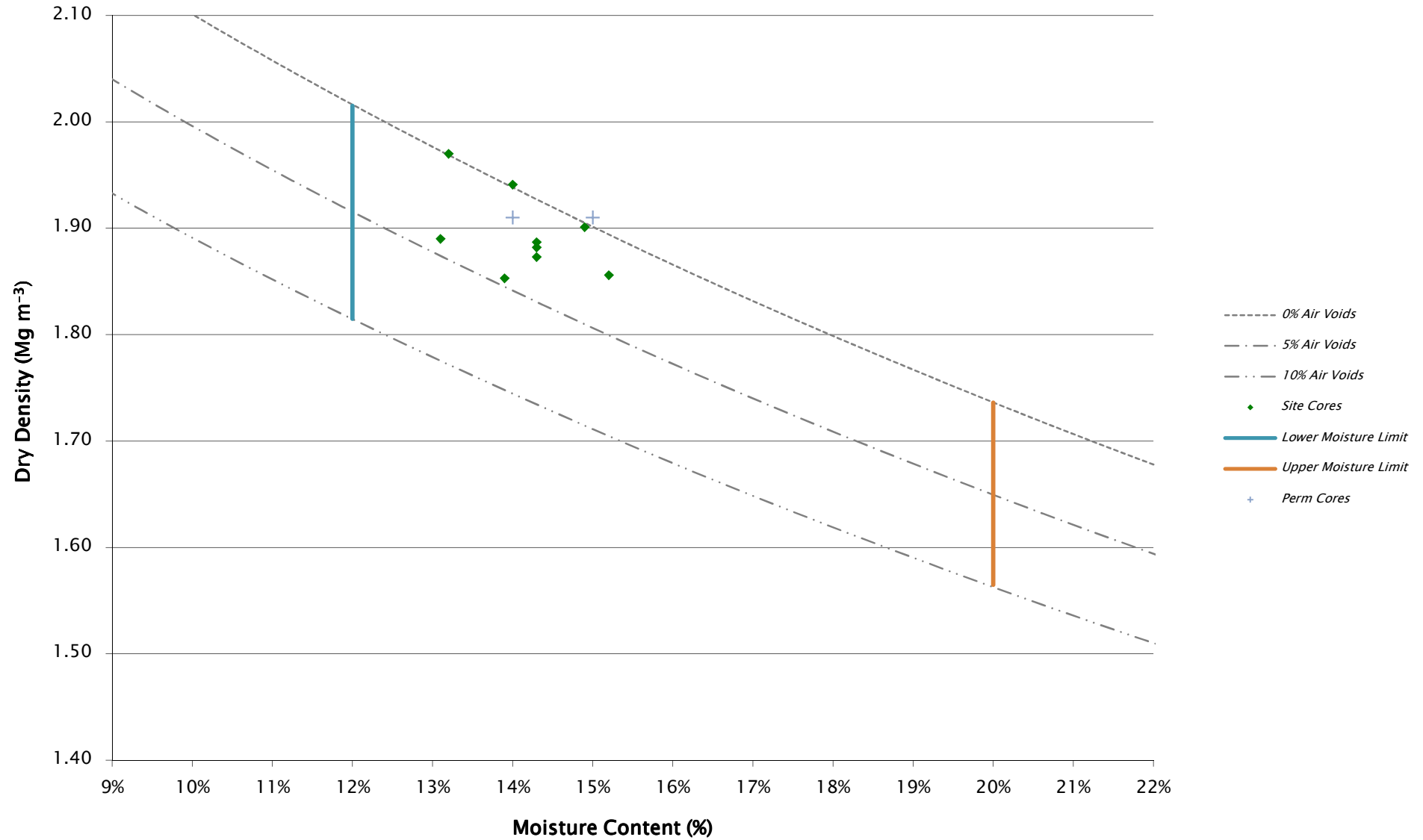


HAFOD PHASE 3 UPPER WEST SIDEWALL CQA SAMPLES

| SAMPLE IDENTIFICATION | | | | | | | LABORATORY | | | | | | | | | | | |
|---|-----|------|------|------------|--------------------|----------|------------|------|------|------------|-----------|-----|-----|----|------|-------|-----|----------|
| | S/N | AREA | LIFT | REPORT REF | SAMPLE DESIGNATION | REPORTED | M/C | BD | DD | VOID RATIO | AIR VOIDS | L/L | P/L | PI | PD | CC | HSV | PERM |
| TRIAL PAD 1 :INCLINED TRIAL PAD, 9 PASSES | 1 | | 1 | PSL14/4019 | TL1/02 | Y | 14% | 2.18 | 1.91 | 0.39 | 1.3% | | | | | | | 8.70E-11 |
| | 2 | | 1 | PSL14/4019 | TL1/04 | Y | 13% | | | | | 30% | 17% | 13 | 2.66 | 30.0% | | |
| | 3 | | 2 | PSL14/4019 | TL2/05 | Y | 14% | 2.17 | 1.91 | 0.39 | 1.4% | | | | | | | 9.40E-11 |
| | 4 | | 2 | PSL14/4019 | TL2/07 | Y | 12% | | | | | 31% | 18% | 13 | 2.65 | 28.0% | | |
| | 5 | | 1 | SITE | TL1/01 | Y | 14% | 2.16 | 1.89 | 0.41 | 2.0% | | | | | | 112 | |
| | 6 | | 1 | SITE | TL1/02 | Y | 14% | 2.14 | 1.87 | 0.42 | 2.7% | | | | | | 74 | |
| | 7 | | 1 | SITE | TL1/03 | Y | 14% | 2.15 | 1.88 | 0.41 | 2.3% | | | | | | 86 | |
| | 8 | | 2 | SITE | TL2/05 | Y | 14% | 2.21 | 1.94 | 0.37 | -0.2% | | | | | | 110 | |
| | 9 | | 2 | SITE | TL2/06 | Y | 13% | 2.23 | 1.97 | 0.35 | -0.2% | | | | | | 105 | |
| | 10 | | 2 | SITE | TL2/08 | Y | 13% | 2.14 | 1.89 | 0.40 | 4.1% | | | | | | 106 | |
| | 11 | | 3 | SITE | TL3/10 | Y | 15% | 2.14 | 1.86 | 0.43 | 1.9% | | | | | | 70 | |
| | 12 | | 3 | SITE | TL3/11 | Y | 14% | 2.11 | 1.85 | 0.43 | 4.5% | | | | | | 76 | |
| | 13 | | 3 | SITE | TH3/12 | Y | 15% | 2.18 | 1.90 | 0.40 | 0.1% | | | | | | 74 | |

| M/C | BD | DD | VOID RATIO | AIR VOIDS | L/L | P/L | PI | PD | CC | UD-TX-SS | PERM |
|-----|-------|-------|------------|-----------|-----|-----|----|------|-------|----------|----------|
| 12 | 10 | 10 | 10 | 10 | 2 | 2 | 2 | 2 | 2 | 9 | 2 |
| 1.7 | 21.63 | 18.96 | 4.01 | 0.19 | 1 | 0 | 26 | 5.31 | 58.0% | 813 | 1.81E-10 |
| 14% | 2.16 | 1.90 | 0.40 | 1.9% | 31% | 18% | 13 | 2.66 | 29.0% | 90 | 9.05E-11 |
| 15% | 2.23 | 1.97 | 0.43 | 4.5% | 31% | 18% | 13 | 2.66 | 30.0% | 112 | 9.40E-11 |
| 12% | 2.11 | 1.85 | 0.35 | -0.2% | 30% | 17% | 13 | 2.65 | 28.0% | 70 | 8.70E-11 |

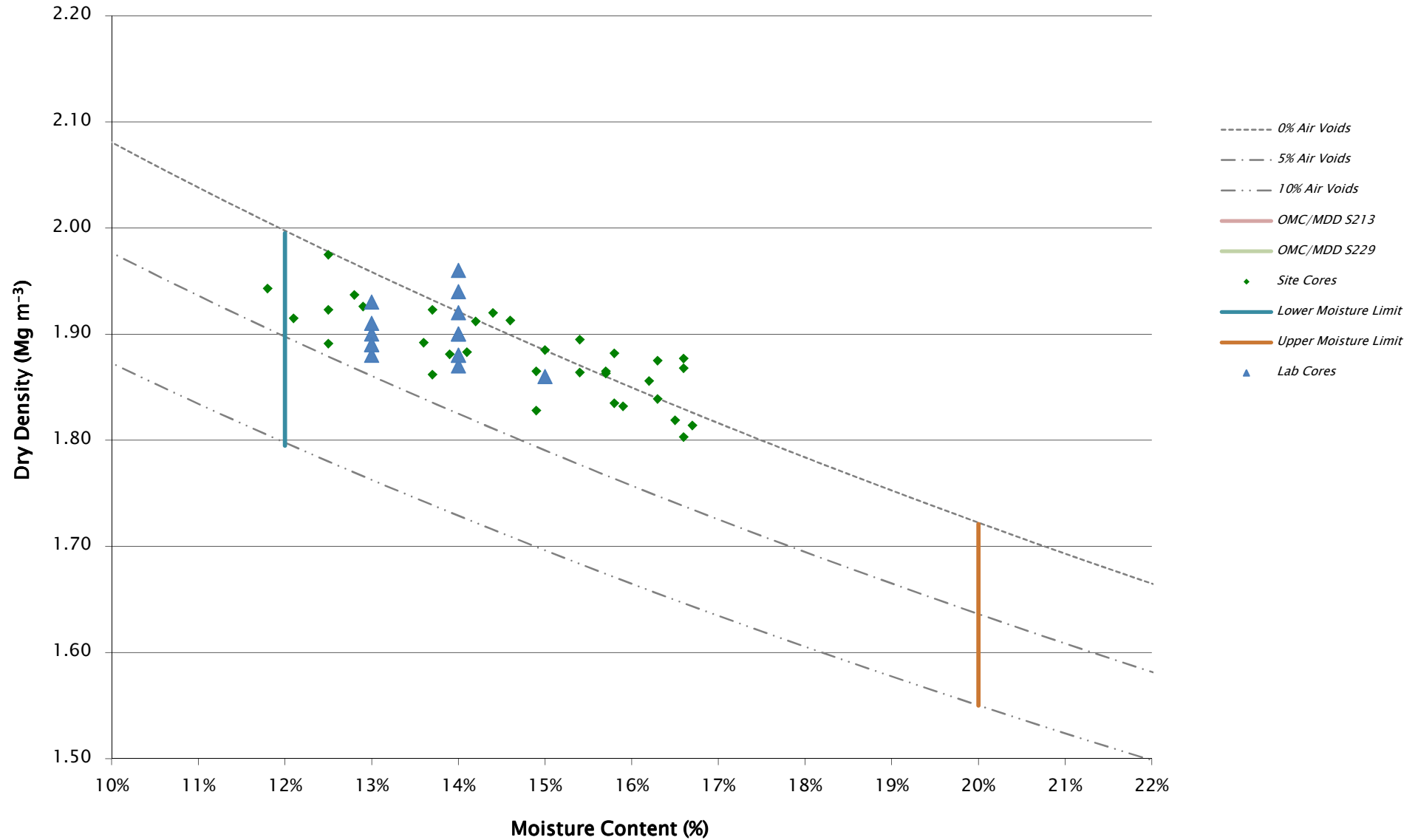
Trial Pad 1 Compaction : Particle Density 2.66 Mg m⁻³



HAFOD PHASE 3 UPPER WEST SIDEWALL CQA SAMPLES

| | SAMPLE IDENTIFICATION | | | | | LABORATORY | | | | | | | | | | | | | | |
|--|-----------------------|------|----------------|--------------------|----------|------------|--------|-------|------------|-----------|-----|-----|-----|-------|--------|------|-----|-------------|---------|----------|
| | S/N | AREA | LAB REPORT REF | SAMPLE DESIGNATION | REPORTED | M/C | BD | DD | VOID RATIO | AIR VOIDS | L/L | P/L | PI | PD | CC | HSV | UDX | FAIL STRAIN | MODE | PERM |
| ARTIFICIALLY ESTABLISHED GEOLOGICAL BARRIER (AECB) + ENGINEERED CLAY LINER (ECL) | 1 | | PSL14/4019 | CL1/01 | Y | 14% | 2.20 | 1.92 | 0.37 | 0.0% | | | | | | | | | | 8.40E-11 |
| | 2 | | PSL14/4019 | CL1/02 | Y | 14% | | | | | 33% | 18% | 15 | 2.66 | 31.0% | | | | | |
| | 3 | | PSL14/4019 | CL1/03 | Y | 12% | | | | | 34% | 18% | 16 | 2.66 | 30.0% | | | | | |
| | 4 | | PSL14/4019 | CL2/04 | Y | 14% | | | | | 31% | 17% | 14 | 2.64 | 31.0% | | | | | |
| | 5 | | PSL14/4019 | CL1/02 | Y | 14% | 2.14 | 1.87 | 0.41 | 2.6% | | | | | | | 148 | 19.5% | Plastic | |
| | 6 | | PSL14/4019 | CL2/04 | Y | 14% | 2.17 | 1.90 | 0.38 | 1.1% | | | | | | | 113 | 18.5% | Plastic | |
| | 7 | | PSL14/4518 | CL2/05 | Y | 13% | 2.14 | 1.90 | 0.38 | 3.0% | | | | | | | | | | 9.70E-11 |
| | 8 | | PSL14/4518 | CL2/07 | Y | 13% | | | | | 35% | 17% | 18 | 2.62 | 30.0% | | | | | |
| | 9 | | PSL14/4518 | CL3/08 | Y | 19% | | | | | 35% | 18% | 17 | 2.60 | 26.0% | | | | | |
| | 10 | | PSL14/4518 | CL3/10 | Y | 13% | 2.14 | 1.89 | 0.39 | 3.5% | | | | | | | | | | 9.70E-11 |
| | 11 | | PSL14/4518 | CL3/12 | Y | 15% | | | | | 34% | 17% | 17 | 2.61 | 29.0% | | | | | |
| | 12 | | PSL14/4518 | CL4/13 | Y | 15% | | | | | 36% | 18% | 18 | 2.63 | 31.0% | | | | | |
| | 13 | | PSL14/4518 | CL4/14 | Y | 14% | 2.13 | 1.88 | 0.40 | 2.1% | | | | | | | | | | 8.90E-11 |
| | 14 | | PSL14/4518 | CL4/15 | Y | 13% | | | | | 34% | 18% | 16 | 2.63 | 28.0% | | | | | |
| | 15 | | PSL14/4518 | CL5/16 | Y | 13% | 2.14 | 1.88 | 0.40 | 4.0% | 33% | 16% | 17 | 2.61 | 31.0% | | | | | 8.50E-11 |
| | 16 | | PSL14/4518 | CL5/18 | Y | 15% | | | | | 35% | 17% | 18 | 2.60 | 36.0% | | | | | |
| | 17 | | PSL14/4518 | CL6/20 | Y | 16% | | | | | 35% | 18% | 17 | 2.62 | 35.0% | | | | | |
| | 18 | | PSL14/4518 | CL6/21 | Y | 13% | 2.14 | 1.89 | 0.39 | 3.5% | | | | | | | | | | 8.50E-11 |
| | 19 | | PSL14/4518 | CL6/23 | Y | 14% | | | | | 34% | 18% | 16 | 2.64 | 33.0% | | | | | |
| | 20 | | PSL14/4518 | CL7/24 | Y | 15% | | | | | 33% | 17% | 16 | 2.62 | 33.0% | | | | | |
| | 21 | | PSL14/4518 | CL7/25 | Y | 14% | 2.14 | 1.88 | 0.40 | 2.1% | | | | | | | | | | 8.80E-11 |
| | 22 | | PSL14/4812 | CL7/26 | Y | 14% | 2.17 | 1.90 | 0.38 | 1.1% | 32% | 17% | 15 | 2.63 | 35.0% | | | | | |
| | 23 | | PSL14/4812 | CL7/27 | Y | 14% | 2.24 | 1.96 | 0.34 | -2.0% | | | | | | | | | | |
| | 24 | | PSL14/4812 | CL8/28 | Y | 13% | 2.16 | 1.91 | 0.38 | 2.5% | 34% | 18% | 16 | 2.64 | 39.0% | | | | | |
| | 25 | | PSL14/4812 | CL8/28 | Y | 14% | 2.12 | 1.86 | 0.41 | 3.2% | | | | | | | | | | 8.10E-11 |
| | 26 | | PSL14/4812 | CL8/29 | Y | 13% | 2.18 | 1.93 | 0.36 | 1.5% | | | | | | | | | | |
| | 27 | | PSL14/4812 | CL8/30 | Y | 15% | 2.14 | 1.86 | 0.41 | 1.3% | 35% | 18% | 17 | 2.63 | 37.0% | | | | | |
| | 28 | | PSL14/4812 | CL8/31 | Y | 14% | 2.21 | 1.94 | 0.35 | -1.0% | | | | | | | | | | |
| | 29 | | SITE | CL1/01 | Y | 17% | 2.19 | 1.88 | 0.40 | -2.6% | | | | | | 110 | | | | |
| | 30 | | SITE | CL1/02 | Y | 15% | 2.14 | 1.87 | 0.41 | 1.2% | | | | | | 75 | | | | |
| | 31 | | SITE | CL1/03 | Y | 15% | 2.17 | 1.89 | 0.39 | 0.0% | | | | | | 95 | | | | |
| | 32 | | SITE | CL1/04A | Y | 14% | 2.19 | 1.92 | 0.37 | 0.5% | | | | | | 82 | | | | |
| | 33 | | SITE | CL2/04 | Y | 17% | 2.18 | 1.87 | 0.41 | -2.1% | | | | | | 75 | | | | |
| | 34 | | SITE | CL2/05 | Y | 12% | 2.15 | 1.92 | 0.37 | 3.9% | | | | | | 80 | | | | |
| | 35 | | SITE | CL2/06 | Y | 16% | 2.16 | 1.87 | 0.41 | -0.3% | | | | | | 100 | | | | |
| | 36 | | SITE | CL2/07 | Y | 13% | 2.22 | 1.98 | 0.33 | 0.1% | | | | | | 92 | | | | |
| | 37 | | SITE | CL3/08 | Y | 14% | 2.12 | 1.86 | 0.41 | 3.6% | | | | | | 60 | | | | |
| | 38 | | SITE | CL3/09 | Y | 15% | 2.19 | 1.90 | 0.39 | -1.3% | | | | | | 94 | | | | |
| | 39 | | SITE | CL3/10 | Y | 17% | 2.12 | 1.82 | 0.44 | 0.8% | | | | | | 84 | | | | |
| | 40 | | SITE | CL3/11 | Y | 14% | 2.20 | 1.92 | 0.37 | -0.7% | | | | | | 84 | | | | |
| | 41 | | SITE | CL4/12 | Y | 13% | 2.13 | 1.89 | 0.39 | 4.4% | | | | | | 76 | | | | |
| | 42 | | SITE | CL4/13 | Y | 14% | 2.14 | 1.88 | 0.40 | 2.3% | | | | | | 86 | | | | |
| | 43 | | SITE | CL4/14 | Y | 16% | 2.12 | 1.83 | 0.43 | 1.1% | | | | | | 80 | | | | |
| | 44 | | SITE | CL4/15 | Y | 16% | 2.12 | 1.84 | 0.43 | 1.2% | | | | | | 72 | | | | |
| | 45 | | SITE | CL5/17A | Y | 13% | 2.18 | 1.94 | 0.36 | 1.5% | | | | | | 86 | | | | |
| | 46 | | SITE | CL5/17B | Y | 15% | 2.10 | 1.83 | 0.44 | 3.2% | | | | | | 80 | | | | |
| | 47 | | SITE | CL5/18 | Y | 17% | 2.10 | 1.80 | 0.46 | 1.4% | | | | | | 70 | | | | |
| | 48 | | SITE | CL5/19 | Y | 14% | 2.15 | 1.88 | 0.40 | 1.8% | | | | | | 62 | | | | |
| | 49 | | SITE | CL6/20 | Y | 12% | 2.17 | 1.94 | 0.35 | 3.1% | | | | | | 68 | | | | |
| | 50 | | SITE | CL6/21 | Y | 15% | 2.19 | 1.91 | 0.37 | -0.7% | | | | | | 80 | | | | |
| | 51 | | SITE | CL6/20R | Y | 16% | 2.18 | 1.88 | 0.40 | -1.9% | | | | | | 62 | | | | |
| | 52 | | SITE | CL6/22 | Y | 16% | 2.16 | 1.86 | 0.41 | -0.2% | | | | | | 70 | | | | |
| | 53 | | SITE | CL6/23 | Y | 16% | 2.18 | 1.88 | 0.40 | -1.4% | | | | | | 72 | | | | |
| | 54 | | SITE | CL7/24 | Y | 13% | 2.16 | 1.92 | 0.37 | 2.8% | | | | | | 90 | | | | |
| | 55 | | SITE | CL7/25 | Y | 13% | 2.18 | 1.93 | 0.36 | 1.9% | | | | | | 84 | | | | |
| | 56 | | SITE | CL7/26 | Y | 15% | 2.15 | 1.86 | 0.41 | 0.4% | | | | | | 62 | | | | |
| | 57 | | SITE | CL7/27 | Y | 14% | 2.18 | 1.91 | 0.37 | 0.1% | | | | | | 84 | | | | |
| | 58 | | SITE | CL8/28 | Y | 14% | 2.15 | 1.89 | 0.39 | 2.3% | | | | | | 76 | | | | |
| | 59 | | SITE | CL8/29 | Y | 16% | 2.16 | 1.86 | 0.42 | -0.7% | | | | | | 74 | | | | |
| | 60 | | SITE | CL8/30 | Y | 17% | 2.12 | 1.81 | 0.45 | 0.7% | | | | | | 66 | | | | |
| | 61 | | SITE | CL8/31 | Y | 16% | 2.14 | 1.84 | 0.43 | 0.0% | | | | | | 92 | | | | |
| | | | | | | M/C | BD | DD | VOID RATIO | AIR VOIDS | L/L | P/L | PI | PD | CC | HSV | UDX | FAIL STRAIN | MODE | PERM |
| COUNT | | | | | | 61 | 49 | 49 | 49 | 49 | 16 | 16 | 16 | 16 | 16 | 33 | 2 | 2 | | 8 |
| SUM | | | | | | 8.8 | 105.74 | 92.43 | 19.28 | 0.55 | 5 | 3 | 263 | 42.04 | 515.0% | 2623 | 261 | 38.0% | | 7.06E-10 |
| MEAN | | | | | | 14% | 2.16 | 1.89 | 0.39 | 1.1% | 34% | 18% | 16 | 2.63 | 32.2% | 79 | 131 | 19.0% | | 8.83E-11 |
| MAX | | | | | | 19% | 2.24 | 1.98 | 0.46 | 4.4% | 36% | 18% | 18 | 2.66 | 39.0% | 110 | 148 | 19.5% | | 9.70E-11 |
| MIN | | | | | | 12% | 2.10 | 1.80 | 0.33 | -2.6% | 31% | 16% | 14 | 2.60 | 26.0% | 60 | 113 | 18.5% | | 8.10E-11 |

AEGB + ECL Compaction : Particle Density 2.63 Mg m⁻³



HAFOD PHASE 3 UPPER WEST SIDEWALL CQA SAMPLES

GRAVEL DRAINAGE MEDIA

| S/N | REPORT REF | SAMPLE DESIGNATION | REPORTED | GRADING | | | | 10% FINES (TFV) | Permeability |
|-----|-------------------------|--------------------|----------|---------|-------|------|--------|-----------------|--------------|
| | | | | 63mm | 50mm | 40mm | 31.5mm | | |
| 1 | PSL14/4019 | DG/01 | Y | 100% | 98% | 56% | 38% | | |
| 2 | PSL14/4518 – STR 384853 | DG/01 BAGS 2-10 | Y | 100% | 98% | 78% | 35% | | |
| 3 | PSL14/4518 – STR 384854 | DG/01 BAGS 2-10 | Y | | | | | 230 | |
| 4 | PSL14/4518 – STR 384855 | DG/01 BAGS 2-10 | Y | | | | | | 1.7E-01 |
| | | | | COUNT | COUNT | 2 | 2 | 1 | 1 |
| | | | | SUM | SUM | 200% | 196% | 230 | 0 |
| | | | | MEAN | MEAN | 100% | 98% | 230 | 1.7E-01 |
| | | | | MAX | MAX | 100% | 98% | 230 | 1.7E-01 |
| | | | | MIN | MIN | 100% | 98% | 230 | 1.7E-01 |

GEOCOMPOSITE

| S/N | REPORT REF | SAMPLE DESIGNATION | REPORTED | TENSILE STRENGTH (MD) | ELONGATION (MD) | TENSILE STRENGTH (CD) | ELONGATION (CD) | CBR | O ₉₀ | PERMEABILITY | THICKNESS | IN-PLANE WATER FLOW |
|-----|------------|--------------------|----------|-----------------------|-----------------|-----------------------|-----------------|------|-----------------|--------------|-----------|---------------------|
| 1 | BS-K115/a | GCD 101 | Y | 17.3 | 42.0% | 15.1 | 37.9% | 2.21 | 98 | 88 | 6.85 | 1.39 |
| 2 | BS-K115/a | GCD 102 | Y | 13.7 | 35.4% | 15.7 | 36.1% | 2.46 | 101 | 89 | 6.76 | 1.35 |
| 3 | BS-K115/b | GCD/03 | Y | 14.1 | 37.5% | 15.7 | 36.7% | 2.44 | 96 | 91 | 6.4 | 1.33 |
| 4 | BS-K115/b | GCD/04 | Y | 17.5 | 42.6% | 17.6 | 39.7% | 2.62 | 95 | 92 | 6.67 | 1.3 |
| | | | | COUNT | COUNT | 4 | 4 | 4.00 | 4 | 4 | 4 | 4 |
| | | | | SUM | SUM | 62.6 | 1.575 | 9.73 | 390 | 360 | 26.68 | 5.37 |
| | | | | MEAN | MEAN | 15.7 | 39.4% | 2.43 | 98 | 90 | 6.67 | 1.34 |
| | | | | MAX | MAX | 17.5 | 42.6% | 2.62 | 101 | 92 | 6.85 | 1.39 |
| | | | | MIN | MIN | 13.7 | 35.4% | 2.21 | 95 | 88 | 6.40 | 1.30 |

FILTRATION GEOTEXTILE

| S/N | REPORT REF | SAMPLE DESIGNATION | REPORTED | Tensile Strength M-way (kN/m) | M-way Extension (%) | Tensile Strength X-way (kN/m) | X-way Extension (%) | CBR (N) | O ₉₀ | Permeability Perpendicular | Terrex NW9 Lotrak Base |
|-------|------------|--------------------|----------|-------------------------------|---------------------|-------------------------------|---------------------|---------|-----------------|----------------------------|---------------------------|
| 1 | BS-K114a | FGD/01 | Y | 8.1 | 34.20% | 9.01 | 40.9% | 1.30 | 89 | 47 | |
| 2 | BS-K114a | FGD/02 | Y | 9.5 | 9.80% | 8.14 | 7.1% | 1.35 | 117 | 11 | |
| | | | | | | | | | | | |
| COUNT | | | COUNT | 2 | 2 | 2 | 2 | 2.00 | 2 | 2 | |
| SUM | | | SUM | 17.6 | 44.00% | 17.15 | 48.0% | 2.65 | 206 | 58 | |
| MEAN | | | MEAN | 8.8 | 22.00% | 8.58 | 24.0% | 1.33 | 103 | 29 | |
| MAX | | | MAX | 9.5 | 34.20% | 9.01 | 40.9% | 1.35 | 117 | 47 | |
| MIN | | | MIN | 8.1 | 9.80% | 8.14 | 7.1% | 1.30 | 89 | 11 | |