method BACKHOE

Make .....

Type .....

Operator .....

Commenced .....

Completed .....

WEATHERING.

CW – Completely weathered
HW – Highly weathered
MW – Moderately weathered
SW – Slightly weathered
Fr St – Fresh, with limonite stained joints
Fr – Fresh

* Soil Classification System: Unified. ( ) means Laboratory Classification.

ENGINEERING GEOLOGY.

Logged Date

Drawn .....

Checked .....

NORTHERN TERRITORY GEOLOGICAL SURVEY

HOLE NO. T27

Page of

CENTRAL ENGINEERING SERVICES

GEOLOGICAL LOG

PROJECT Darwin - Alice Springs Rail

FEATURE Material Search

LOCATION 224 km

CO-ORDINATES X.....m. Y.....m.

SYSTEM .....

HOLE SIZE.....TO:.....TO:.....TO:.....

SURFACE ELEVATION.....m.

DIP.....

BEARING.....

DATUM.....

GEOLOGICAL DESCRIPTION (Type of deposit or material, mineral composition, particle shape, cementation, colour, structures)	DEGREE OF WEATHERING (CW, HW, MW, SW, Fr St, Fr)	DEPTH (metres)	GRAPHIC LOG	DESCRIPTION AND ENGINEERING PROPERTIES OF SOIL (Group name, general maximum size, in situ moisture and density, plasticity, field test data)	GROUP SYMBOL *	SAMPLE NUMBER	TESTS	GROUND WATER LEVEL Date
RESIDUAL GRAVEL Brown with high strength chert and ironstone particles.		1		SANDY GRAVEL f.-c.gr., dry, non plastic to minor plasticity, cobbles to 200 mm.	GW			
1.5m		2 3 4 5		END HOLE STRATA CONTINUING.				

Excavation Method BACKHOE

Make.....

Type.....

Operator.....

Commenced.....

Completed.....

WEATHERING.

CW - Completely weathered
HW - Highly weathered
MW - Moderately weathered
SW - Slightly weathered
FrSt - Fresh, with limonite stained joints
Fr - Fresh

* Soil Classification System: Unified. ( ) means Laboratory Classification.

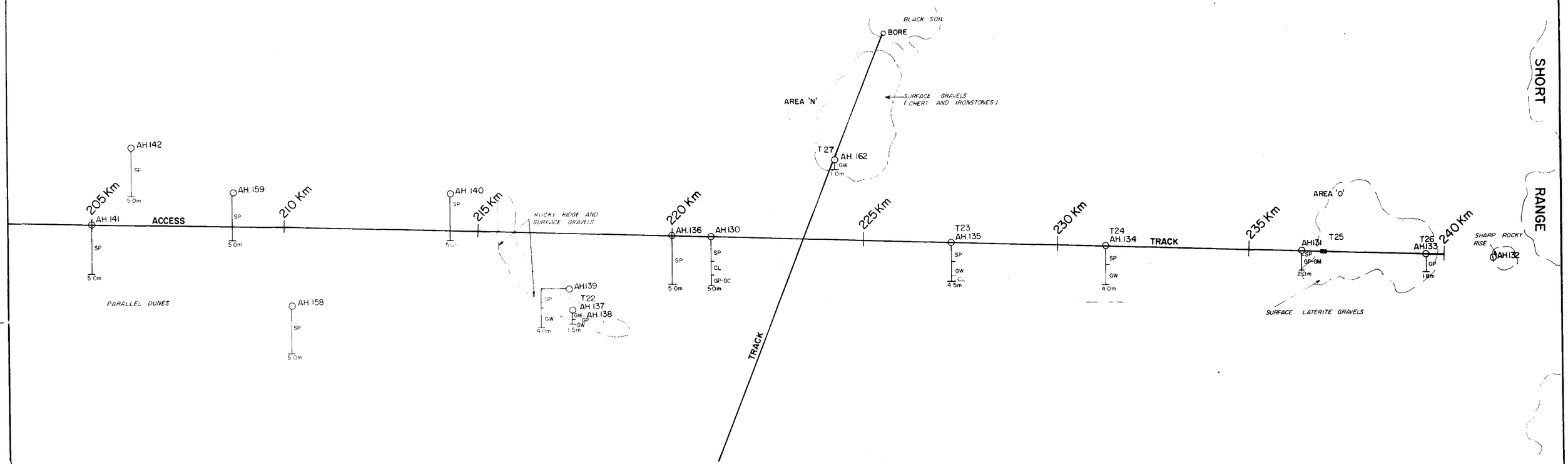
ENGINEERING GEOLOGY.

Logged Date

.....

Drawn .....

Checked.....



CENTRAL ENGINEERING SERVICES				
MATERIALS SEARCH WEST OF LAKE WOODS DISTANCE 205 km - 240 km				FIG.8
GEOLOGY G. MULES	SCALE 1: 50 000	DATE JULY '82	DRAWN R.B.	

GS82/11

DETAILED MATERIALS INVESTIGATION FOR A RAILWAY CORRIDOR WEST OF LAKE WOODS, NORTHERN TERRITORY.

VOLUME 1

AN rail

CENTRAL ENGINEERING SERVICES
81 ELDER STREET,
P.O. BOX 3370, ALICE SPRINGS, N.T.
Phone 52 4092

ENGINEERING GEOLOGIST

GREG MULES

FOR
DEPARTMENT OF MINES AND ENERGY.

Australian National

CONTENTS

VOLUME 1 : TEXT, TEST RESULTS AND PLANS

VOLUME 2 : LOGS AND PLANS

LIST OF FIGURES

1.0 INTRODUCTION

At the request of the Geological Survey of the Northern Territory a materials search within a 15 km corridor west of Lake Woods, was commenced on 10th May, 1982. The Geological Survey was acting on behalf of Australian National Railways, the design and construction authority for the Darwin to Alice Springs Railway.

The search was to determine the availability of near-surface gravels which might be suitable as a select-fill zone for a railway enbankment constructed of surface sandy material. Available quantities were to be determined with some degree of certainty and representative bulk samples were required for testing.

The Geological Survey provided aerial photos at scale 1:50,000 from which a photomosaic was prepared. Also available were images from Landsat at scale 1:250,000, aerial photo interpretation maps (Mules, 1982) and a report on previous investigation (Soiltech, 1982).

This report presents the results of a 7 week field programme and tests carried out on 8 bulk samples.

2.0 REGIONAL SETTING

2.1 Physiography

The investigated corridor is some 240 km in length extending from the northern boundary of Newcastle Waters Station to the Short Range, and passing 25 km west of Lake Woods, Elliot . It lies within the sand dune terrain of the Tanami Desert which has encroached on black soil plains to the east and low rocky outcrop to the south and north, Fig. 1.

West of Lake Woods a dominating broad frontal dune transects the project area from west to north-east parallel to the Lake and is suggested to represent a paleo-shoreline of a lake which has since retreated to the east. (B.M.R., NEWCASTLE WATERS).

North of the dune, wind blown sand has piled into a gently undulating terrain covered by thick mulga scrub.

South of the dune, low longitudinal dunes and irregular transverse dunes are covered by wattle, eucalypts and spinifex. Low gravelly rises and rocky ridges outcrop further south on the flanks of the Ashburton and Short Ranges.

Black soil plains border Lake Woods and occur patchily on the eastern margin of the corridor and support growths of Mitchell and Flinders grass.

2.2 Geology

The area has been mapped at scale 1:250 000 by workers of the Bureau of Mineral Resources (B.M.R.) with results and explanatory notes being published as the NEWCASTLE WATERS, SOUTH LAKE WOODS AND TENNANT CREEK sheets. These results have been condensed onto a composite sheet at scale 1:1,000,000 for the B.M.R. report on the WISO BASIN. A section of that sheet is presented as Fig. 1 of this report and was compiled by the Geological Survey.

This work shows the surface geology of the project area to be

predominantly superficial deposits of Quaternary aeolian sands (Qs) with isolated clay pans (Ql). In the southern section, distinctive outcrops of rocks of Proterozoic and Palaeozoic age have been mapped. Specifically these are sandstones, siltstones and conglomerates of the Tomkinson Creek Beds (Pt), the fossiliferous siltstones, cherts, silicified limestone and sandstones of the Gum Ridge Formation and tholeiitic basalt, minor sandstone and breccia of the Helen Springs Volcanics.

The results of the present investigation and of previous aerial photo interpretation (Mules, 1982), support the B.M.R. mapping but adds more detail in the southern section where further outcrop and low gravelly rises have been identified, Figs. 6-8. Here extensive surface laterite gravels and isolated outcrops of rocks of the Tomkinson Creek Beds occur in sections previously mapped as aeolian sand.

Some areas in the north, previously identified as gravelly rises were remapped as distinctly coloured clayey sands.

Black soil plains (Czb) marginal to Lake Woods were noted to be covered by patchy superficial deposits of ironstone and sandstone gravels and cobbles.

3.0 INVESTIGATION TECHNIQUES

3.1 Approach

In the absence of surface expression of near-surface gravels a sample grid of approximately 5 km was decided upon. North of the dune previous investigations indicated no gravels within a depth of 3 m (Soiltech, 1982). Landsat images suggested calcrete at shallow depths south of the dune. This was supported by previous investigations. Areas to the south, where rock outcrops or is covered by a thin layer of sand, were outlined from Landsat images and aerial photo interpretation.

All targets were marked onto the aerial photo mosaic and tied into the sampling grid. Scout auger drilling to 5 m depth was carried out at these nominated sample points. Where substantial gravel stata were intercepted within potentially economic depths a surrounding pattern of a further 2 or 3 holes was drilled at 500 m spacings. Areas which continue to hold promise were then trenched using either excavator or backhoe to obtain a geological log and representative bulk sample of the strata.

Where gravels were abundant, such areas were explored approximately every 10 km to prove a minimum of 20,000 cu. metres in each area.

3.2 Method of Investigation

Surveying

The access track and all connecting tracks were accurately plotted onto the aerial photomosaics during a light aircraft reconnaissance.

From its northern end the track was pegged at 5 km intervals measured on a vehicle odometer. Auger locations marked on the aerial photos were measured for distance and bearings from known points on the track. Appropriate compass bearings were sighted and the required distance of traverse measured on a vehicle odometer.

Plotted locations of auger holes and trenches are considered accurate to within 300 m. In places, accuracy was improved where features were

clearly recognized on the aerial photos or where holes were located on the access track.

Scout Augering

Using an hydraulic drive Proline auger mounted on a Toyota four wheel drive fitted with puncture-proof types, the scout programme as outlined in Section 3.1, continued throughout the field period.

Holes of 165 mm diameter were drilled to 5 m depth or refusal. Some holes were continued to a depth of 6 metres. Each change of strata was measured, described and given a visual classification. No samples were taken during scout augering.

Trenching

Using a tracked John Deere 690 excavator and a John Deere 400 backhoe, a logging and sampling programme was undertaken in the last 3 weeks of the field period. At selected areas a trench was excavated to a depth that proved sufficient quantities of suitable gravel or to refusal. One or two holes were excavated in each area.

A log was made of the trenches and bulk samples selected to allow testing to provide results representative of materials within the region.

Testing

Testing was undertaken on 4 sand and 7 gravel samples in compliance with ASA standards and included Mechanical Analysis, determination of Atterberg Limits, Linear Shrinkage and Compaction Tests of 4 of the gravel samples.

Results are presented on standard forms in Vol. 1 of this report.

Tested soils have been classified in accordance with the Unified Soils Classification while more detailed descriptions are available from the relevant trench log or auger hole.

4.0 INVESTIGATION RESULTS

4.1 Presentation

The results of the investigation are presented as a combination of plans, logs, test results and area descriptions.

Plans at aerial photo scale show auger hole and trench locations and summarize visual classifications of intersected strata. These are presented in Vol. 2 as Figs. 2-8.

Logs of auger holes and trenches are presented in Vol. 2 as are results of tests carried out on representative sand and gravel samples.

Descriptions of selected areas proven to feasibility stage are presented in Section 4.3 and include plans of the investigation programme (Figs. 9-18).

4.2 Stratigraphy and Distribution

The distribution of shallow stratigraphic types can be conveniently divided into three sections. The northern section extends from 00 km to 75 km, the central section from 75 km to 140 km and the southern section from 140 km to 240 km and are described below.

The irregular dune terrain in the north typically has silty surface sands with sands of increased clay content and in situ density to depths greater than 5 m. The sequence thins to the north where, in places, calcrete and laterite strata occur at 3 to 5 metres depth. At the northern most end, rock and laterite gravels outcrop outside the project area.

The central section is confined by the frontal dune on the west and the black soil plains associated with Lake Woods on the east. The stratigraphic sequence is typically of loose surface sand grading into clayey sands above an apparently continuous deposit of weathered calcrete gravels. The upper surface of the calcrete layer is weathered to varying degrees, producing silty clays. Less weathered calcrete at depth, produce silty gravels with high strength particles.

Isolated occurrences of surface calcrete-ironstone gravel grade into nodular calcrete deposits showing varying degrees of weathering.

Approaching the southern area at 120 km, a typical stratigraphic section is of aeolian sand with an increasing (with depth) clay content and the development of weakly cemented ironstone nodules. Below this is a calcrete deposit with a highly weathered upper surface producing silty clays grading into high strength silty gravels.

The northern boundary of the southern section is marked by the appearance of dune sand covering weathered rock and corresponds with the southern-most occurrence of calcretes. The dune sand is generally uniform in nature to depths of 5 metres. Some increase in in situ density and clay content with depth, was noted in places.

Where rock outcrops, slopes may be covered by rocky gravel scree or nodular laterite gravels. The deposits are typically thin, grading into high strength rock or cemented laterite. Between rock outcrops, colluvial deposits of a sand, laterite and rocky gravel mix were noted. Such areas predominate south of a Trigonometric Station at 172 km.

4.2 Borrow Areas

Plans at scale 1:10,000 are presented for each selected area, showing the investigation programme and summarizing the results. Average depths to the top of the gravel deposits are indicated, as are assumed minimum thicknesses. The latter are usually taken as the maximum intersection obtained and assumes a near horizontal upper surface to the gravels.

Potential volumes have been calculated. The location of the areas are indicated by bearings and distances from points along access tracks.

AREA 'A' - DISTANCE 7 KILOMETERS

A very gently sloping area with no significant airphoto pattern. Prominent occurrence of patches of a medium height, small leafed mulga within the area.

Area 'A' is located 2.4 km west of the 7.2 km distance along the access track and is indicated on Fig. 2. Details of the investigation programme and summary results are shown on Fig. 9.

An area of 1,625,000 sq. m. was proven to feasibility stage with four auger holes (AH 10 ÷ 13) and one trench (T1). With an average depth of 3.0 m of overburden and assuming a continuous gravel layer at least 2 m thick, the area could produce 3,250,000 cu. m. of gravelly material.

The gravels are a mix of silty sand and low to high strength weathered calcrete nodules grading into calcretes with nodules of a predominantly high strength. Some cemented sand concretions of low strength are present. Only minor low plasticity fines are indicated however breakdown of weathered calcrete may increase the percentage of fines.

Overburden consists of poorly sorted sands with medium-low plasticity fines and is of generally consistent thickness across the area.

AREA 'B' - DISTANCE 13 KILOMETERS

The area consists of broad depressions covered by light grey silty sand forming a distinct light coloured aerial photo pattern over an area of 2.5 sq. km. A distinctive vegetation association was noted.

Area 'B' is located on the access track at distance 13 km and is indicated on Fig. 2. Details of the investigation programme and summary results are shown on Fig. 10.

An area of 600,000 sq. m. was proven to feasibility stage with three auger holes (AH 23 - 25) and two trenches (T2 and T3). With an average depth of 2.9 m of overburden and assuming a continuous gravel layer at least 2.4 m thick, the area could produce 1,000,000 cu. m. of gravel.

The gravels are a mix of silty sands and low to high strength calcrete nodules grading into weathered calcretes with nodules of a predominantly high strength. Minor low plasticity fines are indicated however breakdown of weathered calcrete may increase the percentage of fines.

Overburden consists of silty sands with minor clays of low plasticity. T3 suggests that overburden may be thinnest in the eastern section of the area.

AREA 'C' - DISTANCE 68 KILOMETERS

This area was originally thought to contain gravels at depth, but follow-up trenching has proven unproductive. The intersection of dense material during scout augering suggested calcrete gravels may be present. The aerial photo pattern and the topography suggested a large area where groundwater levels are seasonally shallow. This was thought an ideal environment for calcrete deposition and with the prospect of finding gravels on the northern side of the steep dune a total of 3 trenches were excavated in this area (T4, T5, T6). These intersected dense to very dense mottled silty sands which may represent completely weathered calcretes but no high strength gravels were located. The investigation in this area is summarized in Fig. 11.

AREA 'D' - DISTANCE 75 KILOMETERS

Located at the windward toe of the frontal dune, the area comprises a series of low parallel dunes and interdune depressions. Typical vegetation is spinifex and scattered eucalypt trees.

Area D is located at 75 km on the eastern side of the track and is indicated on Fig. 3. Details of the investigation programme and summary results are shown on Fig. 12.

An area of 1 sq. km was proven to feasibility stage with four auger holes (AH 46, AH 54 - 56) and a backhoe trench (T7). With an average depth of 1.4 m of overburden and assuming a minimum thickness of 1.8 m, the area could produce 1,800,000 cu. m. of gravel.

The calcrete gravels are weathered at the top of the deposit producing a silty gravel with low strength nodules. Below 2.0 m however a less weathered material of higher strength is encountered with 30 - 40% of the gravel fraction being of medium strength or stronger.

Overburden consists of loose to medium dense sand grading into the silty weathered calcrete. Depths of overburden are considerably increased over low dunes (AH 54).

AREA 'E' - DISTANCE 80 KILOMETERS

A very gently undulating sandy terrain dominated by a spinifex and scattered eucalypt vegetation.

Area E is located on the track at 80 km and is indicated on Fig. 4. Details of the investigation programme and summary results are shown on Fig. 13.

An area of 80,000 sq. m. was proven to feasibility stage by one auger hole (AH 47) and two backhoe trenches (T8 and T9). With an average depth of 2.2 m of overburden and assuming a continuous gravel layer of 1.7 m minimum thickness, the area could produce 136,000 cu. m. of gravels.

The deposit is a silty gravel of medium to high strength nodular calcrete. There is little plasticity, as most of the fines are silts derived from the weathering of calcrete. The degree of weathering decreases with depth.

Overburden consists of loose to medium dense sand grading into silty sand above the gravel deposit. Thickness of sand overburden is uniform however depths to suitable gravel material may vary across the area.

AREA 'F' - DISTANCE 90 KILOMETERS

A flat terrain of spinifex and scattered eucalypt vegetation. Patches of medium grained surface gravels occur in this area and, increasingly so, to the east.

Area F is located 3.3 km east of the 90 km mark on the access track from Benaud Bore and is indicated on Fig. 4. Details of the investigation programme and summary results are shown on Fig. 14.

An area of 1 sq. km was proven to feasibility stage with 4 auger holes (AH 50 - 53) and one backhoe trench (T10). With an average depth of 0.9 m of overburden and assuming a continuous gravel layer of 1.9 m minimum thickness, this area could produce 1,900,000 cu. m. of gravelly material.

In general, the gravels are of medium to high strength weathered calcrete nodules with non-plastic sand and silt fines. In places, sandy surface gravels occur as medium to high strength nodular ironstone considered to be derived from the underlying calcrete.

Overburden is thin consisting of loose to medium dense aeolian sand.

AREA 'G' - DISTANCE 98 KILOMETERS

A low ridge of surface gravels, sparsely grassed and supporting isolated eucalypt trees, is distinguishable on aerial photos from more densely vegetated surrounds.

Area G is located 4.6 km from the 95 km mark of the access track on a bearing of 110^{o} and is indicated on Fig. 4. Details of the investigation programme and summary results are shown on Fig. 15.

An area of 70,000 sq. m was proven to feasibility stage with one auger hole (AH 93) and two trenches (T11 and T12). With an average depth of 0.8 m of overburden and assuming a continuous layer of 2.6 m minimum thickness, this area could produce 1,820,000 cu. m. of gravelly material.

Surface and near surface sandy gravels are typically of medium to high strength nodular ironstone derived from high strength silty calcrete gravels at depth.

Overburden, where present, is of loose to dense aeolian sand. Approximate area of surface gravels is 10,500 sq. m. Further similar deposits may be present on a north-south strike along this low ridge.

AREA 'H' - DISTANCE 115 KILOMETERS

A flat terrain of spinifex and scattered eucalypt trees with no significant aerial photo pattern.

Area H is located 3.4 km on a bearing of 067^{o} from 115 km on the access track and is indicated on Fig. 5. Details of the investigation programme and summary results are shown on Fig. 16.

An area of 570,000 sq. m. was proven to feasibility stage with 3 auger holes (AH 103 - 105) and one backhoe trench (T15). With an average depth of 1.4 m of overburden and assuming a continuous gravel layer of 2.2 m minimum thickness, this area could produce 1,254,000 cu. m. of gravelly material.

The gravel is high to very high strength nodular calcrete with a percentage of silty sand and minor plastic fines.

Overburden is of loose to medium dense aeolian sand.

AREA 'I' - DISTANCE 130 KILOMETERS

A gently undulating dune terrain with patchy wattle growth and regrowth and isolated eucalypt trees, this area shows no significant aerial photo pattern.

Area I is located at 130 km on the access track and is indicated on Fig. 5. The investigation programme and summary results are shown on Fig. 17.

An area of 200,000 sq. m. was proven to feasibility stage with 3 auger holes (AH 113 - 115) and one backhoe trench (T14). With an average depth of 3.1 m of overburden and assuming a minimum gravel thickness of 1.2 m, this area could produce 240,000 cu. m. of gravel.

The stratigraphy appears consistent across the area with a surface layer of aeolian sand grading into a gravel of well rounded cemented sand nodules of low strength. Below this is a silty clay presumably developed from the weathering of high strength nodular calcrete gravels which occur deeper.

AREA 'J' - DISTANCE 137 KILOMETERS

A gently undulating dune terrain with patchy wattle and scattered eucalypt trees, this area also shows no significant aerial photo pattern.

Area J is located at 137 km on the access track and is indicated on Fig. 6 while the investigation programme and summary results are shown on Fig. 18. . This is the most southerly intersection of calcrete gravels encountered during the investigation programme.

An area of 200,000 sq. m. was proven to feasibility stage with one auger hole (AH 117) and two trenches (T16 and T17). With an average depth of 1.0 m of overburden and assuming a minimum gravel thickness of 2.0 m this area could produce 400,000 cu. m. of gravelly material.

Beneath a layer of aeolian sand are nodular calcrete gravels of high strength, well graded and containing a high proportion of silty and low plastic fines.

AREA 'K' - DISTANCE 172 KILOMETERS

A distinctive trough between outcropping rock, the area supports stunted wattle and eucalypt and open grass with surface gravels. Surrounding terrain is sandy with tall wattle and eucalypt.

Area K is located 6 km west from the access track along the track towards the Trig. Station and is indicated on Fig. 7.

An area of 70,000 sq. m. of surface gravels was proven to feasibility stage with one backhoe trench (T20). A depth of 2 m of gravel was proven showing this area could produce up to 140,000 cu. m. of material.

The gravels are typically a mixture of colluvial pisolitic laterite gravels and angular quartzite cobbles of low to high strength.

Nearby rocky ridges demonstrate the abundance of in situ laterite and residual gravels, particularly on lower slopes. However, the natural sorting and mixing found in colluvial deposits make such areas better prospects for suitable gravels.

AREA 'L' - DISTANCE 177 KILOMETERS

Low rocky ridges and laterite rises covered by spinifex and grass with scattered eucalypt trees. The area forms two distinctive aerial photo patterns with a sharp boundary separating the Gum Ridge Formation and the Helen Springs Volcanics.

Located 1.8 km from 177 km on bearing 068^{o} the area is shown on Fig. 7. A surface extent in excess of 2 sq. km was observed and proven to feasibility stage with three auger holes (AH 155 - 157) A depth of 0.5 m was drilled to refusal indicating this area could produce in excess of 1,000,000 cu. m. With deep ripping this volume could be greatly increased.

The gravel is of high strength material of either lateritic or residual origin with low percentages of sandy fines with little plasticity. Pisolitic laterites appear to have developed in the Helen Springs Volcanics (AH 157) while angular chert, quartzite and ironstone gravels occur on the Gum Ridge Formation (Ah 155 - 156). Some reworking of the gravels is expected and colluvial deposits are likely to occur between the low gravelly rises.

AREA 'M' - DISTANCE 192.5 KILOMETERS

A low rise of surface gravels with spinifex and isolated eucalypts, the area was developed to feasibility stage with three auger holes 250 m apart (AH145 - 147). The area is shown on Fig. 7 and extends for in excess of 2 sq. km. With laterite gravels from the surface to 1.5 m, this area could provide in excess of 3,000,000 cu. m. of gravelly material.

The gravels, from the surface, are medium to high strength silty laterites with minor low plasticity fines.

AREA 'N' - DISTANCE 225 KILOMETERS

An extensive deposit of surface rocky gravels occurs along the track approaching a bore and black soil plains. The area was proven to feasibility stage with one auger hole (AH 162) and one trench (T27).

In excess of 2 sq. km and with a depth of 1.5 m the area could provide more than 3,000,000 cu. m. of gravelly material. The area is shown in Fig. 8.

The gravels consist of residual cherts and ironstone particles of high strength with a percentage of sand with minor plastic fines. Some larger cobbles are present.

AREA 'O' - DISTANCE 238 KILOMETERS

A low gravelly rise covered by wattle and spinifex forming a distinctive aerial photo pattern.

Area O is located predominantly east of distance 236 to 240 km flanking the Short Range and is indicated in Fig. 8.

An area in excess of 2.0 sq. km was noted on the ground and can be seen from aerial photos.

The area was proven to feasibility stage with two trenches (T25-26) and one auger hole (AH 133). . With a maximum intersection of 2 m from the surface, the area could produce in excess of 4,000,000 cu. m. of lateritic gravels.

The deposit grades from loose sandy gravels to a cemented laterite gravel which breaks out with difficulty. Break-down of sandy horizons produces a fine fraction of low plasticity.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The results of the investigation demonstrate the general availability of high strength gravels within the corridor of study.

Deep, subsurface, calcrete gravels are available as far south as the 14 km distance. South of this and extending to the windward toe of the frontal dune at 75 km, a thick deposit of aeolian sand provides no prospect of suitable deposits of gravelly material.

South of the frontal dune, apparently continuous shallow subsurface and isolated surface calcrete occurs to 140 km. The degree of weathering of the calcretes is variable across the area and hence quality may be patchy. However, results indicated that deposits of high strength gravels were generally shallower in the eastern section of the corridor, bordering Lake Woods.

Beyond the calcretes to the Trig. Station at 172 km, a blanket of dune sand covers residual gravels at uneconomic depths.

Numerous laterite and residual gravels occur south from the Trig. Station and, in places, colluvial deposits of naturally mixed sand and gravel are available.

One section of thick dune sand occurs between 195 and 210 km, however surrounding surface deposits of gravel are abundant.

The quality of gravelly deposits varies throughout the project area both in particle gradings and strength as well as origin and composition.

The northern calcretes and those south of the frontal dune appear to be ancient deposits beneath a layer of aeolian sand and are presently undergoing degradation by chemical weathering. The high degree of weathering has reduced the particle strength and increased the percentage of fines in the upper layer of all calcrete deposits. Break down of weathered particles by wetting and mechanical impact was noted during testing. Less weathered calcretes develop gravels with high strength, coarse grained particles and low percent fines. Mixing of the entire calcrete strata should, in general, produce a graded gravel with low plastic fines which could be suitable as a protective select-fill.

The southern laterite and residual gravels are thin but occur extensively on the surface. They consist of medium to very high strength particles ranging from fine gravels to cobbles. Some breakdown of sandy laterites was noted during testing but plasticity and linear shrinkage are generally low (Lab. No. 158 and 160).

Deep ripping within these deposits will greatly increase the available volume and would be likely to produce gravels of increased particle strength but reduced fines.

The surface sandy material which is ubiquitous throughout the project area is a medium to fine grained, non plastic sand easilly worked and compacted. Plasticity generally increases with depth however, and below 1.5 m is a clay sand which has a moderately high shrinkage and may be difficult to work due to its sticky nature.

Except in the case of dune sands, the loose surface material was generally thin being underlain by medium dense to dense sands with considerable bearing capacity. Dune sands were noted to be very loose to medium dense where encountered.

Further investigations should attempt to more clearly define the physical characteristics of the various gravel types revealed by this study. In particular attempts could be made to test strata mixtures to obtain an optimal combination for the various stratigraphic sequences. The clayey sands may need to be mixed with silty surface sands and the upper weathered calcretes with deeper sections of the deposits in order to obtain materials which best satisfy design and construction specifications.

Borrow areas could be sampled in greater detail to more clearly define quantities, and variations in overburden depth. This is particularly so for the calcretes south of the dune where low sand dunes and a variable degree of weathering combine with an apparent thinning of overburden to the east to give scope for optimizing the economic recovery of gravel from that area by more detailed investigations.

The investigation has highlighted the value of using a bucket-type excavator in support of a scout augering programme to allow an appreciation of the in situ nature of the deposits. Auger samples

were sometimes proven unrepresentative of the in situ material and at times were unable to penetrate the upper surface of the calcrete gravels. The excavator trenches also gave an appreciation of the break-out effort required during excavation and of the workability of the excavated material.

REFERENCES

TENNANT CREEK, Explanatory notes, 1:250,000
Geological Series, B.M.R., 1978.

NEWCASTLE WATERS, Explanatory notes, 1:250,000
Geological Series, B.M.R. 1969.

SOUTH LAKE WOODS, Explanatory notes, 1:250,000
Geological Series, B.M.R.

MULES, G.J., Katherine - Tennant Creek Terrain
Appraisal, 1982.

SOILTECH, Report on High Strength Embankment Material for
Possible Railway Routes West of Lake Woods,
Northern Territory, 1982.

W.S. 1

81, Elder Street,
PO Box 3370

CENTRAL ENGINEERING SERVICES

51 Railway Terrace.
Alice Springs N.T.
ph. 525755
524092

REPORT OF FIELD DENSITY TEST RESULTS

TO: Dept. of Mines & Energy

REPORT No: 820071

ATTENTION: R. Hindrichs

1. In accordance with your request dated signed by Field Density tests have been carried out in accordance with AS1289 E3.1 using the sand replacement method & sand cone apparatus. The density sand used passed 1.18mm and was retained on 600 µm sieves. Compaction testing was done to AS1289 E1.1/E2.1. Dry density ratio was calculated to AS1289 E4.1.

2. The following information was supplied in connection with the samples.

CONTRACT NO: 81/124
CONTRACTOR : Central Engineering
FEATURE: Materials Investigation
SAMPLED BY: D.D. & G.M

PROJECT: Lake Woods Corridor
LOCATION: a sketch is/is not attached
DIAMETER OF HOLES: (mm)
DATE SAMPLED:

3. The test results and details of locations are shown below.

Laboratory Reference No. CE82	157	158	159	160				
Project Reference No.								
Chainage								
Offset from centre-line (m)								
Material type (S) sub grade (B) base course (F) fill								
Position from surface (mm)								
~~Standard~~/Modified Maximum Dry Density (ρ_d) (t/m³)	2.36	1.77	1.98	2.14				
~~Standard~~/Modified Optimum Moisture Content (w_o) (%)	8.0	3.0	12.0	8.0				
Field Dry Density (ρ_f) (t/m³)								
Moisture Content in Laboratory (w_f) (%)								
Moisture Variation (w_v) (%)								
Dry Density Ratio (R_D) (%)								

REMARKS

Prepared by

Checked by

Distribution

1. Lab. File
2.
3.

This Laboratory is registered by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with its terms of registration. This document shall not be reproduced except in full.

for O.I.C. Materials Laboratory

2/8/1982

61, Elder Street,
PO Box 3370

W.S. 3

CENTRAL ENGINEERING SERVICES

51 Railway Terrace
Alice Springs N.T.
ph. 525755
524092

REPORT OF TEST RESULTS ON SOILS

To: Dept. of Mines & Energy

Report No.: 820072

Attention: R. Hinrichs

1. In accordance with your request dated and signed by the following tests have been carried out to the methods specified by AS 1289-1977

2. The following information was supplied in connection with the samples

CONTRACT NO.: 81/124
CONTRACTOR : Central Engineering
FEATURE: Materials Investigation
SAMPLED BY: D.D. & G.M.

PROJECT: Lake Woods Corridor
LOCATION: Various
MATERIAL TYPE: Various
DATE SAMPLED:

3. Test results are set out below-

Laboratory Reference No. C.E.82		157	158	159	160		
Suppliers No.		T2	AH156	T3	AH133		
Chainage / Depth	m	1.5-3	0-0.5	1.6-2.8	0.2-1.8		
Depth / Chainage	Km	13	175	13	137		
Mechanical Analysis Percentage Passing A.S.Sieve	75·0mm						
	63·0mm	100	100				
	37·5mm	97	99	100			
	26·5mm	92	94	97			
	19·0mm	83	83	94	100		
	13·2mm	68	68	91	95		
	9·50mm	55	57	89	87		
	6·70mm	43	50	87	75		
	4·75mm	36	45	85	65		
	2·36mm	29	38	80	54		
	1·18mm	26	36	77	48		
	600µm	24	36	74	42		
	425µm	22	36	72	39		
	300µm	20	34	67	34		
	212µm						
	150µm	15	23	42	23		
	75µm	11	13	27	11		
Dust Ratio (75/425µm)%		48	37	38	29		
*Liquid Limit (Standard/Subsidiary Method)		29	NO	31	NO		
*Plastic Limit		15	NO	13	NO		
*Plasticity Index		14	NP	18	NP		
*Linear Shrinkage (%on 250mm mould)		7.0	0.5	8.0	1.5		
Determination of Soil Particle Density Passing/Retained 2·36mm/Combined							
Unified Soils Classification		GW-GC	GM	SC	SW-SM		

REMARKS: All samples wet/dry sieved

*Air/Oven dried at 45°C

Prepared by: K.McP.
Checked by: MB

K.McPherson
for OIC Materials Laboratory
1/8/1982

Distribution:
1 Lab File
2
3

81, Elder Street,
PO Box 3370

W.S. 3

CENTRAL ENGINEERING SERVICES

~~51 Railway Terrace~~
Alice Springs N.T.
ph. ~~525755~~ 524092

REPORT OF TEST RESULTS ON SOILS

To: Dept. of Mines & Energy

Report No: 820071

Attention: R. Hinrichs

1. In accordance with your request dated and signed by the following tests have been carried out to the methods specified by AS 1289-1977

2. The following information was supplied in connection with the samples

CONTRACT NO.: 81/124
CONTRACTOR: Central Engineering
FEATURE: Materials Investigation
SAMPLED BY: D.D. & G.M.

PROJECT: Lake Woods Corridor
LOCATION: Various
MATERIAL TYPE: Various Sand, Sand/clay
DATE SAMPLED:

3. Test results are set out below.

Laboratory Reference No.	C.E.82	161	162	163	164		
Suppliers No.		T1	T11	T6	T9		
Chainage	km	7.2	98	75	80		
Depth	m	1.6-3	0.3-1.5	0-0.3	0.3-1.5		
Mechanical Analysis Percentage Passing A.S.Sieve	75·0mm						
	63·0mm						
	37·5mm						
	26·5mm						
	19·0mm						
	13·2mm						
	9·50mm						
	6·70mm						
	4·75mm						
	2·36mm		100		100		
	1·18mm	100	99		99		
	600µm	99	90	100	97		
	425µm	98	80	98	92		
	300µm	92	69	91	82		
	212µm						
	150µm	57	45	47	51		
	75µm	39	25	34	28		
Dust Ratio (75/425µm)%		40	31	35	30		
*Liquid Limit (Standard/Subsidiary Method)		30	27	N.O.	23		
*Plastic Limit		10	11	N.O.	10		
*Plasticity Index		20	16	N.P.	13		
*Linear Shrinkage (%on 250mm mould)		9.0	8.0	0.5	5.5		
Determination of Soil Particle Density Passing/Retained 2·36mm/Combined							

REMARKS: All samples wet/dry sieved

*Air/oven dried at ~~XX~~°C

Prepared by: K. McP.
Checked by:

K. McPhee
for OIC Materials Laboratory
2/9/1982

Distribution:
1 Lab File
2
3

81, Elder Street,
PO Box 3570

WS.3 **CENTRAL ENGINEERING SERVICES**

~~51 Railway Terrace~~
Alice Springs N.T.
ph. ~~525755~~
524092

REPORT OF TEST RESULTS ON SOILS

To: Dept. of Mines & Energy

Report No: [illegible]

Attention: R. Hinrichs

1. In accordance with your request dated and signed by the following tests have been carried out to the methods specified by AS 1289-1977

2. The following information was supplied in connection with the samples

CONTRACT NO.: 81/124
PROJECT: Lake Woods Corridor
CONTRACTOR: Central Engineering
LOCATION: Various
FEATURE: Materials Investigation
MATERIAL TYPE: Various Sand, Sand/cla
SAMPLED BY: D.D. & G.M.
DATE SAMPLED:

3. Test results are set out below-

Laboratory Reference No. C.E.82		161	162	163	164		
Suppliers No.		T1	T11	T6	T9		
Chainage	km	7.2	98	75	80		
Depth	m	1.6-3	0.3-1.6	0-0.3	0.3-1.5		
Mechanical Analysis Percentage Passing A.S.Sieve	75·0mm						
	63·0mm						
	37·5mm						
	26·5mm						
	19·0mm						
	13·2mm						
	9·50mm						
	6·70mm						
	4·75mm						
	2·36mm		100		100		
	1·18mm	100	99		99		
	600µm	99	90	100	97		
	425µm	98	80	98	92		
	300µm	92	69	91	82		
	212µm						
	150µm	57	45	47	51		
	75µm	39	25	34	28		
Dust Ratio (75/425µm)%		40	31	35	30		
*Liquid Limit (Standard/Subsidiary Method)		30	27	N.O.	23		
*Plastic Limit		10	11	N.O.	10		
*Plasticity Index		20	16	N.P.	13		
*Linear Shrinkage (%on 250mm mould)		9.0	8.0	0.5	5.5		
Determination of Soil Particle Density Passing/Retained 2·36mm/Combined							

REMARKS: All samples wet/dry sieved

*Air/Oven dried at 45°C

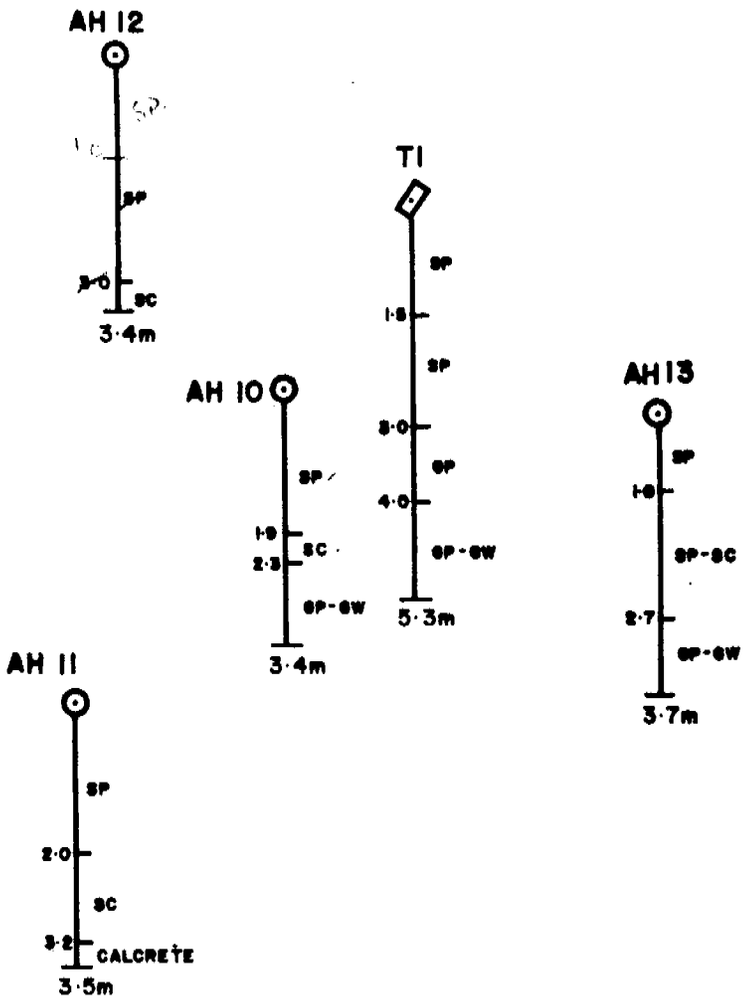
Prepared by: K. McP.
Checked by:

K. McPhee
for OIC Materials Laboratory
2/9/1982

Distribution:
1 Lab File
2
3

AREA = 1625000m^2
AVERAGE DEPTH = 3·0m
MINIMUM THICKNESS = 2·0m
VOLUME = 3 250000m^3

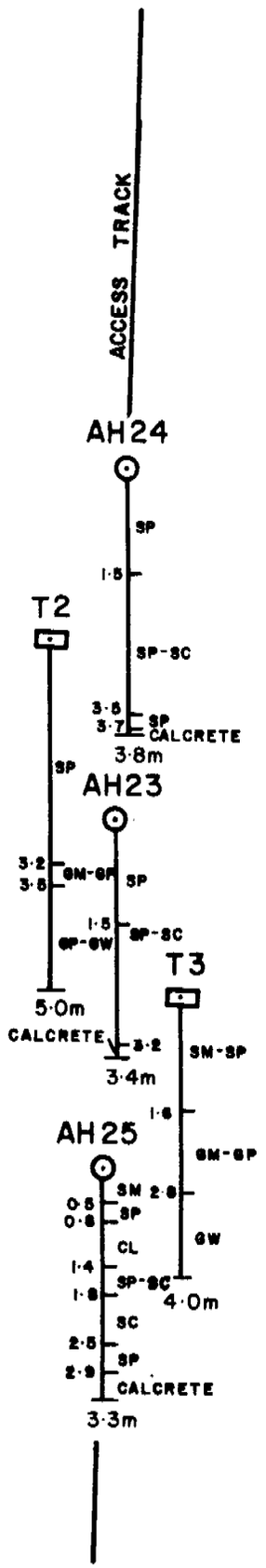
LOCATION = FROM 7·2 Km ON TRACK, BEARING 274° FOR 2·4 Km



AREA 'A'

SCALE 1:10000

FIG 9



AREA = 600 000 m^2
AVERAGE DEPTH = 2·9m
MINIMUM THICKNESS = 2·4m
VOLUME = 1 440 000 m^3

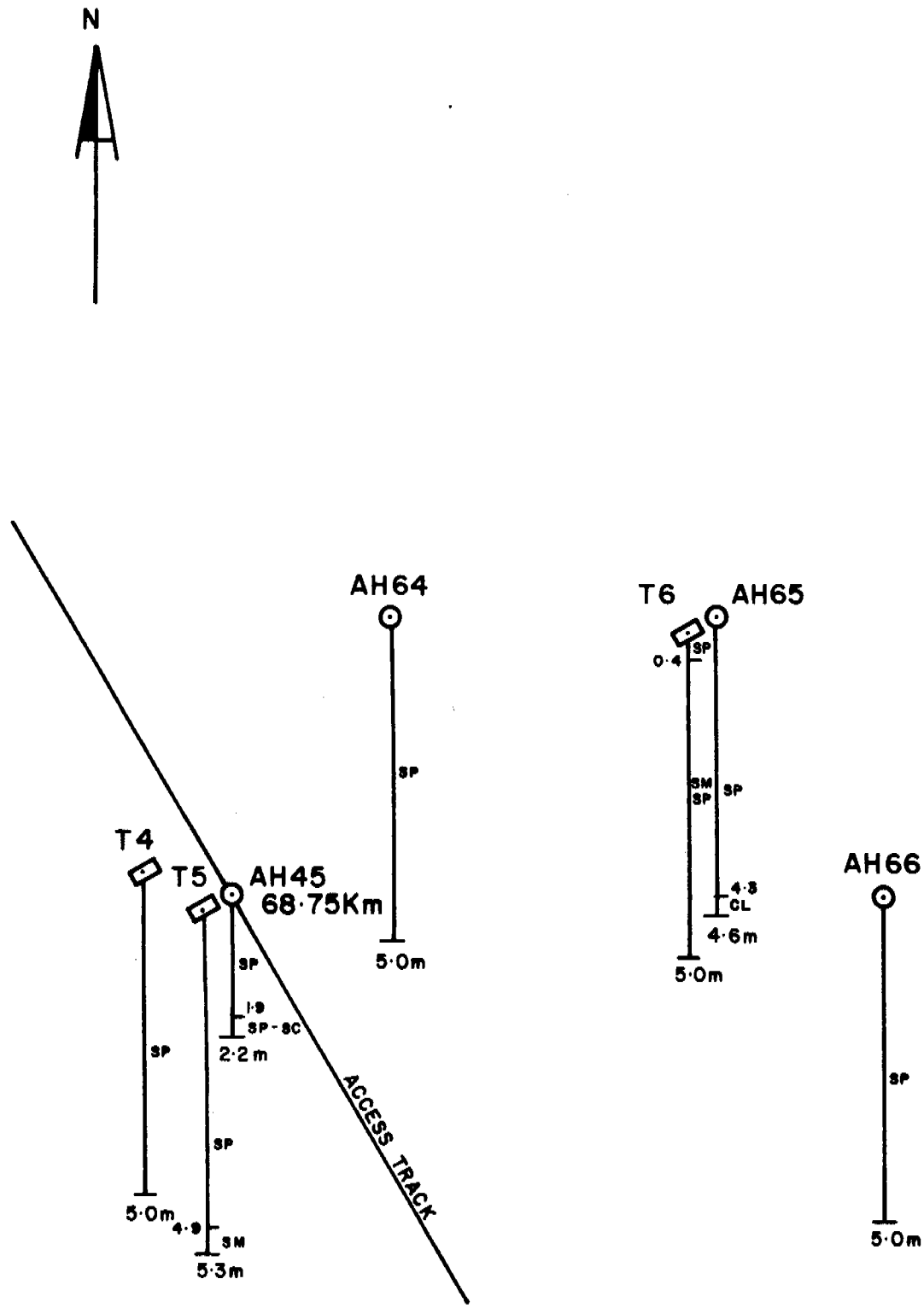
LOCATION = 13 Km ON TRACK

N

AREA 'B'

SCALE 1:10000

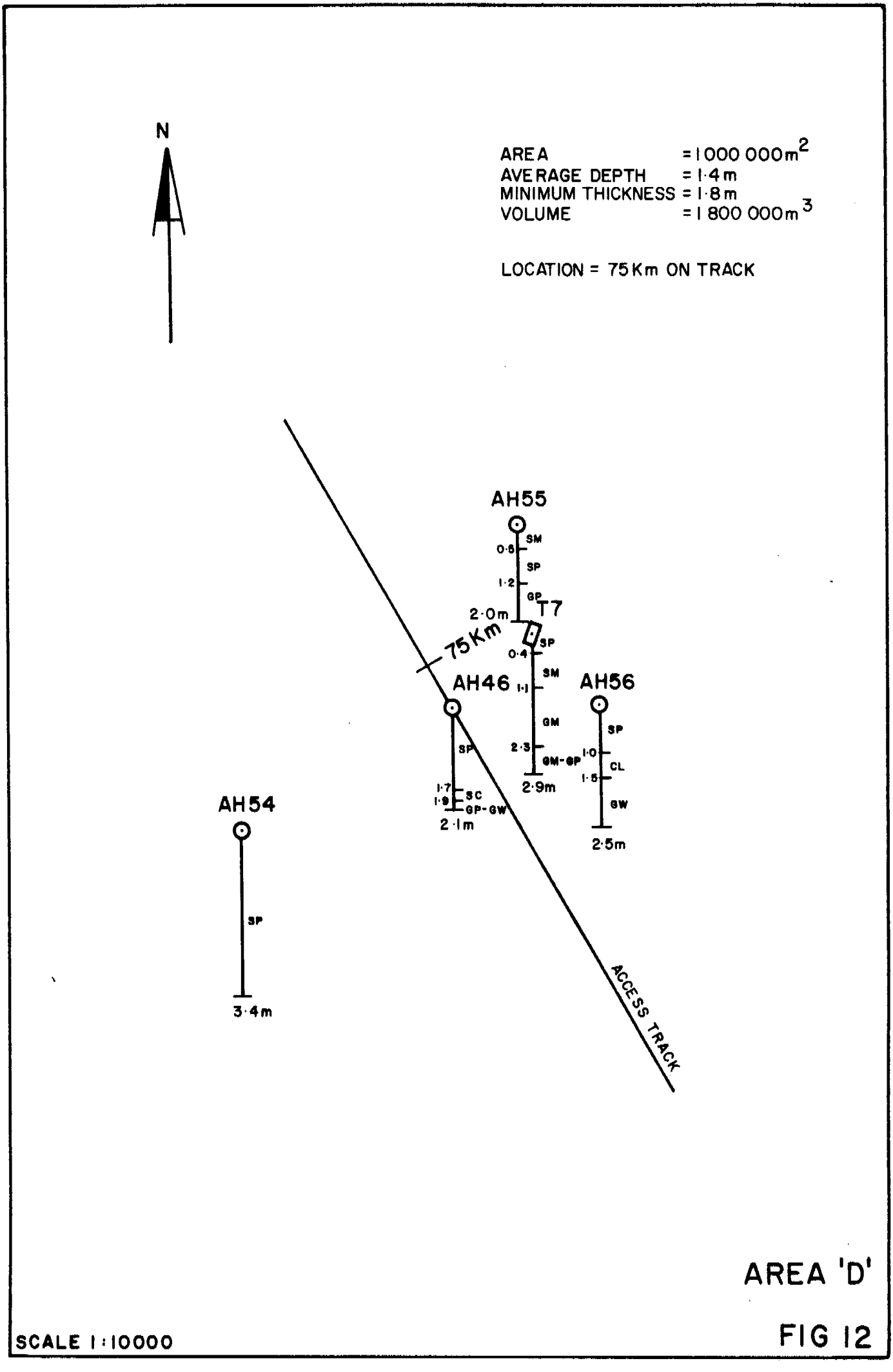
FIG 10



AREA 'C'

SCALE 1:10000

FIG II



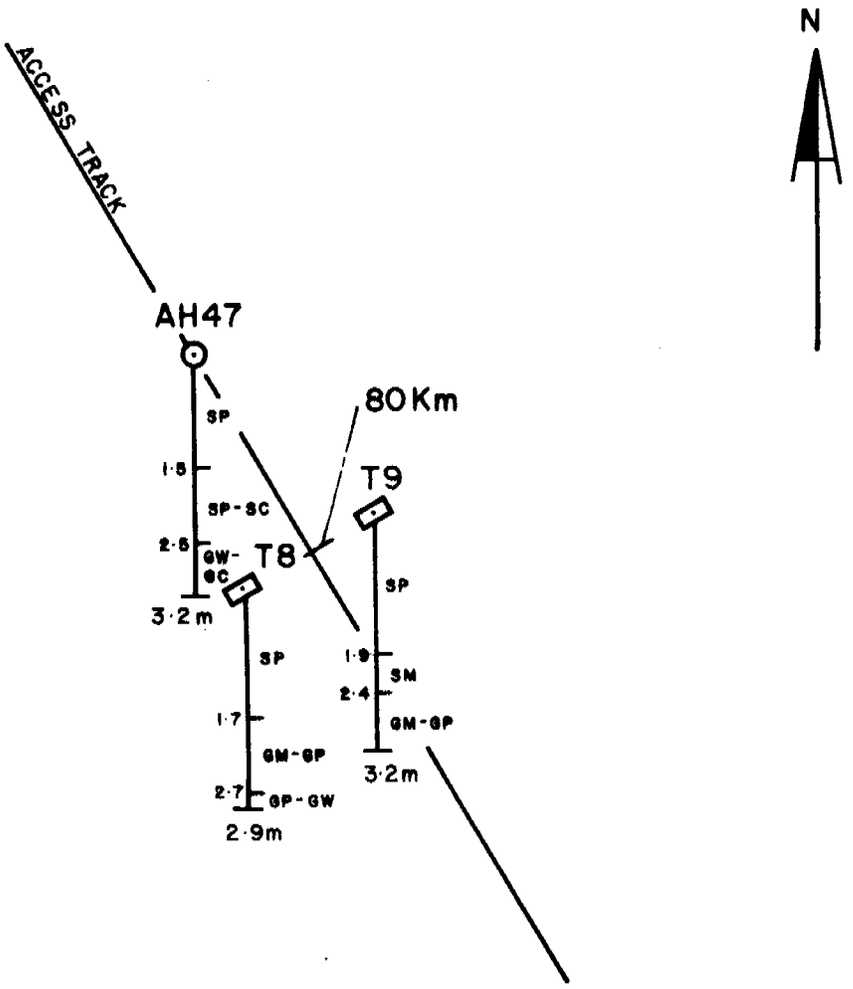
AREA 'D'

SCALE 1:10000

FIG 12

AREA = 80 000m^2
AVERAGE DEPTH = 2·2 m
MINIMUM THICKNESS = 1·7m
VOLUME = 136 000m^3

LOCATION = 80 Km ON TRACK



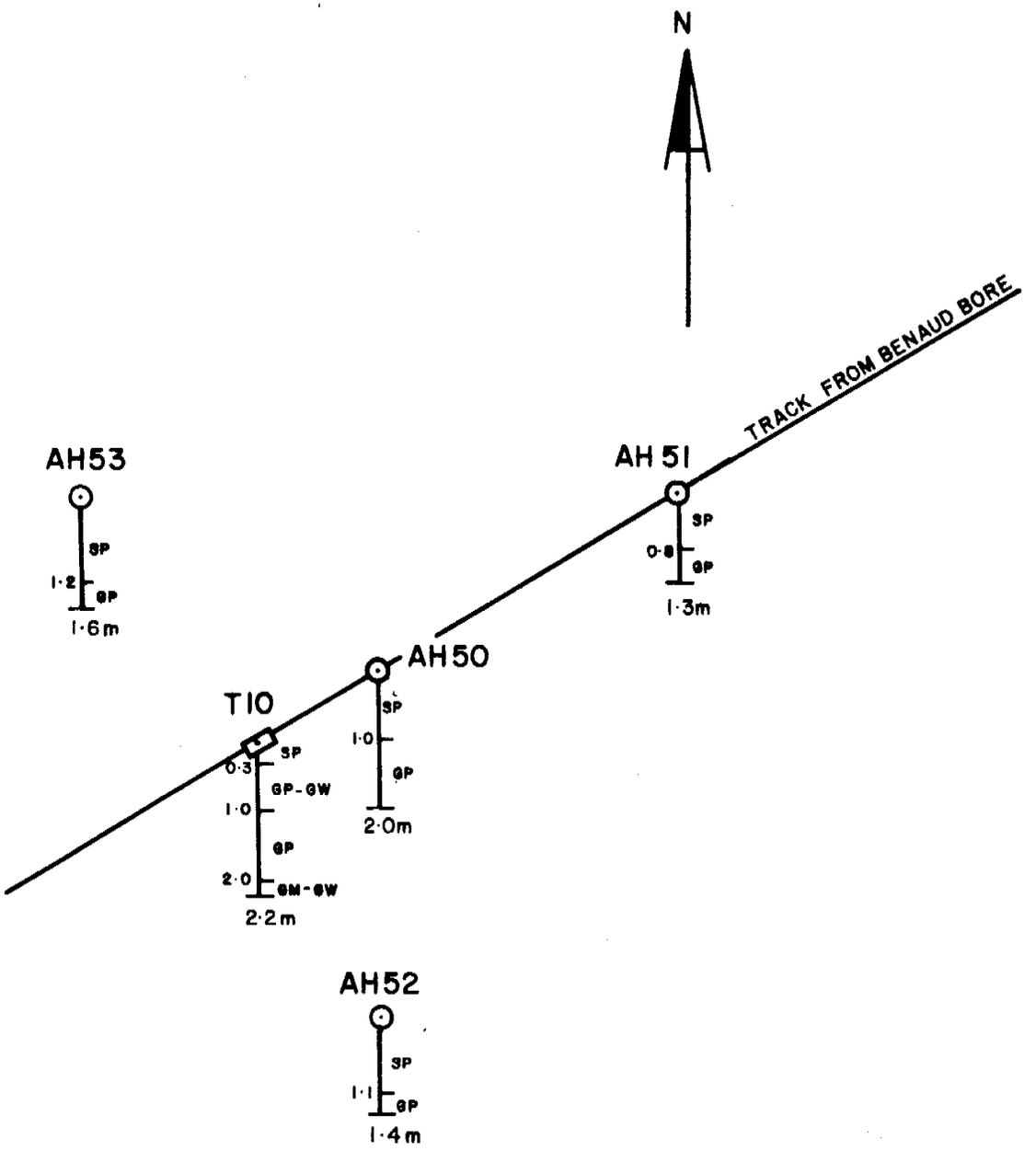
AREA 'E'

SCALE 1:10000

FIG 13

AREA = 1000 000m^2
AVERAGE DEPTH = 0·9m
MINIMUM THICKNESS = 1·9m
VOLUME = 1900 000m^3

LOCATION = 3·3Km EAST OF 90Km
ON TRACK TO BENAUD BORE



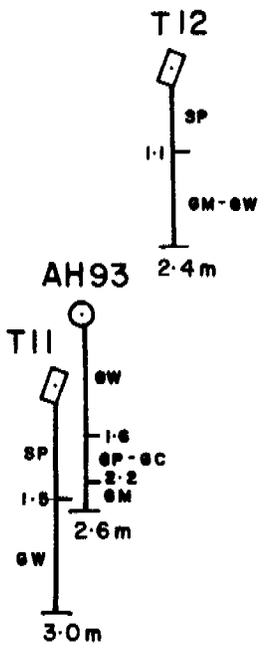
AREA 'F'

SCALE 1:10000

FIG 14

AREA = 70 000 m^2
AVERAGE DEPTH = 0·8m
MINIMUM THICKNESS = 2·6m
VOLUME = 182 000 m^3

LOCATION = FROM 95 Km ON MAIN TRACK
BEARING 110° FOR 4·6 Km



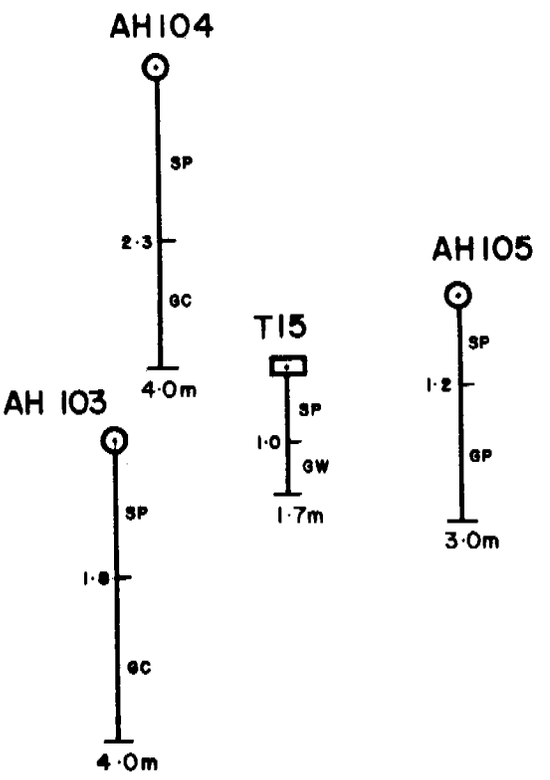
AREA 'G'

SCALE 1 : 10000

FIG 15

AREA = 570 000 m^2
AVERAGE DEPTH = 1·4 m
MINIMUM THICKNESS = 2·2 m
VOLUME = 1254 000 m^3

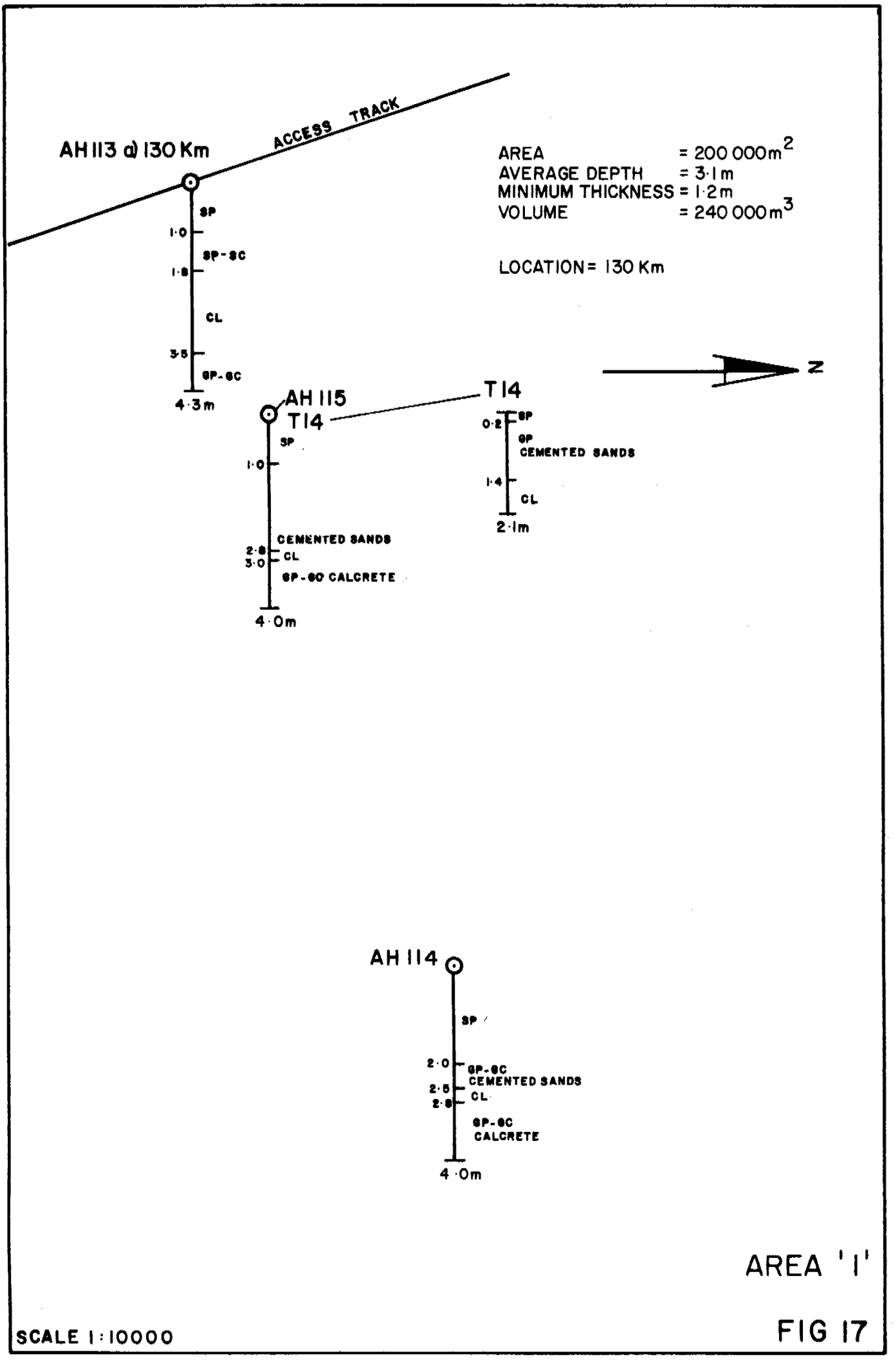
LOCATION = FROM 115 Km ON TRACK
BEARING 67° FOR 3·4 Km



AREA 'H'

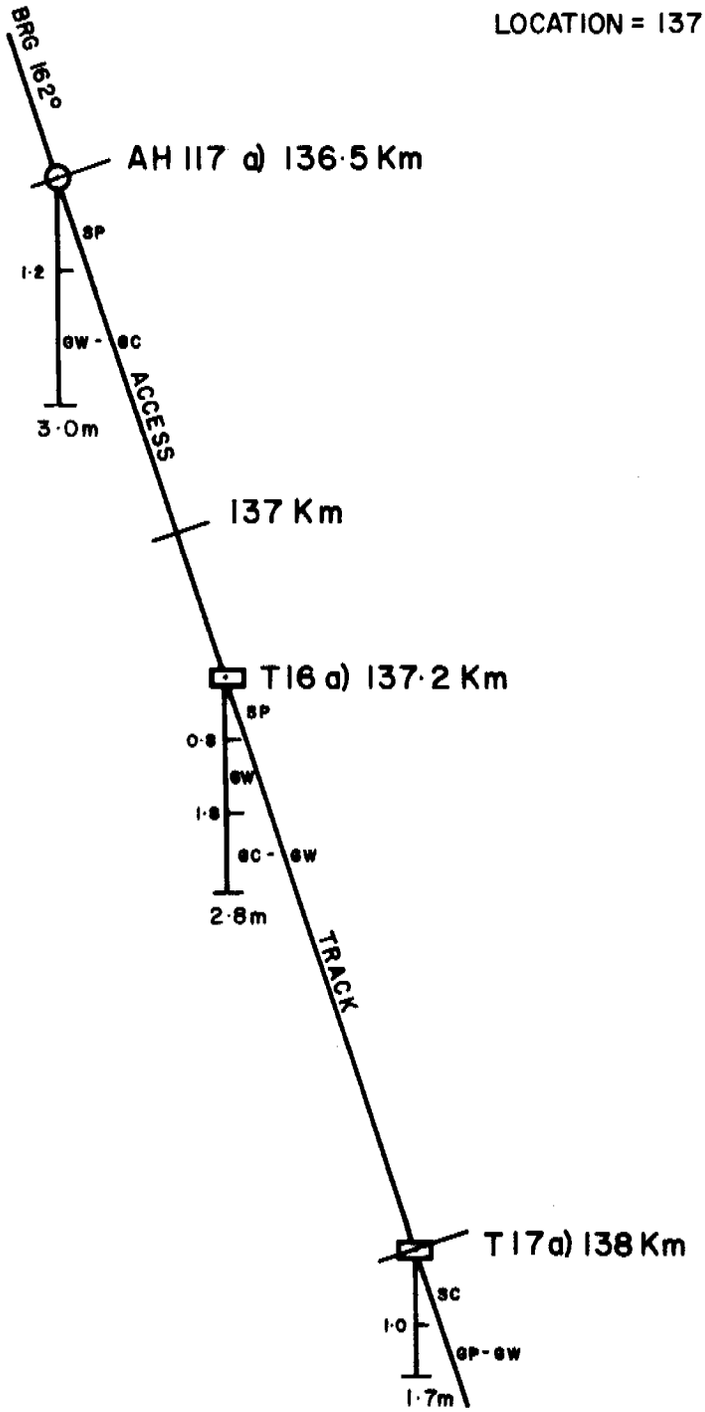
SCALE 1:10 000

FIG 16


AH113 @ 130 Km
ACCESS TRACK
AREA = 200 000m²
AVERAGE DEPTH = 3·1m
MINIMUM THICKNESS = 1·2m
VOLUME = 240 000m³
LOCATION = 130 Km
SP
1·0
SP-SC
1·8
CL
3·5
SP-SC
4·3m
N
AH 115
T14
SP
1·0
CEMENTED SANDS
2·8
CL
3·0
SP-SC CALCRETE
4·0m
T14
0·2
SP
SP
CEMENTED SANDS
1·4
CL
2·1m
AH 114
SP
2·0
SP-SC
CEMENTED SANDS
2·5
CL
2·8
SP-SC
CALCRETE
4·0m
AREA 'I'
SCALE 1:10000
FIG 17

AREA = 200 000 m^2
AVERAGE DEPTH = 1·0m
MINIMUM THICKNESS = 2·0m
VOLUME = 400 000 m^3

LOCATION = 137 Km



AREA 'J'

SCALE 1 : 10000

FIG 18