Aitken Rowe
GEOTECHNICAL ENGINEERING

Geotechnical Engineering
Environmental Consultancy
Soil Concrete Aggregate Testing
NATA Accredited Laboratories

ABN 53 058 315 138 ACN 058 315 138

30 May 2024 Reg. No.: FC24-08

ICG Construction Group
PO Box 2306
Wagga Wagga, NSW 2650

**Attention: Mr. Mark Fleming – Managing Director**

Dear Mark,

**CERTIFICATION OF FILL PLACEMENT – PROPOSED PUMP HOUSE & TANKS BUILDING PAD, MERRITTS MOUNTAIN HOUSE, THREDBO SNOWFIELDS, THREDBO, NSW**

Further to your request, we inspected the exposed subgrade and tested the fill placement at the above site between 19 March and 29 April 2024. We confirm that placement of fill at the above site was tested and supervised by our experienced Geotechnician of Aitken Rowe Testing Laboratories Pty Ltd in accordance with AS 3798-2007 "Guidelines on earthworks for commercial and residential developments". The fill placement was inspected and tested in 150 to 300mm compacted layers for the depth ranging from 900 to 2400mm below finished fill level at the subject site. The test reports are herewith attached.

The subject site for the proposed building pad is situated directly south of the existing snow patrol building near Merritts Mountain House at Thredbo Snowfields, Thredbo, NSW, as shown in the attached site location plan. It should be noted that a Geotechnical Investigation was undertaken by Aitken Rowe Testing Laboratories (ARTL) Pty Ltd at the subject site in December 2023 (refer to ARTL Report No. AS23-176, dated 24 January 2024). It should be noted that the site was found to be underlain by "unsuitable" sand and silt-based "uncontrolled fill" material up to the depth of 1.6m overlying anticipated cobbles or boulders (auger refusal depth) and was classified as **"Class P – Problem"** site at the time of the investigation.

**Initial Site Inspection**

On 19 March 2024, we inspected the subject site during the initial site works to discuss the requirements for certification and to advise the client accordingly. Four (4) test pits were excavated by the client during the initial inspection in order to confirm the depth of "uncontrolled fill" to be removed. The subsurface profile was noted to be highly varied across the site, therefore it was recommended to completely remove all existing fill and cobbles until a solid granite bedrock profile

was encountered, and proof roll the exposed subgrade prior to the placement of any subsequent fill material.

**Initial Proof Roll Testing**

Between 3 and 5 April 2024, we inspected the exposed subgrade prior to the placement of the fill material to ensure all "uncontrolled fill" and unsuitable materials, if any, were removed as recommended above. It was noted that approximately 700 to 2200mm of "uncontrolled fill" material had been removed to the depth ranging from 900 to 2400mm below finished fill level prior to our inspection. We then witnessed the proof rolling of the exposed granite bedrock across the subject site and no soft, loose or heaving areas were detected at the time of the inspection (refer to attached proof roll test reports pages 1 and 2).

**Material Testing**

As per the client's request, quality control testing was undertaken on the proposed fill material at the subject site. A total of seven (7) samples were obtained from various stockpiles and during fill placement at the site for relevant laboratory testing, which included particle size distribution test, Atterberg Limit test, Standard Maximum Dry Density (SMDD), and California Bearing Ratio (CBR) test, which were carried out at our NATA accredited testing laboratory in Wagga Wagga, NSW.

The laboratory tests indicated that the proposed fill material contains 18 to 66% gravel, 27 to 55% sand and 7 to 33% silt/clay content with Plasticity Index (PI) of 7 to 27%. The materials shall be generally classified as **"SC – Clayey SAND; fine to coarse grained, with fine to coarse gravel, fines of medium plasticity", "SM – Silty Gravelly SAND; fine to coarse grained, fine to coarse gravel, fines of low plasticity", "SM – Silty SAND; fine to coarse grained, with fine to coarse gravel, fines of low plasticity", "GC – Clayey GRAVEL; fine to coarse grained, with fine to coarse sand, fines of medium plasticity", "GM – Silty Sandy GRAVEL; fines to coarse grained, fine to coarse sand, fines of low plasticity",** and **"GP-GM – GRAVEL; fine to medium grained, with fine to coarse sand, with silt fines of low plasticity"** in accordance with "AS1726 – 2017 – Geotechnical Site Investigation".

The laboratory 4 day soaked CBR tests indicated the CBR values of 14% on clayey sand, 20% on silty gravelly sand, 17% on silty sand, 18% on clayey gravel, 14% and 19% on silty sandy gravel, and 70% on gravel material compacted at 100% SMDD. The laboratory soil test reports are herewith attached.

**Relative Compaction Testing**

Twenty-three (23) density in-situ (DIS) tests (DIS 1-23) in total were carried out across the proposed building pad at the subject site, which included sand-based and gravel-based general fill and fine to medium grained gravel (capping layer) material. The relative compaction tests are detailed below;

Twenty (20) density in-situ tests (DIS 1-20) carried out on the general fill placement indicated that the sandy and gravel-based fill material was placed to the relative compaction of 100.0% to 102.5%

Standard Maximum Dry Density (SMDD). The results show achievement of the required density across the general fill placement throughout the proposed building pad at the subject site in accordance with the site specification requirements (minimum 100.0% SMDD).

Three (3) density in-situ tests (DIS 21-23) carried out on the final capping layer indicated that the fine to medium grained gravel was placed to the relative compaction of 100.5 to 101.0% SMDD. The results show achievement of the required density across the final capping layer of the proposed building pad at the subject site in accordance with the site specification requirements (minimum 100.0% SMDD).

**Intermediate Proof Roll Testing**

On 12 April 2024, we inspected the fill placement in the north-western section of the subject site at the depth of 600mm finished fill level to ensure the fill material had not become moisture affected" by recent rain/snow fall events. We witnessed the proof rolling of the exposed sand-based and gravel-based "controlled fill" in the north-western section of the site and no soft, loose or heaving areas were detected at the time of the inspection (refer to attached proof roll test report page 3).

**Final Proof Roll Testing**

On 29 April 2024, we witnessed the proof rolling of the final capping layer of gravel "controlled fill" material across the proposed building pad at the subject site and the exposed fine to medium grained gravel was **found to show major heaving and deformation under load in a section of building pad at the time of the inspection** (refer to attached proof roll test report page 4).

**General Comment**

**It should be noted that no final passing proof rolling was undertaken on the final gravel capping layer across the proposed building pad at the time of writing.**

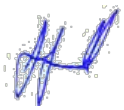
It is assessed that the fill material is deemed "controlled fill" in accordance with AS 3798 **provided no movement is observed in the final gravel fill capping layer across the subject site at the time of construction**. The controlled fill can then be considered "suitable" for use as foundation for the proposed pump house and tanks building pad as per the site-specific requirements for which an allowable bearing capacity of 150kPa may be adopted.

It is recommended to place proper drainage measures around the perimeter of the fill pad to ensure the surface run-off does not affect the fill material. Any soft, loose or heaving areas, if detected at the time of construction, should be excavated down and backfill with granular "controlled fill" material.

This report should be read in conjunction with our previous Geotechnical Investigation Report No. AS23-176, dated 24 January 2024. We confirm that the site classification as given in the report, "Class S – Slightly reactive" may now be adopted for the subject site.

Yours Faithfully,

**Peter Forbes-Taber**
**Geotechnical Engineer**



**Jarrod Gornall**
**Senior Geotechnical Engineer**

Attachments:

- Addendum
- Site location plan
- Density In-Situ test reports
- Proof Roll test reports
- Profile and test locations plan
- Laboratory soil test reports (S24-092 & S24-113)

# ADDENDUM

**LIMITS OF INVESTIGATION**

The recommendations made in this report are based on the assumption that the test results are representative of the overall subsurface conditions. However, it should be noted that even under optimum circumstances, actual conditions in some parts of the building site may differ from those said to exist, because no geotechnical engineer, no matter how qualified, and no subsurface exploration program, no matter how comprehensive, can reveal all that is hidden by earth, rock and time.

The client should also be aware that our recommendations refer only to our test site locations and the ground level at the time of testing.

The recommendations in this report are based on the following: -

a) The information gained from our investigation.
b) The present "state of the art" in testing and design.
c) The building type and site treatment conveyed to us by the client.
d) Historical information.

Should the client or their agent have omitted to supply us with the correct relevant information, or make significant changes to the building type and/or building envelope, our report may not take responsibility for any consequences and we reserve the right to make an additional charge if more testing is necessary.

Not withstanding the recommendations made in this report, we also recommend that whenever footings are close to any excavations or easements, that consideration should be given to deepening the footings.

Unless otherwise stated in our commission, any dimensions or slope direction and magnitude should not be used for any building costing calculations and/or positioning. Any sketch supplied should be considered as only an approximate pictorial evidence of our work.


**Google Earth Aerial Imagery, dated September 2023**

**Aitken Rowe Testing Laboratories Pty Ltd**

**Registration Number: FC24-08**

**Client:** ICG CONSTRUCTION GROUP – WAGGA WAGGA, NSW

**Project:** CERTIFICATION OF FILL PLACEMENT
PROPOSED PUMP HOUSE & TANKS BUILDING PAD,
MERRITTS MOUNTAIN HOUSE, THREDBO SNOWFIELDS,
THREDBO, NSW
SITE LOCATION PLAN

# AITKEN ROWE Testing Laboratories Pty Ltd

ARTL Wagga Wagga: 4/2 Riedell Street, Wagga Wagga NSW 2650

*

PAGE: 1
OF: 4
REQUEST NO: *
ORDER NO: *

## TEST REPORT - RELATIVE COMPACTION

CLIENT : ICG CONSTRUCTION GROUP - WAGGA WAGGA, NSW

PROJECT : CERTIFICATION OF FILL PLACEMENT
PROPOSED PUMP HOUSE & TANKS BUILDING PAD
MERRITTS MOUNTAIN HOUSE, THREDBO SNOWFIELDS, THREDBO, NSW

SECTIONS REPRESENTED : PROPOSED PUMP HOUSE & TANKS BUILDING PAD

LOT No. : BUILDING PAD

LAYER & MATERIAL : FILL - VARIOUS

DATE/S OF LAB COMPACTION: 3/04/2024 to 29/04/2024

TEST METHODS : AS1289.2.1.1, AS1289.5.4.1, AS1289.5.7.1, AS1289.5.8.1

SAMPLING PROCEDURE: AS1289.1.2.1

CLAUSE: 6.4b

DATE OF SAMPLING (LAB COMP.) 3-29/04/2024

REGISTRATION No. : R12b **FC24-08**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SAMPLE OR SITE No. | | 1 | 2 | 3 | 4 | 5 | 6 |
| LAYER | | LAYER 1 | LAYER 1 | LAYER 2 | LAYER 2 | LAYER 3 | LAYER 3 |
| LOCATION (m) | | SEE PLAN | SEE PLAN | SEE PLAN | SEE PLAN | SEE PLAN | SEE PLAN |
| DATE OF TEST (FIELD DENSITY) | | 3/04/24 | 3/04/24 | 3/04/24 | 3/04/24 | 4/04/24 | 4/04/24 |
| TIME OF TEST | | 14:00 | 14:05 | 16:30 | 16:35 | 10:30 | 10:35 |
| DEPTH BELOW FINAL LEVEL (mm) | | 2100 | 2100 | 1800 | 1800 | 1500 | 1500 |
| REDUCED LEVEL (m) | | 1661.700 | 1661.700 | 1662.000 | 1662.000 | 1662.300 | 1662.300 |
| TESTED DEPTH (mm) | | 300 | 300 | 300 | 300 | 300 | 300 |
| FIELD DRY DENSITY (0.01 t/m$^3$) | | 1.63 | 1.52 | 1.61 | 1.68 | 1.72 | 1.64 |
| FIELD WET DENSITY (0.01 t/m$^3$) | | 2.02 | 1.91 | 1.94 | 2.04 | 2.02 | 2.00 |
| PCWD. PEAK CONVERTED WET DENSITY (0.01 t/m$^3$) | | 2.01 | 1.87 | 1.93 | 1.99 | 1.99 | 1.98 |
| APCWD. ADJ. PEAK CONVERTED WET DENSITY (0.01 t/m$^3$) | | 2.02 | 1.87 | 1.93 | 1.99 | 2.01 | * |
| MAXIMUM DRY DENSITY (0.01 t/m$^3$) | | * | * | * | * | * | * |
| ADJUSTED MAXIMUM DRY DENSITY (0.01 t/m$^3$) | | * | * | * | * | * | * |
| OPTIMUM MOISTURE CONTENT (0.5 %) | | 26.0 | 25.5 | 22.0 | 22.0 | 19.5 | 23.5 |
| ADJUSTED OPTIMUM MOISTURE CONTENT (0.5 %) | | * | * | * | * | * | * |
| *FIELD MOISTURE* | VARIATION (0.5 %) | 2.0 | 0.0 | 1.0 | 1.0 | 2.0 | 2.0 |
| | (WET/DRY): | DRY | DRY | DRY | DRY | DRY | DRY |
| *CONTENT* | ACTUAL (0.5 %) | 24.0 | 25.5 | 21.0 | 21.0 | 17.5 | 21.5 |
| | MOISTURE RATIO (0.5 %) | 93.0 | 99.5 | 95.0 | 95.0 | 90.0 | 91.5 |
| OVERSIZE DETERMINATIONS (as required) | +37.5mm (0.1%) | 3.2 | 0.0 | 0.0 | 0.0 | 7.1 | 0.0 |
| | -37.5 +19.0mm (0.1%) | N/A | 6.2 | 4.9 | 8.9 | N/A | N/A |
| DENSITY OF OVERSIZE (where applicable) (0.01 t/m$^3$) | | 2.28 | 2.31 | 2.26 | 2.29 | 2.27 | N/A |
| FRACTION TESTED (mm) | | -19.0 | -37.5 | -37.5 | -37.5 | -37.5 | -37.5 |
| COMPACTIVE EFFORT | | STANDARD | STANDARD | STANDARD | STANDARD | STANDARD | STANDARD |
| TIME FROM ADDITION OF ADDITIVE TO LAB. COMPACTION | | * | * | * | * | * | * |
| MD DETERMINATION BEFORE/AFTER COMPACTION | | After | After | After | After | After | After |
| DENSITY RATIO (0.5 %) | | 100.0 | 102.0 | 101.0 | 102.0 | 101.0 | 101.0 |
| SPECIFIED DENSITY RATIO (%) | | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

REMARKS: DIS 1-20 = SAND & GRAVEL-BASED GENERAL FILL, DIS 21-23 = GRAVEL CAPPING LAYER

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NATA
WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.

ACCREDITATION NUMBER: 4679

APPROVED SIGNATORY: Peter Forbes-Taber

DATE: 21/05/2024

# AITKEN ROWE Testing Laboratories Pty Ltd

ARTL Wagga Wagga: 4/2 Riedell Street, Wagga Wagga NSW 2650

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REQUEST NO: *

ORDER NO: *

## TEST REPORT - RELATIVE COMPACTION

CLIENT : ICG CONSTRUCTION GROUP - WAGGA WAGGA, NSW

PROJECT : CERTIFICATION OF FILL PLACEMENT
PROPOSED PUMP HOUSE & TANKS BUILDING PAD
MERRITTS MOUNTAIN HOUSE, THREDBO SNOWFIELDS, THREDBO, NSW

SECTIONS REPRESENTED : PROPOSED PUMP HOUSE & TANKS BUILDING PAD

LOT No. : BUILDING PAD

LAYER & MATERIAL : FILL - VARIOUS

DATE/S OF LAB COMPACTION: 3/04/2024 to 29/04/2024

TEST METHODS : AS1289.2.1.1
AS1289.5.4.1
AS1289.5.7.1
AS1289.5.8.1

SAMPLING PROCEDURE: AS1289.1.2.1

CLAUSE: 6.4b

DATE OF SAMPLING (LAB COMP.) 3-29/04/2024

REGISTRATION No. : R12b **FC24-08**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SAMPLE OR SITE No. | | 7 | 8 | 9 | 10 | 11 | 12 |
| LAYER | | LAYER 4 | LAYER 4 | LAYER 5 | LAYER 5 | LAYER 5 | LAYER 6 |
| LOCATION (m) | | SEE PLAN | SEE PLAN | SEE PLAN | SEE PLAN | SEE PLAN | SEE PLAN |
| DATE OF TEST (FIELD DENSITY) | | 4/04/24 | 4/04/24 | 4/04/24 | 4/04/24 | 4/04/24 | 5/04/24 |
| TIME OF TEST | | 13:40 | 13:45 | 17:00 | 17:05 | 17:10 | 13:00 |
| DEPTH BELOW FINAL LEVEL (mm) | | 1200 | 1200 | 900 | 900 | 900 | 600 |
| REDUCED LEVEL (m) | | 1662.600 | 1662.600 | 1662.900 | 1662.900 | 1662.900 | 1663.200 |
| TESTED DEPTH (mm) | | 300 | 300 | 300 | 300 | 300 | 1662 |
| FIELD DRY DENSITY (0.01 t/m$^3$) | | 1.68 | 1.68 | 1.69 | 1.79 | 1.79 | 1.81 |
| FIELD WET DENSITY (0.01 t/m$^3$) | | 1.99 | 2.01 | 2.02 | 2.07 | 2.10 | 2.09 |
| PCWD. PEAK CONVERTED WET DENSITY (0.01 t/m$^3$) | | 1.96 | 1.98 | 2.01 | 2.03 | 2.05 | 2.05 |
| APCWD. ADJ. PEAK CONVERTED WET DENSITY (0.01 t/m$^3$) | | * | 1.98 | * | 2.05 | * | 2.07 |
| MAXIMUM DRY DENSITY (0.01 t/m$^3$) | | * | * | * | * | * | * |
| ADJUSTED MAXIMUM DRY DENSITY (0.01 t/m$^3$) | | * | * | * | * | * | * |
| OPTIMUM MOISTURE CONTENT (0.5 %) | | 20.5 | 21.0 | 21.0 | 16.5 | 18.0 | 16.0 |
| ADJUSTED OPTIMUM MOISTURE CONTENT (0.5 %) | | * | * | * | * | * | * |
| *FIELD MOISTURE* | VARIATION (0.5 %) | 2.5 | 1.5 | 1.5 | 1.0 | 1.0 | 1.0 |
| | (WET/DRY): | DRY | DRY | DRY | DRY | DRY | DRY |
| *CONTENT* | ACTUAL (0.5 %) | 18.0 | 19.5 | 19.5 | 15.5 | 17.0 | 15.0 |
| | MOISTURE RATIO (0.5 %) | 88.5 | 93.5 | 93.5 | 92.5 | 93.0 | 92.5 |
| OVERSIZE DETERMINATIONS (as required) | +37.5mm (0.1%) | 0.0 | 2.7 | 0.0 | 6.4 | 0.0 | 5.2 |
| | -37.5 +19.0mm (0.1%) | N/A | N/A | N/A | N/A | N/A | N/A |
| DENSITY OF OVERSIZE (where applicable) (0.01 t/m$^3$) | | N/A | 2.19 | N/A | 2.34 | N/A | 2.38 |
| FRACTION TESTED (mm) | | -37.5 | -37.5 | -37.5 | -37.5 | -37.5 | -37.5 |
| COMPACTIVE EFFORT | | STANDARD | STANDARD | STANDARD | STANDARD | STANDARD | STANDARD |
| TIME FROM ADDITION OF ADDITIVE TO LAB. COMPACTION | | * | * | * | * | * | * |
| MD DETERMINATION BEFORE/AFTER COMPACTION | | After | After | After | After | After | After |
| DENSITY RATIO (0.5 %) | | 101.0 | 101.5 | 100.5 | 101.0 | 102.5 | 101.0 |
| SPECIFIED DENSITY RATIO (%) | | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

REMARKS: DIS 1-20 = SAND & GRAVEL-BASED GENERAL FILL, DIS 21-23 = GRAVEL CAPPING LAYER

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ACCREDITATION NUMBER: 4679

APPROVED SIGNATORY: Peter Forbes-Taber

DATE: 21/05/2024

# AITKEN ROWE Testing Laboratories Pty Ltd

ARTL Wagga Wagga: 4/2 Riedell Street, Wagga Wagga NSW 2650

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REQUEST NO: *

ORDER NO: *

## TEST REPORT - RELATIVE COMPACTION

CLIENT : ICG CONSTRUCTION GROUP - WAGGA WAGGA, NSW

PROJECT : CERTIFICATION OF FILL PLACEMENT
PROPOSED PUMP HOUSE & TANKS BUILDING PAD
MERRITTS MOUNTAIN HOUSE, THREDBO SNOWFIELDS, THREDBO, NSW

SECTIONS REPRESENTED : PROPOSED PUMP HOUSE & TANKS BUILDING PAD

LOT No. : BUILDING PAD

LAYER & MATERIAL : FILL - VARIOUS

DATE/S OF LAB COMPACTION: 3/04/2024 to 29/04/2024

TEST METHODS : AS1289.2.1.1
AS1289.5.4.1
AS1289.5.7.1
AS1289.5.8.1

SAMPLING PROCEDURE: AS1289.1.2.1

CLAUSE: 6.4b

DATE OF SAMPLING (LAB COMP.) 3-29/04/2024

REGISTRATION No. : R12b **FC24-08**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SAMPLE OR SITE No. | | 13 | 14 | 15 | 16 | 17 | 18 |
| LAYER | | LAYER 6 | LAYER 6 | LAYER 7 | LAYER 7 | LAYER 7 | LAYER 8 |
| LOCATION (m) | | SEE PLAN | SEE PLAN | SEE PLAN | SEE PLAN | SEE PLAN | SEE PLAN |
| DATE OF TEST (FIELD DENSITY) | | 5/04/24 | 5/04/24 | 12/04/24 | 12/04/24 | 12/04/24 | 12/04/24 |
| TIME OF TEST | | 13:08 | 13:15 | 15:15 | 15:20 | 15:25 | 14:00 |
| DEPTH BELOW FINAL LEVEL (mm) | | 600 | 600 | 450 | 450 | 450 | 300 |
| REDUCED LEVEL (m) | | 1663.200 | 1663.200 | 1663.350 | 1663.350 | 1663.350 | 1663.500 |
| TESTED DEPTH (mm) | | 300 | 300 | 150 | 150 | 150 | 150 |
| FIELD DRY DENSITY (0.01 t/m$^3$) | | 1.83 | 1.80 | 1.93 | 1.91 | 1.99 | 1.99 |
| FIELD WET DENSITY (0.01 t/m$^3$) | | 2.09 | 2.05 | 2.18 | 2.16 | 2.22 | 2.20 |
| PCWD. PEAK CONVERTED WET DENSITY (0.01 t/m$^3$) | | 2.07 | 2.05 | 2.14 | 2.14 | 2.17 | 2.19 |
| APCWD. ADJ. PEAK CONVERTED WET DENSITY (0.01 t/m$^3$) | | 2.08 | * | 2.15 | 2.15 | 2.19 | * |
| MAXIMUM DRY DENSITY (0.01 t/m$^3$) | | * | * | * | * | * | * |
| ADJUSTED MAXIMUM DRY DENSITY (0.01 t/m$^3$) | | * | * | * | * | * | * |
| OPTIMUM MOISTURE CONTENT (0.5 %) | | 15.5 | 15.5 | 12.5 | 13.0 | 12.0 | 10.0 |
| ADJUSTED OPTIMUM MOISTURE CONTENT (0.5 %) | | * | * | * | * | * | * |
| *FIELD MOISTURE* | VARIATION (0.5 %) | 1.0 | 1.5 | 0.0 | 0.0 | 0.0 | 0.5 |
| | (WET/DRY): | DRY | DRY | DRY | DRY | DRY | WET |
| *CONTENT* | ACTUAL (0.5 %) | 14.5 | 14.0 | 12.5 | 13.0 | 12.0 | 10.5 |
| | MOISTURE RATIO (0.5 %) | 92.5 | 91.5 | 99.5 | 100.0 | 99.5 | 102.5 |
| OVERSIZE DETERMINATIONS (as required) | +37.5mm (0.1%) | 4.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | -37.5 +19.0mm (0.1%) | N/A | N/A | 3.5 | 3.5 | 6.3 | 0.0 |
| DENSITY OF OVERSIZE (where applicable) (0.01 t/m$^3$) | | 2.33 | N/A | 2.47 | 2.43 | 2.49 | N/A |
| FRACTION TESTED (mm) | | -37.5 | -19.0 | -19.0 | -19.0 | -19.0 | -19.0 |
| COMPACTIVE EFFORT | | STANDARD | STANDARD | STANDARD | STANDARD | STANDARD | STANDARD |
| TIME FROM ADDITION OF ADDITIVE TO LAB. COMPACTION | | * | * | * | * | * | * |
| MD DETERMINATION BEFORE/AFTER COMPACTION | | After | After | After | After | After | After |
| DENSITY RATIO (0.5 %) | | 100.5 | 100.0 | 101.0 | 100.5 | 101.5 | 100.5 |
| SPECIFIED DENSITY RATIO (%) | | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

REMARKS: DIS 1-20 = SAND & GRAVEL-BASED GENERAL FILL, DIS 21-23 = GRAVEL CAPPING LAYER

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WORLD RECOGNISED ACCREDITATION

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ACCREDITATION NUMBER: 4679

APPROVED SIGNATORY: Peter Forbes-Taber

DATE: 21/05/2024

# AITKEN ROWE Testing Laboratories Pty Ltd

ARTL Wagga Wagga: 4/2 Riedell Street, Wagga Wagga NSW 2650

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CLIENT : ICG CONSTRUCTION GROUP - WAGGA WAGGA, NSW

PROJECT : CERTIFICATION OF FILL PLACEMENT
PROPOSED PUMP HOUSE & TANKS BUILDING PAD
MERRITTS MOUNTAIN HOUSE, THREDBO SNOWFIELDS, THREDBO, NSW

SECTIONS REPRESENTED : PROPOSED PUMP HOUSE & TANKS BUILDING PAD

LOT No. : BUILDING PAD

LAYER & MATERIAL : FILL - VARIOUS

DATE/S OF LAB COMPACTION: 3/04/2024 to 29/04/2024

TEST METHODS : AS1289.2.1.1
AS1289.5.4.1
AS1289.5.7.1
AS1289.5.8.1

SAMPLING PROCEDURE: AS1289.1.2.1

CLAUSE: 6.4b

DATE OF SAMPLING (LAB COMP.) 3-29/04/2024

REGISTRATION No. : R12b **FC24-08**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SAMPLE OR SITE No. | | 19 | 20 | 21 | 22 | 23 | * |
| LAYER | | LAYER 8 | LAYER 8 | LAYER 9 | LAYER 9 | LAYER 9 | * |
| LOCATION (m) | | SEE PLAN | SEE PLAN | SEE PLAN | SEE PLAN | SEE PLAN | * |
| DATE OF TEST (FIELD DENSITY) | | 29/04/24 | 29/04/24 | 29/04/24 | 29/04/24 | 29/04/24 | * |
| TIME OF TEST | | 14:05 | 14:15 | 14:20 | 14:30 | 14:35 | * |
| DEPTH BELOW FINAL LEVEL (mm) | | 300 | 300 | NIL | NIL | NIL | * |
| REDUCED LEVEL (m) | | 1663.500 | 1663.500 | 1663.800 | 1663.800 | 1663.800 | * |
| TESTED DEPTH (mm) | | 150 | 150 | 300 | 300 | 300 | * |
| FIELD DRY DENSITY (0.01 t/m$^3$) | | 1.97 | 1.97 | 2.14 | 2.14 | 2.13 | * |
| FIELD WET DENSITY (0.01 t/m$^3$) | | 2.20 | 2.18 | 2.30 | 2.32 | 2.29 | * |
| PCWD. PEAK CONVERTED WET DENSITY (0.01 t/m$^3$) | | 2.18 | 2.17 | 2.28 | 2.31 | 2.28 | * |
| APCWD. ADJ. PEAK CONVERTED WET DENSITY (0.01 t/m$^3$) | | * | * | * | * | * | * |
| MAXIMUM DRY DENSITY (0.01 t/m$^3$) | | * | * | * | * | * | * |
| ADJUSTED MAXIMUM DRY DENSITY (0.01 t/m$^3$) | | * | * | * | * | * | * |
| OPTIMUM MOISTURE CONTENT (0.5 %) | | 11.5 | 10.0 | 8.5 | 8.0 | 8.5 | * |
| ADJUSTED OPTIMUM MOISTURE CONTENT (0.5 %) | | * | * | * | * | * | * |
| *FIELD MOISTURE* | VARIATION (0.5 %) | 0.0 | 0.5 | 1.0 | 0.0 | 1.0 | * |
| | (WET/DRY): | WET | WET | DRY | WET | DRY | * |
| *CONTENT* | ACTUAL (0.5 %) | 11.5 | 10.5 | 7.5 | 8.0 | 7.5 | * |
| MOISTURE RATIO (0.5 %) | | 101.0 | 103.5 | 86.0 | 101.5 | 87.5 | * |
| OVERSIZE DETERMINATIONS (as required) | +37.5mm (0.1%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | * |
| | -37.5 +19.0mm (0.1%) | N/A | N/A | 0.0 | 0.0 | 0.0 | * |
| DENSITY OF OVERSIZE (where applicable) (0.01 t/m$^3$) | | N/A | N/A | N/A | N/A | N/A | * |
| FRACTION TESTED (mm) | | -37.5 | -37.5 | -19.0 | -19.0 | -19.0 | * |
| COMPACTIVE EFFORT | | STANDARD | STANDARD | STANDARD | STANDARD | STANDARD | * |
| TIME FROM ADDITION OF ADDITIVE TO LAB. COMPACTION | | * | * | * | * | * | * |
| MD DETERMINATION BEFORE/AFTER COMPACTION | | After | After | After | After | After | * |
| DENSITY RATIO (0.5 %) | | 101.0 | 100.0 | 101.0 | 100.5 | 100.5 | * |
| SPECIFIED DENSITY RATIO (%) | | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | * |

REMARKS: DIS 1-20 = SAND & GRAVEL-BASED GENERAL FILL, DIS 21-23 = GRAVEL CAPPING LAYER

*

NATA
WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.

ACCREDITATION NUMBER: 4679

APPROVED SIGNATORY: Peter Forbes-Taber

DATE: 21/05/2024

# PROOF ROLLING TEST REPORT T198



☑ WAGGA ☐ GRIFFITH ☐ ALBURY ANNEX LAB

**Client:** *ICG CONSTRUCTION GROUP - WAGGA WAGGA, NSW* **Rego No.:** *FC24-08*

**Job Description:** *CERTIFICATION OF FILL PLACEMENT* **Order No.:** *N/A*

*PROPOSED PUMP HOUSE & TANKS BUILDING PAD,*

**Location/Lot No.:** *MERRITTS MOUNTAIN HOUSE, THREDBO SNOWFIELDS, THREDBO, NSW*

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **PRE-EXISTING FILL:** | ☐ NO | ☑ YES | | | | | | |
| **PREVIOUS GEO. REPORT:** | ☐ N/A | ☐ OTHER | ☑ ARTL REGO: | *AS23-176* | | | | |
| **STAGE OF PROJECT:** | ☑ INITIAL | ☐ INTERMEDIATE | ☐ RETEST | ☐ FINAL | | | | |

## EXCAVATION

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **TOPSOIL REMOVED:** | ☐ YES | ☐ NO | ☐ PARTIAL | ☑ N/A | DEPTH (mm): | * | | | | |
| **UNSUITABLE REMOVED:** | ☑ YES | ☐ NO | ☐ PARTIAL | ☐ N/A | DEPTH (mm): | *1500-2200* | | | | |
| **REASON FOR REMOVAL:** | ☑ UNCONTROLLED FILL | | | ☐ CONDITIONAL | | ☐ CLIENT DIRECTION | | | | |

**DESCRIPTION OF MATERIAL/STRUCTURE:** REMOVED "UNCONTROLLED FILL" MATERIAL
PROPOSED PUMP HOUSE & TANKS BUILDING PAD

## PROOF ROLL

**FOUNDING MATERIAL:** *GRANITE (NATURAL)* D.B.F. (mm): *1800-2400*

**SURFACE PRIOR TO PROOF ROLL:** ☐ WETTED ☑ NOT WETTED

| | | | | | | |
|---|---|---|---|---|---|---|
| **PLANT EQUIPMENT:** | MASS: | *9t* | TYPE: | *PADFOOT ROLLER* | TIME: | *1145* |
| | MODEL: | *BOMAG* | TYRE PRESSURE: | *NK* | %OVERLAP: | *50* |

**SURFACE CONDITION PERCIEVED AS:** ☑ UNIFORM ☐ NON-UNIFORM

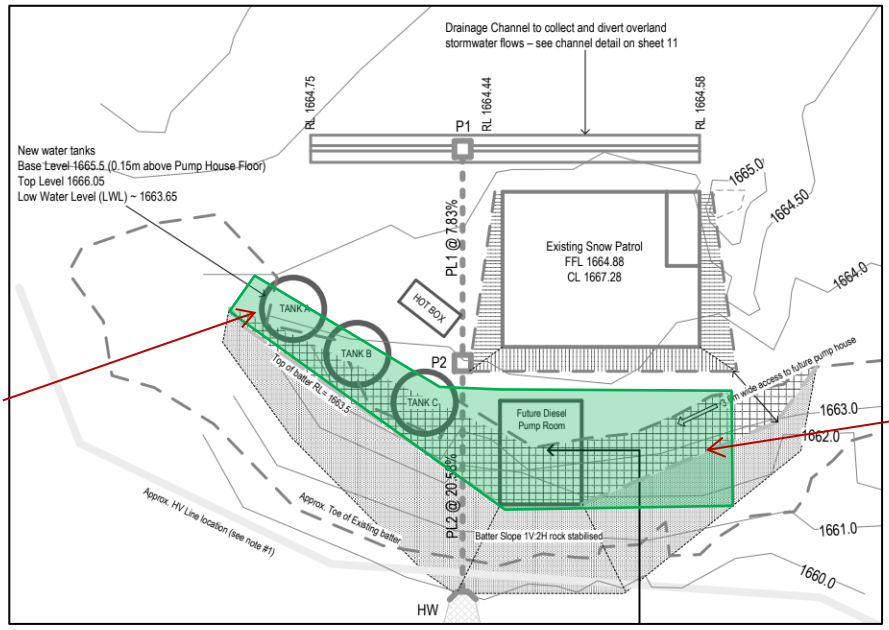
☑ **NON PERCEPTIBLE (NO DEFLECTION-STIFF)**

☐ **PERCEPTIBLE (SHOWN IN ELEVATION BELOW)**

**IF PERCEPTIBLE:** ☐ MINOR ☐ PERMANENT ☐ SOFT

☐ MAJOR ☑ HEAVING ☐ LOOSE

## ELEVATION




Proof Roll Failed ☐ Proof Roll Passed ☑

## ACTION REQUIRED

COMMENTS: **ARTL RECOMMENDS TO PRINT IN COLOUR**

☐ Further excavation/inspection required ☐ Rework/inspection required

☐ Rework Required ☑ Deemed suitable to proceed

| | | |
|---|---|---|
| ARTL Aitken Rowe TESTING LABORATORIES | Inspected by: *Brett Jenkinson* | Approved by: *Peter Forbes-Taber* |
| | Date: *3/04/2024* | Date: *21/05/2024* |

# PROOF ROLLING TEST REPORT T198



☑ WAGGA ☐ GRIFFITH ☐ ALBURY ANNEX LAB

**Client:** *ICG CONSTRUCTION GROUP - WAGGA WAGGA, NSW* **Rego No.:** *FC24-08*

**Job Description:** *CERTIFICATION OF FILL PLACEMENT* **Order No.:** *N/A*

*PROPOSED PUMP HOUSE & TANKS BUILDING PAD,*

**Location/Lot No.:** *MERRITTS MOUNTAIN HOUSE, THREDBO SNOWFIELDS, THREDBO, NSW*

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **PRE-EXISTING FILL:** | ☐ NO | ☑ YES | | | | | | |
| **PREVIOUS GEO. REPORT:** | ☐ N/A | ☐ OTHER | ☑ ARTL REGO: | *AS23-176* | | | | |
| **STAGE OF PROJECT:** | ☑ INITIAL | ☐ INTERMEDIATE | ☐ RETEST | ☐ FINAL | | | | |

## EXCAVATION

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **TOPSOIL REMOVED:** | ☐ YES | ☐ NO | ☐ PARTIAL | ☑ N/A | DEPTH (mm): | * | | | | |
| **UNSUITABLE REMOVED:** | ☑ YES | ☐ NO | ☐ PARTIAL | ☐ N/A | DEPTH (mm): | *700* | | | | |
| **REASON FOR REMOVAL:** | ☑ UNCONTROLLED FILL | | | ☐ CONDITIONAL | | ☐ CLIENT DIRECTION | | | | |

**DESCRIPTION OF MATERIAL/STRUCTURE:** REMOVED "UNCONTROLLED FILL" MATERIAL
PROPOSED PUMP HOUSE & TANKS BUILDING PAD

## PROOF ROLL

**FOUNDING MATERIAL:** *GRANITE (NATURAL)* D.B.F. (mm): *900*

**SURFACE PRIOR TO PROOF ROLL:** ☐ WETTED ☑ NOT WETTED

| | | | | | | |
|---|---|---|---|---|---|---|
| **PLANT EQUIPMENT:** | MASS: | *9t* | TYPE: | *PADFOOT ROLLER* | TIME: | *1100* |
| | MODEL: | *BOMAG* | TYRE PRESSURE: | *NK* | %OVERLAP: | *50* |

**SURFACE CONDITION PERCIEVED AS:** ☑ UNIFORM ☐ NON-UNIFORM

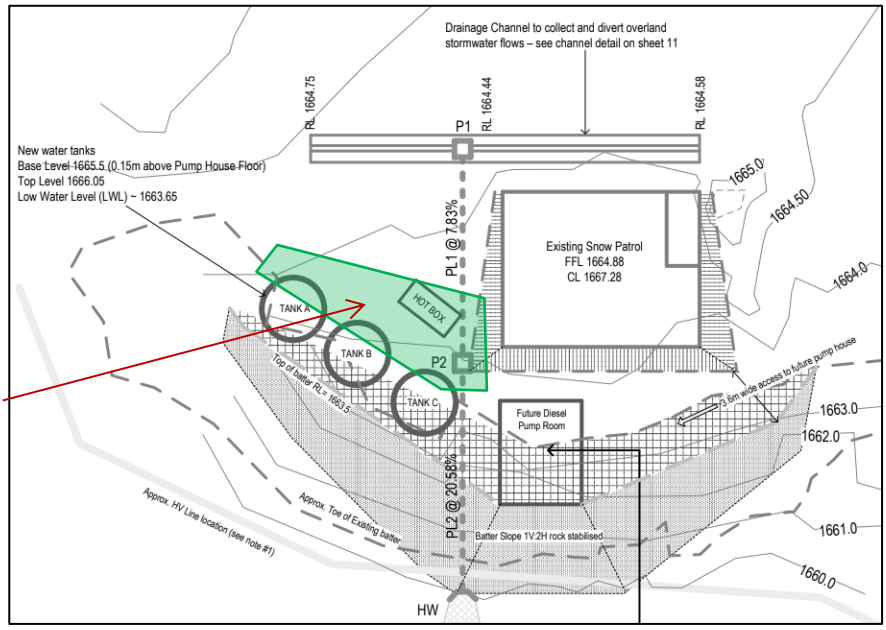
☑ **NON PERCEPTIBLE (NO DEFLECTION-STIFF)**

☐ **PERCEPTIBLE (SHOWN IN ELEVATION BELOW)**

**IF PERCEPTIBLE:** ☐ MINOR ☐ PERMANENT ☐ SOFT

☐ MAJOR ☐ HEAVING ☐ LOOSE

## ELEVATION




***900mm BFL***

Proof Roll Failed Proof Roll Passed

## ACTION REQUIRED

COMMENTS: **ARTL RECOMMENDS TO PRINT IN COLOUR**

☐ Further excavation/inspection required ☐ Rework/inspection required

☐ Rework Required ☑ Deemed suitable to proceed

Aitken Rowe TESTING LABORATORIES

Inspected by: *Brett Jenkinson* Date: *5/04/2024*

Approved by: *Peter Forbes-Taber* Date: *21/05/2024*

# PROOF ROLLING TEST REPORT T198



☑ WAGGA ☐ GRIFFITH ☐ ALBURY ANNEX LAB

**Client:** *ICG CONSTRUCTION GROUP - WAGGA WAGGA, NSW* **Rego No.:** *FC24-08*

**Job Description:** *CERTIFICATION OF FILL PLACEMENT* **Order No.:** *N/A*

*PROPOSED PUMP HOUSE & TANKS BUILDING PAD,*

**Location/Lot No.:** *MERRITTS MOUNTAIN HOUSE, THREDBO SNOWFIELDS, THREDBO, NSW*

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **PRE-EXISTING FILL:** | ☐ | NO | ☑ | YES | | | | |
| **PREVIOUS GEO. REPORT:** | ☐ | N/A | ☐ | OTHER | ☑ | ARTL REGO: | *AS23-176* | |
| **STAGE OF PROJECT:** | ☐ | INITIAL | ☑ | INTERMEDIATE | ☐ | RETEST | ☐ | FINAL |

## EXCAVATION

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **TOPSOIL REMOVED:** | ☐ | YES | ☐ | NO | ☐ | PARTIAL | ☑ | N/A | DEPTH (mm): | * |
| **UNSUITABLE REMOVED:** | ☐ | YES | ☐ | NO | ☐ | PARTIAL | ☑ | N/A | DEPTH (mm): | * |
| **REASON FOR REMOVAL:** | ☐ | UNCONTROLLED FILL | | | ☐ | CONDITIONAL | ☐ | CLIENT DIRECTION | | |

**DESCRIPTION OF MATERIAL/STRUCTURE:** FILL LAYER 6 REHABILITATED AFTER RAIN/SNOW
PROPOSED PUMP HOUSE & TANKS BUILDING PAD

## PROOF ROLL

**FOUNDING MATERIAL:** *GRAVELLY CLAY (CONTROLLED FILL)* D.B.F. (mm): *600*

**SURFACE PRIOR TO PROOF ROLL:** ☐ WETTED ☑ NOT WETTED

**PLANT EQUIPMENT:** MASS: *9t* TYPE: *PADFOOT ROLLER* TIME: *1200*

MODEL: *BOMAG* TYRE PRESSURE: *NK* %OVERLAP: *50*

**SURFACE CONDITION PERCIEVED AS:** ☑ UNIFORM ☐ NON-UNIFORM

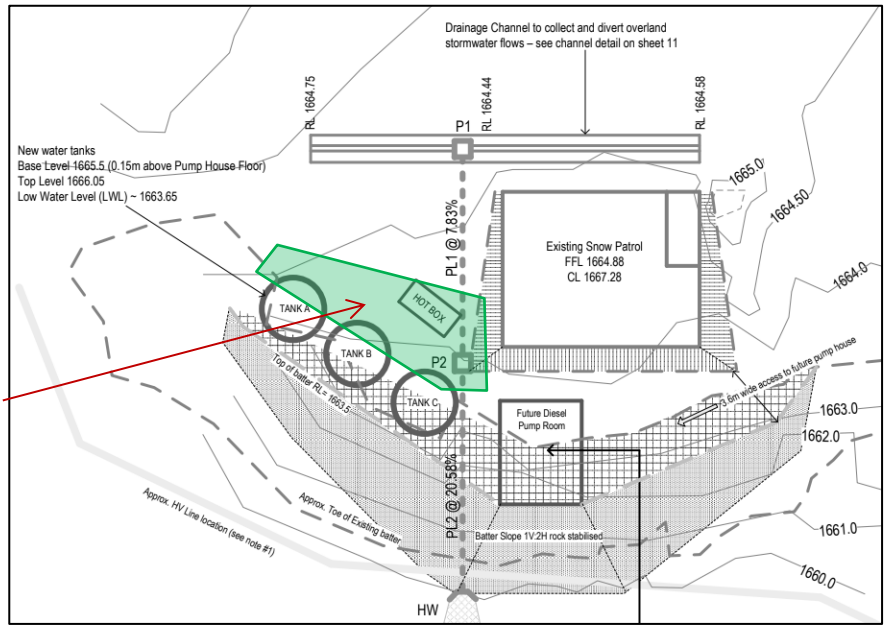
☑ **NON PERCEPTIBLE (NO DEFLECTION-STIFF)**

☐ **PERCEPTIBLE (SHOWN IN ELEVATION BELOW)**

**IF PERCEPTIBLE:** ☐ MINOR ☐ PERMANENT ☐ SOFT

☐ MAJOR ☐ HEAVING ☐ LOOSE

## ELEVATION




*600mm BFL*

N

Proof Roll Failed Proof Roll Passed

## ACTION REQUIRED

COMMENTS: **ARTL RECOMMENDS TO PRINT IN COLOUR**

☐ Further excavation/inspection required ☐ Rework/inspection required

☐ Rework Required ☑ Deemed suitable to proceed

Aitken Rowe TESTING LABORATORIES

Inspected by: *Brett Jenkinson* Date: *12/04/2024*

Approved by: *Peter Forbes-Taber* Date: *21/05/2024*

# PROOF ROLLING TEST REPORT T198



☑ WAGGA ☐ GRIFFITH ☐ ALBURY ANNEX LAB

**Client:** *ICG CONSTRUCTION GROUP - WAGGA WAGGA, NSW* **Rego No.:** *FC24-08*

**Job Description:** *CERTIFICATION OF FILL PLACEMENT* **Order No.:** *N/A*

*PROPOSED PUMP HOUSE & TANKS BUILDING PAD,*

**Location/Lot No.:** *MERRITTS MOUNTAIN HOUSE, THREDBO SNOWFIELDS, THREDBO, NSW*

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **PRE-EXISTING FILL:** | ☐ NO | ☑ YES | | | | | | |
| **PREVIOUS GEO. REPORT:** | ☐ N/A | ☐ OTHER | ☑ ARTL REGO: | *AS23-176* | | | | |
| **STAGE OF PROJECT:** | ☐ INITIAL | ☐ INTERMEDIATE | ☐ RETEST | ☑ FINAL | | | | |

## EXCAVATION

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **TOPSOIL REMOVED:** | ☐ YES | ☐ NO | ☐ PARTIAL | ☑ N/A | DEPTH (mm): | * | | | | |
| **UNSUITABLE REMOVED:** | ☐ YES | ☐ NO | ☐ PARTIAL | ☑ N/A | DEPTH (mm): | * | | | | |
| **REASON FOR REMOVAL:** | ☐ UNCONTROLLED FILL | | ☐ CONDITIONAL | | ☐ CLIENT DIRECTION | | | | | |
| **DESCRIPTION OF MATERIAL/STRUCTURE:** | **PROPOSED PUMP HOUSE & TANKS BUILDING PAD** | | | | | | | | | |

## PROOF ROLL

**FOUNDING MATERIAL:** *SANDY GRAVEL (CONTROLLED FILL)* D.B.F. (mm): *NIL*

**SURFACE PRIOR TO PROOF ROLL:** ☐ WETTED ☑ NOT WETTED

**PLANT EQUIPMENT:** MASS: *20t* TYPE: *EXCAVATOR* TIME: *1400*

MODEL: *VOLVO* TYRE PRESSURE: *NK* %OVERLAP: *80*

**SURFACE CONDITION PERCIEVED AS:** ☐ UNIFORM ☐ NON-UNIFORM

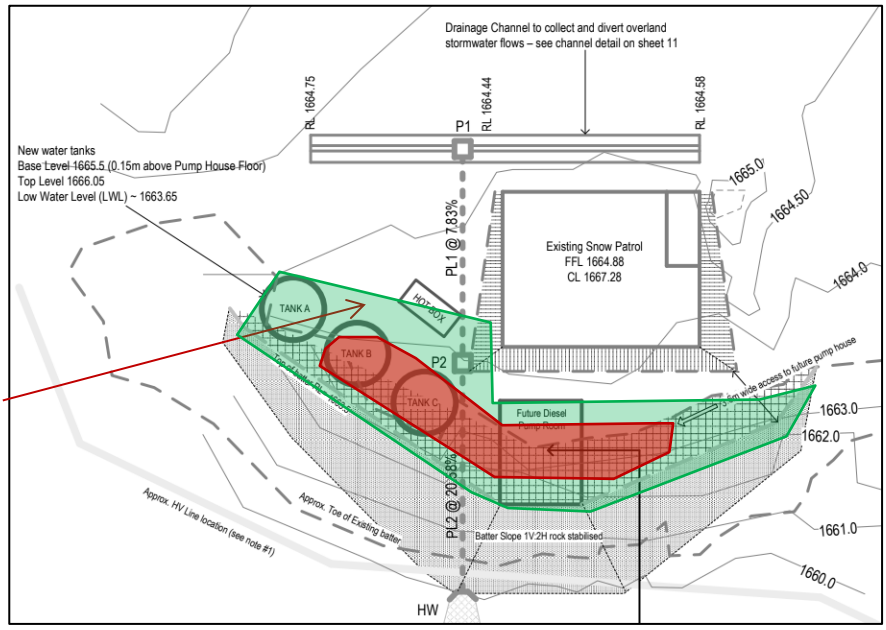
☑ **NON PERCEPTIBLE (NO DEFLECTION-STIFF)**

☑ **PERCEPTIBLE (SHOWN IN ELEVATION BELOW)**

**IF PERCEPTIBLE:** ☐ MINOR ☐ PERMANENT ☑ SOFT

☑ MAJOR ☑ HEAVING ☐ LOOSE

## ELEVATION




N

***NIL BFL***

☐ Proof Roll Failed ☐ Proof Roll Passed

## ACTION REQUIRED

COMMENTS: **ARTL RECOMMENDS TO PRINT IN COLOUR**

☑ Further excavation/inspection required ☐ Rework/inspection required

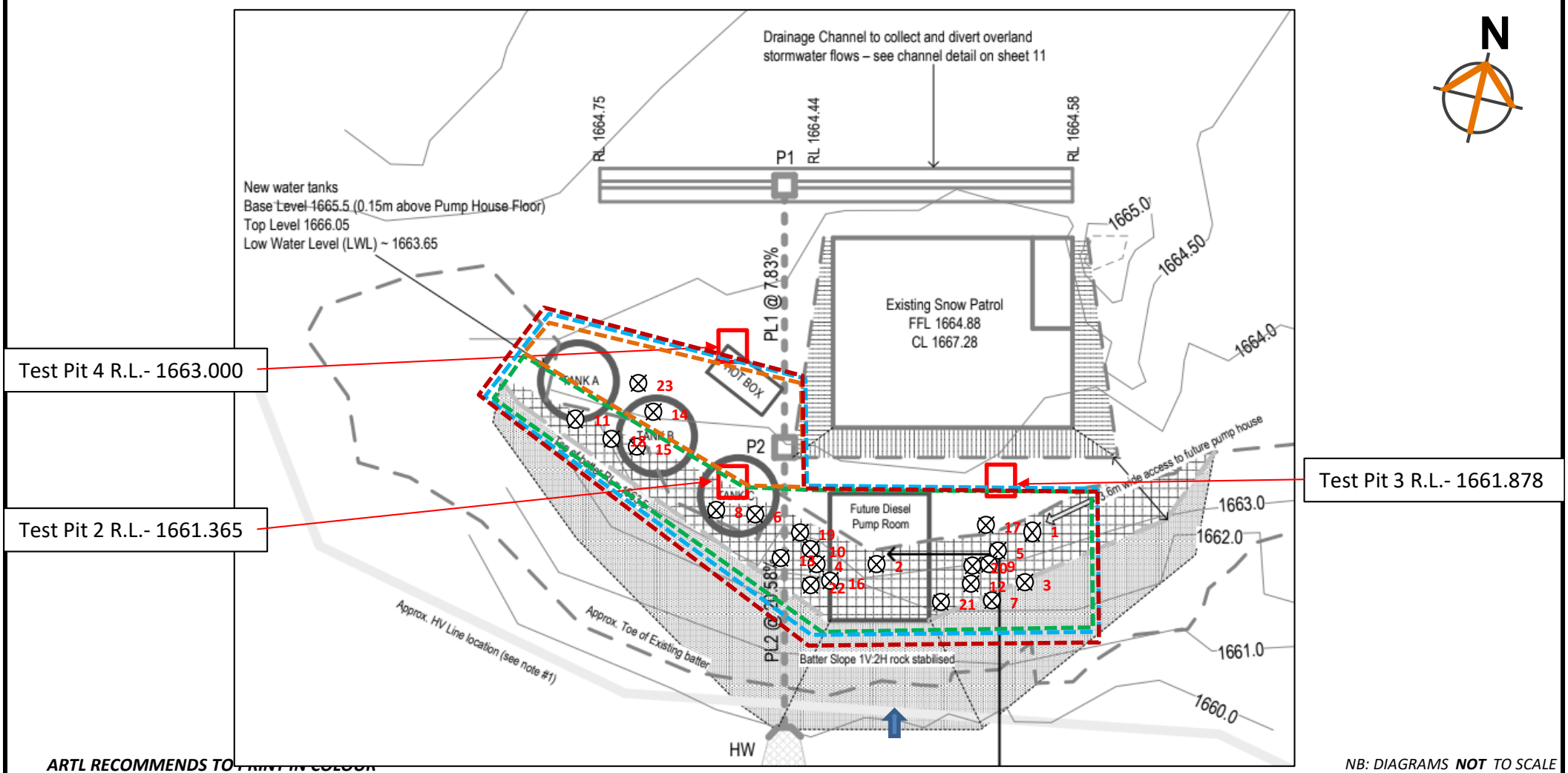
☐ Rework Required ☐ Deemed suitable to proceed

Aitken Rowe TESTING LABORATORIES

Inspected by: *Brett Jenkinson* Date: *29/04/2024*

Approved by: *Peter Forbes-Taber* Date: *21/05/2024*

| | | |
|---|---|---|
| Aitken Rowe TESTING LABORATORIES | **Project** | PROPOSED PUMP HOUSE & TANKS BUILDING PAD, |
| | **Location** | MERRITTS MOUNTAIN HOUSE, THREDBO SNOWFIELDS, THREDBO, NSW |
| **LEVEL 1 CERT. PROFILE/TEST LOCATION** | **Client** | ICG CONSTRUCTION GROUP - WAGGA WAGGA, NSW |
| **Registration No.** FC24-08 **Order #:** N/A | **Contractor** | ICG CONSTRUCTION GROUP - WAGGA WAGGA, NSW |

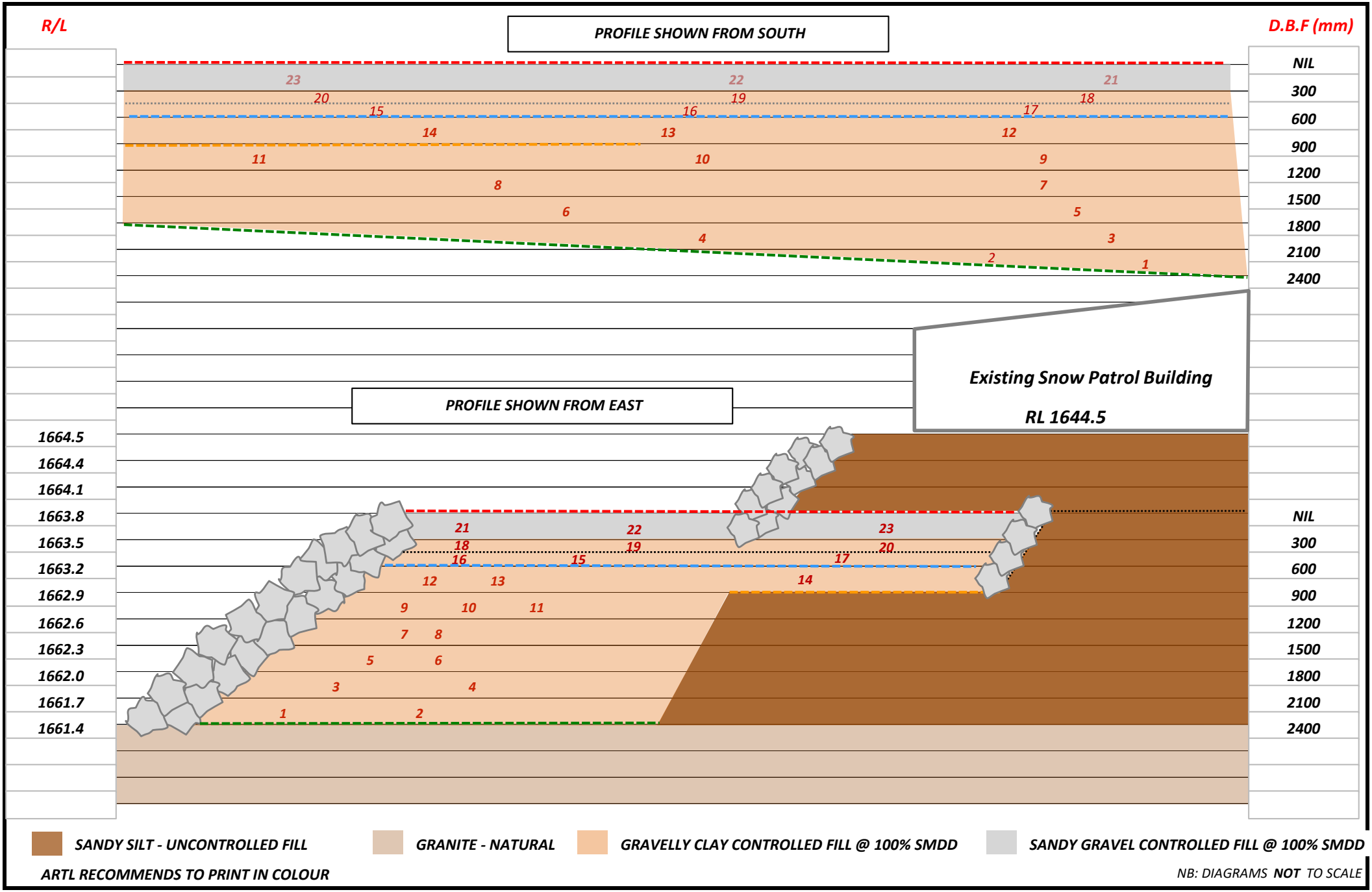



*ARTL RECOMMENDS TO PRINT IN COLOUR*

*NB: DIAGRAMS **NOT** TO SCALE*

| | | | | | |
|---|---|---|---|---|---|
| *Proof Roll 1* | *Proof Roll 4* | *Cut* | *DCP* | *Existing Level* | *Trench* |
| *Proof Roll 2* | | *Fill* | *Offset Point* | *Natural Level* | *Fenceline* |
| *Proof Roll 3* | | *D.I.S.* | *Batter Slope* | *Final E/W level* | *Profile View* |

*Rock*


R/L
PROFILE SHOWN FROM SOUTH
D.B.F (mm)
NIL
300
600
900
1200
1500
1800
2100
2400
Existing Snow Patrol Building
RL 1644.5
PROFILE SHOWN FROM EAST
1664.5
1664.4
1664.1
1663.8
1663.5
1663.2
1662.9
1662.6
1662.3
1662.0
1661.7
1661.4
NIL
300
600
900
1200
1500
1800
2100
2400
SANDY SILT - UNCONTROLLED FILL
GRANITE - NATURAL
GRAVELLY CLAY CONTROLLED FILL @ 100% SMDD
SANDY GRAVEL CONTROLLED FILL @ 100% SMDD
ARTL RECOMMENDS TO PRINT IN COLOUR
NB: DIAGRAMS NOT TO SCALE

# AITKEN ROWE Testing Laboratories Pty Ltd

ARTL Wagga: 4/2 Riedell Street, Wagga Wagga NSW 2650

*



## TEST REPORT

PAVEMENT MATERIALS, FILL, SUBGRADE AND SOILS

CLIENT : ICG CONSTRUCTION GROUP - WAGGA WAGGA, NSW

JOB DESCRIPTION : QUALITY CONTROL TESTING OF CONSTRUCTION MATERIALS
PROPOSED PUMP SHED & TANKS, THREDBO SNOWFIELDS, THREDBO, NSW

MATERIAL SOURCE : SITE STOCKPILES
PROPOSED USE : FILL
MATERIAL TYPE : VARIOUS (*SEE NOTES BELOW)

LOT No.: *
TRAFFIC CATEGORY: *
ORDER No.: *

SAMPLED BY: CLIENT
DATE SAMPLED: 28/03/2024
SUBMITTED BY: CLIENT
DATE SUBMITTED: 28/03-4/04/2024
QUANTITY REP.: N/K
SAMPLING METHOD/S: N/K
*
SAMPLING CLAUSE: N/K
SPECIFICATION: *

**REGISTRATION No : R31 S24-092A**

| TEST DATE/S | | | SAMPLE NUMBER : | | 1 | 2 | 3 | 4 | * |
|---|---|---|---|---|---|---|---|---|---|
| TESTS | TEST DATE/S | SPECIFIED LIMITS : | MIN. | MAX. | * | * | * | * | * |
| AS1289.3.6.1 | FROM: 28/03/2024 | PASS 75.0mm SIEVE % | * | * | * | * | * | * | * |
| | TO: 2/04/2024 | PASS 53.0mm SIEVE % | * | * | * | * | * | * | * |
| | | PASS 37.5mm SIEVE % | * | * | 100 | 100 | 100 | 100 | * |
| | | PASS 26.5mm SIEVE % | * | * | 98 | 93 | 98 | 99 | * |
| | | PASS 19.0mm SIEVE % | * | * | 96 | 90 | 97 | 97 | * |
| | | PASS 13.2mm SIEVE % | * | * | 95 | 89 | 97 | 89 | * |
| | | PASS 9.50mm SIEVE % | * | * | 92 | 87 | 96 | 80 | * |
| | | PASS 6.70mm SIEVE % | * | * | 90 | 85 | 94 | 71 | * |
| | | PASS 4.75mm SIEVE % | * | * | 87 | 81 | 92 | 63 | * |
| | | PASS 2.36mm SIEVE % | * | * | 74 | 70 | 82 | 49 | * |
| AS1141.19 | | WHOLE SAMPLE PASS 425 µm SIEVE % | * | * | 51 | 48 | 45 | 30 | * |
| | | PASS 75 µm SIEVE % | * | * | 33 | 31 | 27 | 21 | * |
| | | LESS THAN 13.5 µm % | * | * | 22 | 18 | 16 | 13 | * |
| AS1141.19 | FROM: 2/04/2024 | PASS 425 µm SIEVE % | * | * | 70 | 68 | 55 | 61 | * |
| | TO: 3/04/2024 | -2.36mm PASS 75 µm SIEVE % | * | * | 44 | 44 | 33 | 43 | * |
| | | LESS THAN 13.5 µm % | * | * | 30 | 26 | 20 | 27 | * |
| | | OBSERVATIONS | * | * | * | * | * | * | * |
| AS1289.3.6.1 | | PASS 37.5mm, RET. 26.5mm SIEVE % | * | * | * | * | * | * | * |
| AS1141.19 | | PASS 26.5mm, RET. 19.0mm SIEVE % | * | * | 2 | 3 | 1 | 2 | * |
| | | PASS 19.0mm, RET. 13.2mm SIEVE % | * | * | 2 | 2 | 0 | 9 | * |
| | | PASS 13.2mm, RET. 9.5mm SIEVE % | * | * | 3 | 2 | 1 | 9 | * |
| | | PASS 9.5mm, RET. 4.75mm SIEVE % | * | * | 6 | 6 | 4 | 17 | * |
| | | PASS 4.75mm, RET. 2.36mm SIEVE % | * | * | 13 | 11 | 10 | 14 | * |
| | | PASS 2.36mm, RET 425 µm SIEVE % | * | * | 23 | 22 | 37 | 19 | * |
| | | PASS 425 µm, RET. 75 µm SIEVE % | * | * | 19 | 17 | 18 | 9 | * |
| | | PASS 75 µm, GREATER THAN 13.5 µm % | * | * | 11 | 12 | 11 | 8 | * |
| AS1289.3.1.1 | FROM: 2/04/2024 | LIQUID LIMIT % | * | * | 43 | 33 | 31 | 39 | * |
| AS1289.3.2.1 | TO: 3/04/2024 | PLASTIC LIMIT % | * | * | 16 | 26 | 21 | 26 | * |
| AS1289.3.3.1 | | PLASTICITY INDEX | * | * | 27 | 7 | 10 | 13 | * |
| | | PREPARATION METHOD | * | * | AS1289.1.1-5.3 | AS1289.1.1-5.3 | AS1289.1.1-5.3 | AS1289.1.1-5.3 | * |
| AS1289.5.1.1 | FROM: 28/03/2024 | STANDARD MAXIMUM DRY DENSITY $t/m^3$ | * | * | 1.826 | 1.916 | 1.843 | 1.864 | * |
| | TO: 2/04/2024 | STANDARD OPTIMUM MOISTURE CONTENT % | * | * | 14.9 | 12.4 | 14.3 | 14.1 | * |
| | | OVERSIZE SIEVE mm | * | * | -19.0 | -19.0 | -19.0 | -19.0 | * |
| | | % OVERSIZE | * | * | 3.7 | 9.7 | 3.1 | 2.6 | * |
| | | LIQUID LIMIT METHOD (FOR CURING TIME) | * | * | VISUAL | VISUAL | VISUAL | VISUAL | * |
| | | CURING TIME (HRS) | * | * | 112 | 112 | 113 | 119 | * |
| AS1289.3.4.1 | FROM: 3/04/2024 | LINEAR SHRINKAGE % | * | * | 5.0 | 4.0 | 3.0 | 6.0 | * |
| (AIR DRIED) | TO: 5/04/2024 | LENGTH OF MOULD mm | * | * | 254 | 254 | 254 | 254 | * |
| | | CRUMBLING (CR) OR CURLING (CU) OCCURRED | * | * | * | * | * | * | * |
| T213 | FROM: TO: | PARTICLE SHAPE (2:1) % MISSHAPEN | * | * | * | * | * | * | * |

SAMPLE PREPARATION: AS METHODS PREPARED IN ACCORDANCE WITH AS1289.1.1. TfNSW METHODS PREPARED IN ACCORDANCE WITH T105.

NATA
WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.

ACCREDITATION NUMBER 4679

The sampling is not covered by ARTL NATA Accreditation.

All sample and lot information supplied by client, Not NATA Accredited.

* Sample No. 1 = Clayey SAND, No. 2 = Silty Gravelly SAND, No. 3 = Silty SAND, No. 4 = Clayey GRAVEL

All samples are oven dried and dry sieved during preparation unless otherwise stated

APPROVED SIGNATORY : ..... DATE: 11/04/2024

Gary Lyons

# AITKEN ROWE Testing Laboratories Pty Ltd

ARTL Wagga Wagga: 4/2 Riedell Street, Wagga Wagga NSW 2650



**TEST REPORT**

CALIFORNIA BEARING RATIO OF SOILS AND GRAVELS

CLIENT: ICG CONSTRUCTION GROUP - WAGGA WAGGA, NSW

JOB DESCRIPTION: QUALITY CONTROL TESTING OF CONSTRUCTION MATERIALS
PROPOSED PUMP SHED & TANKS
THREDBO SNOWFIELDS, THREDBO, NSW

SOURCE OF MATERIAL: SITE STOCKPILES

PROPOSED USE: FILL

LOT NO: N/A

SAMPLED BY: CLIENT

DATE SAMPLED: N/K

DATE RECEIVED: 28/03/2024

TESTING COMMENCED: 28/03-4/04/20

TESTING COMPLETED: 9-10/4/2024

TEST METHODS: AS1289.2.1.1
AS1289.5.1.1 AS1289.6.1.1

SAMPLING PROCEDURE: N/K

SAMPLING CLAUSE: N/K

REGISTRATION NO : R6 **S24-092**

| SAMPLE NO: | 1 | 2 | 3 | 4 | * |
|---|---|---|---|---|---|
| SITE OR LOCATION | STOCKPILE | STOCKPILE | STOCKPILE | STOCKPILE | * |
| DEPTHS BETWEEN WHICH SAMPLES TAKEN (mm) | N/A | N/A | N/A | N/A | * |
| ADDITIVE IF STABILISED | N/A | N/A | N/A | N/A | * |
| AMOUNT OF ADDITIVE (%) | N/A | N/A | N/A | N/A | * |
| TYPE OF COMPACTION (Standard/Modified) | STANDARD | STANDARD | STANDARD | STANDARD | * |
| MATERIAL RETAINED ON THE 19.0mm SIEVE (%) | 3.7 | 9.7 | 3.1 | 2.6 | * |
| OPTIMUM MOISTURE CONTENT (%) | 14.9 | 12.4 | 14.3 | 14.1 | * |
| MAXIMUM DRY DENSITY ($t/m^3$) | 1.83 | 1.92 | 1.84 | 1.86 | * |
| MOULDING MOISTURE CONTENT (%) | 14.8 | 12.2 | 14.1 | 14.0 | * |
| DRY DENSITY OF TEST SPECIMEN ($t/m^3$) | 1.83 | 1.92 | 1.85 | 1.87 | * |
| SPECIFIED LDR (%) | 100 | 100 | 100 | 100 | * |
| ACTUAL LDR (%) | 100 | 100 | 100 | 100 | * |
| MOISTURE CONTENTS : TOP 30 mm | 17.9 | 16.5 | 16.8 | 16.2 | * |
| WHOLE SAMPLE | 15.8 | 17.3 | 15.2 | 14.1 | * |
| ABSORPTION (%) | 1.1 | 5.1 | 1.1 | 0.1 | * |
| SPECIFIED LMR (%) | 100 | 100 | 100 | 100 | * |
| ACTUAL LMR (%) | 99 | 98 | 98 | 99 | * |
| NUMBER OF DAYS SOAKING | 4 | 4 | 4 | 4 | * |
| SWELL (%) | 0.0 | 0.1 | 0.1 | 0.2 | * |
| CBR OBTAINED FROM PENETRATION (mm) | 5.0 | 5.0 | 5.0 | 5.0 | * |
| CALIFORNIA BEARING RATIO (%) | **14** | **20** | **17** | **18** | * |

NOTES: * Sample No. 1 = Clayey SAND, No. 2 = Silty Gravelly SAND, No. 3 = Silty SAND, No. 4 = Clayey GRAVEL
*

COMMENTS: *

NATA
WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.

ACCREDITATION NUMBER: 4679

APPROVED SIGNATORY: Jarrod Gornall

DATE: 11/04/2024

# AITKEN ROWE Testing Laboratories Pty Ltd

ARTL Wagga: 4/2 Riedell Street, Wagga Wagga NSW 2650

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## TEST REPORT

PAVEMENT MATERIALS, FILL, SUBGRADE AND SOILS

CLIENT : ICG CONSTRUCTION GROUP - WAGGA WAGGA, NSW

JOB DESCRIPTION : QUALITY CONTROL TESTING OF CONSTRUCTION MATERIALS
PROPOSED PUMP SHED & TANKS, THREDBO SNOWFIELDS, THREDBO, NSW

MATERIAL SOURCE : SITE
PROPOSED USE : FILL
MATERIAL TYPE : VARIOUS

LOT No.: *
TRAFFIC CATEGORY: *
ORDER No.: *

SAMPLED BY: CLIENT
DATE SAMPLED: 12/04/2024
SUBMITTED BY: ARTL
DATE SUBMITTED: 15/04/2024
QUANTITY REP.: N/K
SAMPLING METHOD/S: AS1141.3.1
*
SAMPLING CLAUSE: 8.4.3
SPECIFICATION: *

**REGISTRATION No : R31 S24-113**

| TEST DATE/S | | | SAMPLE NUMBER : | | 1 | 2 | 3 | * | * |
|---|---|---|---|---|---|---|---|---|---|
| TESTS | TEST DATE/S | SPECIFIED LIMITS : | MIN. | MAX. | * | * | * | * | * |
| AS1289.3.6.1 | FROM: 19/04/2024 | PASS 75.0mm SIEVE % | * | * | * | * | * | * | * |
| | TO: 19/04/2024 | PASS 53.0mm SIEVE % | * | * | 100 | * | * | * | * |
| | | PASS 37.5mm SIEVE % | * | * | 99 | 100 | * | * | * |
| | | PASS 26.5mm SIEVE % | * | * | 95 | 99 | * | * | * |
| | | PASS 19.0mm SIEVE % | * | * | 90 | 94 | 100 | * | * |
| | | PASS 13.2mm SIEVE % | * | * | 82 | 84 | 88 | * | * |
| | | PASS 9.50mm SIEVE % | * | * | 78 | 77 | 75 | * | * |
| | | PASS 6.70mm SIEVE % | * | * | 73 | 72 | 62 | * | * |
| | | PASS 4.75mm SIEVE % | * | * | 68 | 64 | 50 | * | * |
| | | PASS 2.36mm SIEVE % | * | * | 52 | 50 | 34 | * | * |
| AS1141.19 | | WHOLE SAMPLE PASS 425 µm SIEVE % | * | * | 32 | 29 | 15 | * | * |
| | | PASS 75 µm SIEVE % | * | * | 18 | 16 | 7 | * | * |
| | | LESS THAN 13.5 µm % | * | * | 11 | 7 | 4 | * | * |
| AS1141.19 | FROM: 22/04/2024 | PASS 425 µm SIEVE % | * | * | 60 | 57 | 44 | * | * |
| | TO: 23/04/2024 | -2.36mm PASS 75 µm SIEVE % | * | * | 34 | 32 | 20 | * | * |
| | | LESS THAN 13.5 µm % | * | * | 21 | 14 | 11 | * | * |
| | | OBSERVATIONS | * | * | * | * | * | * | * |
| AS1289.3.6.1 | | PASS 37.5mm, RET. 26.5mm SIEVE % | * | * | * | * | * | * | * |
| AS1141.19 | | PASS 26.5mm, RET. 19.0mm SIEVE % | * | * | 6 | 5 | * | * | * |
| | | PASS 19.0mm, RET. 13.2mm SIEVE % | * | * | 8 | 10 | 12 | * | * |
| | | PASS 13.2mm, RET. 9.5mm SIEVE % | * | * | 4 | 7 | 13 | * | * |
| | | PASS 9.5mm, RET. 4.75mm SIEVE % | * | * | 10 | 13 | 25 | * | * |
| | | PASS 4.75mm, RET. 2.36mm SIEVE % | * | * | 15 | 14 | 17 | * | * |
| | | PASS 2.36mm, RET 425 µm SIEVE % | * | * | 21 | 21 | 19 | * | * |
| | | PASS 425 µm, RET. 75 µm SIEVE % | * | * | 14 | 13 | 8 | * | * |
| | | PASS 75 µm, GREATER THAN 13.5 µm % | * | * | 7 | 9 | 3 | * | * |
| AS1289.3.1.1 | FROM: 22/04/2024 | LIQUID LIMIT % | * | * | 33 | 34 | 23 | * | * |
| AS1289.3.2.1 | TO: 23/04/2024 | PLASTIC LIMIT % | * | * | 24 | 24 | 15 | * | * |
| AS1289.3.3.1 | | PLASTICITY INDEX | * | * | 9 | 10 | 8 | * | * |
| | | PREPARATION METHOD | * | * | AS1289.1.1-5.3 | AS1289.1.1-5.3 | AS1289.1.1-5.3 | * | * |
| AS1289.5.1.1 | FROM: 15/04/2024 | STANDARD MAXIMUM DRY DENSITY $t/m^3$ | * | * | 1.950 | 1.989 | 2.188 | * | * |
| | TO: 16/04/2024 | STANDARD OPTIMUM MOISTURE CONTENT % | * | * | 13.2 | 10.4 | 8.1 | * | * |
| | | OVERSIZE SIEVE mm | * | * | -19.0 | -19.0 | -19.0 | * | * |
| | | % OVERSIZE | * | * | 10.5 | 6.2 | 0.0 | * | * |
| | | LIQUID LIMIT METHOD (FOR CURING TIME) | * | * | VISUAL | VISUAL | VISUAL | * | * |
| | | CURING TIME (HRS) | * | * | 27 | 27 | 28 | * | * |
| AS1289.3.4.1 (AIR DRIED) | FROM: 22/04/2024 | LINEAR SHRINKAGE % | * | * | 4.0 | 3.5 | 3.0 | * | * |
| | TO: 26/04/2024 | LENGTH OF MOULD mm | * | * | 254 | 254 | 254 | * | * |
| | | CRUMBLING (CR) OR CURLING (CU) OCCURRED | * | * | * | * | * | * | * |
| T213 | FROM: TO: | PARTICLE SHAPE (2:1) % MISSHAPEN | * | * | * | * | * | * | * |

SAMPLE PREPARATION: AS METHODS PREPARED IN ACCORDANCE WITH AS1289.1.1. TfNSW METHODS PREPARED IN ACCORDANCE WITH T105.

NATA
WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.

ACCREDITATION NUMBER 4679

The sampling is not covered by ARTL NATA Accreditation.

All sample and lot information supplied by client, Not NATA Accredited.

All samples are oven dried and dry sieved during preparation unless otherwise stated

APPROVED SIGNATORY : ..... DATE: 29/04/2024

Gary Lyons

# AITKEN ROWE Testing Laboratories Pty Ltd

ARTL Wagga Wagga: 4/2 Riedell Street, Wagga Wagga NSW 2650



**TEST REPORT**

CALIFORNIA BEARING RATIO OF SOILS AND GRAVELS

CLIENT: ICG CONSTRUCTION GROUP - WAGGA WAGGA, NSW

JOB DESCRIPTION: PROPOSED PUMP SHED & TANKS
THREDBO SNOWFIELDS, THREDBO, NSW

SOURCE OF MATERIAL: SITE

PROPOSED USE: FILL

SAMPLED BY: CLIENT
DATE SAMPLED: 12/04/2024
DATE RECEIVED: 15/04/2024
TESTING COMMENCED: 15/04/2024
TESTING COMPLETED: 25/04/2024
TEST METHODS: AS1289.2.1.1
AS1289.5.1.1 AS1289.6.1.1
SAMPLING PROCEDURE: AS1289.1.2.1
SAMPLING CLAUSE: 8.4.3

REGISTRATION NO : R6 **S24-113**

| | | | | | |
|---|---|---|---|---|---|
| SAMPLE NO: | 1 | 2 | 3 | * | * |
| SITE OR LOCATION | STOCKPILE | STOCKPILE | STOCKPILE | * | * |
| DEPTHS BETWEEN WHICH SAMPLES TAKEN (mm) | * | * | * | * | * |
| ADDITIVE IF STABILISED | * | * | * | * | * |
| AMOUNT OF ADDITIVE (%) | * | * | * | * | * |
| TYPE OF COMPACTION (Standard/Modified) | STANDARD | STANDARD | STANDARD | * | * |
| MATERIAL RETAINED ON THE 19.0mm SIEVE (%) | 10.5 | 6.2 | 0.0 | * | * |
| OPTIMUM MOISTURE CONTENT (%) | 13.2 | 10.4 | 8.1 | * | * |
| MAXIMUM DRY DENSITY ($t/m^3$) | 1.95 | 1.99 | 2.19 | * | * |
| MOULDING MOISTURE CONTENT (%) | 13.2 | 10.4 | 8.1 | * | * |
| DRY DENSITY OF TEST SPECIMEN ($t/m^3$) | 1.95 | 1.99 | 2.19 | * | * |
| SPECIFIED LDR (%) | 100 | 100 | 100 | * | * |
| ACTUAL LDR (%) | 100 | 100 | 100 | * | * |
| MOISTURE CONTENTS : TOP 30 mm | 13.3 | 12.8 | 8.2 | * | * |
| WHOLE SAMPLE | 13.1 | 12.5 | 7.9 | * | * |
| ABSORPTION (%) | -0.1 | 2.1 | -0.2 | * | * |
| SPECIFIED LMR (%) | 100 | 100 | 100 | * | * |
| ACTUAL LMR (%) | 100 | 100 | 100 | * | * |
| NUMBER OF DAYS SOAKING | 4 | 4 | 4 | * | * |
| SWELL (%) | 0.1 | 0.2 | 0.0 | * | * |
| CBR OBTAINED FROM PENETRATION (mm) | 5.0 | 5.0 | 5.0 | * | * |
| CALIFORNIA BEARING RATIO (%) | **14** | **19** | **70** | * | * |

NOTES: T117 specifications: LMR -3% to +2%, LDR ± 1%
The sampling is not covered by ARTL NATA Accreditation.

COMMENTS: All sample and lot information supplied by client, Not NATA Accredited.

NATA
WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.

ACCREDITATION NUMBER: 4679

APPROVED SIGNATORY: Gary Lyons

DATE: 29/04/2024