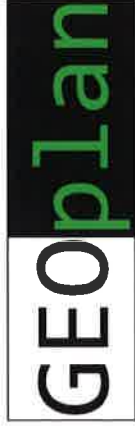
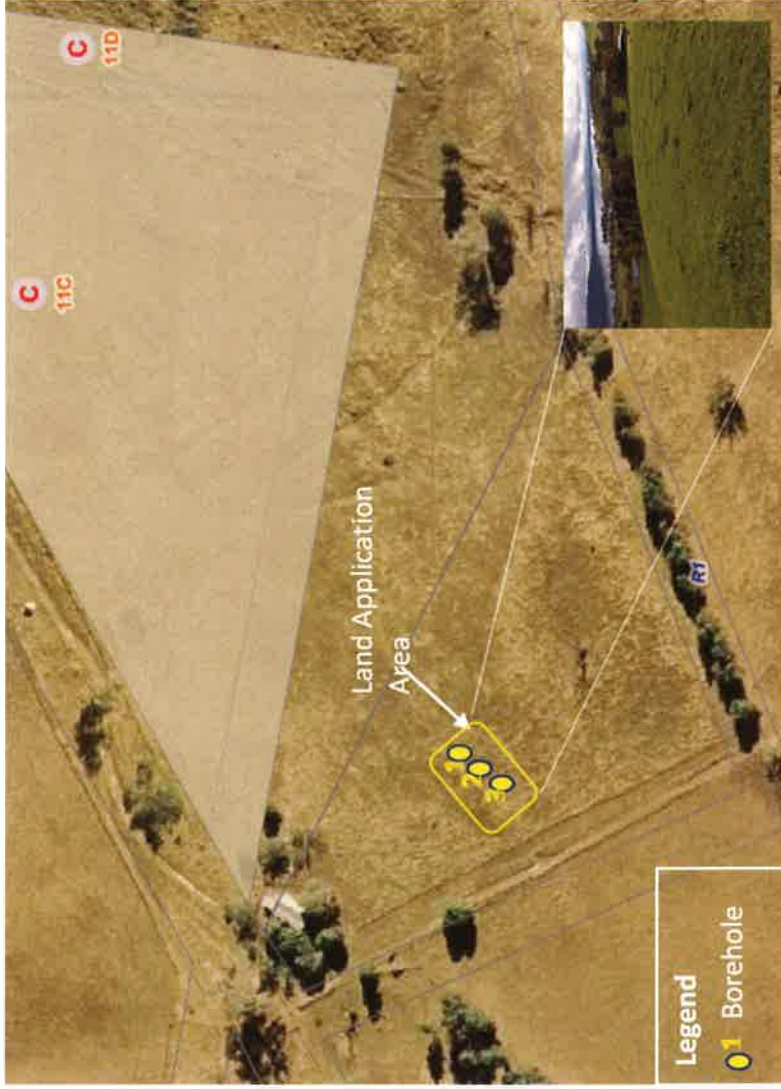


Appendix A - Site Plan and Proposed Land Application Area



Geoscience + Planning

| Land Application Area Summary | | | | | |
|--|---------------------------------|------------------------------|--|-----------------------|---------------------------------------|
| Indicative Summary of Design Recommendations Summary (See Flow Rate and QOL 300) | | | | | |
| Threshold Standard | Specific Tank Capacity (Litres) | Land Application Method | Comminution Requirements (AS/NZS 3547/3633 Comminution (Optional)) | Calculated Length (m) | Indicative LAA Area (m ²) |
| Primary or Secondary Wastewater (AWTS or Sand Filter) | 3000L (5BR) | Trench (Secondary Treatment) | L | 120m (3BR) | 264 m ² |
| | 4000L (8BR) | | | 160m (4BR) | 351 m ² |
| | 4500L (9BR) | ET/ETS | L & L | 205m | 510 m ² |
| | | Subsurface Irrigation* | M1 | 257m | 660 m ² |
| | | | | 309m | 790 m ² |
| | | | | 400 m (4 Bedroom) | |
| | | | | 475 m (5 Bedroom) | |

* Subsurface Irrigation is dependent on soil type and water table. Always confirm with a qualified Geotechnical Engineer.
 * Specific Lengths are not exact. See the site plan for more details.
 * The above LAA Area is indicative only and should not be used for final design purposes.

Notes:

For setback distances refer to EPA Publication 89.1.4 (Guidelines for Environmental Management Code of Practice Onsite Wastewater Management). All CoP setbacks can be achieved. Land application shown not to scale.

Disclaimer

Due regard has been made to undertake all aspects of this study in accordance with the requirements of best practice and relevant standards. LAA calculations have been made with due regards to AS/NZS 1547:2012 and whilst the findings contained in this report represent a reasonable interpretation of site conditions, it does not indicate that these findings represent the actual state of the site at all points. The complex interactions between soil, climate, topography and wastewater mean that there is no one correct answer and the nominated results should be viewed in this context. The paucity of specific evaporation data is a limiting factor with regard to LAA calculations.

Appendix B – Soil Profiles

Profile 1



Profile 2



Profile 3



Client: **Martin** Job: **1708** Excavation Number: **1** Logged by: **SH**
 Address: **Cemetery Rd, Balmingrd** Surface level: R L
 Date of inspection: **8 July 2017** Surface conditions: **Moist** Indicative drainage:
 Slope: **10%** Land form element: **Wax-Div** Ground cover: **pasture** Waterfable depth: **> 1m**
 Surface stones: **Limited** Parent material: **Chert**
 Land surface notes:

| Layer | Lower depth (mm) | Horizon | Moisture conditions (see Note 2) | Colour (moist) | Field texture | Coarse fragments % volume | Structure (see Note 3) | Modified Emersion | Sample taken (Y/N) | Consistency (see Note 4) | Soil category | Other assessment |
|-------|------------------|---------|----------------------------------|----------------|---------------|---------------------------|------------------------|-------------------|--------------------|--------------------------|---------------|------------------|
| 1 | A1 - 100mm | | Moist | CR-BR | FOL | < 5% | MOD | | R | WK | | |
| 2 | A2 - 200mm | | Moist | YR-BR CL-LM | | | MOD | | H | WK | | |
| 3 | B1 - 400mm | | Dry | BR-GESAND CL | | | MOD | | H | AKGD | 5C | |
| 4 | B2 - 1000mm | | Dry | L-OL SANDY CL | | | WK | | Y | WK | 5C | |
| 5 | | | | | | | | | | | | |

Overall soil category assigned: **5C** Maximum depth of system: **7100mm**
 Soil appears favourable for (list system types) Checked by:

Notes/comments/observations:
 Organisational details/Logo:

NOTES:
 1 Use another form if > 5 layers on major horizons
 2 Dry, moist, very moist, saturated
 3 Apedal (no peds) Either single grain or massive
 Pedal (observable peds) Weak, moderate or strong
 4 Strength - loose, very weak, weak, firm, very firm, strong, very strong, rigid
 Stickiness (when wet) - non, slightly, moderately, very

FIGURE B1 SITE-AND-SOIL EVALUATION FORM: EXCAVATION LOG - EXAMPLE

Client: **Marlin Cemetery Rd Bethunga** 1708
 Address: **1708 Cemetery Rd Bethunga**
 Date of inspection: **8 July 2017**
 Slope: **10** % Land form element: **War-Div**
 Surface stones: **limited**
 Land surface notes:

Excavation Number: **2** Logged by: **SH**
 Surface level: R L
 Indicative drainage: **Moist**
 Watertable depth: **71M**
 Parent material: **Pushne**
 Surface conditions: **Moist**
 Ground cover: **Pushne**

| Layer | Lower depth (mm) | Horizon | Moisture conditions (see Note 2) | Colour (moist) | Field texture | Coarse fragments % volume | Structure (see Note 3) | Modified Emersion | Sample taken (Y/N) | Consistency (see Note 4) | Soil category | Other assessment |
|-------|------------------|---------|----------------------------------|----------------|---------------|---------------------------|------------------------|-------------------|--------------------|--------------------------|---------------|------------------|
| 1 | 100 | A1 | MOIST | 6R-6R | SL | 5% | MOD | | N | WEAK | | |
| 2 | 200 | A2 | MOIST | 6R-6R | CL-LM | | MOD | | N | WEAK | | |
| 3 | 300 | B1 | DRY | 6R-6R | CL-CL | | MOD | | N | RIGID | | |
| 4 | 1000 | B2 | DRY | 6R-6R | SANDY CL | | WK | | N | WEAK | 5C | |

NOTES:
 1 Use another form if >5 layers on major horizons
 2 Dry, moist, very moist, saturated
 3 Apedal (no peds) Either single grain or massive
 Pedal (observable peds) Weak, moderate or strong
 4 Strength - loose, very weak, weak, firm, very firm, strong, very strong, rigid
 Stickiness (when wet) - non, slightly, moderately, very

Notes/comments/observations:
 Organisational details/Logo:
 Overall soil category assigned: **5C** Maximum depth of system: **> 1000mm**
 Soil appears favourable for (list system types):
 Checked by:

FIGURE B1 SITE-AND-SOIL EVALUATION FORM: EXCAVATION LOG - EXAMPLE

Client: **Martin Cemetery Rd** Job: **1708** Excavation Number: **3** Logged by: **SK**
 Address: **Bethanga** Surface level: R L
 Date of inspection: **9 July 2018** Surface conditions: **Moist** Indicative drainage:
 Slope: **10** % Land form element: **Wax-au.** Ground cover: **Pasture** Waterable depth: **71M**
 Surface stones: **Limited** Parent material:
 Land surface notes:

| Layer | Lower depth (mm) | Horizon | Moisture conditions (see Note 2) | Colour (moist) | Field texture | Coarse fragments % volume | Structure (see Note 3) | Modified Emersion | Sample taken (Y/N) | Consistency (see Note 4) | Soil category | Other assessment |
|-------|------------------|---------|----------------------------------|-----------------|---------------|---------------------------|------------------------|-------------------|--------------------|--------------------------|---------------|------------------|
| 1 | 100 | A1 | MOIST | GR-BL | FSL | <5% | MO | | N | MO | | |
| 2 | 300 | A2 | MOIST | GR-BL | CL-LM | | MO | | N | MO | | |
| 3 | 600 | B1 | DRY | BR-LP | L-CL | | MO | | N | R-LD | | |
| 4 | 1000 | B2 | DRY | IL-GR SANDY CLM | | | WEAK | | | WEAK | 5C | |

NOTES:
 1 Use another form if >5 layers on major horizons
 2 Dry, moist, very moist, saturated
 3 Apedal (no peds) Either single grain or massive Pedal (observable peds) Weak, moderate or strong
 4 Strength - loose, very weak, weak, firm, very firm, strong, very strong, rigid Stickiness (when wet) - non, slightly, moderately, very.

Notes/comments/observations:
 Organisational details/Logo:
 Overall soil category assigned: **5C** Maximum depth of system: **7100mm**
 Soil appears favourable for (list system types):
 Checked by:

FIGURE B1 SITE-AND-SOIL EVALUATION FORM: EXCAVATION LOG - EXAMPLE

Appendix C – Water Nutrient Balances

Spreadsheet Prepared by Paul Williams & Associates Pty Ltd for use by GeoPlan Consulting
WATER/NITROGEN BALANCE (20/30 irrigation): 3 Bedroom - with no wet month storage.
 Rainfall Station: Albury Airport AWS Evaporation: BOM

Location: Bethanga
 Date: August, 2017
 Client: Martin

| ITEM | UNIT | # | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | YEAR |
|---|----------------|----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| Days in month: | | D | 31 | 28 | 31 | 30 | 31 | 30 | 31 | 31 | 30 | 31 | 30 | 31 | 365 |
| Evaporation (Mean) | mm | A | 250 | 200 | 175 | 90 | 50 | 30 | 30 | 50 | 80 | 125 | 200 | 200 | 1480 |
| Rainfall (9th Decile wet year adjusted) | mm | B1 | 73 | 81 | 67 | 94 | 105 | 105 | 99 | 103 | 111 | 104 | 104 | 72 | 1118 |
| Effective rainfall | mm | B2 | 66 | 73 | 60 | 85 | 95 | 94 | 89 | 93 | 100 | 93 | 93 | 65 | 1006 |
| Peak seepage Loss ¹ | mm | B3 | 155 | 140 | 155 | 150 | 155 | 150 | 155 | 155 | 150 | 155 | 150 | 155 | 1825 |
| Evapotranspiration(JXA) | mm | C1 | 100 | 80 | 70 | 36 | 20 | 12 | 12 | 20 | 32 | 50 | 80 | 80 | 592 |
| Waste Loading(C1+B3-B2) | mm | C2 | 189 | 147 | 165 | 101 | 80 | 68 | 78 | 82 | 82 | 112 | 137 | 170 | 1412 |
| Net evaporation from lagoons (1/10(0.8A-B1xlagoon area(ha))) | L | NL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume of Wastewater | L | E | 22320 | 20160 | 22320 | 21600 | 22320 | 21600 | 22320 | 22320 | 21600 | 22320 | 21600 | 22320 | 262800 |
| Total Irrigation Water(E-NL)/G | mm | F | 70 | 63 | 70 | 68 | 70 | 68 | 70 | 70 | 68 | 70 | 68 | 70 | 821 |
| Irrigation Area(E/C2)annual. | m ² | G | | | | | | | | | | | | | 320 |
| Surcharge | mm | H | -119 | -84 | -95 | -34 | -10 | 0 | -8 | -13 | -15 | -42 | -69 | -100 | 0 |
| Actual seepage loss | mm | J | 36 | 56 | 60 | 116 | 145 | 150 | 147 | 142 | 135 | 113 | 81 | 55 | 1234 |
| Direct Crop Coefficient: | | I | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | Shade: |
| Rainfall Retained: | 90 % | K | | | | | | | | | | | | | Shade: |
| Lagoon Area: | 0 ha | L | | | | | | | | | | | | | |

1. Seepage loss (peak) equals deep seepage plus lateral flow:8mm (<10% ksat)

| | | | CROP FACTOR | | | | |
|---------------------------|--------------------|----|-------------|-----|-----|-----|------|
| Lagoon Area: | 0 ha | L | | | | | |
| Wastewater(Irrigation): | 720 L | M | 0.7 | 0.7 | 0.6 | 0.5 | 0.45 |
| Seepage Loss (Peak): | 5 mm | N | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 |
| Irrig'n Area(No storage): | 320 m ² | P2 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| Application Rate: | 2.3 mm | Q | 0.8 | 0.8 | 0.7 | 0.6 | 0.6 |
| Nitrogen in Effluent: | 30 mg/L | R | | | | | |
| Denitrification Rate: | 20 % | S | | | | | |

NITROGEN UPTAKE:

| Species: | Kg/ha.yr. | pH | Species: | Kg/ha.yr. | pH | Species: | Kg/ha.yr. | pH |
|-------------|-----------|---------|----------------|-----------|---------|------------|-----------|---------|
| Ryegrass | 200 | 5.6-6.5 | Bent grass | 170 | 5.6-6.9 | Grapes | 200 | 6.1-7.9 |
| Eucalyptus | 90 | 5.6-6.9 | Couch grass | 280 | 6.1-6.9 | Lemons | 90 | 6.1-6.9 |
| Lucerne | 220 | 6.1-7.9 | Clover | 180 | 6.1-6.9 | C. cunn'a | 220 | 6.1-7.9 |
| Tall fescue | 150-320 | 6.1-6.9 | Buffalo (soft) | 150-320 | 5.5-7.5 | P. radiata | 150 | 5.6-6.9 |
| Ryed/clover | 220 | | Sorghum | 90 | 5.6-6.9 | Poplars | 115 | 5.6-8.5 |

Spreadsheet Prepared by Paul Williams & Associates Pty Ltd for use by GeoPlan Consulting

WATER/NITROGEN BALANCE (20/30 irrigation): 4 Bedroom - with no wet month storage.

Rainfall Station: Albury Airport AWS Evaporation: BOM

Location: Bethanga

Date: August, 2017

Client: MartIn

| ITEM | UNIT | # | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | YEAR |
|---|--------------------|----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|
| Days in month: | | D | 31 | 28 | 31 | 30 | 31 | 30 | 31 | 31 | 30 | 31 | 30 | 31 | 365 |
| Evaporation (Mean) | mm | A | 250 | 200 | 175 | 90 | 50 | 30 | 30 | 50 | 80 | 125 | 200 | 200 | 1480 |
| Rainfall (9th Decile wet year adjusted) | mm | B1 | 73 | 81 | 67 | 94 | 105 | 105 | 89 | 103 | 111 | 104 | 104 | 72 | 1118 |
| Effective rainfall | mm | B2 | 66 | 73 | 60 | 85 | 95 | 94 | 89 | 93 | 100 | 93 | 93 | 65 | 1005 |
| Peak seepage Loss ¹ | mm | B3 | 155 | 140 | 155 | 150 | 155 | 150 | 155 | 155 | 150 | 155 | 150 | 155 | 1825 |
| Evapotranspiration(IXA) | mm | C1 | 100 | 80 | 70 | 36 | 20 | 12 | 12 | 20 | 32 | 50 | 80 | 80 | 592 |
| Waste Loading(C1+B3-B2) | mm | C2 | 189 | 147 | 165 | 101 | 80 | 68 | 78 | 82 | 82 | 112 | 137 | 170 | 1412 |
| Net evaporation from lagoons (100.8A-B1xlagoon area(ha)) | L | NL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume of Wastewater | L | E | 27900 | 25200 | 27900 | 27000 | 27900 | 27000 | 27900 | 27900 | 27000 | 27900 | 27000 | 27900 | 328500 |
| Total Irrigation Water(E-NLYG) | mm | F | 70 | 63 | 70 | 68 | 70 | 68 | 70 | 70 | 68 | 70 | 68 | 70 | 821 |
| Irrigation Area(E/C2)annual. | m ² | G | | | | | | | | | | | | | 400 |
| Surcharge | mm | H | -119 | -84 | -95 | -34 | -10 | 0 | -8 | -13 | -15 | -42 | -69 | -100 | 0 |
| Actual seepage loss | mm | J | 36 | 56 | 60 | 116 | 145 | 150 | 147 | 142 | 135 | 113 | 81 | 55 | 1234 |
| Direct Crop Coefficient: | | I | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | Shade |
| Rainfall Retained: | 90% | K | | | | | | | | | | | | | |
| Lagoon Area: | 0/ha | L | | | | | | | | | | | | | |
| Wastewater(Irrigation): | 900/L | M | 0.7 | 0.7 | 0.7 | 0.6 | 0.5 | 0.45 | 0.4 | 0.45 | 0.55 | 0.65 | 0.7 | 0.7 | Pasture |
| Seepage Loss (Peak): | 5 mm | N | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | Shade |
| Irrig'n Area(No storage): | 400 m ² | P2 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | Fescue |
| Application Rate: | 2.3 mm | Q | 0.8 | 0.8 | 0.7 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6 | 0.7 | 0.8 | 0.8 | 0.8 | MAY |
| Nitrogen in Effluent: | 30 mg/L | R | | | | | | | | | | | | | |
| Denitrification Rate: | 20% | S | | | | | | | | | | | | | |
| Plant Uptake: | 220 kg/ha/yr | T | | | | | | | | | | | | | |
| Mean daily seepage loss: | 3.4 mm | U | | | | | | | | | | | | | |
| Annual N load: | 7.88 kg/yr | V | | | | | | | | | | | | | |
| Area for N uptake: | 358 m ² | W | | | | | | | | | | | | | |
| Application Rate: | 2.5 mm | X | | | | | | | | | | | | | |

1. Seepage loss (peak) equals deep seepage plus lateral flow:8mm (<10% ksat)

CROP FACTOR

| Species | kg/ha.yr | pH | Species | kg/ha.yr | pH | Species | kg/ha.yr | pH |
|-------------|----------|---------|----------------|----------|---------|-----------|----------|---------|
| Ryegrass | 200 | 5.6-8.5 | Bent grass | 170 | 5.6-6.9 | Grapes | 200 | 6.1-7.9 |
| Eucalyptus | 90 | 5.6-6.9 | Couch grass | 280 | 6.1-6.9 | Lemons | 90 | 6.1-6.9 |
| Lucerne | 220 | 6.1-7.9 | Clover | 180 | 6.1-6.9 | C cunn'a | 220 | 6.1-7.9 |
| Tall fescue | 150-320 | 6.1-6.9 | Buffalo (soft) | 150-320 | 5.5-7.5 | P radiata | 150 | 5.6-6.9 |
| Rye/clover | 220 | | Sorghum | 90 | 5.6-6.9 | Poplars | 115 | 5.6-8.5 |

NITROGEN UPTAKE

| Species | kg/ha.yr | pH | Species | kg/ha.yr | pH |
|-------------|----------|---------|----------------|----------|---------|
| Ryegrass | 200 | 5.6-8.5 | Bent grass | 170 | 5.6-6.9 |
| Eucalyptus | 90 | 5.6-6.9 | Couch grass | 280 | 6.1-6.9 |
| Lucerne | 220 | 6.1-7.9 | Clover | 180 | 6.1-6.9 |
| Tall fescue | 150-320 | 6.1-6.9 | Buffalo (soft) | 150-320 | 5.5-7.5 |
| Rye/clover | 220 | | Sorghum | 90 | 5.6-6.9 |

Spreadsheet Prepared by Paul Williams & Associates Pty Ltd for use by GeoPlan Consulting

WATER/NITROGEN BALANCE (20/30 irrigation): 5 Bedroom - with no wet month storage.

Rainfall Station: Albury Airport AWS Evaporation: BOM

Location: Bethanga

Date: August, 2017

Client: Martin

| ITEM | UNIT | # | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | YEAR |
|---|----------------|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------|
| Days in month: | | D | 31 | 28 | 31 | 30 | 31 | 30 | 31 | 31 | 30 | 31 | 30 | 31 | 365 |
| Evaporation (Mean) | mm | A | 250 | 200 | 175 | 90 | 50 | 30 | 30 | 50 | 80 | 125 | 200 | 200 | 1480 |
| Rainfall (9th Decile wet year adjusted) | mm | B1 | 73 | 81 | 67 | 94 | 105 | 105 | 98 | 103 | 111 | 104 | 104 | 72 | 1118 |
| Effective rainfall | mm | B2 | 66 | 73 | 60 | 85 | 95 | 94 | 89 | 93 | 100 | 93 | 93 | 65 | 1005 |
| Peak seepage Loss ¹ | mm | B3 | 155 | 140 | 155 | 150 | 155 | 150 | 155 | 155 | 150 | 155 | 150 | 155 | 1825 |
| Evapotranspiration(IXA) | mm | C1 | 100 | 80 | 70 | 36 | 20 | 12 | 12 | 20 | 32 | 50 | 80 | 80 | 592 |
| Waste Loading(C1+B3-B2) | mm | C2 | 189 | 147 | 165 | 101 | 80 | 68 | 78 | 82 | 82 | 112 | 137 | 170 | 1412 |
| Net evaporation from lagoons (100.8A-B1xlagoon area(ha)) | L | NIL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume of Wastewater | L | E | 33480 | 30240 | 33480 | 32400 | 33480 | 32400 | 33480 | 33480 | 32400 | 33480 | 32400 | 33480 | 394200 |
| Total Irrigation Water(E-NL)/G | mm | F | 70 | 64 | 70 | 68 | 70 | 68 | 70 | 70 | 68 | 70 | 68 | 70 | 830 |
| Irrigation Area(E/C2)annual. | m ² | G | | | | | | | | | | | | | 475 |
| Surcharge | mm | H | -119 | -83 | -95 | -33 | -10 | 0 | -7 | -12 | -14 | -41 | -69 | -100 | 0 |
| Actual seepage loss | mm | J | 36 | 57 | 60 | 117 | 145 | 150 | 148 | 143 | 136 | 114 | 81 | 55 | 1243 |
| Direct Crop Coefficient: | | I | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | Shade |
| Rainfall Retained: | % | K | | | | | | | | | | | | | |
| Lagoon Area: | ha | L | | | | | | | | | | | | | |
| Wastewater(Irrigation): | L | M | 0.7 | 0.7 | 0.7 | 0.6 | 0.5 | 0.45 | 0.4 | 0.45 | 0.55 | 0.65 | 0.7 | 0.7 | Pasture |
| Seepage Loss (Peak): | mm | N | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | Shade |
| Irrig'n Area(No storage): | m ² | P2 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | Fescue |
| Application Rate: | mm | Q | 0.8 | 0.8 | 0.7 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6 | 0.7 | 0.8 | 0.8 | 0.8 | MAV |
| Nitrogen in Effluent: | mg/L | R | | | | | | | | | | | | | |
| Denitrification Rate: | % | S | | | | | | | | | | | | | |
| Plant Uptake: | kg/ha/yr | T | 220 | 220 | 200 | 200 | 200 | 200 | 170 | 170 | 280 | 280 | 280 | 200 | Grapes |
| Mean daily seepage loss: | mm | U | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | Lemons |
| Annual N load: | kg/yr | V | 9.46 | 9.46 | 9.46 | 9.46 | 9.46 | 9.46 | 9.46 | 9.46 | 9.46 | 9.46 | 9.46 | 9.46 | Cumt'a |
| Area for N uptake: | m ² | W | 430 | 430 | 430 | 430 | 430 | 430 | 430 | 430 | 430 | 430 | 430 | 430 | P radiata |
| Application Rate: | mm | X | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | Poplars |

1. Seepage loss (peak) equals deep seepage plus lateral flow:8mm (<10% ksal)

CROP FACTOR

| Species: | kg/ha.yr | pH | Species: | kg/ha.yr | pH |
|-------------|----------|---------|----------------|----------|---------|
| Ryegrass | 200 | 5.6-8.5 | Bent grass | 170 | 5.6-6.9 |
| Eucalyptus | 90 | 5.6-6.9 | Couch grass | 280 | 6.1-6.9 |
| Lucerne | 220 | 6.1-7.9 | Clover | 180 | 6.1-6.9 |
| Tall fescue | 150-320 | 6.1-6.9 | Buffalo (soft) | 150-320 | 5.5-7.5 |
| Rye/clover | 220 | | Sorghum | 90 | 5.6-6.9 |

NITROGEN UPTAKE:

| Species: | kg/ha.yr | pH | Species: | kg/ha.yr | pH |
|-------------|----------|---------|----------------|----------|---------|
| Ryegrass | 200 | 5.6-8.5 | Bent grass | 170 | 5.6-6.9 |
| Eucalyptus | 90 | 5.6-6.9 | Couch grass | 280 | 6.1-6.9 |
| Lucerne | 220 | 6.1-7.9 | Clover | 180 | 6.1-6.9 |
| Tall fescue | 150-320 | 6.1-6.9 | Buffalo (soft) | 150-320 | 5.5-7.5 |
| Rye/clover | 220 | | Sorghum | 90 | 5.6-6.9 |

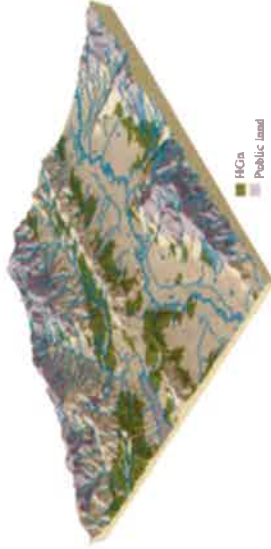
Appendix D – North East Land Resource Assessment Data

Soil landform unit: HGn; Hills on gneiss, Tallangatta / Leneva / Bethanga

Landform pattern: Hills
 Elevation (m): 225-450
 Annual rainfall (mm): 650-1600
 Geomorphic unit: 1.3.1 Eastern Uplands; Ridges, Valleys and Hills; High Dissected Ridges and Valley Relief
 Geology: Ordovician gneiss and gneissic pegmatite



Position in landscape



Locality diagram

| Landform component | 1 | 2 | 3 |
|---------------------------|--|--|---|
| Landform element | Steep slopes | Moderate slopes | Gentle footslopes |
| Slope range (%) | 20 - >32 | 10 - 20 | 3 - 10 |
| Site drainage | Well to rapidly drained with high permeability | Imperfectly to moderately well drained with low to moderate permeability | Moderately well to well drained with high permeability |
| Rock outcrop | Nil | 0-50% , rock to 0.6 m | 0-20% , rock to 2 m |
| Soil description | Shallow stony loams | Brown loam gradational soils and reddish texture contrast soils | Brown loam gradational soils and reddish texture contrast soils |
| Present land use | Grazing, public land | Grazing | Grazing |
| Susceptibility to erosion | Sheet and rill erosion: High | Sheet and rill: Moderate | Sheet and rill: High |
| | Gully: Moderate | Gully: Moderate | Gully: Moderate |
| | Landslip: High | Landslip: Moderate | Landslip: Low |
| | Wind: High | Wind: Moderate | Wind: Moderate |
| Native vegetation | <i>Eucalyptus divers, E. macrarhyncha</i> | <i>E. divers, E. macrarhyncha, E. goniodorix</i> | <i>E. divers, E. macrarhyncha, E. radiata</i> |

Soil landform map unit:

HGa; Hills on Gneiss, Tallangatta /
Leneva / Bethanga
Moderate slopes

Component:

2



Geoscience + Planning



| Soils | General description | ASC | PPF |
|-------|---|---------------|---------|
| Major | Brown loam gradational soils and reddish texture contrast soils | Brown Kurosol | Dy.3.11 |

Physical characteristics:

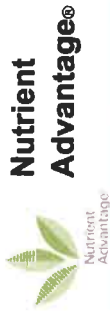
| Horizon | Depth (cm) | Representative profile description |
|--------------------------|------------|---|
| Site ID: Tallangatta 107 | | |
| A1 | 0-10 | Brown (10YR4/3) fine sandy loam; weak crumb structure; ped sizes 5-10 mm; weak consistence when dry; pH 5.5; abrupt transition to: |
| B21 | 10-50 | Yellowish brown (10YR5/4) light medium clay; strong angular blocky structure; ped sizes 2-5 mm; firm consistence when moderately moist; reddish brown mottles; pH 4.5; gradual transition to: |
| B22 | 50-80+ | Yellowish brown (10YR5/4) light medium clay; strong angular blocky structure; ped sizes 30-40 mm; firm consistence when moderately moist; reddish brown mottles; pH 4.5 |



Chemical characteristics:

| Horizon | pH | Sulmity (EC) | Internal drainage | Sodicity | Slaking | Dispersion |
|---------|---------------|--------------|--------------------|-----------|---------|------------|
| A1 | Strongly acid | Very low | Well | Non sodic | N/A | N/A |
| B21 | Strongly acid | Very low | Imperfect - poorly | Non sodic | N/A | N/A |
| B22 | Strongly acid | Very low | Imperfect - poorly | Non sodic | N/A | N/A |

Appendix E – Laboratory Soil Data



Nutrient Advantage Advice

Report Print Date: 01/08/2017
Agent/Dealer: NAA Cash Lab User
Advisor/Contact: NAA Cash Lab User
Phone: GEOPLAN
Purchase Order No: GEOPLAN

GEOPLAN
PO BOX 92
TAWONGA STH
VIC 3698

Nutrient Report

Report Print Date: 01/08/2017
Agent/Dealer: NAA Cash Lab User
Advisor/Contact: NAA Cash Lab User
Phone: GEOPLAN
Purchase Order No: GEOPLAN

GEOPLAN
PO BOX 92
TAWONGA STH
VIC 3698

Grower Name : GEOPLAN
Sample No: 030032973
Paddock Name: BETHANGA B
Sample Name: B1 HORIZON
Sample Depth (cm): 30 To 50

Nearest Town: TAWONGA
Test Code: E25
Sample Type: Soil
Sampling Date: 18/07/2017

| Analyte / Assay | Units | Value |
|------------------------------------|------------|-------|
| Soil Colour | Brown | |
| Soil Texture | Clay | |
| Emerson Class | 2 | |
| pH (1:5 Water) | 6.7 | |
| pH (1:5 CaCl2) | 5.5 | |
| Elect. Conductivity (EC) | dS/m | 0.04 |
| Electrical Conductivity (Sat. Ex.) | dS/m | 0.2 |
| Cation Exch. Cap. (CEC) | cmol(+)/kg | 11.1 |
| Calcium | cmol(+)/kg | 7.5 |
| Magnesium | cmol(+)/kg | 3.0 |
| Sodium | cmol(+)/kg | 0.10 |
| Potassium | cmol(+)/kg | 0.41 |
| Available Potassium | mg/kg | 160 |
| Aluminium | cmol(+)/kg | 0.1 |
| Aluminium % of Cations | % | 1.3 |
| Calcium % of Cations | % | 67.0 |
| Magnesium % of Cations | % | 27.0 |
| Sodium % of Cations (ESP) | % | 0.92 |
| Potassium % of Cations | % | 3.70 |
| Calcium/Magnesium Ratio | | 2.5 |

| Analyte / Assay | Units | Value |
|------------------------------------|------------|-------|
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| Soil Texture | Clay | |
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Nutrient Advantage Advice

Report Print Date: 01/08/2017
Agent/Dealer: NAA Cash Lab User
Advisor/Contact: NAA Cash Lab User
Phone: GEOPLAN
Purchase Order No: GEOPLAN

GEOPLAN
PO BOX 92
TAWONGA STH
VIC 3698

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| Calcium/Magnesium Ratio | | 2.5 |



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