

**Table 4-5: Soil Features - Risk Ratings for OWMS**

| Soil Feature  | Relevant System                             | Risk Rating      |                        |                               | Restrictive Feature   |
|---|---|------------------|------------------------|-------------------------------|---|
|   |   | Minor Limitation | Moderate Limitation    | Major Limitation <sup>1</sup> |   |
| Depth to bedrock or hardpan (m)   | Subsurface irrigation                       | >1.0             | 0.75 - 1.0             | <0.75                         | Possible waterlogging<br>Increased risk of runoff<br>May limit plant growth (trees)             |
|   | Surface irrigation                          | >1.0             | 0.6 - 1.0              | <0.6                          | Possible waterlogging<br>Increased risk of runoff<br>May limit plant growth (trees)             |
|   | Absorption system                           | >1.5             | 1.2 - 1.5              | <1.2                          | May restrict seepage<br>Resurfacing hazard<br>Groundwater pollution hazard                      |
| Depth to high episodic/ seasonal water table (as evidenced by mottling) (m) | Subsurface irrigation                       | >1.0             | 0.75 - 1.0             | <0.75                         | Resurfacing hazard<br>Groundwater pollution hazard  |
|   | Surface irrigation                          | >1.0             | 0.6 - 1.0              | <0.6                          | Resurfacing hazard<br>Groundwater pollution hazard  |
|   | Absorption system                           | >1.5             | 1.2 - 1.5 <sup>2</sup> | <1.2                          | May restrict seepage<br>Groundwater pollution hazard  |
| Soil Category <sup>3</sup>  | Subsurface irrigation<br>Surface irrigation | 2b, 3 and 4      | 1, 2a, 5 and 6         |                               | Excessive run-off,<br>waterlogging<br>Percolation   |
|   | LPED  | 2, 3 and 4       | 5                      | 1 and 6                       |   |
|   | Evapotranspiration<br>Absorption system     | 4 and 5          | 6 <sup>4</sup>         | 1, 2 and 3                    |   |
|   | Absorption system                           | 3 and 4          |                        | 1, 2, 5, and 6                |   |
| Coarse fragments (%)  | All EAA systems                             | <20              | 20 - 40                | >40                           | Preferential flow pathways through soil<br>May restrict plant growth<br>May impede installation |

| Soil Feature  | Relevant System  | Risk Rating                      |                     |                                  | Restrictive Feature   |
|---|--|----------------------------------|---------------------|----------------------------------|---|
|   |  | Minor Limitation                 | Moderate Limitation | Major Limitation <sup>1</sup>    |   |
| Bulk density (g/cm <sup>3</sup> )   | All EAA systems<br>Sandy loam<br>Clay loam<br>Clay                             | <1.8<br><1.6<br><1.4             |                     | >1.8<br>>1.6<br>>1.4             | Indicator of permeability<br>May restrict plant growth        |
| pH <sup>5</sup>   | All EAA systems  | >6.0                             | 4.5 - 6.0           | <4.5                             | May inhibit plant growth                                      |
| Electrical conductivity (EC) (dS/m)   | All EAA systems  | <4                               | 4-8                 | >8                               | Excessive salt may restrict plant growth                      |
| Sodicity (exchangeable sodium percentage) (ESP) <sup>5</sup>                    | Subsurface irrigation<br>Surface irrigation (0-0.4 m)                          | <5                               | 5-10                | >10                              | Potential for structural degradation                          |
|   | Absorption system (0-1.2m)   |                                  |                     |                                  |   |
| Cation exchange capacity (CEC) (cmol <sup>+</sup> /kg) (0-40cm) <sup>5, 6</sup> | Subsurface irrigation<br>Surface irrigation                                    | >15                              | 5-15                | <5                               | Indicator of soil fertility<br>Unable to hold plant nutrients |
| Phosphorus sorption (kg/ha)   | All EAA systems (0-100cm for irrigation) (100cm below intended base of trench) | >6,000 (approximately 375 mg/kg) | 2,000-6,000         | <2,000 (approximately 125 mg/kg) | Unable to immobilise any excess P                             |
| Modified Emerson Aggregate Test (dispersion class) <sup>5</sup>                 | All EAA systems  | Class 3, 7, 8                    | Class 2             | Class 1                          | Potential for structural degradation                          |

**NOTES:**

1. Sites with major limitations are generally **not** suitable for land application of effluent. Risk reduction measures must be applied to reduce to minor limitation.
2. Presence of soil water might indicate soil conditions that facilitate movement of nutrients and other contaminants into the groundwater.
3. See Table 4-7 for soil category information.
4. ETA systems are only suitable for use with a minimum of secondary treated effluent in category 6 soils.
5. May require soil amelioration where a moderate or major limitation is identified (see Figure 6-4).
6. Soil is likely to become more sodic with effluent application.