

Specification for Land Management Construction



- (b) Use existing *Access Track* infrastructure wherever possible. Contact the *Energy Queensland Officer* if there are good reasons to deviate from the existing *Access Track* route. Obtain approval in writing from the *Energy Queensland Officer* before any deviation works precede.
- (c) Undertake restoration work on any bypassed section of existing *Access Track* infrastructure to ensure it is left in an environmentally acceptable condition. The *Energy Queensland Officer* is to determine the scope and extent of restoration work required to bypassed section of existing *Access Track* infrastructure.

8.5 Maintenance of Existing Access Track Pavement

- (a) During the maintenance of existing *Access Track Pavement*, all reinstatement and modification construction works are to be in accordance with the design and construction criteria and parameters for new *Access Track Pavement* construction included in Section 6 - Construction of *Access Track Infrastructure - All Weather and / or up to 30 Tonnes Load*, of this *WCS1.5*.
- (b) The maintenance construction works are to be conducted in accordance with the specified requirements for:
 - (i) All Weather and / or Heavy Vehicle Loads *Access Track Infrastructure* – Technical Specification in Section 6 of this Specification, (subsection 6.3).
 - (ii) [Figure E-9](#) – *Access Track Infrastructure* – General Notes and Typical Arrangement.
 - (iii) [Figure E-11](#) – *Access Track Infrastructure* – All Weather and / or Heavy Vehicle Loads – *Access Track Pavement Types*.
 - (iv) [Figure E-12](#) – *Access Track Infrastructure* – *Minor Creek Crossing* – Rock Spall Water Course Crossing.

8.6 Maintenance of Existing Watercourse Crossings Infrastructure

- (a) Maintenance Environmental Management Plan that contains details of all works associated with a *Watercourse* crossing is to be established and available at the *Worksite* prior to commencement of any maintenance works.
- (b) Ensure the necessary measures are in place to control *sediment* and *Erosion* on and off the *Worksite* during all stages of the maintenance works.
- (c) During the maintenance of existing *Watercourse* crossings infrastructure (for example, *Minor Creek Crossings*), all reinstatement and modification construction works are to be in accordance with the design and construction criteria and parameters for new *Watercourse* crossings infrastructure construction included at Section 6 of this Specification, subsection 6.3.4 - *Watercourse Crossings For All Weather and / or Heavy Vehicle Loads Access Track Infrastructure*, of this *WCS1.5*.
- (d) The maintenance construction works are to be conducted in accordance with the specified requirements for:
 - (i) *Watercourse* crossings (Section 5, subsection 5.8).
 - (ii) *Minor Creek Crossing* - technical specification (Section 5, subsection 5.9).
- (e) Prior to commencement of any maintenance works at *Watercourse* crossings, ensure water flows or levels have not been adversely impacted by:
 - (i) Fallen trees.
 - (ii) Vehicular traffic and equipment damage.
 - (iii) Blockages from soil or other materials.

If there has, remove the obstructions to allow clear water flows at the same levels as that of initial construction.
- (f) Works will not impact on the water flows or levels.
- (g) Inspect the *Watercourse* crossing's rock spall *Pavement* that is boxed into the *Watercourse* bed for:
 - (i) Sediment accumulation.
 - (ii) *Erosion* from flood damage.

Specification for Land Management Construction



- (iii) Deterioration that threaten to cause failure.
- (iv) Damage from vehicular traffic.

Remove *sediment* so that clear water flows are not reduced and investigate the source of the *sediment* for *Erosion*; and repair any places in the rock spall *Pavement* that have deteriorated or that have been subjected to any damage.

- (h) Check for *Erosion* and undermining of control devices, rock spall surfaces and *Slopes*; determine if further controls are required to be installed during this maintenance phase.

8.7 Maintenance of Drainage and Erosion and Sediment Controls

While maintaining *Access Track* infrastructure, manage *sediment* and *Erosion* control issues at the *Site* in accordance with subsection 7.2 - Maintenance of Drainage and *Erosion* and Sediment Control.

8.8 Maintenance of Existing Access Track Drainage

- (a) During the maintenance of existing *Access Track* infrastructure, all reinstatement, modification to and relocation of drainage is to be in accordance with the design and construction criteria and parameters for new drainage construction included at Section 12 – Land *Stabilisation*, of this WCS1.5.
- (b) The maintenance construction works are to be conducted in accordance with the specified requirements for:
 - (i) *Access Track* drainage (subsection 5.7).
 - (ii) Maintenance of Drainage Control (subsection 12.2).
 - (iii) Removal of Drainage Controls (subsection 12.3).

8.8.1 Maintenance of Drainage Control Structures

- (a) Inspect the drainage system(s); for accumulated *sediment*, falling *Vegetation* / trees, and soil and / or other materials in the drainage, remove all these material from drainage system(s) to allow clear drainage (water flow) in accordance with Section 12 – Land *Stabilisation*, Subsection 12.2 - Maintenance of Drainage Control.
- (b) Repair any sections in the drainage system(s) that have deteriorated or that have been subjected to damage in accordance with Section 12 Land *Stabilisation*, Subsection 12.2 - Maintenance of Drainage Control.

8.8.2 Removal of Drainage Controls

- (a) There is generally no need to remove existing drainage controls during this maintenance phase if they are constructed from naturally occurring materials at the *Site*. As long as the drainage controls are maintained and the existing drainage system is adequate, they can stay in place permanently.
- (b) Where removal of existing drainage controls are required (for example on *Sites* that are already stable), remove the existing drainage controls in accordance with Section 12 – Land *Stabilisation*, subsection 12.3 - Removal of Drainage Controls.

8.9 Maintenance of Existing Erosion Control Infrastructure

8.9.1 Maintenance of Existing Erosion Control Structures

Maintain *Whoa-boys* or other *Erosion* control infrastructure in accordance with the following maintenance instruction:

- (a) Inspect *Whoa-boys* or other *Erosion* control infrastructure for damage after weather events resulting in *Rainfall Run-off*.
- (b) Check for environmental impact on land surface surrounding drainage outlets to prevent impact of *Rainfall Run-off* from *Access Track Pavement* and easements.

Specification for Land Management Construction



- (c) Immediately correct all damage to *Whoa-boys* or other *Erosion* control infrastructure in accordance with Section 12 – Land *Stabilisation*, subsection 12.4.1.7 – Maintenance of *Whoa-boys*.

8.9.2 Construction of Additional Erosion Control Structures During Maintenance Phase

During the maintenance of existing *Whoa-boys* or other *Erosion* control infrastructure, all modification to, relocation and new construction of *Whoa-boys* or other *Erosion* control infrastructure is to be in accordance with the installation criteria and parameters for new *Whoa-boys* included at subsection 12.4.1.1 – Installation of *Whoa-boys* of this WCS1.5.

8.9.3 Removal of Whoa-boys or Other Erosion Control Structures During Maintenance Phase

Where removal of existing *Whoa-boys* or other *Erosion* control structures are required (for example on *Sites* that are already stable), undertake these removals in accordance with subsection 12.4.1.8 -Removal of *Whoa-boys*, of this WCS1.5.

8.9.4 Fibre Matting

8.9.4.1 Maintenance of Fibre Matting

Where maintenance of fibre matting is required (for example on *Slopes* that are already stable), undertake the maintenance in accordance with subsection 12.4.2.2 - Maintenance of Fibre Matting, of this WCS1.5.

8.9.4.2 Removal of Fibre Matting

Where removal of fibre matting is required, undertake these removals in accordance with subsection 12.4.2.3 - Removal of Fibre Matting, of this WCS1.5.

8.10 Maintenance of Existing Sediment Controls

8.10.1 Construction of Additional Sediment Controls During Maintenance Phase

- (a) During the maintenance of existing *sediment* control infrastructure, when modification to, or construction of new *sediment* control infrastructure is under active consideration, the *Service Provider* is to consider alternative *sediment* control measures that may be more practical and / or effective for construction in accordance with Section 12, Subsection 12.5 - Sediment Control Methods, of this WCS1.5.
- (b) During the maintenance of existing *sediment* control infrastructure, all modification to, relocation of, and new construction of *sediment* controls or other land *Stabilisation* infrastructure is to be in accordance with the installation criteria and parameters for new *sediment* controls or other land *Stabilisation* infrastructure included at Section 12, Subsection 12.5 – Sediment Control Methods, of this WCS1.5.

8.10.2 Maintenance of Sediment Controls

For the maintenance of sediment control infrastructure is to be conducted in accordance with Section 12 – Land *Stabilisation*, Subsection 12.6.1.3 - Maintenance of Sediment Fences, of this WCS1.5.

8.10.3 Removal of Sediment Controls

- (a) When *Disrupted* ground surface areas up-*Slope* of the *sediment* control system is sufficiently *Stabilised* to restrain *Erosion*, the *sediment* control infrastructure and any outlets are to be removed in accordance with Section 12 – Land *Stabilisation*, Subsection 12.6.1.4 - Removal of Sediment Fences.
- (b) Where ground surface areas have *Stabilised*, including the *sediment* build up at the *sediment* control barrier, there may be more value in leaving the *sediment* control infrastructure and any outlets where

Specification for Land Management Construction



they are. Removing the *sediment* control infrastructure at this stage will usually lead to the ground surface area becoming susceptible to *Erosion* once again.

8.11 Summary of Available Stabilisation Techniques

During the maintenance of existing *Access Track* infrastructure and the associated land *Stabilisation* infrastructure, when modification to, or construction of new land *Stabilisation* infrastructure is under active consideration, the *Service Provider* is to refer to the summary of available *Stabilisation* techniques Section 12.9 – Land *Stabilisation*, Table H5 - Summary of Available *Stabilisation* Techniques, to determine the more practical and / or effective land *Stabilisation* construction for the ground surface and environmental conditions at the *Site*.

8.12 Access Track Pavement Reformation

Access Track Pavement reformation is required to be undertaken for the following conditions at *Site*:

- (a) Drainage control, especially in areas where any wheel rutting or compaction is likely to intercept, concentrate and channel water.
- (b) Where the topography of the *Access Track* location or the drainage characteristics of the soil are likely to hinder *Access* for a protracted time period following rain, for example one to two weeks.
- (c) Where the natural side-*Slope* would pose a safety hazard to potential users of the *Access Track*, for example *Patrol Officers*, *Service Providers* / *Subcontractors*, *Landowners* / *Occupiers* and *Energy Queensland* personnel.
- (d) Where *Patch Gravelling* / *rocking* would be required. Often *Access Track Pavement* reformation can reduce or eliminate the need for *Patch Gravelling* / *rocking*. Where *Patch Gravelling* / *rocking* is still considered to be warranted, the reformation process can remove undesirable material and / or box the imported material where it is required.

8.13 Access Track Pavement Resurfacing

8.13.1 Slashing

Consider slashing as the preferred maintenance option for the *Access Track Pavement* if no *Erosion* or drainage problems are evident.

A well grassed running surface is considered ideal for *Energy Queensland's* purposes.

8.13.2 Blading

- (a) Where appropriate and approved, use blading to maintain existing formed *Access Track Pavement* at locations requiring reinstatement of the *Access Track Pavement* formation.
- (b) These situations requiring blading may be and are not limited to repair of potential environmental damage, for example drainage restriction and wheel ruts, or to remove potential hazards, for example fallen limbs and stakes.

8.13.3 Patch Gravelling / Rocking

- (a) Only use *Patch Gravelling* / *rocking* when required to ensure traction, avoid rutting, or to maintain effective drainage.
- (b) *Patch Gravelling* / *rocking* is not to be undertaken without the approval of the *Energy Queensland Officer* and the *Landowners* / *Occupiers*.



Specification for Land Management Construction

9 Construction and Maintenance Standard – Access Track Infrastructure - General Construction and Maintenance Details and Typical Arrangements

9.1 Formation Profiles and Specifications

9.1.1 Crowned Surface Formation

9.1.1.1 Crowned Surface Formation Cross Section

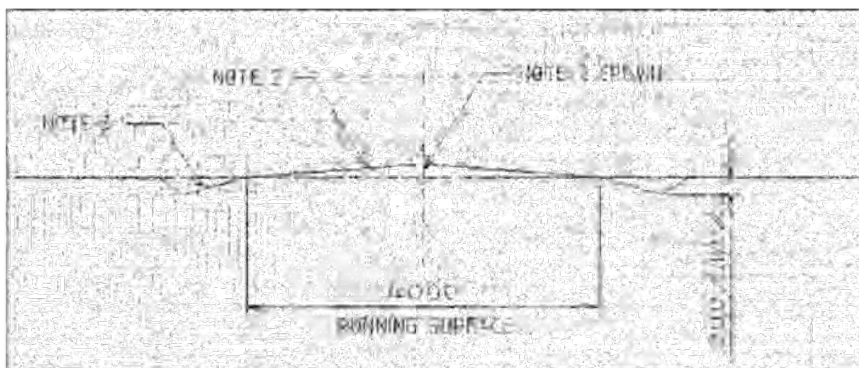


Figure E-1 – Crowned Surface Formation Cross Section

Note 1: Normally 0.1 metre above natural surface after consolidation, for example \approx 0.15 metre unconsolidated.

Note 2: Nominal design cross fall of 5% after consolidation, for example \approx 7% unconsolidated.

Note 3: Nominal shoulder *Batter* of 1:5.

9.1.1.2 Crowned Surface Formation Specification

- (a) Is suitable for *Access Track Pavements* where water can be shed from both sides of the formation.
- (b) May be used in other situations in conjunction with suitable crossroad drainage techniques across *Access Track Pavement* (refer to Section E4).
- (c) May require down road drainage along *Access Track Pavement* (refer to Section E5).

9.1.2 Crowned Side Cut Formation

9.1.2.1 Crowned Side Cut Formation Cross Section

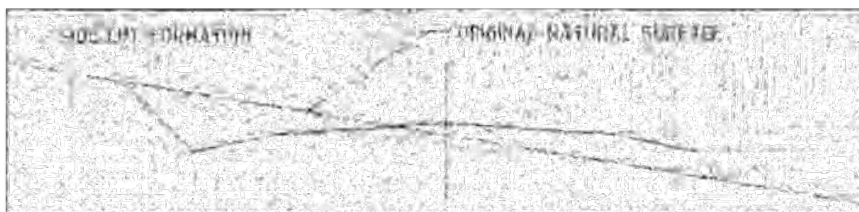


Figure E-2 – Crowned Side Cut Formation Cross Section

Notes and dimensions are specified in Section E1.1.1



Specification for Land Management Construction

9.1.2.2 Crowned Side Cut Formation Specification

- (a) Suitable for smaller lengths of side cut where water can be shed from the confined water table further down the *Access Track Pavement*, for example at ridge top saddle.
- (b) May be used in limited situations for longer runs if used in conjunction with acceptable cross drainage techniques across *Access Track Pavement* (refer to Section E4).

9.1.3 Out-slope Formation

9.1.3.1 Out-slope Formation Cross Section

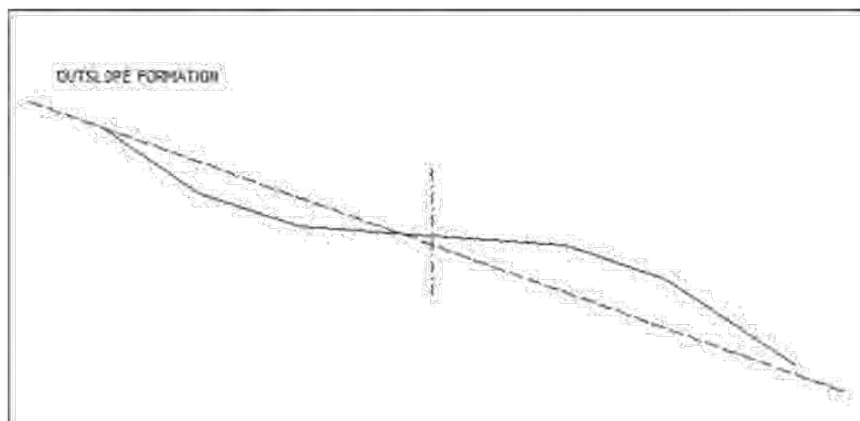


Figure E-3 – Out-slope Formation Cross Section

Note 1: Normally 0.1 metre above natural surface after consolidation, for example \approx 0.15 metre unconsolidated.

Note 2: Nominal design cross fall of 5% after consolidation, for example \approx 7% unconsolidated.

Note 3: Nominal shoulder *Batter* of 1:5 (20%).

9.1.3.2 Out-slope Formation Specification

- (a) Suitable for longer lengths of side cut where water cannot be shed from the confined shoulder of the *Access Track Pavement* except across the running surface of the *Access Track Pavement*.
- (b) This design profile should be used in conjunction with approved cross drainage techniques (refer to Section E4).

9.2 Clearing and Track Width

- (a) The normal formation width is \approx 6.6 metre (including *Batters*, table-drains and running surface of the *Access Track Pavement*).
- (b) Clearing extends 1 metre either side of the *Access track* formation width.
- (c) On steep topography, especially in areas of long lengths of side cut, hand felling is the required method of clearing outside the *Access track* formation widths.
- (d) Clearing may be extended to remove unsafe or unsound trees.
- (e) Long *Batter* lengths will require limited additional *Access track* formation and clearing widths.

9.3 Drainage of Access Tracks

9.3.1 Berms

- (a) Berms are rills of excess or unsuitable roading material windrowed on to the side of the worked area.



Specification for Land Management Construction

- (b) Any berm is discontinuous. Open breaks at intervals of less than 20 metres.
- (c) Extend any drainage through the berm.
- (d) Place berms on the uphill side of workings, especially in locations suitable for outflow *Access* track formation (refer to Section E1). Where possible berms should be incorporated into the *Access* track shoulder.

9.3.2 Spacing

- (a) Intercept and disperse water flow from table drains at safe locations and at least every 3 metres of vertical fall of the *Access* track *Pavement* centre line.
- (b) It is acknowledged that soil type, *Slope* and climatic zones may vary the ideal from this specification. This specification is to be used as a minimum requirement, any variation to this Specification to be authorised in writing by the *Energy Queensland Officer*.

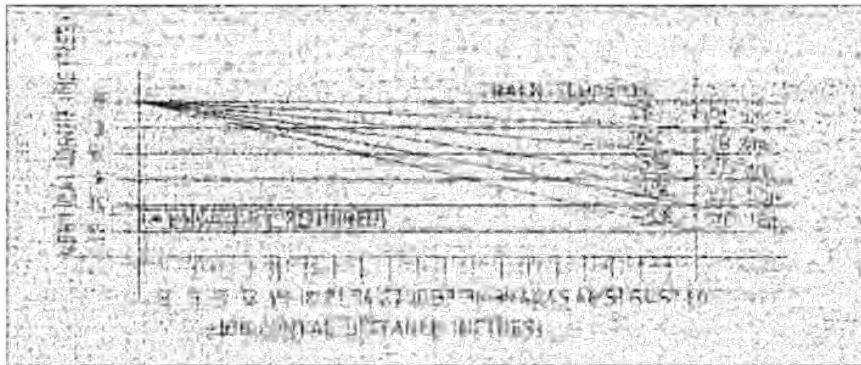


Figure E-4 – Cross Flow Whoa Boy Requirements

- (i) Calculating *Slope*:

$$Slope\% = \frac{\text{Vertical Drop (m)}}{\text{Horizontal Distance (m)}} \times 100$$

Example: $\frac{1.5 \text{ m}}{15 \text{ m}} \times 100 = 10\% \text{ Slope}$

- (ii) Calculating Maximum Horizontal Spacing:

$$\text{Maximum Horizontal Spacing (m)} = \frac{\text{Maximum Allowable Vertical Drop (m)}}{\text{Actual Slope\%}} \times 100$$

Example: Maximum Allowable Vertical Drop = 3 m
Actual Slope = 10%



Specification for Land Management Construction

So:

$$\text{Maximum Horizontal Spacing (m)} = \frac{3}{10} \times \frac{100}{1} = 30 \text{ m}$$

9.3.3 Turnouts (also called Side or Spur Drains)

Turnouts are generally:

- (a) Should be as shorter length as possible.
- (b) Should be terminated in as wide (level) a discharge as is practical.
- (c) Should run at approximate 1.5% grade (the lead out of the table drain may exceed this limit and is not to be more than 1.5 metre in length).
- (d) Requires an effective table drain stop.
- (e) Should extend as far as is required to prevent discharged water from flowing back to the Access track formation further down the Slope (refer to diversion drains Section E3.4).
- (f) Only discharges onto stable land surface areas of undisrupted Vegetation and not onto fill Slopes, exposed soils or directly into a Watercourse.

9.3.4 Diversion Drains

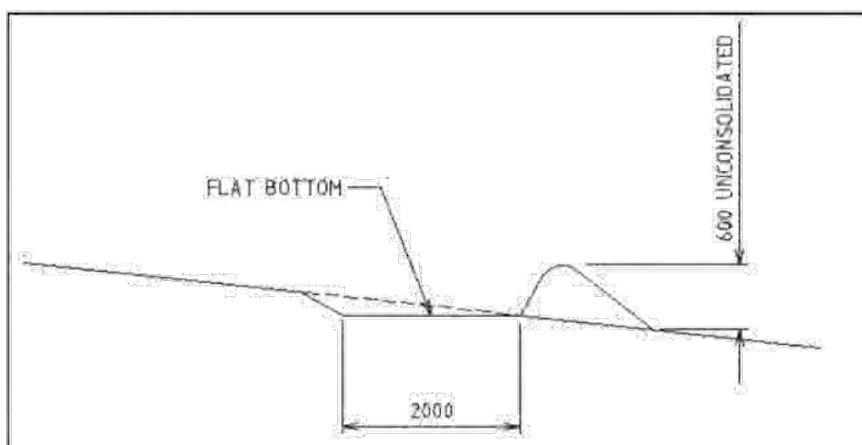


Figure E-5 – Diversion Drains

- (a) All Batters are less than 1:1.5 ratio.
- (b) Slope of the diversion drain is 0.5% to 1.5%.
- (c) These structures may need to be constructed to:
 - (i) Intercept a major concentration of overland water flow.
 - (ii) Prevent Access track discharge water from flowing back onto the Access track formation.
- (d) Diversion drains should:
 - (i) Be constructed with a grader.
 - (ii) Be flat bottomed ≈ 2 metre wide.
 - (iii) Capture no more than 2 hectares of catchments.
 - (iv) Run at 1.0% ± 0.5%.
 - (v) Discharge onto stable land surface areas of undisrupted Vegetation and not onto fill, Slopes, exposed soils, or directly into a Watercourse.

Specification for Land Management Construction



- (vi) Be surveyed prior to construction.
- (vii) May need to be seeded with approved and appropriate grass species, for example and not limited to jap millet, oats, couch, and natives as specified by the *Energy Queensland Officer*.
- (viii) Have *Batters* of less than 1:1.5 ratio.
- (ix) Have an unconsolidated mound height of 600 mm.

9.4 Access Track Cross Road Draining Techniques

9.4.1 Culverts

- (a) A culvert is defined as any RCP pipe, box or arch construction used for *Access track crossroad drainage* that is covered and below the surface of the *Access track Pavement*. Additional culverts are only to be installed at the express and written instructions of the *Energy Queensland Officer*.
- (b) Preserve existing culverts and leave culvert heads in a clean and functional condition.
- (c) If existing culverts are damaged during maintenance, photograph, and record in writing the location and extent of damage and relay this information to the *Energy Queensland Officer* within twenty-four hours of occurrence.
- (d) New RCP pipe crossing construction and subsequent maintenance is to be undertaken in accordance with [Figure E-13](#) – *Access Track Infrastructure – Watercourse – RCP Pipe Crossing*

9.4.2 Inverts

Inverts are man-made or naturally occurring open topped depressions in the surface of the *Access track Pavement* which allow for concentrated *Access track crossroad drainage*.

9.4.3 Cross Flow Whoa-Boys

These structures are used to invert water across the *Access track Pavement*.

9.4.3.1 Locating Cross Flow Whoa-Boys

- (a) Placement of cross flow *Whoa-boys* requires care and planning. Construct cross flow *Whoa-boys* at critical points where there is:
 - (i) Significant change of grade.
 - (ii) Significant change of road direction.
 - (iii) Significant point of overland flow concentration.
 - (iv) Safe stable discharge point.
- (b) After these key points are located, additional cross flow *Whoa-boys* will need to be constructed so as to remain within the minimum specification of 3 metre of vertical fall (refer to the spacing of *Access track drainage Section E3.2*).



Specification for Land Management Construction

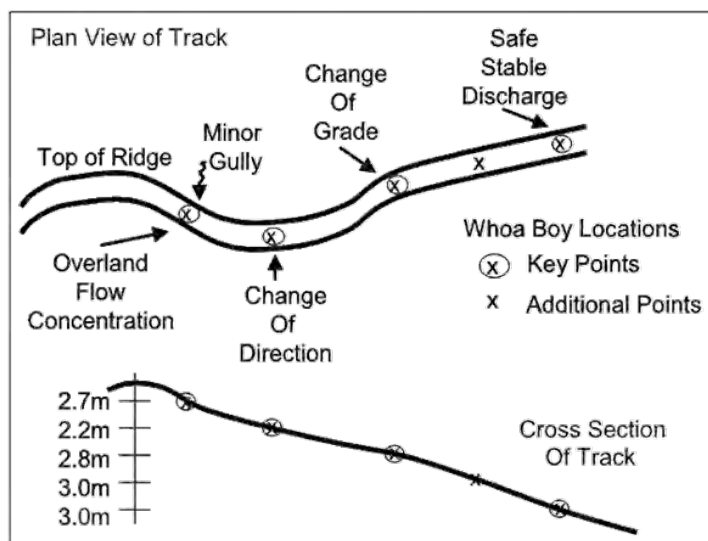


Figure E-6 – Location of Cross Flow Whoa-Boys – Indicative Construction Diagram

9.4.3.2 Dimensions of Cross Flow Whoa-Boys

- (a) Whoa-boys are easily trafficable and drain water across the Access track Pavement without scouring, ponding, or overtopping.
- (b) They will be approximately 600 mm high (unconsolidated) and be Battered for a minimum of 2 metre on both top and bottom sides of the mound.
- (c) As the longitudinal Slope (grade) increases so too does the risk of overtopping. A corresponding degree of care with construction is warranted to preclude any risk of the structure failing.

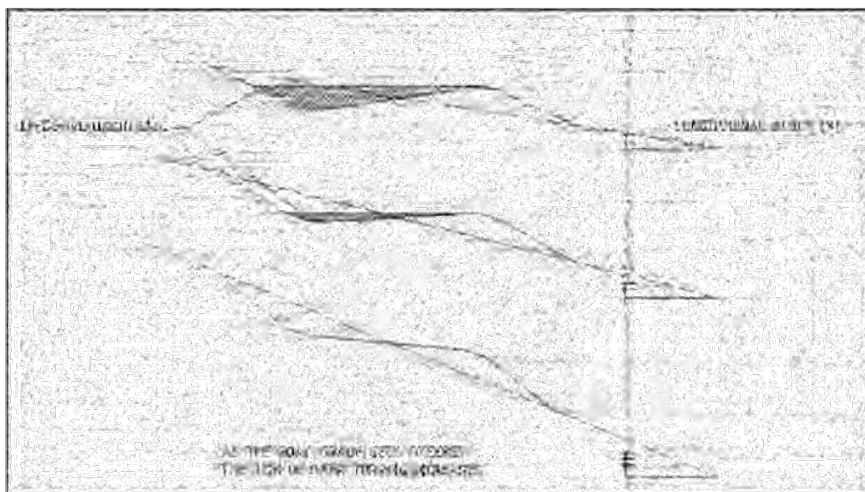


Figure E-7 – Cross Flow Whoa Boys – Cross Sections

- (d) Generally:
 - (i) For Slopes < 5%, source materials from the lower side of the mound.
 - (ii) For Slopes 5% to 10%, source materials from both sides of the mound.
 - (iii) For Slopes > 10%, source all material from above the mound.

Specification for Land Management Construction



- (e) In some very steep situations additional material will be required. Gravel needs to be sourced externally and imported to the required Whoa Boy location.

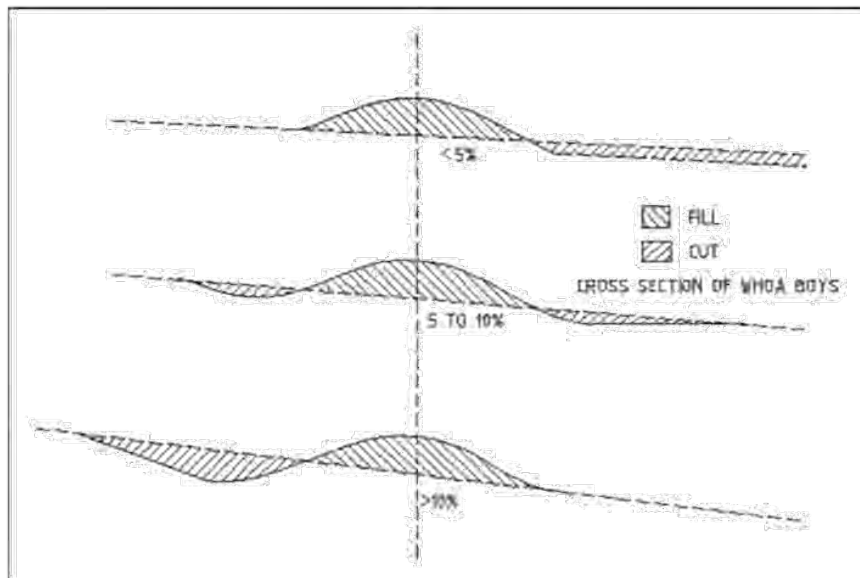


Figure E-7 – Whoa Boy Mound – Cross Sections

9.5 Access Track Down Road Drainage

- (a) These techniques specifically relate to dispersal of water confined or concentrated on the running surface of the *Access track Pavement*, for example in wheel ruts or compacted zones.
- (b) Water is to be dispersed using:
- (i) Cross fall on running surface of the *Access track Pavement*.
 - (ii) *Whoa-boys*.
 - (iii) Combination of (i) and (ii).

9.5.1 Down Road Drainage on Formed Access Tracks

- (a) Normally the cross-fall on the running surface of the *Access track Pavement* will suffice. Exceptions occur where the *Access track* formation is:
- (i) On very steep *slopes* where the longitudinal *Slope* is far greater than the cross fall on the *Access track* formation and even minor ruts may channel the water and frustrate water shedding from the running surface of the *Access track Pavement*.
 - (ii) In locations with highly erodible soil types.
- (b) Incorporate additional protective techniques in these situations. The techniques include *Access track* crossroad drainage structures if applicable, or if not applicable, install minor *Whoa-boys*.

9.5.2 Down Road Drainage on Unformed Access Tracks

- (a) If the *Access track* intercepts and concentrates overland flows of water, then construct normal cross flow *Whoa-boys*. In these situations, it is imperative that the structure discharge extends a sufficient distance to preclude any chance of this water migrating back to the *Access track Pavement*.
- (b) If overland flow is not a problem, then minor *Whoa-boys* will be acceptable.

Specification for Land Management Construction



9.6 Whoa Boys

9.6.1 Locating Whoa-Boys

- (a) Placement of *Whoa-boys* requires care and planning. Construct minor *Whoa-boys* at a critical point where there is:
 - (i) Significant change of grade.
 - (ii) Significant change of road direction.
 - (iii) Safe and stable discharge point.
- (b) After these key points are located, additional *Whoa-boys* will need to be constructed so as to intercept the potential flow every 6 metre of vertical fall.
- (c) These structures are free draining. Discharges extend a sufficient distance to preclude any chance of this water migrating back to the *Access track Pavement*.

9.6.2 Dimensions of Whoa-Boys

Minor *Whoa-boys* are easily trafficable and drain water off the running surface of the *Access track Pavement* without scouring, ponding, or overtopping.

- (a) They will be approximately between 450 mm and 600 mm high (unconsolidated) and be *Battered* for a minimum of 2 metre on both top and bottom sides of the mound.
- (b) As the longitudinal *Slope (grade)* increases so too does the risk of overtopping. A corresponding degree of care with construction is warranted to preclude any risk of the structure failing.
- (c) Generally:
 - (i) For *slopes* < 5%, source materials from the lower side of the mound.
 - (i) For *slopes* 5% to 10%, source materials from both sides of the mound.
 - (ii) For *slopes* > 10%, source all material from above the mound.
- (d) In some very steep situations additional material will be required. Gravel needs to be sourced externally and imported to the required *Whoa-boy* location. (Refer to Section E6.1 for indicative construction diagrams.)

Specification for Land Management Construction

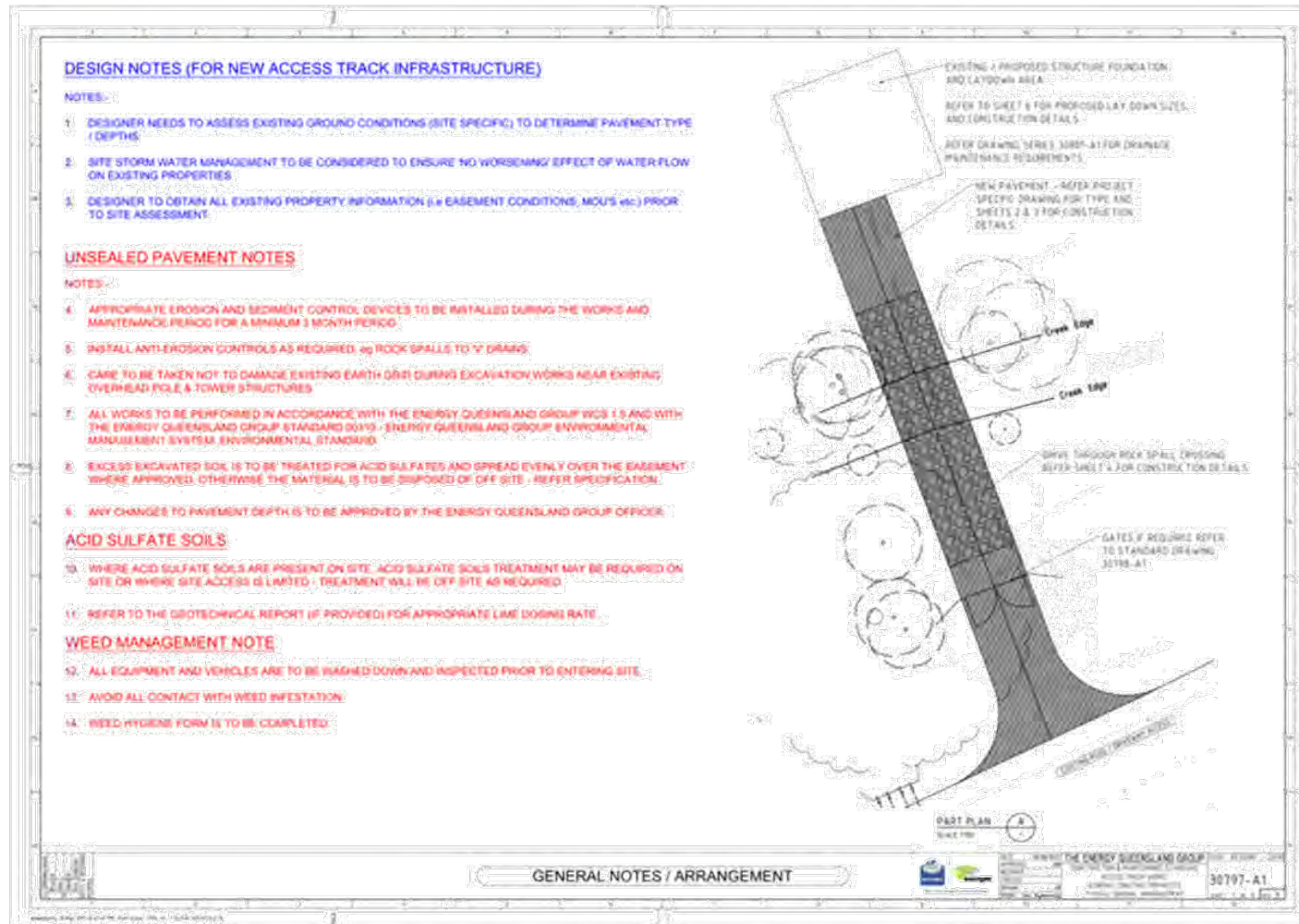


Figure E-9 – Access Track Infrastructure – General Notes and Typical Arrangement.

Specification for Land Management Construction

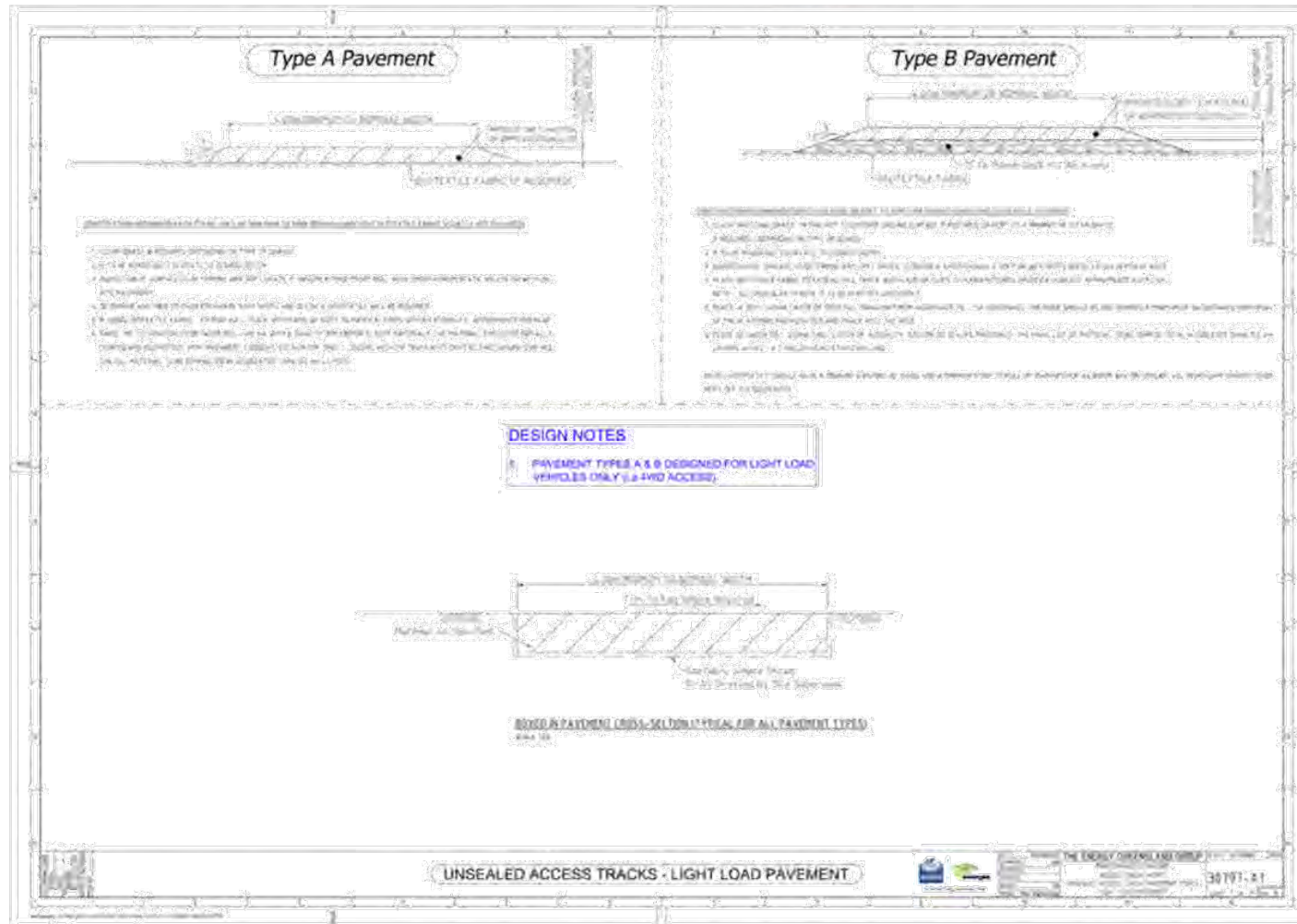


Figure E-10 – Access Track Infrastructure – Light Vehicle Loads – Access Track Pavement Types.

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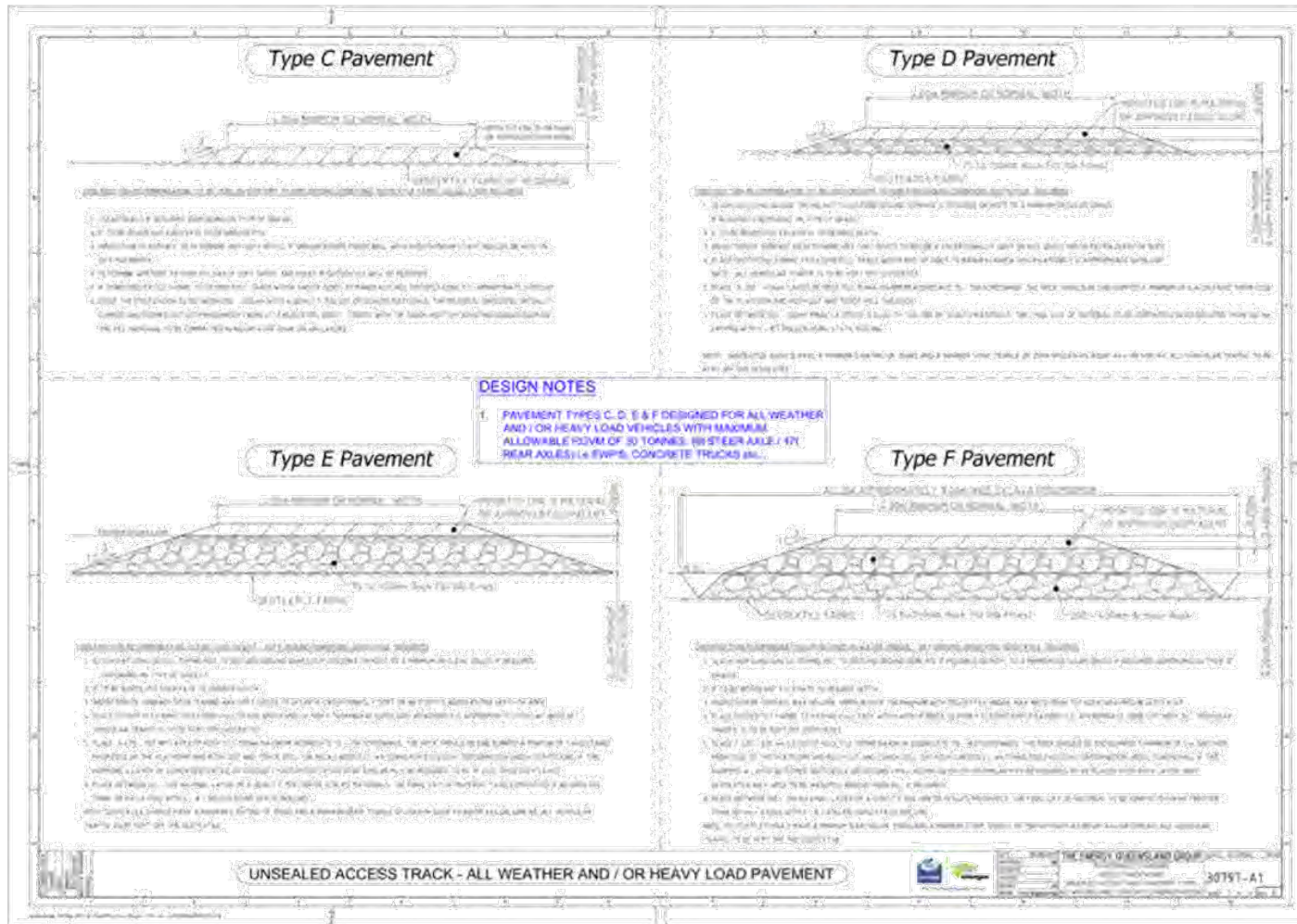


Figure E-11 – Access Track Infrastructure – All Weather And / Or Heavy Vehicle Loads – Access Track Pavement Types.

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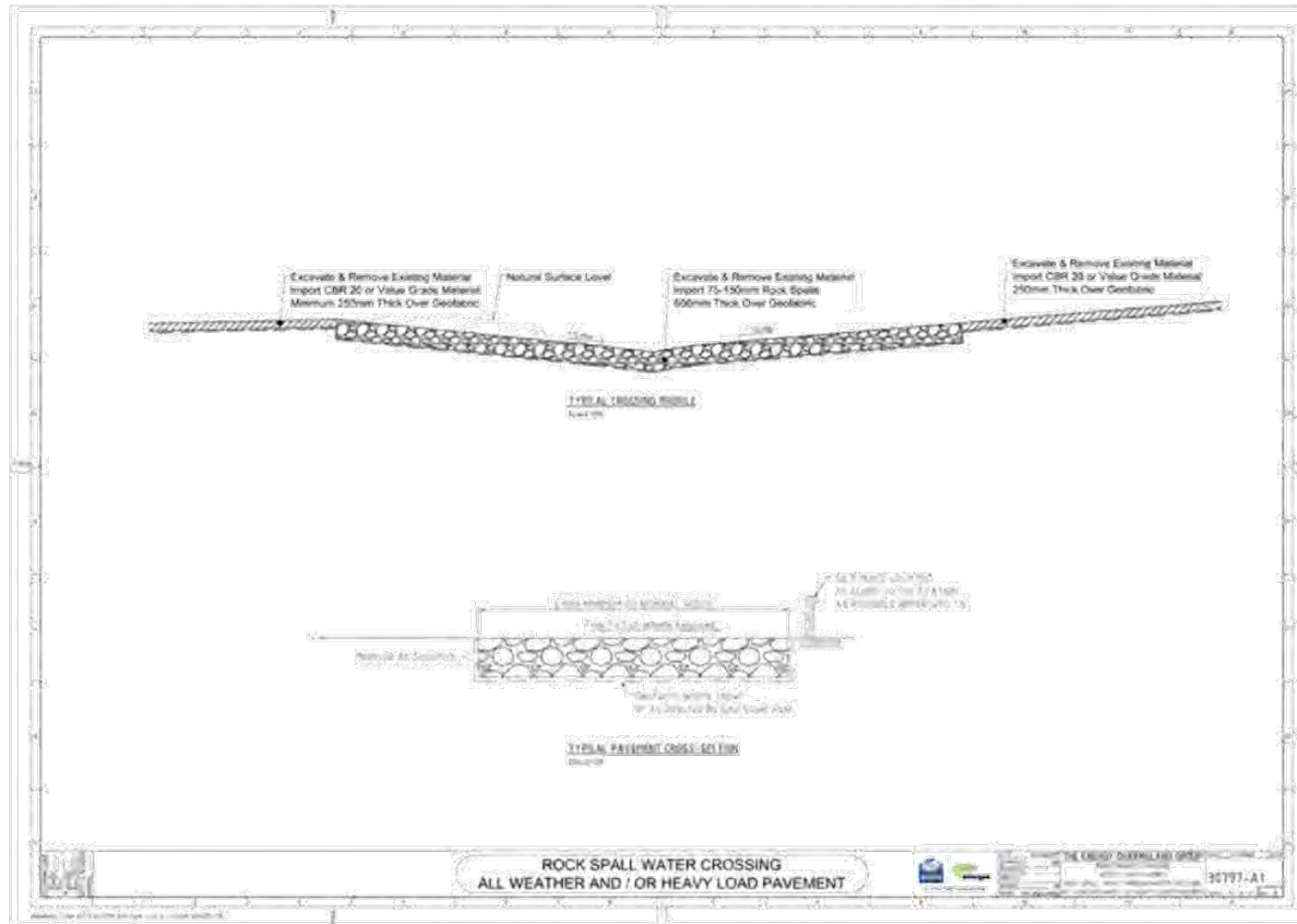


Figure E-12 – Access Track Infrastructure – Minor Creek Crossing – Rock Spall Water Course Crossing

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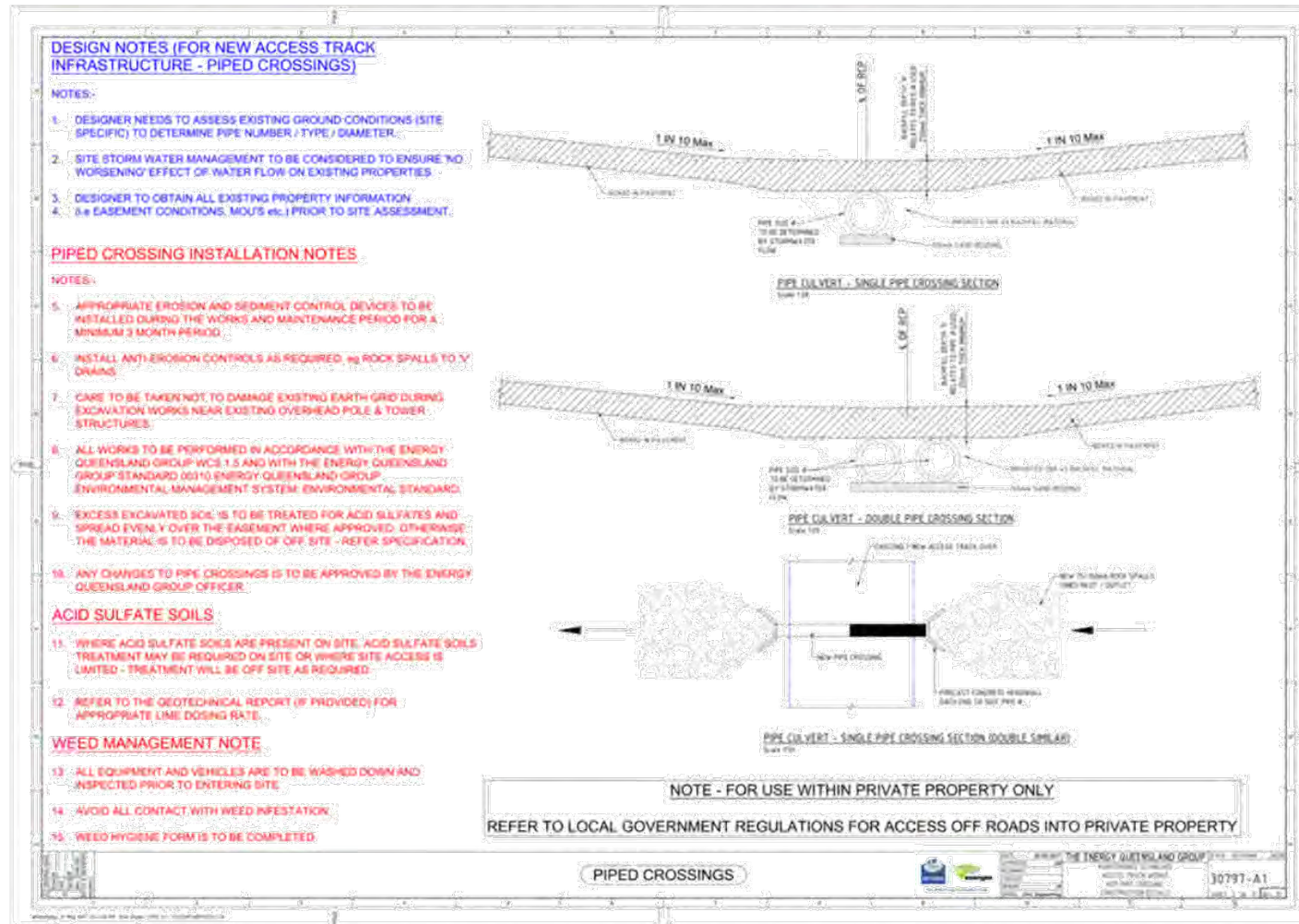


Figure E-13 – Access Track Infrastructure – Watercourse – RCP Pipe Crossing

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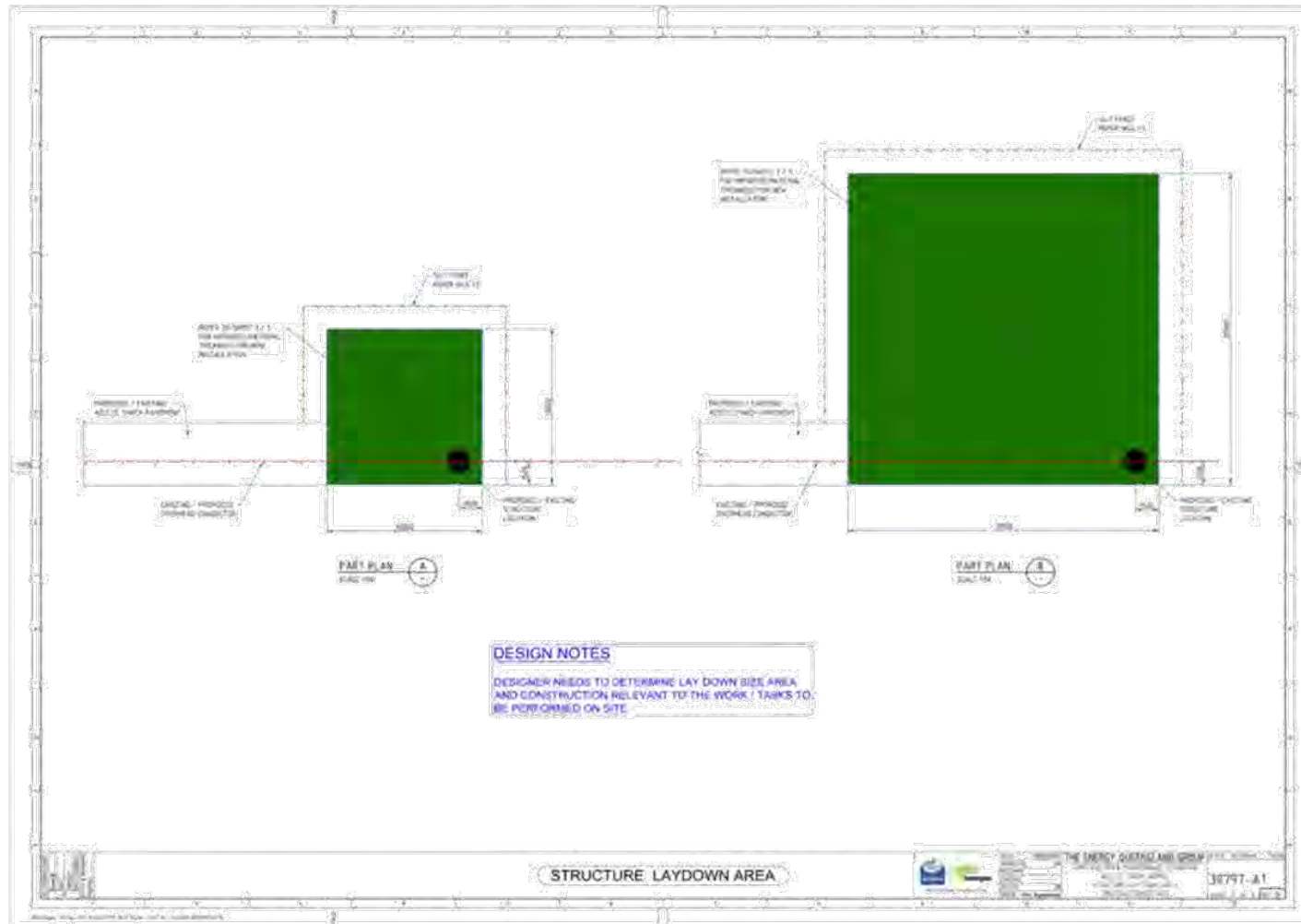


Figure E-14 – Access Track Infrastructure – Structure Laydown Area - Details

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Specification for Land Management Construction



10 Construction and Maintenance of Access Gates and Fencing Locking Rails

10.1 Access Gates and Locking Rails

- (a) Undertake the construction / installation of new gate and / or locking rail assemblies where gate Access is required through a fence line that impedes continuous or lateral Access to electricity distribution and transmission network infrastructure.
- (b) Install Access gates and locking rails of a size and style nominated on either the *Construction Plan n/Drawing* or along the route the power line is to follow.
- (c) Where *Energy Queensland* is directly supplying the gates, posts, and assembly components, they will be supplied to an agreed location. The delivery to the *Worksite* is to be agreed beforehand by the *Energy Queensland Officer* and the *Service Provider*.
- (d) Installation / construction includes:
 - (i) The cutting of the existing fence.
 - (ii) Removal of existing posts where necessary.
 - (iii) The construction of the gate(s) or locking rail.
 - (iv) The piecing, re-tensioning, and retying including repair of the existing fencing, if necessary.
 - (v) Restoring the fence to as good as or better condition that existed prior to the construction of the gate(s) or locking rail(s).

Replacement is to occur where the function of an existing gate or locking rail is impaired by major damage or deterioration to the majority of the gate's or locking rail's components or the clear opening for Access is to be altered.

- (e) The construction / installation of new gate and / or locking rail assemblies and the maintenance of existing gate and / or locking rail assemblies is to be performed only with the approval of the *Energy Queensland Officer*.

10.1.1 Uninterrupted Construction and Maintenance of Access Gates and Locking Rails and Safe Performance of Works In Remote Locations

At each *Worksite* (particularly in remote and / or isolated regional areas), to ensure uninterrupted construction and maintenance of Access gates and locking rails and safe performance of works the *Service Provider* is to:

- (a) Provide all plant, equipment, materials for the nominated Access gate(s) or locking rail(s) design necessary for the safe performance of the work to specified construction and / or maintenance standards.
- (b) Provide a competent and suitably experienced plant *Operator* for the relevant plant at the *Worksite*.
- (c) Provide competent *Operators* to perform the works and *Worksite Supervisor* (as required) for the supervision of the works.
- (d) Provide all the necessary support for the *Operator(s)* and maintenance for plant and equipment.
- (e) Accept all liability for any damage that may occur to all supplied materials and equipment during the period of construction and maintenance works.
- (f) Assume responsibility as caretaker for all the plant and equipment at the *Worksite* and during transport during the period of construction and maintenance works.

10.2 Access Gates or Locking Rails Installed in Boundary Fences

- (a) If the subdivision of existing parcels of land poses the introduction of a new fence across an existing Access track, or a *Landholder* intends to construct an internal fence across an existing Access track which will prevent Access to an electricity network structure, the *Landowner*, will be required to

Specification for Land Management Construction



construct a gate or locking rail in the fence centred over the *Access* track for *Energy Queensland* to *Access* electricity network structure(s) in the vicinity, as detailed in:

- (i) [Figure F-2](#) – *Access Track Infrastructure – Access Gate Construction and Fabrication Details*.
 - (ii) [Figure F-3](#) – *Access Track Infrastructure – Fencing Locking Rail – Log Rail Barrier Details*.
 - (iii) [Figure F-4](#) – *Access Track Infrastructure – Fencing Locking Rail – CHS Pipework Rail Barrier Details*.
 - (iv) [Figure F-5](#) – *Access Track Infrastructure – Fencing Locking Rail – PFC Post and CHS Rail Barrier Details*.
- (b) In situations where new subdivision fences are constructed on existing powerline easements there is to be a minimum clearance of 3 metres between the fence line and the nearest edge of any *Energy Queensland* poles, columns, towers, or other infrastructure assets to allow working *Access* to and around the *Site*.
- (c) The minimum requirement would be to request the *Landholder* constructing the fence, to include a gate or locking rail in their planned fence-line that is centred over the *Access* track. *Energy Queensland* may at its discretion agree to supply the gate or locking rail components for the installation.
- (d) All *Access* gates or locking rails installed in boundary fences are to be locked with standard locks provided by *Energy Queensland*, unless adjacent *Landholders* (property owners) are satisfied that they are left unlocked. Gates and locking rails installed in internal property fences will be latched or locked on request. All locks remain the property of *Energy Queensland* and should only be used to give *Energy Queensland* authorised personnel *Access* through a gate or locking rail. Any extra lock(s) are to be located so that no party can lock any other party out.
- (e) Existing gates and locking rails are to be left as they are found. Where it appears that a gate or locking rail should be shut, relevant *Landholders* (property owners) are to be contacted where possible, to ascertain the appropriate action to be taken in relation to the gate or locking rail.
- (f) Under no circumstances is a gate or locking rail to be locked by *Energy Queensland* without consultation with the *Landholder* (property owner) and their agreement.

10.3 Access Gates and Locking Rail - Construction

- (a) The *Service Provider* is to construct, replace or maintain (repair) *Access* gates or locking rails.
- (b) The *Service Provider* provides all transportation of materials, supervision, support, labour, and equipment necessary for the construction, replacement, or maintenance (repair) of gates or locking rails.
- (c) Recover existing gate or locking rail assemblies or components that are replaced during works and return the assemblies or components that remain in a serviceable condition, to a location nominated by the *Energy Queensland Officer*.
- (d) Strain the fence wires at least as tight as the existing fence wires and tie the wires off permanently around the gateposts as indicated in the construction drawing included in this Section 10, [Figure F-2](#) to [Figure F-5](#) inclusive.

10.4 Gate Post Removal - Uncontaminated Timber

When the *Service Provider* is required to remove wooden gate posts, inspect the post to check for evidence of Termite / CCA treatment. If Termite / CCA treatment is not suspected, then:

- (a) Remove and dispose of any waste and the wooden gate post(s) in an approved industrial waste bin or collection point for recycling in accordance with local *Authority* regulations. General waste includes:
 - (i) Uncontaminated wooden gate posts.
 - (ii) Concrete.
 - (iii) Excavated Rocks.
 - (iv) Timber / wood shavings and off-cuts.

Specification for Land Management Construction



- (v) *Vegetation* and debris from *Worksite*.
- (vi) Wire off-cuts.

10.5 Gate Post - Reinstatement

- (a) Backfill the gate post excavation with all the available excavated soil and provide approved additional backfill material for the excavation where required. Approved backfill material supplied by the *Service Provider* is to be clean gravel, sand, or loam suitable for compaction with a maximum particle size of 25mm. Clean backfill material may be collected from the *Worksite* if the backfill material is gathered from a distance greater than 2 metres from any existing wooden gate posts in the surrounding area, and if the backfill material is suitable for compaction.
- (b) As the backfill soil is reinstated in the excavation, compact the layers of soil at 100mm vertical intervals with a suitable compaction tool all around the full circumference of the wooden gate post.
- (c) Cover the backfill and adjacent ground surface with clean soil material to the nominated depth, according to the following requirements:
 - (i) ≥75mm depth above the contaminated soil backfill if the wooden gate post is in a normal grazing area.
 - (ii) ≥100mm depth above the contaminated soil backfill if the wooden gate post is located near feedlots, dairies, or fenced cattle yards where cattle are contained in close proximity for extended periods.
- (d) Leave the *Worksite* in a safe, clean, and tidy condition.

10.6 Gate Post Removal - Contaminated Timber

When a wooden gate post(s) is known to be, or suspected of being contaminated from Termite / CCA treatment, the *Service Provider* undertakes the following additional steps for removal, in addition to those set out in subsection 12.4:

- (a) Follow trackable waste handling and transport procedures appropriate for relevant local *Authority*. Trackable waste includes and is not limited to:
 - (i) Wooden gate post(s)
 - (ii) Chemical residue and containers enclosing the chemical residue.
- (b) On certified organic farmland, on chemical-free properties, in stock holding yards or in *Watercourses*, transport the posts and waste materials in secure containment on a route that reduces the exposure of contamination to these sensitive locations in the immediate vicinity and / or along the nominated transport route.
- (c) When operating in Regional Queensland areas (*Energy Queensland* Northern & Southern Regions), for further information refer to Implement Controls – Handling and Disposal of Redundant Poles Work Instruction.

10.7 Access Gate and Locking Rail Construction - Unstable Soil

- (a) At locations in Regional Queensland where unstable soil conditions are identified at *Site* (for example black soil), install an additional gate post each side of the field gate opening and construct a variation to the type of strainer assembly with additional adaptive strap and bracing in the span between the two standard gate posts each side of the field gate opening.
- (b) At locations with areas of unstable soils in regional Queensland, install five bar field gates only, within cattle grazing country and on *State Authority* controlled land.
- (c) At locations with areas of unstable soils in regional Queensland, install mesh field gates only, within sheep or goat grazing country and within rural residential areas.

Specification for Land Management Construction



10.8 Gate Supply Regional Queensland

The stock code numbers and their description for field gates, gate posts and assembly components are to be quoted when requesting supply from an *Energy Queensland* regional warehouse (store) is outlined below in Table F1.

Table F1 – Field Gate Stock Code Number and Description

ENERGY QUEENSLAND STOCK CODE NUMBER AND DESCRIPTION		
EnergyQ Stock Code Number ²	EnergyQ Stock Code Description ³	Additional Field Requirements
2417624	GATE: Driveable End Assembly with Hinges: 1x2100mm (100mmNB/75x75mm angle) post, 1 x 3250mm x 50NB stay, 1 x 450mm x 200mm x 6mm galv. Driveable stay block 1 x adjustable galvanised TOP Strap, 1 x adjustable galvanised BOTTOM Gudgeon	Two of these assemblies are required to construct one field gate. Each assembly weighs 40kg.
2417616	GATE: Set Five Bar Field Gate 2 x 2370mm x 1170mm x 25NB 4.8m Opening, 400mm x 8mm Chain. Hot Dipped Galvanised.	One of these sets is required to construct one five bar field gate. Each set weighs 70kg.
2417665	GATE: Set Weld Mesh Field Gate 2 x 2370mm x 1170mm x 25NB 4.8m Opening, 400mm x 8m Chain, Hot Dipped Galvanised.	One of these sets is required to construct one weld mesh field gate. Each set weighs 70kg.
2438596	BOX ASSEMBLY, FENCING; Strainer for Unstable Soils c/w Post 1x2100mm (100mmNB/75x75mm Angle), Top Rail 1x60NB, Turnbuckle, Wire Brace, Bolt & Nut, 2 x Upper & Lower Brackets.	Two of these assemblies are required to construct one field gate. Each assembly requires one 2417624 : drivable end assembly with hinges Each assembly weighs 40 kg.
2417657	GATE: Strainer Assembly Post Driver 6" Round Pipe	A hand-held system that requires a documented safe system of work for its use.
Note:	To assemble a complete gateway you require two strainer post packages and one gate panel package.	
2465979	SIGN Arrow , Aluminium, 220 x 120 x 1.6mm, Class1 Material, Red Screen-Printed Arrow with <i>Energy Queensland</i> Group Logo Cut-out, White Reflective B/Ground, c/w Mounting ⁴ .	

10.9 Access Gate and Locking Rail Signage

- (a) For the location of Access gate(s) and locking rail(s) not installed in the immediate vicinity of the *Energy Queensland Overhead Conductors* and associated support infrastructure, use the *Energy Queensland* directional arrow sign(s) on the dividing fence, Access gate or locking rail to indicate the

Specification for Land Management Construction



- direction to the next nearest gate or locking rail providing Access through the fence to the *Energy Queensland Overhead Conductors* and associated support infrastructure.
- (b) For the fabrication details and the stock code number and its description for the *Energy Queensland* directional arrow signage refer to:
- (i) [Table F1](#) -- Field Gate Stock Code Number and Description.
 - (ii) [Figure F1](#) -- *Energy Queensland* Directional Arrow Signage.
- (c) When requesting supply from *Energy Queensland* of the directional arrow signs, quote the stock code numbers and description for the directional arrow signage. Contact the *Energy Queensland Officer* to arrange supply, pick up and / or delivery drop of point at Site of the directional arrow signage.



Figure F-1 -- *Energy Queensland* Directional Arrow Signage.

Specification for Land Management Construction

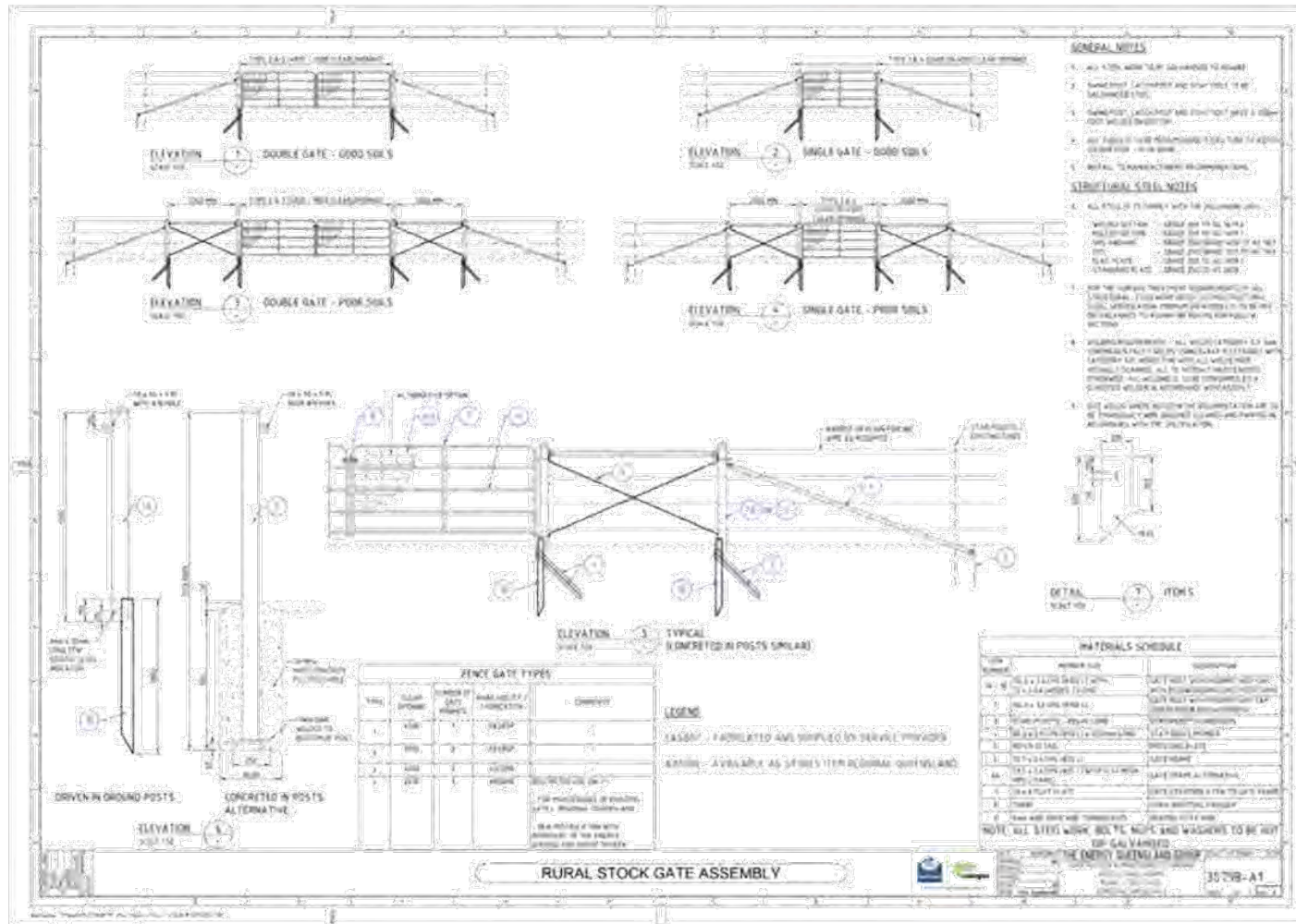


Figure F-2 – Access Track Infrastructure – Access Gate Construction and Fabrication Details.

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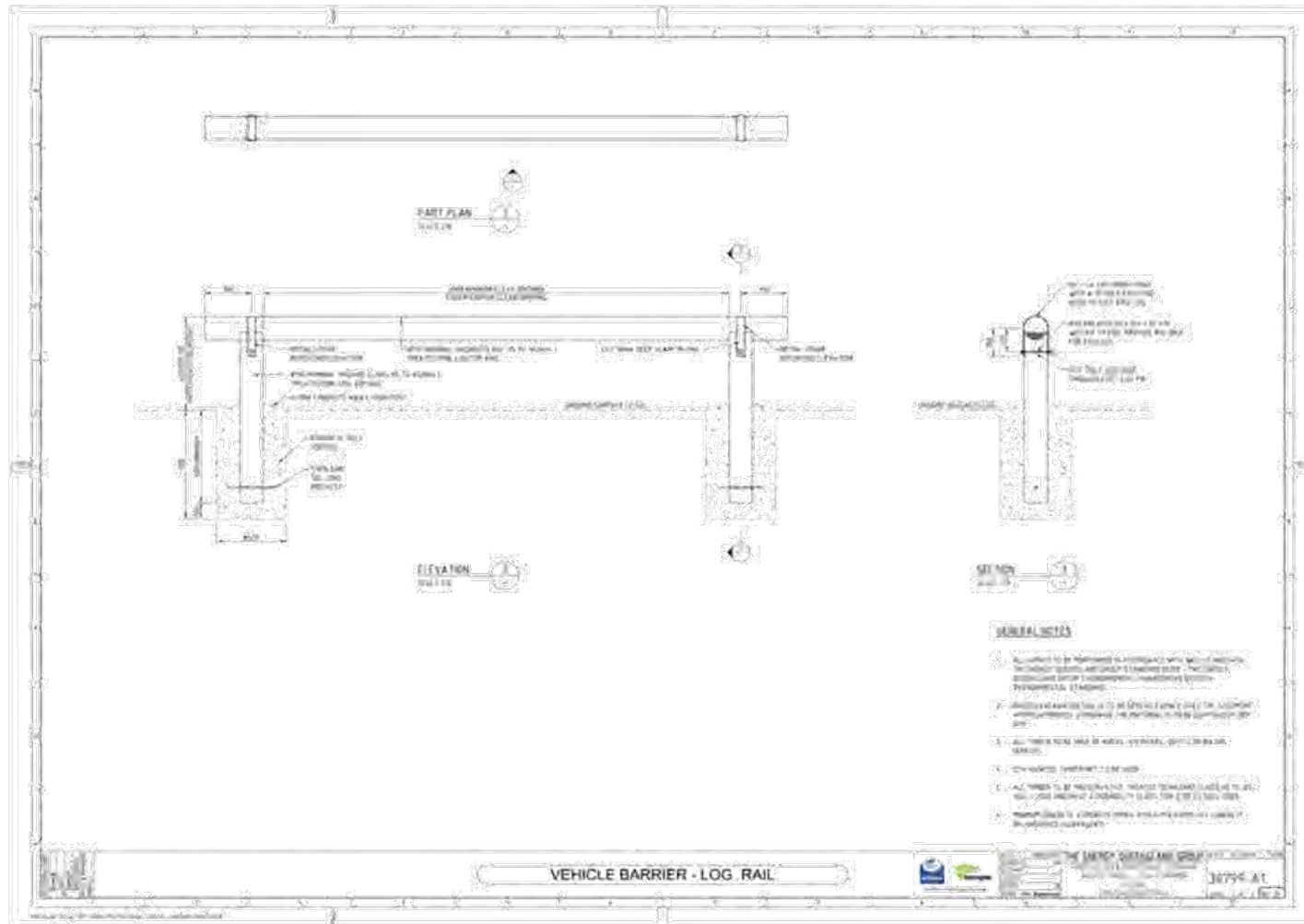


Figure F-3 – Access Track Infrastructure – Fencing Locking Rail – Log Rail Barrier Details.

ner: Chief Operating Officer

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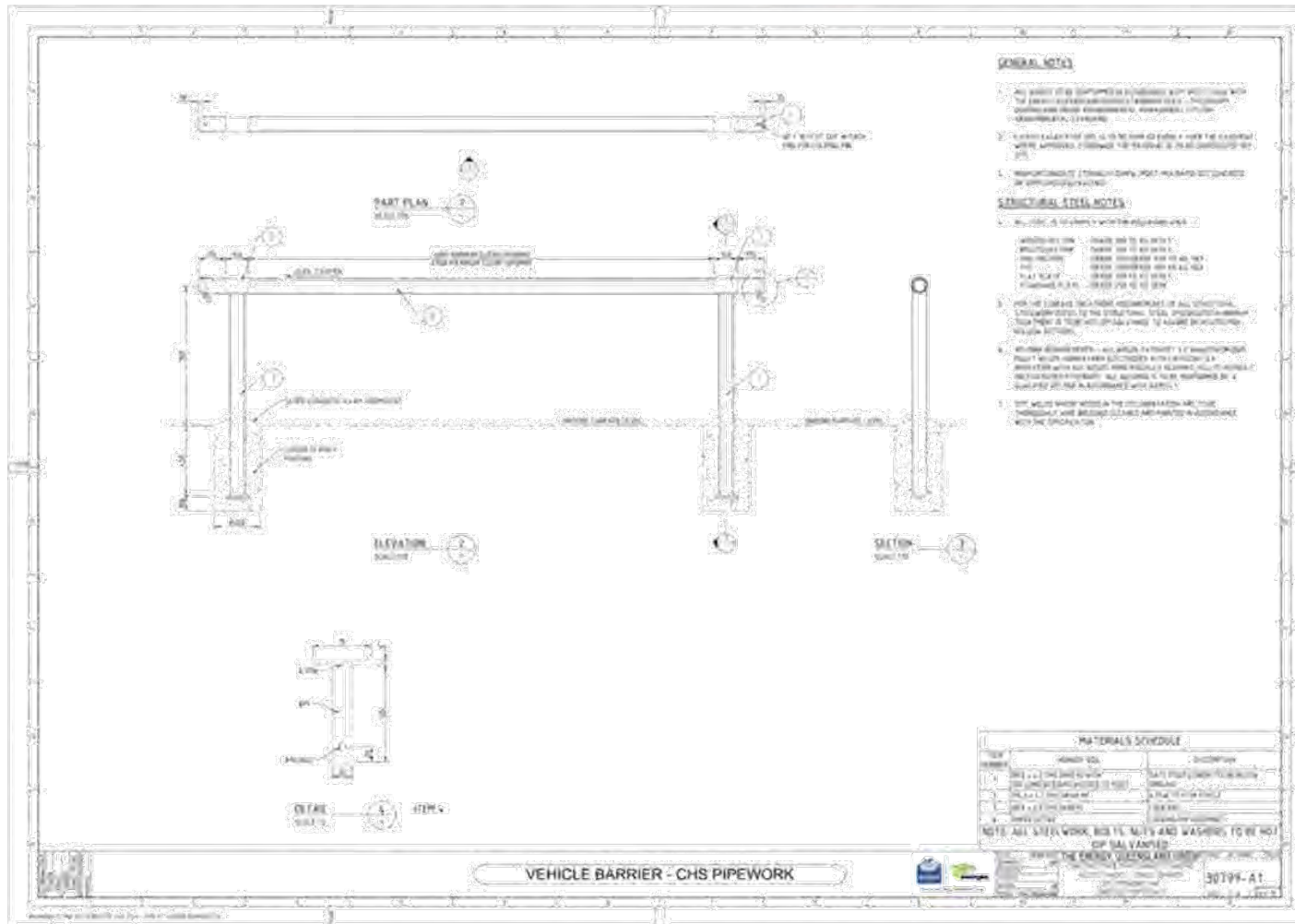


Figure F-4 – Access Track Infrastructure – Fencing Locking Rail – CHS Pipework Rail Barrier Details.

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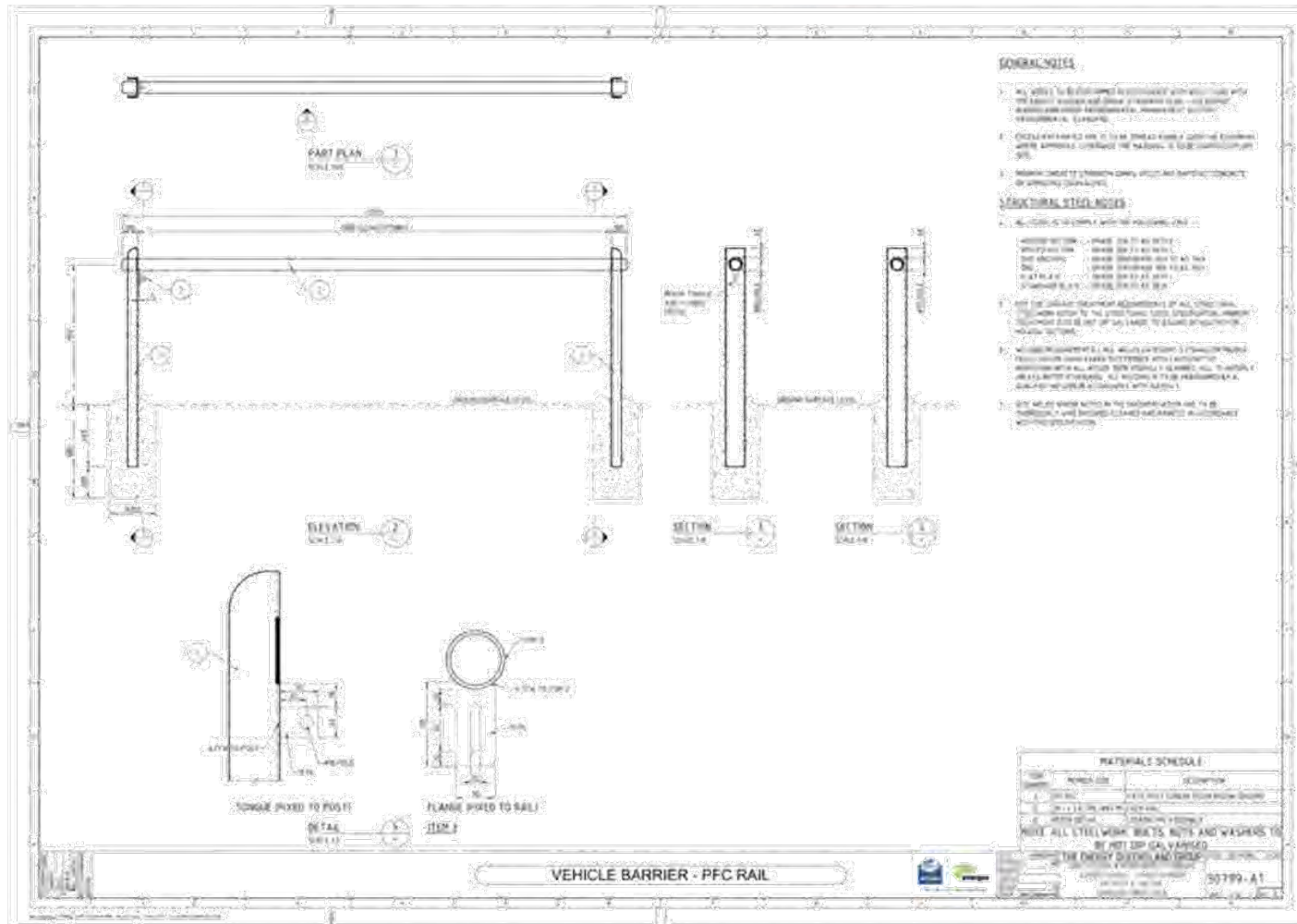


Figure F-5 – Access Track Infrastructure – Fencing Locking Rail – PFC Post and CHS Rail Barrier Details.

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Specification for Land Management Construction

11 Construction and Maintenance of Infrastructure Drainage

11.1 Construction and Maintenance of Infrastructure Drainage

- (a) Undertake the initial construction / ongoing maintenance of *Infrastructure Drainage*, that is where the system of drainage around electricity distribution and transmission network infrastructure is required to prevent moisture (e.g., storm water) ponding around and the build-up of soil and debris around tower legs, mono and multi structure poles and columns (wood / concrete / steel) and their foundations at or above ground surface level.
- (b) The initial construction / ongoing maintenance of *Infrastructure Drainage*, is to be undertaken in accordance with:
 - (i) *Infrastructure Drainage - Technical Specification* (subsection 11.2).
 - (ii) *Figure G-1-Drainage Maintenance – Lattice Tower*.
 - (iii) *Figure G-2-Drainage Maintenance – Monopole Structure*.
 - (iv) *Figure G-3-Drainage Maintenance – 'H' Frame Structure*.

11.2 Infrastructure Drainage - Technical Specification

11.2.1 Extent of Work

The work included comprises of and is not limited to:

- (a) Clearing of the *Worksite*.
- (b) Earth works.
- (c) Installation of *Erosion* and *sediment* control devices.
- (d) Treatment and disposal of spoil.

11.2.2 Clearing of Site

- (a) Clear tower leg, and mono and multi structure poles and columns *Worksites*, including surface areas surrounding tower leg, and mono and multi structure poles and columns foundations; of all shrubs, scrub, undergrowth, dumped building material, spoil resulting from *Erosion* and surface boulders.
- (b) Remove all debris resulting from *Worksite* clearing to the nearest approved refuse tip off *Site* accepting this class of debris and material.

11.2.3 Excavation

Undertake excavation where required to suit the dimensions and surface levels nominated for drains or mounding.

11.2.4 Treatment Disposal of Spoil

- (a) Where required, dispose of excess spoil removed from the *Site* in accordance with controlling *Authority* requirements for transport and disposal, and negotiated *Landholder* acceptance.
- (b) Implement appropriate control measures (disposal process in place to handle and transport the contaminated soil) on *Sites* containing acid sulphate soils.

11.2.5 Construction Work

- (a) Construct earth "V" drains, local cut-off drains or mounding to ensure redirection of stormwater around base of tower legs, and mono and multi structure poles and columns.
- (b) Grade or bench ground surface under tower (inside area bounded by tower legs) to ensure no ponding of stormwater below the tower or adjacent to tower leg foundation.

Specification for Land Management Construction



- (c) Grade or bench ground surface between multi structure poles and columns (inside area bounded by multi structure poles and columns) to ensure no ponding of between multi structure poles and columns or adjacent to multi structure pole and column foundation.
- (d) Bench area surrounding foundations to ensure top surface of foundations are a minimum of 100 mm proud of the surrounding ground surface level.
- (e) Install appropriate *Erosion* and *sediment* control devices during the construction or maintenance and maintain them for a period of not less than 3 months and the environmental hazards being controlled cease to exist. (Provide anti-erosion controls, for example rock spalls to "V" drains, when required).
- (f) Exercise extreme care to positively identify the location of and not to damage any existing earth grids, electricity cables or essential services during required excavation.
- (g) Excess excavated uncontaminated soil may be spread evenly over the easement when approved by the *Energy Queensland Officer* and there is no potential for environment harm to occur.

Specification for Land Management Construction

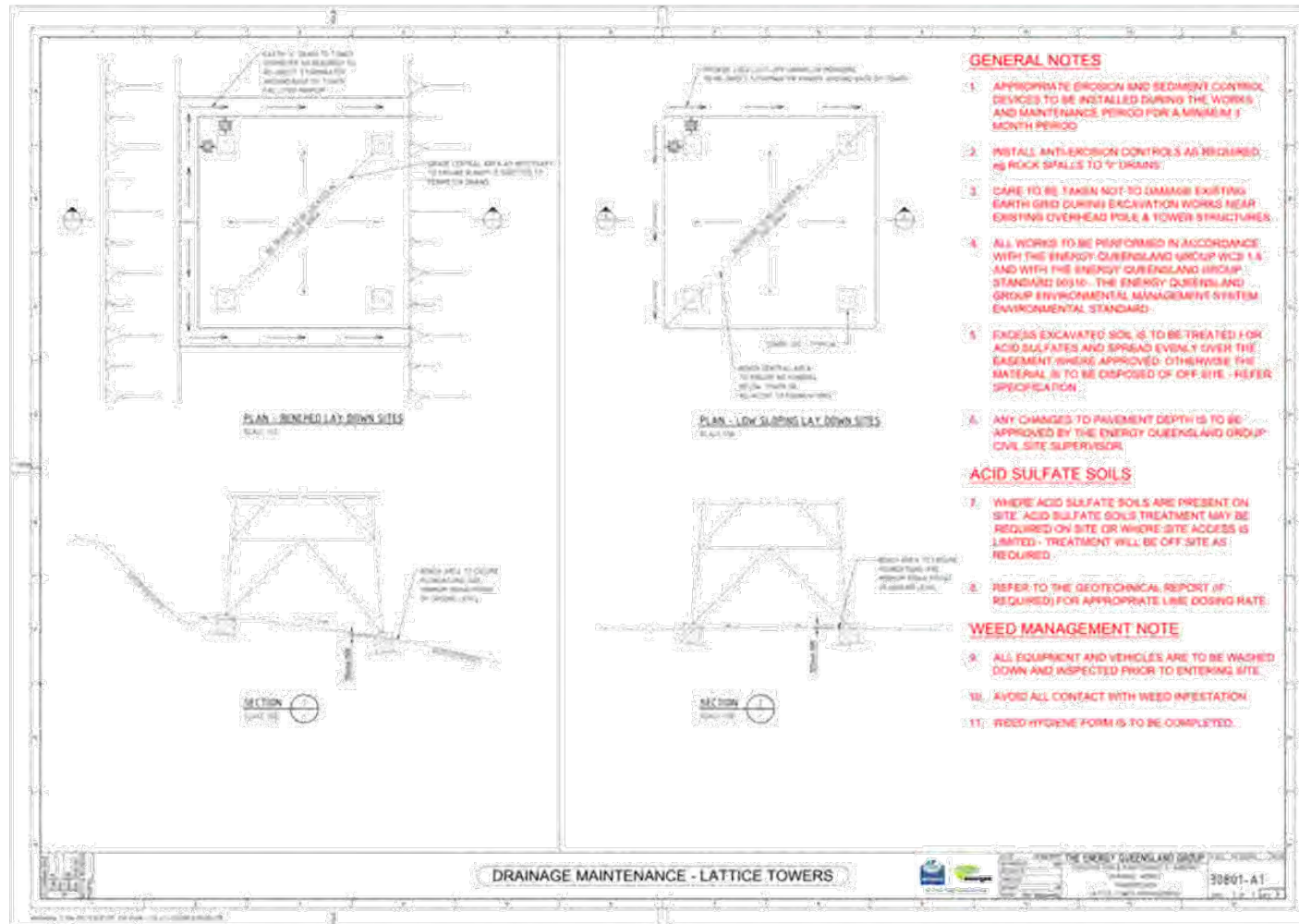


Figure G-1-Drainage Maintenance – Lattice Tower

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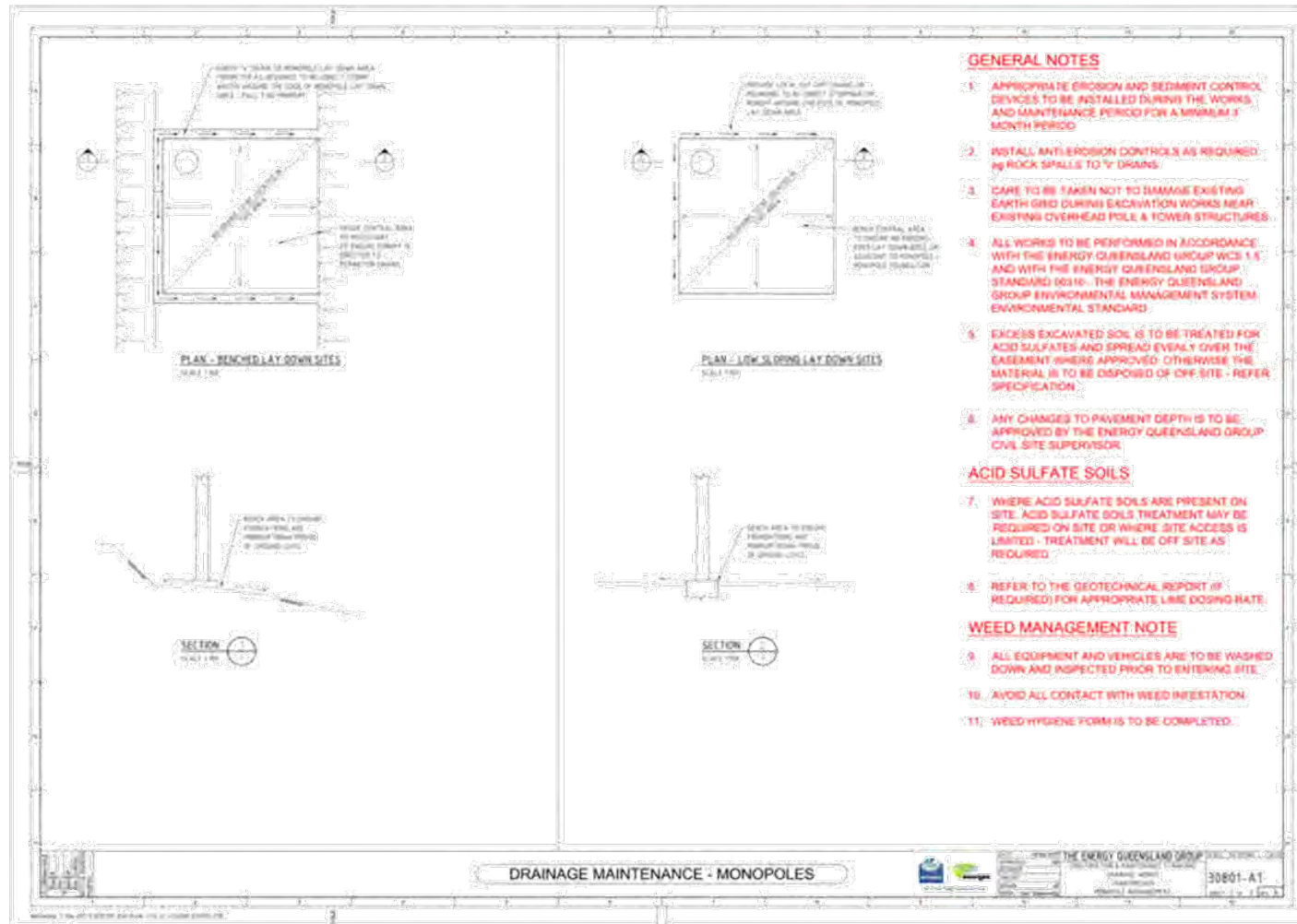


Figure G-2-Drainage Maintenance – Monopole Structure

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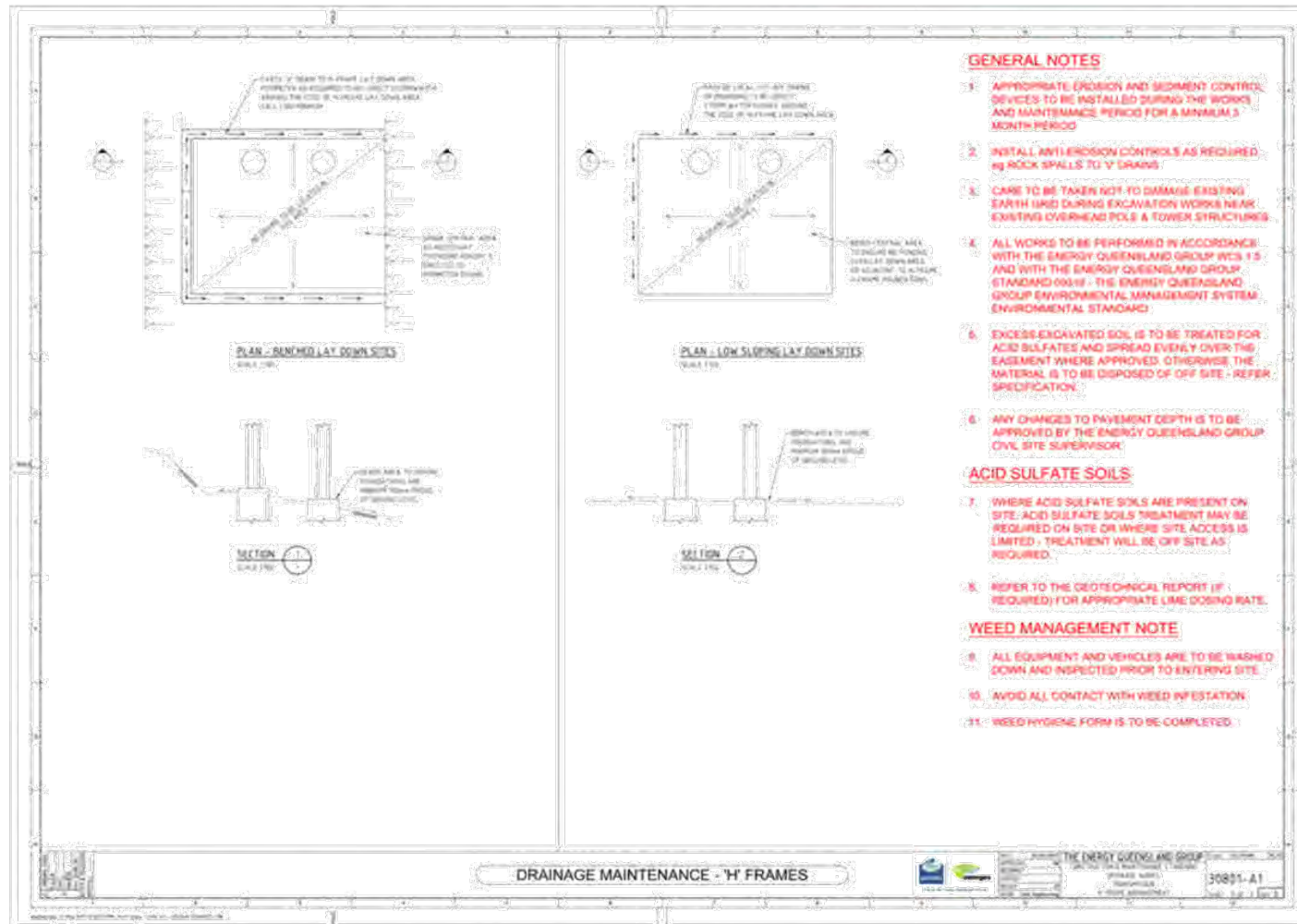


Figure G-3-Drainage Maintenance – 'H' Frame Structure

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Specification for Land Management Construction

12 Land Stabilisation

12.1 Drainage Control Methods

Figure H-1 below, details where drainage systems (including pipes) are to be located to drain water runoff away from the Access track Pavement surface. The top portion of the figure (illustration) is an end view or cross-section of the Access track Pavement and the surrounding land surface.

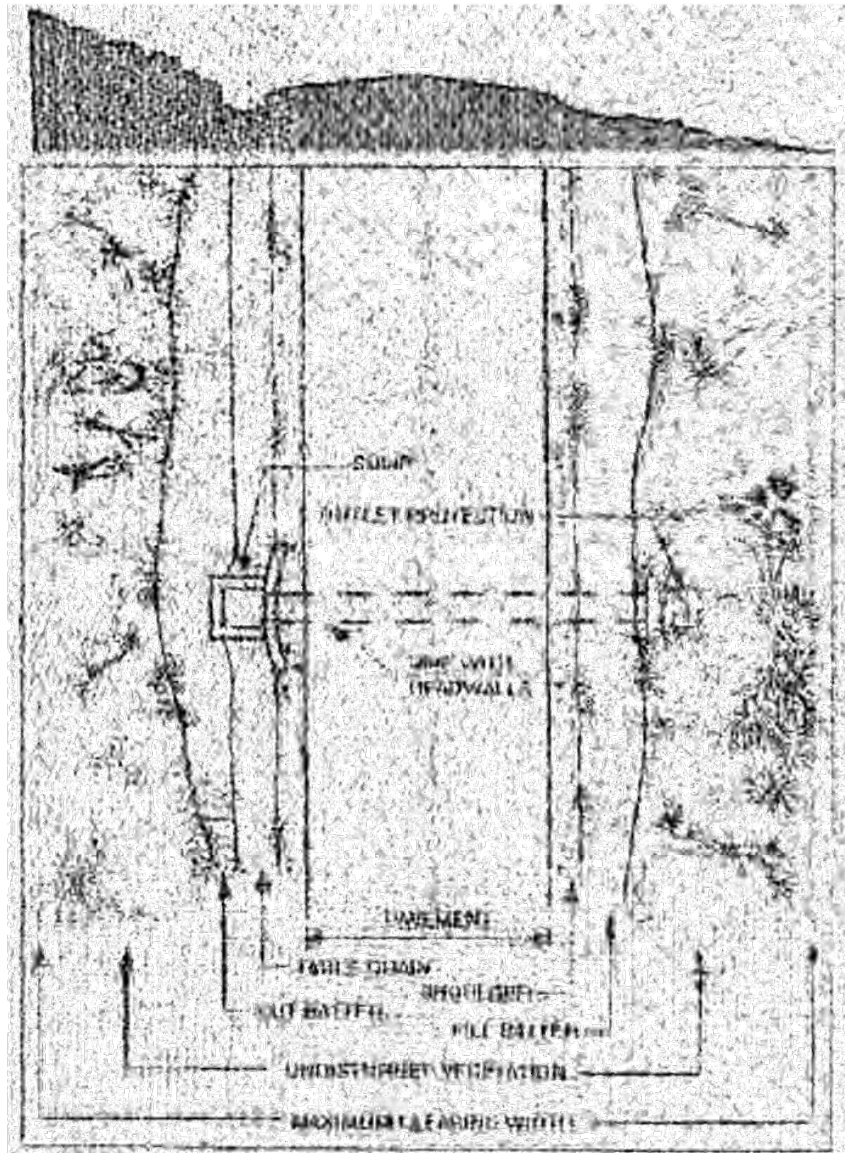


Figure H-1 – Access Track Infrastructure – Drainage Details



Specification for Land Management Construction

12.1.1 Crowned Surface Formation

- (a) This is a formation of raised earth / soil constructed on the centre line of the *Access track Pavement* alignment, graded, and sloping back toward the base of the drainage structures on each side of the *Access track Pavement*.
- (b) Soil recovered from the drainage structure construction provides material for the *Pavement* crown of the *Access track*.
- (c) [Figure H2](#) below, details a crowned surface formation and is a cross-section of the *Access track Pavement*, drainage, and the surrounding land surface.

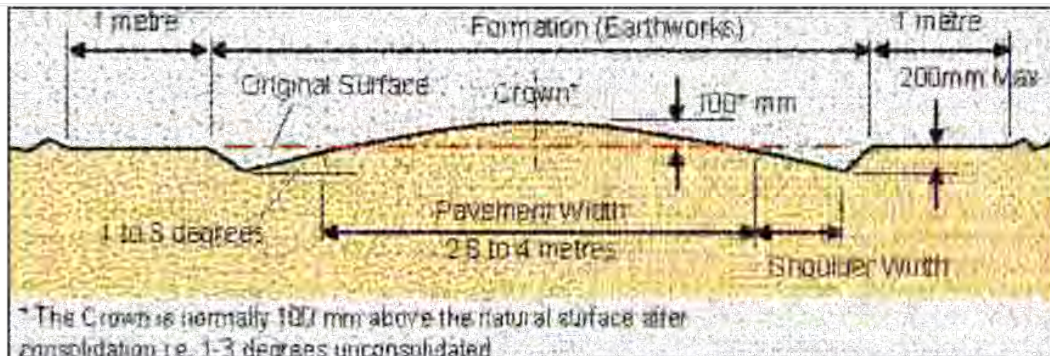


Figure H-2 – Access Track Infrastructure – Drainage Details

- (d) The crowned surface formation of the *Access track Pavement*:
Is suitable for *Access track* construction where water can be shed from both sides of the *Pavement* formation.
Alternatively, utilised in conjunction with appropriate cross track drainage techniques and protection systems.

12.1.2 Side Cut Construction

- (a) This construction refers to cutting through the natural topography with *Battered* banks down to table drains and *Access track Pavement* formation.
- (b) Where side cutting construction is necessary, construction is to comply with and is not limited to the following subsections.

12.1.2.1 Crowned Side Cut Formation

- (a) This design is similar to the crowned surface formation, and additionally includes a side cut to one side of the *Access track Pavement* and without a drainage structure on the opposite side of the *Pavement*. The excavation to form this drain provides all material for the formation as detailed in [Figure H3](#) below.
- (b) Crowned side cut formations are to be utilised for smaller lengths of side cut where the water can be shed from the confined water table further down the *Access track*, for example at a ridge top saddle.
- (c) Crowned side cut formations are to be utilised (in limited situations) for longer runs down the *Access track*, if constructed in conjunction with approved cross track drainage techniques.



Specification for Land Management Construction



Figure H-3 – Access Track Infrastructure – Crowned Side Cut Formation Details

12.1.2.2 Out Slope Formation

- (a) The out *Slope* (or one-way cross fall) design is utilised when construction *Access* is on a side *Slope* and the intention is for surface water to continue to flow across the *Access track Pavement* surface from the uphill side.
- (b) Water is not captured in any drainage structure and will not follow the path of the track as detailed in [Figure H4](#) below.

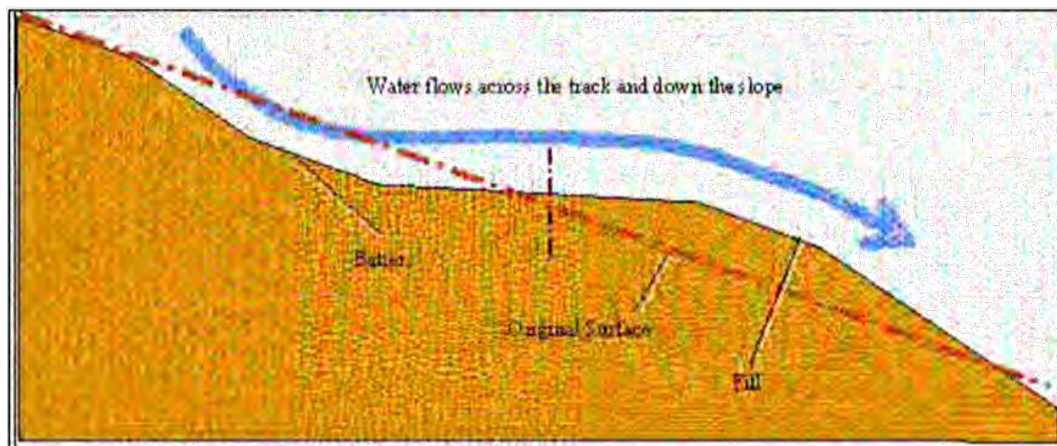


Figure H-4 – Access Track Infrastructure – Out *Slope* Formation Details

- (c) Out *Slope* formations are suitable for longer lengths of side cut where water cannot be shed via cross *Access track drainage*.
- (d) Utilise this design profile in the absence of cross drainage techniques, for example a pipe or *Whoa-boy*.



Specification for Land Management Construction

12.1.2.3 Side Cutting Formation Design

The general requirements for the side cutting formation design are detailed in Figure – H5 below

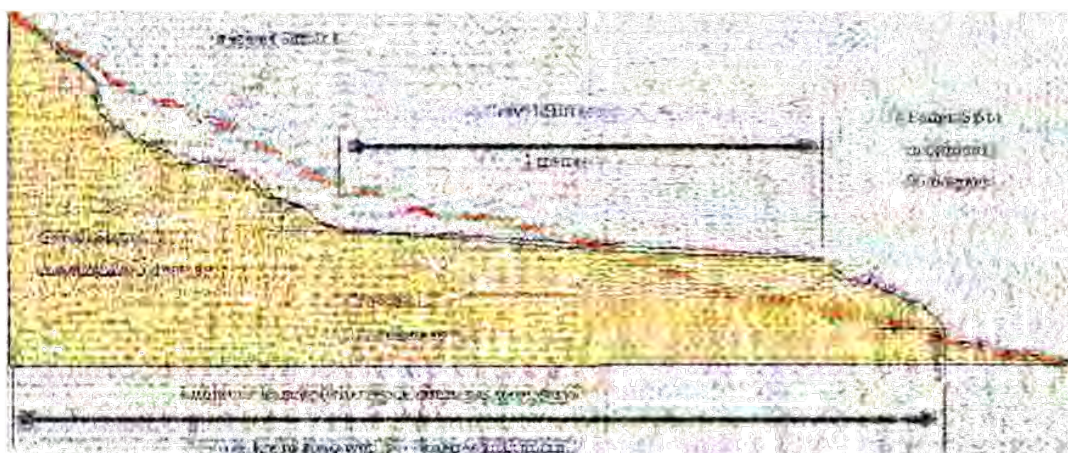


Figure H-5 – Access Track Infrastructure – Side Cutting Formation Details

12.1.3 Installation of Catch Drains

- (a) Catch drains are used to intercept and divert up-Slope runoff water, away from *Disrupted Surface* areas with exposure of bare earth to a *Stable Outlet Area*. Placed catch drains up-Slope of where water can pass onto the *Worksite* (for example at the top of a *Batter / Slope*). Install catch drains in conjunction with fibre matting in locations where rainfall is high and where *Batters / Slopes* are steep.

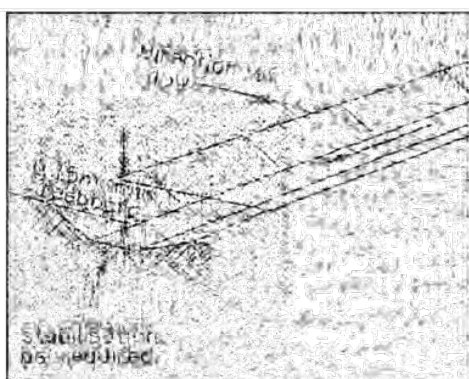


Figure H-6 – Catch Drain Installation Detail

- (b) Determine the location of the catch drain(s) at the Worksite by taking into consideration the following conditions:
 - (i) The locations of down-Slope sediment-trapping devices (for example *sediment fences*). The catch drain is to drain to a protected outlet area where the *Surface Run-Off* water is expected to contain *sediment*. Catch drains are to divert "clean" water (water from undisrupted surface areas with no exposure of bare earth) around these devices.
 - (ii) The drain is to *Slope* down with a maximum grade of 2% (so that it is not too steep).
 - (iii) Other natural drains and *Slopes* of the *Access track Pavement / footprint*.
- (c) Clear a footprint for the drain, by clearing only the area needed to provide *Access* for personnel and equipment for the drain's construction / installation. Do not clear or disrupt (expose bare earth) the surface area above the drain and ensure down-Slope sediment-trapping devices are in place (where required).



Specification for Land Management Construction

- (d) Remove roots, stumps, and other debris, and dispose of them in accordance with controlling Authority requirements for transport, disposal and negotiated Landholder acceptance.
- (e) Grade the drain with:
 - (i) The sides of the drain not being steeper than 30°.
 - (ii) The completed drain is to be at least 150mm deep, measured from the bottom of the drain to the ground surface level.
 - (iii) Ensure positive drainage in the specified direction, check Slope on the bottom of the drain to confirm.
 - (iv) The drain is to be immediately vegetated unless it will operate for less than 30 days. In either case, temporary Erosion protection (e.g., matting, rock) is required as specified by the Construction Plan or as directed by the Energy Queensland Officer.
- (f) Check that the end of the catch drain has a stable / protected outlet and does not discharge to an unstable Slope. Where a Stable Outlet Area does not exist, construct / install a Drop Pipe.

12.1.4 Installation of Table Drains



Figure H-7 – Table Drain Installation Detail No 1

- (a) Table drains are used to carry Surface Run-Off water along the sides of Access track Pavements. Table drains are often installed in conjunction with Whoa-boys.
- (b) Clear a footprint for the table drain, by clearing only the area needed to provide Access for Operators and equipment for the table drain construction / installation.
- (c) The table drain(s) is to have a broad base to minimise Erosion and to be 'U' shaped and not 'V' shaped (Refer to [Figure H-7](#) to [Figure H-9](#) inclusive to see illustration);
- (d) Remove roots, stumps and other debris and dispose of them in accordance controlling Authority requirements for transport and disposal and negotiated Landholder acceptance.
- (e) In high rainfall or heavy intensity rainfall areas (where the velocity of Rainfall Run-Off is very high), table drains at the Toe of Batter / Slope require Stabilisation. Install Stabilisation by lining the table drain with turf, rock, or matting.



Specification for Land Management Construction

<p>Figure H-8 – Table Drain Installation Detail No 2</p>	<p>Figure H-9 – Table Drain Installation Detail No 3</p>

12.1.5 Installation of Turn-Out Drains



Figure H-10 – Turn-Out Drain Installation Detail

- (a) Turn-out drains are used to carry water from table drains to *Stable Outlet Areas*. Turn-out drains are often installed in conjunction with *Whoa-boys*.
- (b) Determine the location of turn-out drain(s) at the *Worksite* by taking into consideration the following conditions:
 - (i) The locations of *Whoa-boys*. The turn-out drains are to carry *Surface Run-Off* water safely from the side of the *Access track Pavement* and into a vegetated area.
 - (ii) The steepness of the *Access track Pavement*. Usually turn-out drains follow a similar spacing to the *Whoa-boys*.
- (c) Clear a footprint for the turn-out drain, by clearing only the area needed to provide *Access* for *Operators* and equipment for the turn-out drain installation.
- (d) Remove roots, stumps and other debris and dispose of them in accordance with controlling *Authority* requirements for transport and disposal and negotiated *Landholder* acceptance.
- (e) Check that the end of the turn-out drain has a stable / protected outlet (preferably into stable *Vegetation*) and does not discharge to an unstable *Slope*. Where a *Stable Outlet Area* does not exist, construct / install a *Drop Pipe*.
- (f) Vary the spacing for the turn-out drain installation to allow turn-out drain to connect up to contour banks in cultivated land areas.

Specification for Land Management Construction



12.2 Maintenance of Drainage Control

- (a) Check if, for example and not limited to, equipment and falling *Vegetation* / trees have damaged the drainage system(s). If the drainage is damaged, advise the *Energy Queensland Officer* and undertake repairs as directed.
- (c) Also check that soil and / or other material has not blocked the drainage system(s). If the drainage is blocked, remove the material(s) to allow clear drainage (water flow).
- (d) Undertake a detailed inspection of the drainage system(s).
- (e) If sediment has accumulated in the drainage system(s), remove the sediment so that the drainage (water flow) capacity is not reduced and investigate the source of the sediment and for potential *Erosion*.
- (f) Do not dispose of the sediment in a manner that will create an *Erosion* hazard or a contamination hazard.
- (g) Repair any sections in the drainage system(s) that are weakened or that have been subjected to damage from vehicular traffic and that threaten to cause failure of the drainage.
- (h) Check for *Erosion* and undermining of control devices, soil surfaces and Slopes of *Access track Pavement*; determine if further controls are required to be installed during this maintenance phase and advise the *Energy Queensland Officer* accordingly.
- (i) If possible, avoid grading of table drains as this will remove any grass in the drain and cause *Erosion*. *Erosion* results in the drain becoming too low to discharge into the turn-out drain. Runoff (water flow) then bypasses the turn-out drain causing additional *Erosion* as the runoff (water flow) continues down the table drain.
- (j) Maintain turn-out drains by grading from the turn-out drain outlet towards the table drain. If there is a sill at the outlet that has collected sediment, use the sediment to maintain the bank and ensure the turn-out drain connects up with the table drain.

12.3 Removal of Drainage Controls

Where removal of existing drainage controls is required (for example on *Sites* that are already stable):

- (a) Remove accumulated *sediment* and dispose of the *sediment* in accordance with local controlling *Authority* regulations for transport, disposal, and negotiated *Landholder* acceptance.
- (b) Grade the ground surface area and level out (smooth) the ground surface, in preparation for land *stabilisation* and rehabilitation material, if the area has not already been *Stabilised* and rehabilitated.
- (c) *Stabilise* and rehabilitate the ground surface area with suitable *stabilisation* / rehabilitation material (for example, lay turfs, mulch) as specified by the *Construction Plan/Drawing* or as directed by the *Energy Queensland Officer*.

12.4 Erosion Control Methods

12.4.1 Whoa-Boys

12.4.1.1 Installation of Whoa-Boys

- (a) *Whoa-boys* are low profile, angled, trafficable earth banks across the *Access track Pavement*, refer to [Figure H-11](#). *Whoa-boys* intercept runoff (water flow) flowing down an *Access track Pavement*, divert the flow of water off the *Access track Pavement* into a table drain or protected outlet, and allow it to continue its natural flow direction down the landscape.
- (b) The construction of *Whoa-boys* is dependent on the *Slope* in the road and the amount of runoff (water flow) they have to divert.

Specification for Land Management Construction

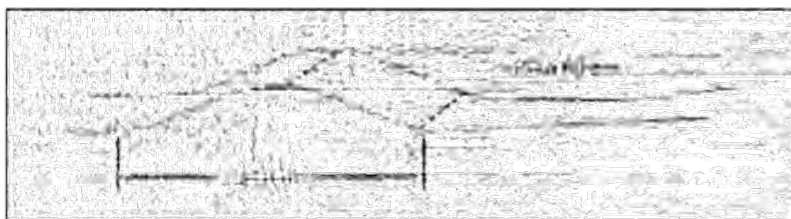


Figure H-11 – Cross-Section of Whoa-Boy in Access Track Pavement

- (c) Determine the location of *Whoa-boys* at the *Worksite* by taking into consideration the following conditions:
- (i) The locations of table drains and turn-out drains, where they are present. The *Whoa-boy* is to drain into a table drain and / or a protected outlet area, where the *Surface Run-Off* water is expected to contain *sediment*.
 - (ii) The locations with a *Stable Outlet Area*, for example a grassed or stony area.
 - (iii) The ground surface soil types as some are more susceptible to *Erosion* than others.
 - (iv) The steepness of the *Access track Pavement* – refer to the [Table H-1](#) and [Table H-2](#) below for *Whoa-boys* spacing guide on infrequently used *Access track Pavements*.
 - (v) The direction of overland flow (water flow) adjacent to the *Access track Pavement*. (In flatter landscapes determine the best side of the *Access track Pavements* to divert water runoff.)
 - (vi) The directing of runoff (water flow) in a direction that will not interfere with the lower sections of the *Access track Pavements*, for example, refer to [Figure H-12](#) *Whoa-boys* at locations A and B. Unsatisfactory *Whoa-boy* design / location are where runoff from the *Whoa-boy* will flow back towards the *Access track Pavements* and cause *Erosion*.
 - (vii) Where *Access track Pavements* are situated on ridges or directly up and down the *Slope Site*, runoff (water flow) can be diverted to either side of the *Access track Pavements*, for example, refer to [Figure H-12](#) *Whoa-boys* at locations C and D.
 - (viii) *Access track Pavement* is to be aligned so *Whoa-boys* are constructed / installed at right angles to the *Access track Pavement* centre line, for example, refer to [Figure H-12](#), *Access track Pavement* at locations A has been re-aligned so the *Whoa-boy* crosses it at right angles.
 - (ix) Likely excessive gradient occurring, where *Whoa-boy* more difficult to construct / install across the *Access track Pavement* at right angles, for example, refer to [Figure H-12](#) *Whoa-boy* at location B.
 - (x) Where there is a significant change in the *Slope* of the *Access track Pavement*, the location of *Whoa-boys* is at the top and bottom edge of the *Slope*.
 - (xi) On the approach to a drainage line or *Watercourse* crossing (*Minor Creek Crossing*), the location of a *Whoa-boy* is at top of the approach into a drainage line or *Watercourse* crossing.
 - (xii) Alignment of *Whoa-boys* with contour banks in cultivated land or where they can discharge into farm / grazing land area dams. (Ensure that the top of *Whoa-boy* in an existing *Access track Pavement* is placed just above any rills occurring in the *Access track Pavement*. If the *Erosion* appears to be active, it may be necessary to start even further up the *Slope*.)

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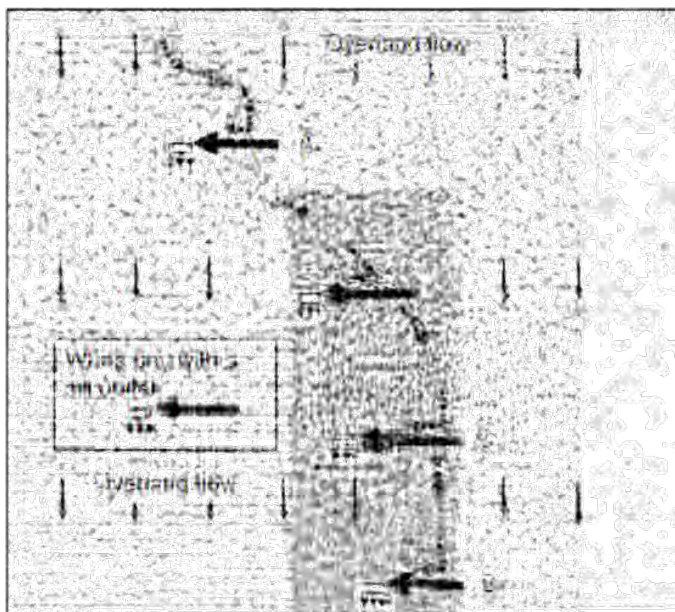


Figure H-12 – Whoa-Boys - Allow Overland Flows - Cross Access Track Pavement

12.4.1.2 Spacing of Whoa-Boys

- (a) Decreasing the spacing between *Whoa-boys* installed on *Access track Pavement* ensures the runoff (water flow) issues are reduced and minimised.
- (b) There are no strict rules to determine *Whoa-boy* spacing on *Access track Pavement* and other important considerations [subsection 12.4.1.1(b)] are to be actively considered when determining the spacing of *Whoa-boy* installations.
- (c) Installation guidelines for the spacing of *Whoa-boys* in use on *Access track Pavement*, in relation to the *Slope* of the *Pavement* refer to [Table H-1](#).
- (d) Installation guidelines for the spacing of *Whoa-boys* in use on *Access track Pavement*, in relation to the grade of drainage and level of the hazard in the vicinity of the *Pavement* refer to [Table H-2](#).

Table H1 – Whoa-Boy Spacing – Grade of Slope – Guideline

Grade of Land Slope %	VI (m)	HI (m)	Grade of Land Slope %	VI (m)	HI (m)
1	1.0	100	11	3.0	30
2	1.2	60	12	3.0	25
3	1.4	50	13	3.0	23
4	1.8	45	14	3.0	20
5	2.0	40	15	3.0	20
6	2.2	40	16	3.2	20
7	2.4	35	17	3.4	20
8	2.6	35	18	3.6	20
9	2.8	30	19	3.8	20
10	3.0	30	20	4.0	20

Legend:

VI = Vertical interval.

HI = Horizontal interval.

Table H-2 – Whoa-Boy Spacing – Grade of Drainage – Level of Hazard – Guideline



Specification for Land Management Construction

Grade of Drainage	Moderate Hazard	High Hazard
< 5°	60m	30m
5 - 15°	40m	20m
15 - 25°	20m	10m
>25°	10m	10m

12.4.1.3 Whoa-Boy Specification - Slopes Less Than Ten Percent

- (a) *Whoa-boys* may be required on *Slopes* with fall as low as one per cent (fall of one metre in 100 metre) which can be sufficient to create an *Erosion* problem.
- (b) The capacity of the channel behind a *Whoa-boy* decreases dramatically as the *Slope* increases. Where there is minimal overland flow, construct *Whoa-boys* with a height of 450 mm.
- (c) *Whoa-boys* constructed with a height of 600 mm height provides:
 - (i) Greater safety on *Slopes* above two percent grade.
 - (ii) Have a longer maintenance interval.
 - (iii) Settlement will occur depending on the method of construction.
- (d) For the cross-sectional capacity of *Whoa-boys* constructed to a height of 450 mm and 600 mm, assuming that there is no cut and fill, refer to [Table H-3](#).

Table H-3 – Whoa-Boys Cross-Sectional Capacity

Land Slope as a Percentage (%)	Height of the Whoa-Boy Above the Channel	
	45cm	60cm
Cross-sectional area (m ²) of the channel (assuming no cut and fill)		
1	10.7	18.8
2	5.6	9.8
5	2.6	4.4
10	1.6	2.6

- (e) Construct broad *Batters* to improve traffic flow over the *Access track Pavement*, of between 1:4 and 1:8 depending on the type of vehicle using the *Access track* and the *Slope* of the land, refer to [Figure H-13](#) for details (assuming that there is no cut and fill).

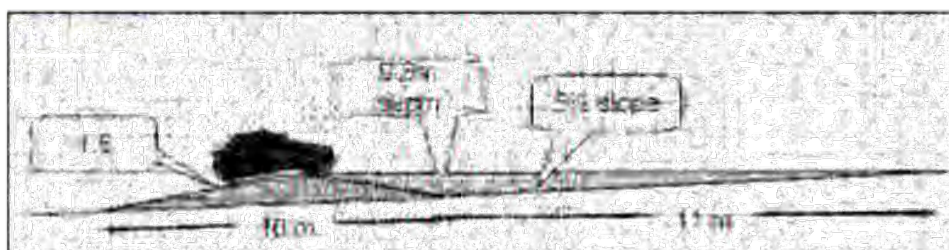


Figure H-13 – Whoa-Boys – Cross-Section – Five Percent Slope

12.4.1.4 Whoa-Boy Specification - Slopes Greater Than Ten Percent

- (a) As the *Access track Pavement Slope* increases, for *Whoa-boy* construction, it is more difficult to provide:
 - (i) Sufficient cross-sectional capacity.



Specification for Land Management Construction

- (ii) Trafficable *Batters* (as high clearance vehicles have difficulty negotiating *Whoa-boys* on *Access track Pavement Slopes* steeper than twenty per cent).
- (b) For the cross-sectional capacity of *Whoa-boys* constructed to a height of 450 mm and 600 mm, and constructed with and without cut and fill, refer to [Table H-4](#).

Table H-4 – Whoa-Boys Cross-Sectional Capacity

Land Slope as a Percentage (%)	Cross-section Area (m ²) of the Channel			
	Without Cut and Fill		With Cut and Fill	
	45cm	60cm	45cm	60cm
10	1.6	2.6	3.9	5.5
15	1.2	2.0	3.7	5.1
20	1.1	1.7	3.6	4.9

- (c) *Whoa-boy* construction on steep *Slopes* can either be:
 - (i) Cut and fill technique (refer to [Figure H-14](#)), for example constructing a 600 mm high *Whoa-boy* on a twenty per cent *Slope* using cut and fill:
 - Requires considerable earthmoving with up to 900 mm of soil needing to be excavated to form up the *Slope Batter* leading into the channel.
 - *Batter* is very susceptible to *Erosion*.
 - The total distance required to construct a *Whoa-boy* is around 20 metres.
 - (ii) Importing additional road building material for fill (refer to [Figure H-15](#)).

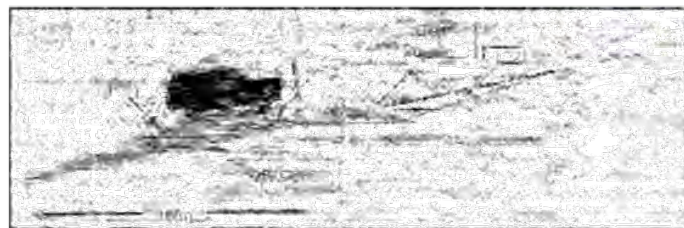


Figure H-14 – Whoa-Boys – Twenty Percent Slope – Cut and Fill – Cross-Section

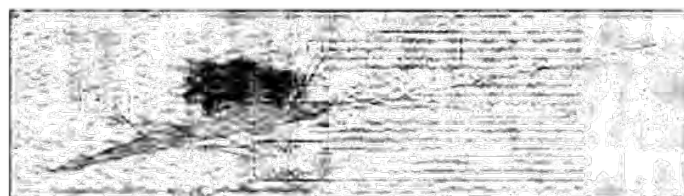


Figure H-15 – Whoa-Boys – Twenty Percent Slope – Importing Road Building Material – Cross-Section

- (d) On a steep *Slope* where *Access track Pavement* is to have an outfall type of cross-section (outfall drainage removes runoff from the *Access track Pavement*) [refer to [Figure H-16](#)], and construct the *Whoa-boy* height to 450 mm with:
 - (i) Stormwater running off the *Access track Pavement* rather than down it.
 - (ii) Smaller *Whoa-boy* adequate to deal with any runoff that flows down wheel ruts in the *Access track Pavement*.
 - (iii) *Whoa-boy* much easier to construct and easier for vehicles to traverse over.

Specification for Land Management Construction

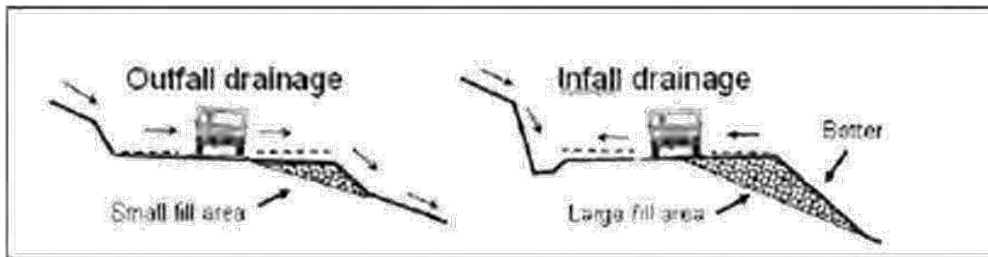


Figure H-16 – Outfall Drainage and In Fall Drainage – Steep Slope – Cross-Section

12.4.1.5 Whoa-Boy Specification - Gradients

- (a) Construct a 100 to 250 mm fall in a *Whoa-boy* from one side of the *Access track Pavement* to the other.
- (b) Runoff from *Whoa-boys* is to flow into a grassed flat-bottomed drain with a *Stable Outlet Area*, for example a grassed or rock protected surface area. (Flat bottomed drains are preferable construction to V-shaped drains, which are very susceptible to *Erosion*)
- (c) Flat bottomed drains are easier to install and maintain and there is less chance of exposing erodible subsoils.
- (d) Flat bottomed, grass lined drains are to have gradients from 0.2 percent on lower *Slopes* to 2 percent on steeper *Slopes*.
- (e) If the channel is considered to be at risk of eroding, then the construction of 0.2 percent gradients are recommended.

12.4.1.6 Whoa-Boy Construction

- (a) For construction on *Slopes* up to ten percent, move the soil for the *Whoa-boy* construction from either the top side or the bottom side of the mound.
- (b) For construction on *Slopes* above ten percent, construct the mound from the top side using cut and fill from the *Site* or road building material (for example soil or gravel) imported to the *Site*.
- (c) Take care not to expose dispersible subsoils. This can be avoided by importing road building material (for example soil or gravel) using a scraper.
- (d) Rip the *Pavement* soil on which the mound is to be constructed before the mound is constructed, this is to ensure that the soil in the constructed mound binds with the *Pavement* sub soil below the mound.
- (e) An alternative source of soil or gravel to build the mound for a *Whoa-boy* is a sill located at the *Whoa-boy* outlet.
- (f) A sill is an excavation at the end of a structure which has a level outlet that allows for the spread of runoff from the structure. The average length of a sill is usually 10 metre and 6-9 metre in width. The depth of a sill is usually 200 to 300 mm. The sill outlet is to be surveyed to ensure it is level.
- (g) For the construction of *Whoa-boys* at the *Worksite*:
 - (i) Cut a channel in the *Access track Pavement* on a slightly diagonal angle (to the forward direction of the *Access track*) and push that soil or gravel forward (down-hill) to form a mound of earth (for approximate dimensions refer to Figure H-17 - *Whoa-boys* Installation Detail, these dimensions may change depending on the *Slope* of the *Access track Pavement*, soil type and rainfall for the surrounding catchment).
 - (ii) Remove roots, stumps and other debris and dispose of them in accordance with controlling Authority requirements for transport and disposal and negotiated *Landholder* acceptance.
 - (iii) Grade the channel at a 2% fall to *Access track Pavement* edge and into a table drain or *Stabilised* outlet. The completed channel will be 150mm deep, measured from the bottom of the cut channel to the ground surface level.

Specification for Land Management Construction



- (iv) Check the bottom of the channel (up-hill side of the mound) to ensure positive drainage in the desired direction (for example towards the edge of the *Access track Pavement* and into the table drain, if previously constructed and available).
- (v) Check that the end of the *Whoa-boy* has a stable / protected outlet (for example thick *Vegetation*) or discharges to a table drain. On steep *Access track Pavements* turn-out drains (out of table drains) may be required, to ensure the controlled movement of *Surface Run-Off* water.



Figure H-17 – Whoa-boy Installation Detail

12.4.1.7 Maintenance of Whoa-Boys

- (a) Inspect *Whoa-boys* for damage after a significant rain and / or *Surface Run-Off* events.
- (b) Correct all damage to *Whoa-boys* immediately, by reinstating the earth bank and channel. If significant *Erosion* has occurred between *Whoa-boys*, check the spacing and install extra *Whoa-boys* as required after advising the *Energy Queensland Officer* and obtaining approval to proceed.
- (c) Ensure that the drainage structures, for example table drains and turn-out drains, are not subject to damage or blockage from *sediment* washed from the *Whoa-boys*.
- (d) Remove *sediment* that has accumulated behind and / or at the outlet of the *Whoa-boys* to prevent damage to the drain's *Vegetation*.
- (e) Place the *sediment* in an authorised disposal area, or if appropriate, mix the *sediment* with dry soil on the *Site*.
- (f) Do not dispose of the *sediment* in a manner that will create an *Erosion* hazard or a contamination hazard.

12.4.1.8 Removal of Whoa-Boys

Where removal of existing *Whoa-boys* are required (for example on *Sites* that are already stable):

- (a) Remove accumulated *sediment* and dispose of the *sediment* in accordance with local controlling *Authority* regulations for transport, disposal and negotiated *Landholder* acceptance.
- (b) Grade the ground surface area and level out (smooth) the ground surface out in preparation for land *stabilisation* and rehabilitation material if the area has not already been *Stabilised* and rehabilitated.
- (c) *Stabilise* and rehabilitate the ground surface area with suitable *stabilisation* / rehabilitation material (for example lay turfs, mulch) as specified by the *Construction Plan* or as directed by the *Energy Queensland Officer*.

Specification for Land Management Construction



12.4.2 Fibre Matting

12.4.2.1 Installation of Fibre Matting

- (a) Determine whether or not the location is appropriate for the use of fibre matting taking into consideration the following conditions:
 - (i) The steepness of the *Batter / Slope* to which the matting is to be placed. (Note that if the *Slope* is too steep and a catch drain has not been installed at the top of the *Slope* to carry water away from the *Slope Face*, the matting will fail)
 - (ii) Install a catch drain at the top of the *Batter / Slope* to prevent water from running down the *Slope Face* and undermining the matting.
 - (iii) The *Slope* requires a fairly even surface for the matting to sit over so the matting can be pegged in with close contact to the ground. (The surface of the *Slope Face* may need to be raked level before the matting is placed on the surface of the *Slope Face*)
 - (iv) Trench in (bury under a layer of soil) the top of the matting (at the top of the *Slope Face*) to avoid the matting from coming loose and away from the surface of the *Slope Face*.
- (b) Direct *Surface Run-Off* water away from the *Slope* surface by installing a catch drain along the top of *Slope*.
- (c) Rake the soil surface of the *Slope* smooth and level; remove roots, stumps and other debris and dispose of them in accordance with controlling *Authority* requirements for transport and disposal and negotiated *Landholder* acceptance.
- (d) Trench in the top of the matting under the soil surface (excavate the soil, dig a small trench) and bury the matting with the excavated soil over the matting.
- (e) Peg the matting on with heavy-duty pegs and ensure the matting is securely fastened over the entire soil surface of the *Slope* with total cover.
- (f) When utilising matting to develop a *Vegetation* cover over the soil surface of the *Slope*:
 - (i) Select suitable *Vegetation* species for the area and soil type of the *Slope*.
 - (ii) Regularly water the surface to encourage growth until the *Vegetation* cover is established.

12.4.2.2 Maintenance of Fibre Matting

For the regular maintenance of fibre matting:

- (a) Inspect the fibre matting, particularly after severe weather event (e.g., heavy rain and / or strong winds).
- (b) Repair damaged sections of fibre matting; re-secure fibre matting to the ground surface with pegs and place new fibre matting over exposed areas of the *Slope*'s ground surface if required.
- (c) Check that the soil surface of the *Slope* underneath the fibre matting has not eroded; if the soil surface has eroded, reinstate ground surface soil (backfilling and compacting soil surface of the *Slope* smooth and level) and restore the fibre matting as required.
- (d) Where applicable, check the vegetative regrowth, and restore fibre matting and / or re-seed un-vegetated ground surface of the *Slope* surface where necessary.

12.4.2.3 Removal of Fibre Matting

- (a) Fibre matting may be removed where the *Vegetation* cover is established and adequate to provide the required surface protection against *Erosion* or when an area is no longer *Energy Queensland*'s responsibility for *Erosion* control (if deemed appropriate).
- (b) Where the fibre matting removal is required:
 - (i) Carefully remove the matting cover from the *Slope* surface, ensuring minimal damage to the *Vegetation* cover from regrowth and edges of the original fibre matting area of cover.



Specification for Land Management Construction

- (ii) Dispose of recovered fibre matting at local landfill / tip in accordance with the local Authority regulations.
- (iii) *Stabilise* and rehabilitate any ground surface area *Disrupted* from the removal of fibre matting, as required or as directed by the *Energy Queensland Officer*.

12.5 Sediment Control Methods

During the construction of new or the maintenance of existing *sediment* control infrastructure, when modification to existing, or construction of new *sediment* control infrastructure is under active consideration, the *Service Provider* is to consider alternative *sediment* control measures that may be more practical and / or effective for construction and maintenance, including and not limited to:

- (a) Sediment Fences (catchment area is 0.6 hectare maximum; *Slope* ratio [height to length] is 1:2 maximum, is not to be used where *Surface Run-Off* concentrates).
- (b) Check Dams ([for example, rock, concrete, gabions] – catchment areas are 4 heclares maximum, spillway 0.15 metre below sides, outlet protected downstream).
- (c) Dry *sediment* basins, wet *sediment* basins and artificial wetlands.
- (d) Coarse rock sediment traps.
- (e) Mulch, vegetative debris, or rock bunding
- (f) Native *Vegetation* buffer zones.
- (g) Gravel / coarse rock inlet filters.

12.6 Sediment Control Methods

12.6.1 Installation of Sediment Fences

12.6.1.1 Materials Required for the Installation of Sediment Fences

- (a) Synthetic filter fabric or a pervious sheet of polypropylene, nylon, polyester, or polythene yarn. The fabric is to be ultra-violet ray inhibited or *stabilised* to provide a minimum life of not less than 6 months in the direct exposure to sun light.
- (b) Stakes, either 50mm hardwood or steel star pickets suitable for attaching the synthetic filter fabric.
- (c) Synthetic filter fabric reinforcement consisting of wire or steel mesh, minimum 14 gauge with a minimum mesh spacing of 150mm separation.

12.6.1.2 Installation of Sediment Fences

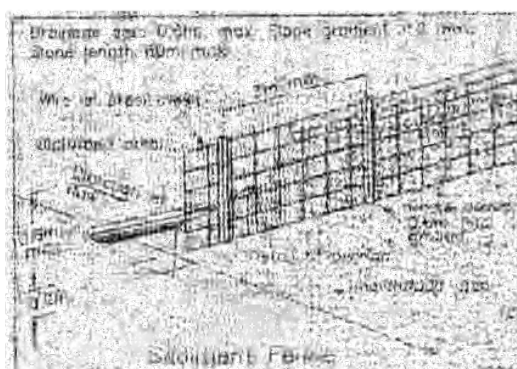


Figure H-18 – Sediment Fence Installation Detail

For the installation of *sediment* fences:

- (a) Excavate a 200mm x 200mm trench along the proposed *sediment* fence line, placing the excavated material on the higher-*Slope* side.

Specification for Land Management Construction



- (b) Along the lower side of the trench, install the stakes 500mm to 700mm into the undisrupted ground. Space the stakes no greater than:
 - (i) 3 metres apart if synthetic filter fabric supported with mesh.
 - (ii) 2 metres apart if synthetic filter fabric without the support of mesh.
 - (iii) 0.5 metres apart in areas of minor concentrated sediment flow.
- (c) Construct the *sediment* fence from a continuous roll of synthetic filter fabric avoiding joints wherever possible. To join fabric, attach each end of the synthetic filter fabric to individual stakes, holding the stakes firmly together, rotate the stakes 180 degrees around each other, and then drive the two stakes into the ground.
- (d) Securely attach the necessary support mesh to the high-*Slope* side of the stakes with the mesh extending at least 200mm into the excavated trench.
- (e) Securely attach the synthetic filter fabric to the mesh and stakes (attachments at a maximum of 300mm centres) with the synthetic filter fabric extended at least 200mm into the excavated trench. The complete *sediment* fence should be at least 450mm high, and not more than 700mm high above the ground surface level.
- (f) Backfill the trench and compact the fill by tamping to firmly anchor the bottom of the fabric and wire mesh to prevent water from flowing under the *sediment* fence.

12.6.1.3 Maintenance of Sediment Fences

For the installation of *sediment* fences:

- (a) Check if, for example and not limited to, equipment and falling *Vegetation* / trees have damaged the *sediment* fence(s). If the *sediment* fence(s) are damaged, immediately repair the damage, advise the *Energy Queensland Officer* and undertake additional repairs as directed.
- (b) Check that the adjacent fill material has not accumulated against the *sediment* fence. If the fill material has, remove the fill material, repair the *sediment* fence, and move the *sediment* fence or fill material so that the accumulation does not reoccur.
- (c) Clean out the accumulated *sediment* when it reaches a depth of one-half of the height of the synthetic filter fabric above the ground surface.
- (d) Place the *sediment* in an approved disposal area or if appropriate, mix the *sediment* with dry soil on the *Worksite*. Do not dispose of *sediment* in a manner that will create an *Erosion* hazard. Do not erect a new *sediment* fence on top of accumulated *sediment* behind the existing *sediment* fence.
- (e) If *sediment* fence outlets are used, remove and replace the gravel filter with clean, washed gravel when the filter becomes clogged. Dispose of any contaminated gravel in accordance with controlling *Authority* requirements for transport, disposal, and negotiated *Landholder* acceptance.
- (f) Repair any breaks in or deteriorated (rotten) sections of the synthetic filter fabric.
- (g) If the *sediment* fence synthetic filter fabric is sagging between stakes, install additional stakes in the impacted section of the *sediment* fence.
- (h) When making repairs to a *sediment* fence, always restore the *sediment* fence to its original constructed configuration.

12.6.1.4 Removal of Sediment Fences

- (a) When the *Disrupted Surface* areas up-*Slope* of the *sediment* fence are sufficiently *Stabilised* to restrain *Erosion*, the *sediment* fence and any outlets may be removed.
- (b) Where areas have *Stabilised* including the *sediment* build up at the *sediment* fence, there may be more value in leaving the *sediment* fence where it is. Removing the *sediment* fence at this stage will usually lead to the area becoming susceptible to *Erosion* again.
- (c) Where removal of the *sediment* fence is considered necessary:
 - (i) Remove accumulated *sediment* and dispose of the *sediment* in accordance with controlling *Authority* requirements for transport, disposal, and negotiated *Landholder* acceptance.

Specification for Land Management Construction



- (ii) Remove stakes, *sediment* fence and synthetic filter fabric, and reuse / recycle materials or dispose of the materials at a local *Authority* landfill tip.
- (iii) Remove any rocks and gravel and dispose of any rocks and gravel in accordance with controlling *Authority* requirements for transport, disposal, and negotiated *Landholder* acceptance.
- (iv) *Stabilise* and rehabilitate the area where the *sediment* fence was located.

12.7 Gabion Basket Walls

12.7.1 Gabion Baskets / Walls - General

- (a) All construction methods and materials used are to be in accordance with below subsection and attached *Drawings* (specification) of this Section 12:
 - (i) [Figure H-20](#) – Access Track Infrastructure – Land *Stabilisation* – ≤1 metre Gabion Rock Wall Mattress Details.
 - (ii) [Figure H-21](#) – Access Track Infrastructure – Land *Stabilisation* – >1 metre Gabion Rock Wall Mattress Details.
- (b) There may be a point where specialised geotechnical consultancy advice is required if there is any doubt about landslide hazards or specialist knowledge is required for assessing the stability of soils. If the *Service Providers* are not sure about the risks associated with a particular feature, for example landslip, request assistance (inspection and assessment) from a suitably qualified and *Competent Person* who is to provide detailed construction design for the *Site*.

12.7.2 Minimum Material Specification

- (a) Gabions:
 - (i) Double twisted, hexagonal wire mesh gabions of nominal 80x100 mesh, with 3.4mm o/d frame wire and 2.7mm mesh wire, complete with diaphragms at 1 metre centres.
- (b) Reno Mattresses:
 - (i) Manufactured from double twisted, hexagonal wire mesh of nominal 60x80 mesh, with 2.4mm o/d frame wire and 2.0mm o/d mesh wire, complete with diaphragms at 1 metre centres.
 - (ii) Diaphragms are to consist of two layers of mesh having the base of the mattress and the diaphragms manufactured from one continuous mesh panel.
- (c) PVC coated Wire:
 - (i) Mild steel coated (95% Zinc + 5% Aluminium mischmetal alloy) and heat bonded with heavy duty grey PVC coating of nominal 0.5mm wall thickness.
- (d) Fill Material:
 - (i) The gabion fill material is to be weather resistant, non-friable, insoluble, and sufficiently hard rock. Basalt and granite typically have these properties and sufficient specific gravity (high density) which qualify them to be used as fill material.

12.7.3 Minimum Construction Specification

- (a) Compact material behind and below the gabion wall structure to the nominated soil compaction specification.
- (b) A continuous filament non-woven needle punched geotextile to be placed at all mesh soil rock interfaces.
- (c) Adequate drainage and keying of structure into embankment needs to be provided for the control of *Surface Run-Off* running down the *Slope*.

Specification for Land Management Construction



12.8 Timber Boarded Access Track for Sand Conditions

12.8.1 Example 1



Figure H-19 – Timber Boarded Access Track Construction

12.8.2 Minimum Material Specification

- (a) Timber Board:
 - (i) 200mm X 50mm X 3000mm treated CCA pine timber for light traffic areas.
 - (ii) 200mm X 50mm X 3000mm treated CCA hardwood timber for high traffic areas.
- (b) Fasteners:
 - (i) 14g x100mm bugle batten screws galvanised; or
 - (ii) 100mm hexagonal headed screws galvanised Type 17.

12.8.3 Construction Methodology

- (a) Box out the Access track *Pavement* to a 3-metre-wide and approximately 100mm deep and stockpile the sand for reuse.
- (b) Lay the timber base boards along the Access track with a 75mm gap between each board across the boxed-out section with a slight angle towards the lower side to shed the water.
- (c) Lay the timber side boards continuous along the edges of the timber base boards starting and finishing offset on either side of track with 100mm galvanised screw fixing to each timber base board.
- (d) Attach angled timber cross boards at 45 degrees to the timber sideboard, were specified on *Slopes* as a water shed, fix to each timber base board with a 100mm galvanised screw.
- (e) Sand up the finished timber boarded Access track to an uncompacted depth of approximately 100 mm and lightly track role the sand in to compact the *Pavement* surface.
- (f) Trim the sand edges to allow water to exit on the lower side at regular intervals of approximately 5 metres along the Access track and place appropriate *Erosion* control.



Specification for Land Management Construction

12.9 Summary of Stabilisation Techniques

Table H-5- Summary of Stabilisation Techniques

Technique	Advantage	Disadvantage	Application	Technical Aspects
Reducing Gradient	<p>Visually appealing. Safer.</p> <p>Traversable by machinery.</p> <p>Easier to topsoil and revegetate.</p> <p>More natural looking.</p>	<p>Requires greater disruption of ground surface.</p>		<p><i>Batter</i> grade equal to or greater than 1(v):3(h) desirable for <i>Erosion</i> control. <i>Batter</i> steeper than 1:2 should not be topsoiled. <i>Batter</i> face is to be protected from <i>Erosion</i>.</p>
Benching	<p>Useful technique where <i>Battering</i> not possible.</p> <p>Easier to control <i>Surface Run-Off</i> on benches.</p> <p>Benches can be revegetated.</p>	<p>Poor visual amenity.</p> <p>Steep <i>Batters</i> difficult to revegetate.</p> <p>Water ponding on bench can lead to <i>Slope</i> instability.</p>	<p>Generally, not applicable for soil.</p> <p>Ideal where steeper <i>Batters</i> or minimal disturbance required.</p>	<p>Benches should <i>Slope</i> inward with stable longitudinal grade.</p> <p>A minimum width of 3 metre should be adopted.</p> <p>Bench drains should be lined to allow the efficient drainage of <i>Surface Run-Off</i> and minimise infiltration.</p>
Topsoiling	<p>Easier to revegetate.</p> <p>High quality of revegetation.</p> <p>Improved visual amenity.</p>	<p>Difficult to place on steep <i>Slopes</i>.</p> <p>Imported topsoil may contain weeds and pathogens.</p>	<p>Topsoil is placed on areas to be revegetated.</p>	<p>Should be a maximum of 50mm thick on steep <i>Slopes</i>.</p> <p>Do not place on <i>Batters</i> steeper than 1:2.</p> <p>Should be protected from <i>Erosion</i> immediately after placement.</p>



Specification for Land Management Construction

Technique	Advantage	Disadvantage	Application	Technical Aspects
Seeding	Cost effective. Small areas do not require specialist machinery.	Offers no <i>Erosion</i> protection until <i>Vegetation</i> is established. Requires preparation of the soil surface. Difficult to prepare soils on steep <i>Slopes</i> and other constrained areas.	Most effective on large, flat areas where good soil conditions are available.	Soils should be tested to determine nutrient and pH status. Seed should be <i>Invasive Plant</i> free. Supplied by a certified seed merchant. Seed merchant, agronomist or revegetation agent should be contacted for species selection and application rate.
Hydro-seeding	More effective than conventional seeding techniques on constrained <i>Worksites</i> . Requires minimal site preparation.	Offers limited short term <i>Erosion</i> protection.	Seeds easily washed away in a high rainfall environment.	
Hand Mulching	Cost effective for small areas. Depending on location, material for example hay can be cheap. Does not require specialist machinery.	Labour intensive. Mulch may contain undesirable weeds.	Normally associated with intensive landscaping or small areas of surface disruption.	Minimum soil cover of 75% is required. Mulch should be tacked down to prevent wind damage – water and bitumen common tackifiers.
Hydro mulching	Limited surface preparation required. Offers immediate <i>Erosion</i> protection. Effective in constrained areas.	Offers some <i>Erosion</i> protection. Tackifiers generally water soluble. Easily damaged by stock and vehicles. Offers only short-term <i>Erosion</i> protection. Relies on <i>Vegetation</i> for long term protection. Requires specialist machinery for application.	Effective in environments with medium rainfall intensities and <i>Sheet Flows</i> . Not to be used in drains and flow lines where concentrated flows are encountered.	Plus, appropriate grass and tree species and fertiliser.



Specification for Land Management Construction

Technique	Advantage	Disadvantage	Application	Technical Aspects
Reinforced Earth	<p>Geotechnical stability provided as well as <i>Erosion</i> protection.</p> <p>Basic earthmoving equipment required to install.</p>	<p>Can be expensive. Requires intensive site preparation.</p> <p>Not suitable where rock is present.</p>	<p>Appropriate where geotechnical stability is required for example fill <i>Batter</i> for an <i>Access track Pavement</i>.</p>	<p>Refer to manufacturer's specification for each particular product.</p>
Bonded Fibre Matrix (BFM)	<p>Limited surface preparation required.</p> <p>Offer immediate <i>Erosion</i> protection. Effective in constrained areas.</p> <p>Offers better <i>Erosion</i> protection than hydro mulching.</p>	<p>Short term costs higher than hydro mulching.</p> <p>Requires specialist machinery for application.</p>	<p>Used on <i>Slopes</i> where high intensity rainfall is common and where immediate <i>Erosion</i> protection is required.</p>	<p>Application Rate:</p> <p>Bagasse 10,000kg/ha</p> <p>Paper 1000kg/ha</p> <p>Binder 30L/ha (non water soluble)</p> <p>Plus, appropriate grass and tree species and fertiliser.</p> <p>If no seeds are to be included in mix increase binder to 40 L/ha (e.g., planting tube stock / mass mechanical planting techniques).</p>
Erosion Control Blankets	<p>Provides greater raindrop impact protection than hydro mulching and BFM.</p> <p>Does not require specialist machinery.</p>	<p>Intensive surface preparation required.</p> <p>Can be expensive.</p> <p>Relies on permanent <i>Vegetation</i> for long term stability.</p> <p>Installation labour intensive.</p> <p>Nylon netting in some mats can trap birds and animals.</p>	<p>Used on smooth earthen <i>Batters</i> when surface preparation is possible.</p>	<p>Type of mat depends on degree and length of protection required.</p> <p>Coconut fibre and cellulose mats offer short term protection.</p> <p>2D and 3D polypropylene mats offer long term protection and can withstand more intense rainfall.</p>

Specification for Land Management Construction



Technique	Advantage	Disadvantage	Application	Technical Aspects
Rock Mattress	Provides greater geotechnical stability and <i>Erosion</i> protection than other solutions. Can be revegetated.	Expensive. Requires extensive site preparation. Requires good <i>Access</i> for machinery.	Used where geotechnical stability is required e.g., retaining wall, fill embankments.	Refer to manufacturer's specifications and installation guide.
Rock Mulching	Offers immediate protection. If done correctly will provide permanent, long term <i>Erosion</i> protection.	Soil can erode from under rocks. Suitable rocks often not available in remote locations. Requires good <i>Access</i> for machinery. Can be expensive.	Good technique where permanent <i>Vegetation</i> cover cannot be maintained.	Soil surface should be relatively smooth. Place geotextile on the surface. Install up <i>Slope</i> cut-off trenches. Minimum average rock size of 200mm is recommended.
Gabion Basket Wall	Permanent geotechnical solution to control and <i>Stabilise</i> significant subsidence or major <i>Erosion</i> of an embankment adjacent to critical infrastructure.	Unstable soil for foundation requires geotechnical testing to confirm foundation stability. An RPEQ civil / structural engineered design required in extreme circumstances.	Appropriate where geotechnical / structural stability is required to secure high value / critical electricity supply assets in land slip and high <i>Erosion</i> geotechnical areas.	Substrata base course foundation material needs to be compacted and stable. Follow the <i>Construction Standard</i> / manufacturer's installation specifications for gabion basket wall. Rock fill is to be clean and <i>Invasive Plant</i> free.



Specification for Land Management Construction

Technique	Advantage	Disadvantage	Application	Technical Aspects
Timber Boarding	<p>Limited surface preparation required and straight forward construction.</p> <p>Offers immediate <i>Erosion</i> protection. Effective in constrained areas. Assists with vehicle <i>Access</i> across deep and soft sand. Offers a solution for sand track <i>Erosion</i>.</p>	<p>CCA pine boards can only be used for light traffic and low vehicle loads in sand.</p> <p>Sand can erode from under the boards if not compacted correctly.</p>	<p>Sandy areas only where <i>Access</i> is difficult.</p> <p>Assists vehicle across deep soft sand and offers a solution to sand track <i>Erosion</i>. Cost effective compared to constructing compacted gravel/rock <i>Access</i> tracks in the same areas.</p>	<p>Box out site saving sand for re use</p> <p>Lay boards with a 75mm gap between each board with slight angle to low side to shed water</p> <p>Attach side boards and angled cross boards at 45 degrees to sides as a water shed.</p> <p>Sand up finished boards to approximately 100 mm uncompacted depth and lightly track role in sand.</p> <p>Trim sand edges to allow water exit on lower side at regular intervals of approx. 5 metres.</p>

Specification for Land Management Construction

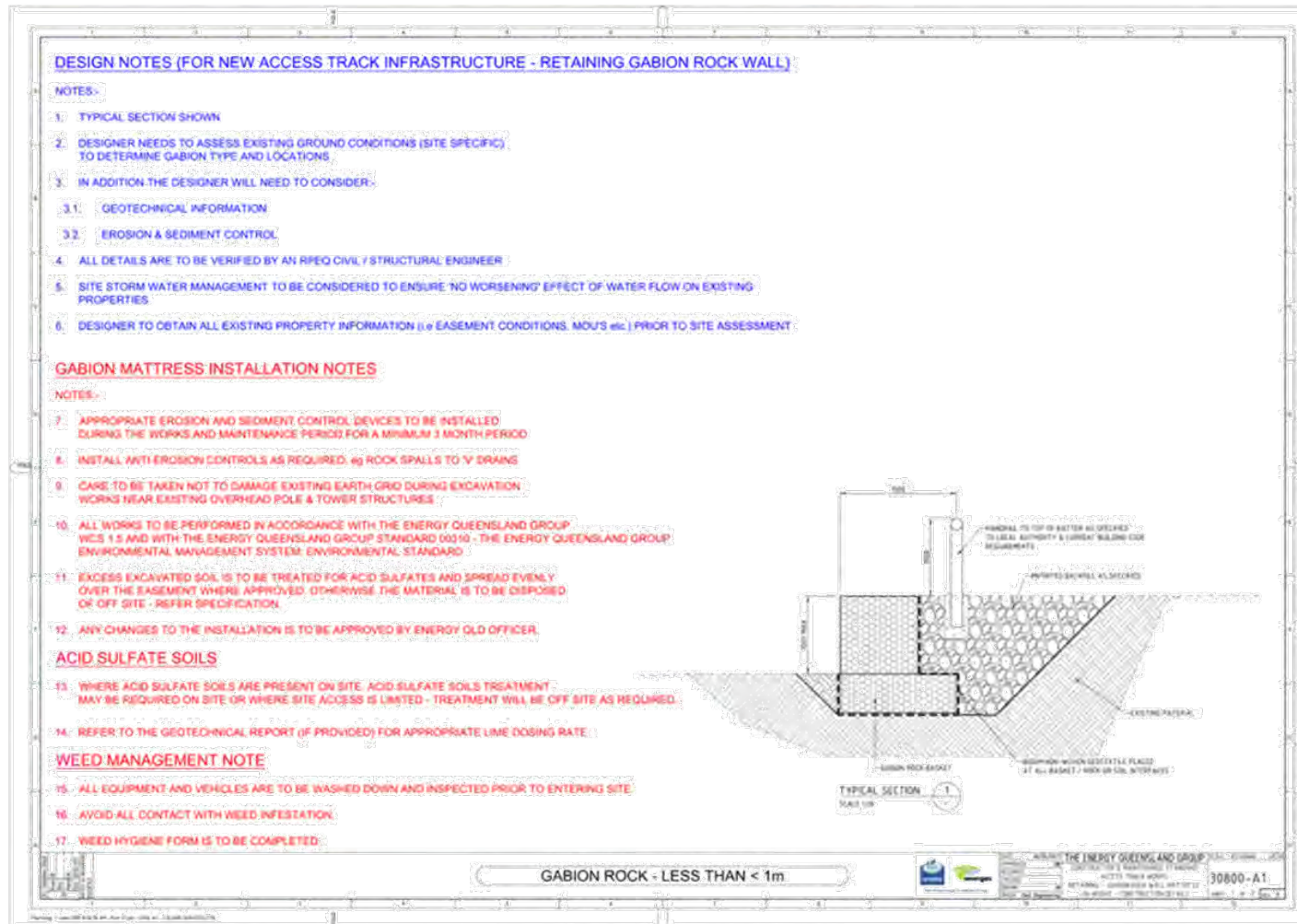


Figure H-20 – Access Track Infrastructure – Land Stabilisation – ≤1m Gabion Rock Wall Mattress Details.

ner: Chief Operating Officer

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Specification for Land Management Construction

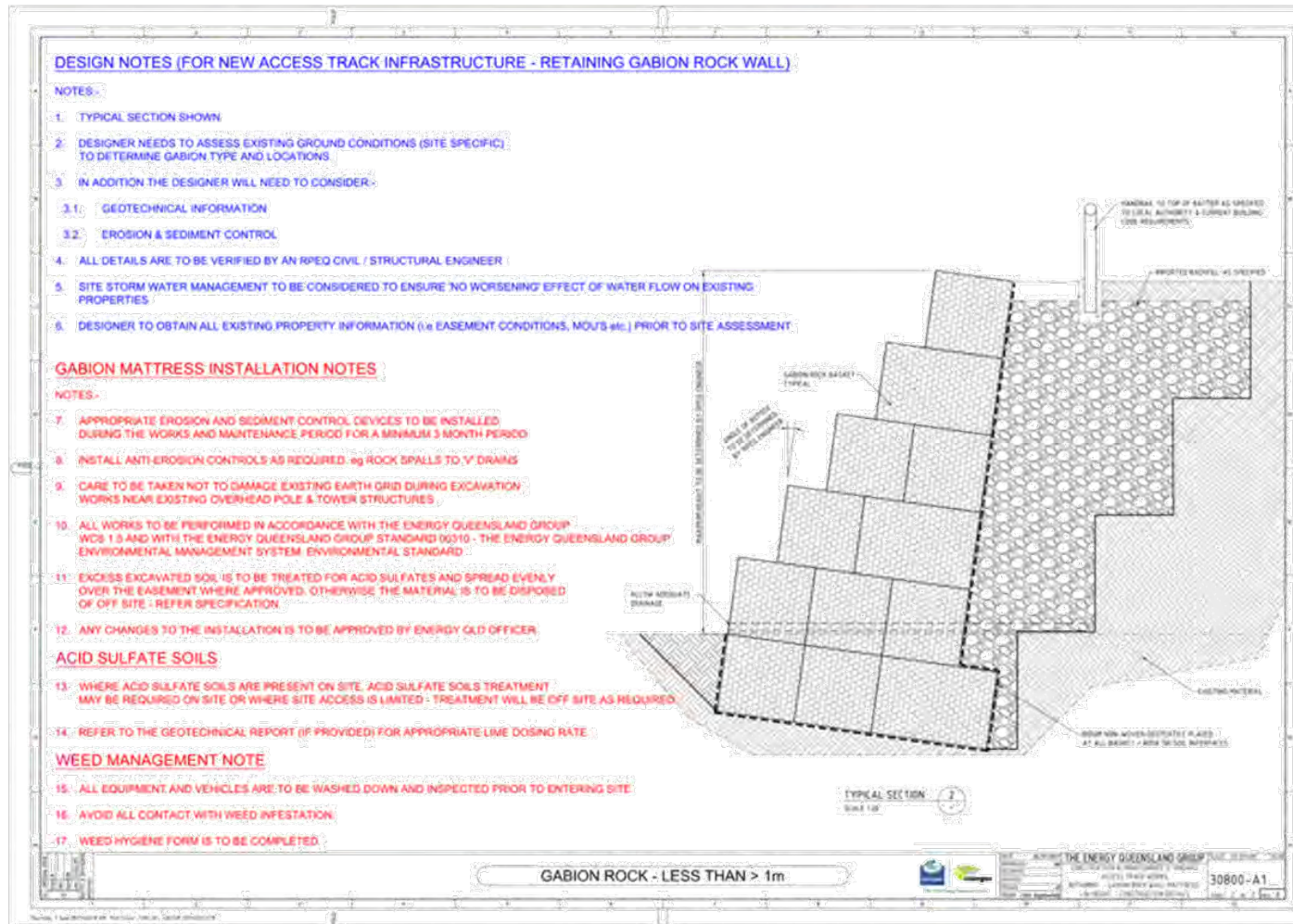


Figure H-21 – Access Track Infrastructure – Land Stabilisation – >1m Gabion Rock Wall Mattress Details.

Specification for Land Management Construction



13 Land Rehabilitation and Revegetation

13.1 Pre-works and Site Establishment

13.1.1 Management and Control Plan Implementation

- (a) The *Service Provider* is to establish and implement the following management and control plans:
- (i) Environmental management plan includes the following details as a minimum:
 - Assignment of responsibility for environmental controls.
 - Conditions of approvals, licences and permits to meet controlling *Authority* requirements, and negotiated *Landholder* acceptance.
 - Details of potential environmental impacts and operational control measures that are to be implemented.
 - (ii) Soil *Erosion* and *sediment* control plan include the following details for all *Worksite* areas and *Access* and *haulage* tracks, *borrow* pits, and *stockpile* areas as a minimum:
 - Staging of operations and sequence of land rehabilitation works.
 - Diversion of upstream water around the *Site*.
 - Provision of temporary drains and catch drains.
 - Application of diversion, dispersal and / or retention measures to concentrate flows, to control, dissipate stormwater and concentrate runoff through the *Site* without damage.
 - Temporary treatments to protect and / or restoration of *Disrupted* or exposed surface areas in progress with the land rehabilitation works, for example contour ploughing, bunding or mulching.
 - (iii) Air quality control plan, include the following details as a minimum:
 - Details of the measures to protect adjoining *Landholders / Occupiers* and the public against dust, dirt and water nuisance and injury.
 - Utilisation of dust screens and watering to reduce the dust nuisance.
 - (iv) Waste management plan and identify major waste streams that will be generated and where the waste is to be re-used, recycled, stockpiled, treated, or disposed of, include the following details as a minimum:
 - Green waste and organic waste.
 - Construction waste, including spoil and demolition waste.
 - (v) Ground contamination plan, include the following details as a minimum:
 - If the land to be rehabilitated is identified as contaminated, or the presence of acid sulphate soils is found, prepare a remediation action plan in accordance with *Authority* guidelines.
 - (vi) *Invasive Plants* management plan, include the following details as a minimum:
 - Identify *Invasive Plants* and infestation zones within the *Worksite*.
 - Method of cleaning vehicles and machinery and cleaning date.
 - Cleaning bay location and treatment date.
 - Contaminated fill stockpile, treatment type and treatment date.

Specification for Land Management Construction



13.1.2 Site Preparation

13.1.2.1 Program of Work

- (a) The *Service Provider* is to submit a program of work (typically in the form of a bar chart), for the land rehabilitation works prior to the commencement of *Site* works to the *Energy Queensland Officer*.
- (b) The *Service Provider* is to submit a proposed planting maintenance program (typically in the form of a bar chart), for the land rehabilitation after initial works, prior to the commencement of *Site* works to the *Energy Queensland Officer*.

13.1.2.2 Community Liaison

Notify *Authorities / Landholders / Occupiers* of new or changed land rehabilitation construction activities which will affect *Access* to or disrupt the use of the properties under their control.

13.1.2.3 Temporary Landscape Fencing

- (a) Install temporary landscape fencing to ensure the *Worksite*, and the trees and plantings are protected from vehicular and pedestrian traffic movement until rehabilitation works are complete and trees and plantings are established.
- (b) Temporary landscape fencing dimensions are nominally
 - (i) Height of 1.2 metre.
 - (ii) Maximum post spacing of 5 metres.
 - (iii) The minimum standard for fencing material is star pickets and a form of sighter tape strung between pickets at top.
- (b) Temporary landscape fencing is to remain in place and only be removed at the end of the planting establishment period.

13.1.2.4 Tree Protection

- (a) All established trees that are not marked for removal are to be maintained and protected. The level of protection is to comply with (and not limited to) those parts of AS 4970 which are referenced in the below section:
 - (i) Tree protection zone - AS 4970 Section 3.
 - (ii) Tree protective measures - AS 4970 Section 4.
 - (iii) Tree monitoring and certification - AS 4970 Section 5.
- (b) Display a tree protection warning sign in a prominent position at each entrance to the *Worksite*, warning that trees and plantings are to be protected during the initial land rehabilitation construction activities and the planting establishment period.
- (c) Tree protection warning signage is to remain in place and only be removed at the end of the planting establishment period.
- (d) Tree protection warning signage lettering is to be road type sign letters; sans serif and 100 mm high to AS 4970 Appendix C.



Specification for Land Management Construction

13.2 Site Clearing

13.2.1 Extent of Clearing

Clear only the following *Site* areas:

- (a) **Work Areas:**
 - (i) Areas to be occupied for land rehabilitation, including, and not limited to excavation, regrading, landscaping, and planting and establishment of *Vegetation* works.
- (b) **Service Provider's Worksite areas:**
 - (i) If not included within the land rehabilitation areas documented above, clear generally only to the extent necessary for Site mobilisation and the performance of the works.

13.2.2 Clearing and Grubbing

- (a) **Clearing:**
 - (i) Remove everything on or above the Worksite surface, including and not limited to rubbish, scrap material, grass, vegetable matter and organic debris, scrub, trees, timber, stumps, boulders, and rubble.
 - (ii) Remove vegetative spoil from Site and the vegetative spoil are not to be burn.
- (b) **Grubbing:**
 - (i) Grub out stumps and roots over 75 mm diameter to a minimum depth of 500 mm below subgrade under, embankments or paved areas.
 - (ii) Grub out stumps and roots over 75 mm diameter to a minimum depth of 300 mm below finished surface in unpaved open landscape areas.
 - (iii) Backfill holes remaining after grubbing with sand material to prevent ponding of water. Compact the material to the same relative density of the existing adjacent ground material.

13.3 Tree Maintenance

- (a) All tree maintenance is to conform to the tree maintenance schedule provided by *Energy Queensland* or as directed by the *Energy Queensland Officer* on *Worksite*.
- (b) The *Service Provider* is to give notice to the *Energy Queensland Officer* prior to commencing tree maintenance at *Worksite*.
- (c) If it is necessary to perform any work on trees that are to be retained as part of the land rehabilitation, give notice to the *Energy Queensland Officer* prior to commencing any work on the trees.
- (d) All pruning of trees is to be carried out in accordance with AS 4373 and the relevant industry codes of practice.
- (e) Tree maintenance works (for example pruning of trees to be retained) are to be carried out by a fully qualified and experienced arborist.

13.4 Disposal of Waste Materials

13.4.1 Disposal of Spoil

Remove all cleared spoil and grubbed material from the *Worksite* and dispose of in accordance with controlling *Authority* requirements for transport, disposal, and negotiated *Landholder* acceptance.

13.4.2 Mulch

- (a) Chip seed free aerial vegetative matter by putting through a chipper and reducing the vegetative matter to pieces not larger than 75 x 50 x 15 mm and stockpile for re-use as mulch.

Specification for Land Management Construction



- (b) Aerial vegetative matter not permitted to be chipped is leaf matter and tree lopping from and not limited to:
- (i) Privet.
 - (ii) Camphor laurel.
 - (iii) Coral tree.
 - (iv) Poplar.
 - (v) Willow.
 - (vi) *Invasive Plants*.
- (c) Mulch supplied or generated at *Worksite* is not to contain biohazard contaminants.
- (d) The *Service Provider* is to submit a detailed program for the mulching of the cleared *Vegetation* at the *Worksite(s)*.

13.5 Topsoil

13.5.1 Site Topsoil

Soil excavated from the *Worksite* which contains organic matter, supports plant life, conforms generally to the fine to medium texture classification to AS 4419 (loam, silt, clay loam) and is free from:

- (a) Stones > 25 mm diameter.
- (b) Clay lumps > 75 mm diameter.
- (c) *Invasive Plants* and tree roots.
- (d) Sticks and rubbish.
- (e) Material toxic to plants.

may be stockpiled at *Worksite* and utilised to finish the surface area being landscaped to the required levels, grade, and shape for both grassing and tree planting.

13.5.2 Imported Topsoil

Import topsoil to the selected type (texture) unless the topsoil type can be provided from material recovered from the *Site*. Imported topsoil is to be similar to naturally occurring local topsoil at the *Site*, and:

- (a) Suitable for the establishment and ongoing viability of the selected *Vegetation* being planted.
- (b) Certified free of *Invasive Plants* propagules.
- (c) Free of contaminants (including bio-hazard contaminants).
- (d) Classified by texture as follows to AS 4419:
 - (i) Fine:
 - Clay loam, fine sandy loam, sandy clay loam, silty loam, loam.
 - (ii) Medium:
 - Sandy loam, fine sandy loam.
 - (iii) Coarse:
 - Sand, loamy sand.
- (e) For deliveries of topsoil to *Site*, the accompanying documentation is to comply with AS 4419
- (f) If using additives to raise topsoil to the required standard, ensure compliance with the relevant test criteria of AS 4419.
- (g) Nitrogen drawdown: if the NDI_{150} value is < 0.5 to AS 4419 add a source of soluble nitrogen to bring the value above zero.



Specification for Land Management Construction

- (h) The supplied topsoil to Site is to be suitable for native planting.
- (i) For the particle size of topsoil(s) being provided, refer to [Table I-1](#) for the particle size of the various nominated textures of the topsoil.

Table I-1 – Topsoil Particle Size Table [Percentage (%) Passing By Mass]

AS Sieve Aperture To	Topsoil Textures		
	Fine	Medium	Coarse
2.36	100	100	100
1.18	90 – 100	90 – 100	90 – 100
0.60	75 – 100	75 – 100	70 – 90
0.30	57 – 90	55 – 85	30 – 46
0.15	45 – 70	38 – 55	10 – 22
0.075	35 – 55	25 – 35	5 – 10
0.002		2 – 15	2 – 8

For the nutrient levels of topsoil(s) being provided, refer to [Table I-2](#) for the nutrient sufficiency range for the topsoil.

Table I-2 – Topsoil Nutrient Levels

Nutrient	Unit	Sufficiency Range
Nitrate-N (NO ₃)	mg/kg	> 25
Phosphate-P (PO ₄) – P tolerant	mg/kg	43 - 63
Phosphate-P (PO ₄) – P sensitive	mg/kg	< 28
Phosphate-P (PO ₄) – P very sensitive	mg/kg	< 6
Potassium (K)	mg/kg	178 - 388
Sulphate-S (SO ₄)	mg/kg	39 - 68
Calcium (Ca)	mg/kg	1200 - 2400
Magnesium (Mg)	mg/kg	134 - 289
Iron (Fe)	mg/kg	279 - 552
Manganese (Mn)	mg/kg	18 - 44
Zinc (Zn)	mg/kg	2.6 - 5.1
Copper (Cu)	mg/kg	4.5 - 6.3
Boron (B)	mg/kg	1.4 - 2.7

Method References:

pH in H₂O (1:5), pH in CaCl₂ (1:5) and Electrical Conductivity (EC) by Rayment & Higginson (1992) method 4A2, 4B2, 3A1.

Soluble Nitrate-N by APHA 4500.

Soluble Chloride by Rayment & Higginson (1992) modified method 5A2.

Extractable P by Mehlich 3 – ICP.

Exchangeable cations – Ca, Mg, K, Na by Mehlich 3 – ICP.

Extractable S by Mehlich 3 – ICP.

Extractable trace elements (Fe, Mn, Zn, Cu, B) by Mehlich 3 – ICP.

13.5.3 Topsoil Stockpiles

- (a) Stockpile Site topsoil intended for re-use and imported topsoil where necessary to maximum height of 1.5 metre.
- (b) Provide drainage and Erosion protection for the stockpile(s).
- (c) Protect the topsoil stockpiles from contamination by other excavated material, Invasive Plants and building debris.

Specification for Land Management Construction



13.6 Imported Materials

- (a) Imported fill is to be provided with certification or test results by a GTA registered laboratory which establishes the compliance of imported fill with the material specification including the source.
- (b) Soil materials provided are to comply with the following standards as a minimum:
 - (i) Site and imported topsoil is to comply with AS 4419.
 - (ii) Potting mixes are to comply with AS 3743.
 - (iii) Composts, soil conditioners and mulches are to comply with AS 4454.

13.6.1 Compost

- (a) The compost supplied is to be well-rotted vegetative material or animal manure, free from harmful chemicals, grass, *Invasive Plant* growth and biohazard contaminates.
- (b) The organic content of the compost by mass is specified in the landscape design *Drawings* or as nominated by the *Energy Queensland Officer*.

13.7 Embankment Stabilisation

- (a) Where necessary *Stabilise* embankments to prevent *Erosion* or soil movement, in accordance with Section 12, *Land Stabilisation* utilising methods, for example matting overlay or hydro mulching.
- (b) Matting overlay:
 - (i) Biodegradable fibre reinforced with lightweight polymer mesh.
 - (ii) Provide lightweight material for seeding, and medium or heavy weight material for planting of the embankment.
 - (iii) In high *Erosion* zones, utilise flexible carbon black UV *stabilised* interwoven nylon mesh.

13.8 Ripping Subsoil

- (a) Rip subsoil parallel to the final contours wherever possible.
- (b) Subsoil is not to be ripped when the subsoil is wet or plastic.
- (c) Subsoil is not to be ripped within the dripline of trees and shrubs to be retained as part of the landscaping.
- (d) For compacted subsoil rip the subsoil to a typical depth of 300 mm.

13.9 Excavation for Planting Beds

- (a) Excavate the subsoil to at least a depth of 150 mm below finished design surface levels.
- (b) Shape the subsoil to fall to the subsoil drains where applicable.
- (c) Break up the subsoil to a further depth of 150 mm below the subsoil surface levels after initial excavation.
- (d) Remove any previously unexcavated weeds, roots, builder's rubbish, and other debris exposed during the excavation and breakup of the subsoil.
- (e) Re-establish the planting bed to a depth of 75 mm below finished design surface levels with topsoil as specified by the landscape master plan.

13.10 Cultivation

- (a) Cultivate manually within 300 mm of paths or structures.
- (b) Remove stones exceeding 25 mm, clods of earth exceeding 50 mm, and weeds, rubbish or other deleterious material brought to the surface during the cultivation.
- (c) Trim the surface to the design surface levels after cultivation.
- (d) During cultivation, thoroughly mix in materials required to be incorporated into the subsoil.

Specification for Land Management Construction



- (e) Cultivate the subsoil to a minimum depth of 100 mm unless otherwise specified as detailed below:
 - (i) Grassed areas (seeded) to a depth of 100 mm.
 - (ii) Planting areas to a depth as specified on landscape master plan(s)
- (f) Underground services and roots of trees and shrubs to be retained as part of the landscaping are not to be damaged or *disrupted*, if necessary, cultivate these areas by hand.

13.11 Additives to Subsoil

- (a) Apply additives after ripping or cultivation of the subsoil and incorporate additives into the upper 100 mm layer of the subsoil when required.
- (b) For example, when adding gypsum; incorporate the gypsum at the rate of 0.25 kg/m².

13.12 Site Topsoil Preparation

- (a) Screed *Site* topsoil by a suitably sized power hydraulic screen for the volume of *Site* topsoil to be processed, with sieves grading from 20 mm to 15 mm.
- (b) Remove screed generated waste from *Site*, including and not limited to all clay lumps, balled compacted particles greater than 20 mm, stones and trash foreign to the normal composition of soil.
- (c) If *Site* topsoil contamination has occurred, including from and not limited to diesel oil, cement or other phytotoxic material has been spilt on the *Site* topsoil, excavate the contaminated soil and dispose of it off the *Site* in accordance with controlling *Authority* requirements for transport and disposal, and negotiated *Landholder* acceptance.
- (d) Admixtures, during the screening process add for example:
 - (i) 15% by weight coarse sand with a minimum particle size of 0.2 mm.
 - (ii) Ameliorants if recommended in the soil tests specified.
- (e) The additives program to *Site* topsoil at screening is to occur eight weeks prior to stolonizing or turfing of *Site* topsoil.

13.13 Placing Topsoil

- (a) *Site* topsoil is not to be incorporate into the landscaping works until soil testing certification has been approved. Remove any unauthorised topsoil material from the *Site*.
- (b) Spread the topsoil on the prepared subsoil and grade evenly, making the necessary allowances to permit the following:
 - (i) Required finished surface levels and contours are being achieved after light compaction.
 - (ii) Grassed areas are finished flush with adjacent hard surfaces, for example kerbs, paths, and mowing strips.
- (c) When spreading topsoil on steep *Batters*, if using a chain drag, ensure there is no danger of *Batter* being *disrupted*.
- (d) When finishing the topsoil, feather the edges into the adjoining undisrupted ground.

13.13.1 Topsoil Consolidation

Topsoil is to be compacted lightly and uniformly in 150 mm layers. Avoid differential subsidence and excess compaction, and produce a finished topsoil surface which has the following characteristics:

- (a) Finished to design levels.
- (b) Smooth and free from stones or lumps of soil.
- (c) Graded to drain freely, without ponding, to catchment points.
- (d) Graded evenly into adjoining ground surfaces.
- (e) Ready for grassing and / or planting.



Specification for Land Management Construction

13.13.2 Topsoil Depths

Topsoil is to be spread to the following depths and may vary subject to the nominated finished surface levels:

- (a) For excavated planting areas:
 - (i) If using organic mulch, the depth is 225 mm.
 - (ii) If using gravel mulch, the depth is 250 mm.
- (b) For irrigated grassed areas, the depth is 150 mm.
- (c) For irrigated grassed areas, commercial use (e.g., playing fields, playgrounds, public parks), the depth is 200 mm.
- (d) For non-irrigated grass areas, the depth is 100 mm.
- (e) For earth mounds:
 - (i) Mass planted surfaces, the depth is 300 mm.
 - (ii) Grassed surfaces, the depth is 100 mm.
- (f) For top dressing, the depth is 10 mm.

13.13.3 Surplus Topsoil

- (a) Spread any surplus topsoil on designated areas around the Site; otherwise, dispose of the surplus topsoil off Site.
- (b) Spread topsoil evenly around designated areas and spread over existing grassed areas to form an even surface when finished.

13.14 Fertiliser

- (a) When delivering commercially produced fertilisers to the Site must be in sealed bags marked to show the manufacturer or vendor, weight of the bag, fertiliser type, N:P:K ratio, recommended uses and application rates.
- (b) Refer to [Table I-3](#) for the fertiliser schedule.

Table I-3 – Fertiliser Schedule

Fertiliser Key	Variety	N:P:K ratio	Application Rate
Biological – processed where pathogens, parasites and weed seeds are eradicated	Australian Certified Organic and in a pelletised form where secondary nutrients and micronutrients in a natural form	4:3:2	200-400kg / hectare

13.15 Invasive Plant Eradication

- (a) *Invasive Plant eradication by the application of Herbicide:*
 - (i) Eradicate weeds using environmentally acceptable methods, for example a non-residual glyphosate *Herbicide* in any of its registered formulae, at the recommended maximum rate.
 - (ii) The application of *Herbicide* is to be in accordance with Section 14, Procedure – *Herbicide Application*.
- (b) *Invasive Plant eradication by manual weeding:*
 - (i) Regularly remove by hand, rubbish, and Invasive Plant growth throughout grassed, planted and mulched areas.
 - (ii) Remove Invasive Plant growth from an area 750 mm diameter around the base of the trees in grassed areas.

Specification for Land Management Construction



- (c) Continue *Invasive Plant* eradication throughout the course of the initial landscaping works and during the planting establishment period.

13.16 Grass Seeding

- (a) Provide grass seed mixtures which are thoroughly pre-mixed with a bulking material, for example safflower meal.
- (b) Deliver the grass seed to the *Site* in bags marked to show the weight, seed species and supplier's name.
- (c) Provide fresh, clean, new grass seed. Do not provide wet, mouldy, or otherwise impaired grass seed.
- (d) The specification for the grass seed provided is:
- (i) Purity is to be a minimum of 98%.
 - (ii) Germination viability is to be a minimum of 86%.
 - (iii) Age from date of harvest is to be a maximum of two years.
- (e) Prepare the surface areas to be sown with grass seed:
- (i) Spread the fertiliser evenly over the cultivated bed within 48 hours before sowing and rake lightly into the surface.
 - (ii) If a prepared area becomes compacted from any cause before sowing can begin, rework the ground surface before sowing.
- (f) Sowing of the grass seed over the prepared area:
- (i) The sowing of grass seed is not to proceed when the following conditions occur:
 - Frost is likely before the plant has reached an established state.
 - In periods of extreme heat, cold or wet.
 - Within acceptable wind velocities that will allow even distribution without dispersion over areas outside the nominated area for grass seeding.
 - (ii) Provide an even distribution of grass seed and lightly rake the surface to cover the seed.
 - (iii) Sow seeded grass areas at *Worksite* in accordance with the grass seeding schedule provided or as directed by the *Energy Queensland Officer*.
- (g) Roll the seed bed immediately after sowing utilising the maximum roller weight as detailed below:
- (i) For clay and packing (heavy) soils, roll with 90 kg/m width roller.
 - (ii) For sandy and light soils, roll with 300 kg/m width roller.
- (h) Watering of the grass seed over the prepared areas (if required):
- (i) Before germination, water the seeded area with a fine spray until the topsoil is moistened to its full depth. Continue watering until germination to keep the surface damp and the topsoil moist and ensure the topsoil does not become waterlogged.
 - (ii) After germination, water to maintain a healthy condition, and progressively hardened off to attain the natural climatic conditions of the *Site*.
- (i) After germination, maintain sown areas if required until the attainment of a dense continuous sward of healthy grass over the whole of the seeded area, evenly green and of a consistent height.
- (j) Remove weeds that occur in sown areas if required by spraying where necessary with a selective *Herbicide* for broad leafed weeds. The spraying of grass seeded areas is not to occur within three months of germination of the grass seed.
- (k) Protect the newly sown grassed areas against vehicular and pedestrian traffic movement until well established if required. Protection method is to lay star droppers with temporary roped flagging until grass areas are established.
- (l) Fertilising of grassed areas after germination is to occur as specified below if required:

Specification for Land Management Construction



- (i) Six weeks after germination of the grass, spread fertiliser evenly over the sown area and then water in. Do not apply the fertiliser to wet grass.
- (ii) Ten weeks after germination of the grass, and if the planting establishment period carries through the summer months, spread pelleted sulphate of ammonia at the rate of 250 kg/ha.
- (m) Mowing of grassed areas after germination is to occur as specified below if required:
 - (i) Mow to maintain the grass at the nominated height within the specified range or as directed by the *Energy Queensland Officer*.
 - (ii) Do not remove more than one third of the grass height at any one time.
 - (iii) Carry out the last mowing within seven days before the end of the planting establishment period.
 - (iv) Remove grass clippings from the *Site* after each mowing.

13.17 Revegetation

13.17.1 Pre-works Approvals

The *Service Provider* is to submit a proposal to and obtain the approval of the *Energy Queensland Officer* for the following:

- (a) If a planting machine is to be used as an alternative to hand planting of tree stock.
- (b) If open rooted stock plants are to be used, instead of potted plants / tube stock.
- (c) If required to spray with targeted insecticide, fungicide or both to eradicate insect attack or plant disease identified at *Site*.

13.17.2 Mulching Planted Landscape Areas

- (a) Provide mulch which is free of deleterious and extraneous matter, for example soil, weeds, and sticks. Organic mulches are to be free of stones.
- (b) Mulch provided are to comply with Standard AS 4454 as a minimum.
- (c) Mulch is to be brush chippings and leaf litter recovered from *Site* clearing (if available), otherwise source alternative approved material.

13.17.3 Invasive Plant Eradication of Planted Landscape Areas

Undertake *Invasive Plant* eradication of planted landscape areas in accordance with Subsection 13.15, Invasive Plant Eradication of this Section 13.

13.17.4 Individual Plantings in Grassed Areas

- (a) Excavate a hole to twice the diameter of the root ball of the plant and at least 100 mm deeper than the root ball of the plant. Break up the base of the hole to a further depth of 100 mm and loosen compacted sides of the hole to prevent confinement of root growth.
- (b) If it appears necessary to vary plant locations and spacing from those specified to avoid underground services, or to cover the planting area uniformly, or for any other reasons, advise the *Energy Queensland Officer* of the variation to the planting plan and obtain approval.
- (c) Planting is not to occur in unsuitable weather conditions, for example, extreme heat, cold, wind or rain events.
- (d) In other than sandy soils, suspend excavation of holes when the soil is wet, or during periods of frost.
- (e) Thoroughly water the plants before planting, immediately after planting, and as required to maintain growth rates free of stress while the plants are being established.
- (f) Remove the plant from the container with minimum disturbance to the root ball. Root prune to ensure all circling roots have been either severed or aligned radially into the surrounding soil.
- (g) Ensure that the root ball is moist and place it in its final position, in the centre of the hole and plumb, and with the topsoil level of the plant root ball level with the finished surface of the surrounding soil.

Specification for Land Management Construction



- (h) Compact lightly so as to minimise subsidence without compacting the backfill.
- (i) Avoid mixing the mulch with the topsoil.
- (j) Backfill with topsoil mixture by lightly tamping and watering to eliminate air pockets.
- (k) Ensure that topsoil placed over the top of the root ball, so that the plant stem remains at the same height above ground surface as it was in the container.
- (l) Except in irrigated grassed areas and normally moist areas, construct a watering basin around the base of each individual plant, consisting of a raised ring of soil capable of holding at least ten litres of water.

13.17.5 Fertilising Individual Plantings

- (a) In planting beds and individual plantings, place fertiliser pellets around the plants at the time of planting.
- (m) Refer to the fertiliser schedule and application rates on product supplied for the plantings being fertilised.

13.17.6 Placing Mulch around Individual Plantings

- (a) Place mulch to the required depth, clear of plant stems, and rake to an even surface flush with the surrounding finished levels.
- (n) Spread and roll mulch so that after settling, or after rolling, the mulch is:
 - (i) Smooth and evenly graded between design surface levels Sloped towards the base of plant stems in plantation beds.
 - (ii) Not closer to the stem than 50 mm in the case of gravel mulches.
- (o) In mass planted areas, place the mulch after the preparation of the planting bed and before planting and other works.
- (p) In smaller areas (e.g., planter boxes), place the mulch after the preparation of the planting bed, planting, and other work.
- (q) For all planter beds, the type and depth of mulch is specified on the detailed planting plan of the area(s).
- (r) Spread organic mulch to a minimum depth of 100 mm.

13.17.7 Spraying Individual Plantings

- (a) Advise the *Energy Queensland Officer* of evidence of insect attack or disease amongst individual plantings and / or plant material at *Site*.
- (b) Where required, spray with targeted insecticide, fungicide, or both to eradicate insect attack or plant disease identified at *Site*.

13.17.8 Stakes and Ties Around Individual Plantings

- (a) Stake material and fabrication is to be hardwood, straight, free from knots or twists, and pointed at one end.
- (b) Installation of stakes is to be by driving the stakes into the ground to a depth of one third of their length, avoiding damage to the root system.
- (c) Stake sizes and lengths, and number required for various plant sizes are to be suitable for application and field environment.
- (d) Provide ties that are securely fixed to the stakes, one tie is to be placed at half the height of the main stem of the plant, and others as necessary to stabilise the plant.
- (e) Attach all ties loosely to the main stem of the plant(s).
- (f) Tie types, number, and installation details, required for various plant sizes are specified below:

Specification for Land Management Construction



- (i) For plants that are ≥ 2.5 metre high, provide two strands of 2.5 mm galvanized wire neatly twisted together, passed through a reinforced rubber or plastic hose, and installed around stakes and stem of plant in a figure of eight pattern.
- (ii) For plants that are < 2.5 metre high, provide 50 mm hessian webbing around stem of plant that is stapled to the stakes.

13.17.9 Marker Stakes at Individual Plantings

- (a) Marker stake material and fabrication is to be timber offcuts, each 25 x 25 x 1200 mm and pointed at one end. The top square end is to be paint with a high visibility paint.
- (b) Installation of marker stakes is to be by driving the marker stakes firmly into the ground at least 300 mm from the plant. The plant is not to be tied to the marker stake.
- (c) At the various location where there is a need for higher visibility of trees, utilisation of marker stakes are specified below:
 - (i) For trees that are in grass, mark the location of each tree with a marker stake.
 - (ii) For rip line planting areas, mark the location of each rip line at every fifth plant along the line.

13.17.10 Trunk Protection at Individual Plantings

For the protection of the stem / trunk of individual plantings, install a collar guard that are 200 mm length and fabricated from 100 mm diameter agricultural pipe split lengthways.

13.18 Maintenance of Worksite Conditions

- (a) Progressive clear and clean the *Worksite* as the landscaping (including excavation of *Site*), maintaining a clean tidy and safe *Worksite* at all times as the landscaping proceeds.
- (b) Remove from the *Worksite*, any rubbish and surplus material arising from the execution of the landscape area, including any work performed on the landscape area during the plant establishment period.

13.19 Cleaning Landscaped Areas

At the end of the planting establishment period:

- (a) Remove stakes and ties that are no longer required.
- (b) Remove any temporary protective fences still remaining.

13.20 Completion of Land Rehabilitation

- (a) Provide plant product certification, by submitting the plant supplier's written statement certifying that plants supplied are true to the required species and type, and are free from diseases, pests, and *Invasive Plants*.
- (b) Submit recommendations for the ongoing maintenance and specialised care of plants.

13.21 Plant Procurement

13.21.1 Plant Procurement

- (a) The *Service Provider* is to provide plants that have been grown to a standard that allows them to establish rapidly and grow to maturity.
- (b) Take any other precautions required to safeguard the health and well-being of all plant materials prior to and including their delivery to *Site*.
- (c) Anticipate replacement of plant failures on *Site* amounting to 15% during the course of propagation and the growing of plant materials during the planting establishment period.
- (d) Provide written certification that all plant material has been grown from locally provenance stock.

Specification for Land Management Construction



- (e) All the plants supplied to *Worksite* are true-to-species and type, and free of disease, fungal infection and / or any other impediment to their future growth and that they have been fully acclimatised for the conditions of the *Site*.
- (f) Where the plants supplied are to be established in the vicinity of the *Energy Queensland* network assets the plants are to comply with WCS1.6.

13.21.2 Plant Procurement - Specification

- (a) For the purposes of this subsection the definitions given below apply:
 - (i) *Calliper*: The stem or trunk diameter at a nominated point. Generally measured at 300 mm above ground level.
 - (ii) *Size Index*: Product of tree / plant height (m) x Calliper (mm).
 - (iii) *Tube or Plant Cell*: Trees or shrubs grown in small containers or cells in trays with a height diameter ratio > 3:2, typically < 0.75 litres.
 - (iv) *Small Tree or Small Shrub*: Tree or shrub grown in containers < 20 litres (other than tubes or plant cells), and ex-ground trees of *Size Index* < 35.
 - (v) *Large Tree*: Tree grown in containers ≥ 20 litres, and ex-ground trees of *Size Index* ≥ 35.
- (b) **External tree inspection, without washing away of soil from the root ball, is to assesses the following:**
 - (i) The tree's ability to be self-supporting.
 - (ii) The tree's ability to balance.
 - (iii) The tree's root development.
- (c) *Tubes or Plant Cells* are to have a height above soil level between 1.5 and 2.5 times the height of the *Tube or Plant Cell*.
- (d) Trees and shrubs in containers < 20 litres (other than *Tubes or Plant Cells*) or ex-ground trees of *Size Index* < 35 (e.g., 1.4-metre-high x 25 mm *Calliper*); the height is to fall within the range indicated for the container size in the nursery industry small container-grown plant table.
- (e) Containers / root balls (other than *Tubes or Plant Cells*) are to remain flat on the ground when the stem, held at 80% of height above ground, is deflected 30° from the vertical, side to side. (Exempt is species that naturally produce hard inflexible wood in the early stages of their development.)
- (f) For trees grown in containers ≥ 20 litres, the *Size Index* is to fall within the range indicated for the nominal container size shown in the nursery industry common container volumes table.
- (g) Ex-ground trees with a *Size Index* ≥ 35 (e.g., 1.4-metre-high x 25 mm *Calliper*) are to have root ball diameters greater than or equal to the minimum root ball diameters shown in the nursery industry ex-ground trees table.
- (h) Clearly label individual plants and batches with a label type to withstand transit without erasure or misplacement.
- (i) Supply plants with foliage size, texture and colour at time of delivery consistent with the size, texture and colour shown in healthy specimens of the nominated species.
- (j) Supply plants with extension growth consistent with that exhibited in vigorous specimens of the species nominated.
- (k) Supply plants free from damage and from restricted habit due to growth in nursery rows.
- (l) Supply plants free from stress resulting from inadequate watering, excessive shade or excessive sunlight experienced at any time during their development.
- (m) Supply plants that have been grown and hardened off to suit the conditions that could reasonably be anticipated to exist on *Site* at the time of delivery.
- (n) For maximum root development of plants in containers, grow plants in their final containers for the following periods:
 - (i) For plants in containers of < 25 litre size, grow plants for > 6 weeks.



Specification for Land Management Construction

- (ii) For plants in containers of > 25 litre size, grow plants for > 12 weeks.
- (o) Supply plants with foliage free from attack by pests or disease.
- (p) Native species with a history of attack by native pests; restrict plant supply to those with evidence of previous attack to < 15% of the foliage and ensure absence of actively feeding insects.
- (q) Supply plant material with the root system:
 - (i) Well-proportioned in relation to the size of the plant material.
 - (ii) Conducive to successful transplantation.
 - (iii) Free of any indication of having been restricted or damaged.
- (r) Supply trees that:
 - (i) Are free from injury.
 - (ii) Are self-supporting.
 - (iii) Have the Calliper at any given point on the stem greater than the Calliper at any higher point on the stem.

13.22 Landscape Establishment

- (a) For the purposes of this subsection the definitions given below apply:
 - (i) Plant Establishment: Maintain the landscape area during the Plant Establishment Period.
 - (ii) Plant Establishment Period: The period between the date of practical completion and the date of final completion.
- (b) There will be a minimum of four *Site* inspections over the *Plant Establishment Period* with a final inspection occurring in the 'off *Plant Establishment Period*' period. Any defects noted will need to be rectified by the *Service Provider* immediately.
- (c) The landscaping *Service Provider* is to be present at all scheduled *Landholder / Authority Site* inspections.
- (d) The *Service Provider* is to conduct monthly *Site* inspections making note of any plant / grass die-off, *Invasive Plant / pest* infestations, *Erosion* issues and report back to *Energy Queensland Officer* with any issues identified.
- (e) Provide a monitoring program incorporating the following:
 - (i) Photographic record including:
 - Colour photographs.
 - Documented monitoring locations and photograph angles.
 - (ii) Reporting periods including photographic records at the following:
 - Prior to the commencement of the works.
 - Date of practical completion.
 - Three monthly intervals during the *Plant Establishment Period*.
 - Date of final completion.
 - Benchmark definition based on remnant communities.
 - Replicated measurements over time and comparative analysis with regard to the benchmark.
- (f) Provide two days' notice of the following operations:
 - (i) Application of *Herbicide*.
 - (ii) Application of fertiliser.
 - (iii) Watering.

Specification for Land Management Construction



- (iv) Each *Site* maintenance visit.
- (g) Log the following on a weekly basis and make available on request:
 - (i) Description, time and method of application of toxic material.
 - (ii) Inclement weather to verify inability to carry out work within the specified time frame.
 - (iii) All maintenance activities including and not limited to watering, fertilising, *Invasive Plant* and pest control, and plant replacements.
- (h) Provide written certification that all replacement plant material is true to the required species and type.
- (i) Ensure the general appearance and presentation of the landscape and the quality of plant material at date of practical completion is maintained for the full *Planting Establishment Period*.
- (j) Maintain existing planting and grass within the landscaped area as specified for the corresponding classifications of new grassland or planting.
- (k) Replace failed, dead and / or damaged plants at maximum three-week intervals as necessary throughout the full *Plant Establishment Period*.
- (l) Prune the trees and shrubs to the pruning schedule provided with the project landscape *Drawings* and Standard AS 4373.

13.22.1 Fertilising - Establishment Period

- (a) Fertilise trees once every two years.
- (b) Generally, apply an all-purpose fertiliser of N:P:K (nitrogen : phosphorus : potassium) 10:4:6 at recommended rates. Alternatively apply 12-month slow-release fertiliser at the manufacturer's recommended rate.
- (c) Apply all-purpose fertiliser to shrubs annually in two bands and cultivated into the soil 100 mm deep.
- (d) Fertilise shrubs and trees in September and March according to their seasonal growth requirement.

13.22.2 Insect and Disease Control - Establishment Period

- (a) Evidence of insect attack or disease amongst individual plantings and / or plant material at *Site*, treat until eliminated.
- (b) Where required, spray with targeted insecticide, fungicide, or both to eradicate insect attack or plant disease identified at *Site* outside of normal working hours.
- (c) Specify the methodology for the frequency and chemicals to be used to control weeds and / or pest species that may be causing plant die-back.

13.22.3 Stakes and Ties - Establishment Period

- (a) If plants are unable to be self-supporting or if stakes are damaged, stake or re stake the plants as follows:
 - (i) Drive three hardwood stakes, placed obliquely with the first stake on the opposite side to the prevailing winds.
 - (ii) Large plants are not to be single staked.
- (b) If plants are robust with well-developed systems and are strong enough to no longer require support, remove the stakes and ties.

13.22.4 Ground Maintenance - Establishment Period

- (a) Remove litter and fallen branches prior to mowing.
- (b) Mow grass consistent with the growth habit of the grass variety and maintain grass height at 25 mm to 40 mm throughout the year.
- (c) Do not mow grass under wet weather conditions.

Specification for Land Management Construction



- (d) Remove grass clippings from *Site*.
- (e) Topdressing material for established turf or grass seeded areas, is to be *Invasive Plant* free imported sandy topsoil applied to a depth of 5 mm.
- (f) Topdressing material for remediation of depressions or irregularities is by applying coarse or medium soil to Standard AS 4419 and is suitable for application to turf or grass seeded areas.
- (g) Apply lawn fertiliser at the completion of the first and last mowing of the *Plant Establishment Period*, and at other times as required to maintain healthy grass cover.

13.22.5 Watering - Establishment Period

- (a) Watering of all plantings, lawn areas and trees within the landscaped area is to occur.
- (b) Water quality is to comply with the following specification as a minimum:
 - (i) pH between 5.5 and 7.5.
 - (ii) Total soluble salts less than 1000 mg / litre.
 - (iii) No substances that would be toxic to plant growth.
- (c) Program a minimum of three complete watering events, soaking to a depth of 150 mm at fortnightly intervals for the first 6 weeks of plant establishment irrespective of natural rainfall. Confirm soaked depth and record result.
- (d) Comply with water restrictions, by coordinating the water supply and confirm the watering regime against *Authority* (local, state and territory government) legislation and restrictions at the time.
- (e) Water all lawn and planting areas, by soaking to a depth of 150 mm for lawn and 300 mm for planting. Avoid frequent dampening of the surface. Allow the surface of the soil to partially dry out between watering events.
- (f) Specify methodology to be used for watering, for example, water truck or irrigation system.
- (g) If using a water truck a watering program is to be developed that takes into account recent rainfall, for example there is no need to water when ground is already saturated.

14 Procedure - Herbicide Application

14.1 Herbicide Application - General

- (a) Before the distribution of any *Herbicide*, the *Service Provider / Operator* is to confirm the status of the *Site / location* and whether it is an ACDC Act regulated area, by checking the *Site / location* on the Queensland Government ACDC area map interactive web site [Agricultural Chemicals Distribution Control (ACDC) Atlas] and record the regulated area data provided from the web request for later retrieval and reference if required.
- (b) For all ACDC Act Regulated *Hazardous areas* and Queensland National Parks and State Forests and Reserves (under the Code of Practice - Maintenance of Electricity Corridors in Queensland's Parks and Forests); *Herbicide* applied by or under the direct supervision of a Licensed Commercial *Operators* in accordance with the *Laws* including the Agricultural Chemical Distribution Control Act and Regulation (Qld) and reporting requirements therein. (A Licensed Commercial *Operator* means a person who holds a commercial *Operator's* licence issued under the Agricultural Chemical Distribution Control Act Qld and is in force at any time *Herbicide* application is occurring.)
- (c) For all ACDC Act Regulated areas and ACDC Act Excluded (non-regulated) areas outside of Queensland National Parks and State Forests and Reserves; *Herbicide* applied by a *Competent Person* in accordance with the *Laws* including the Agricultural Chemical Distribution Control Act and Regulation (Qld) and reporting requirements therein.
- (d) The Licensed Commercial *Operator* or the responsible *Competent Person* is present at the *Worksite* for the whole of the distribution of the *Herbicide* that is during the preparation, application to *Vegetation*, cleaning up (including disposal of any excess chemical) and maintenance of spraying plant and equipment.

Specification for Land Management Construction



- (e) The Licensed Commercial *Operator* or the responsible *Competent Person* is to ensure the safety of themselves, co-workers and public at all times during any tasks associated with the handling, transport and use of particular *Herbicide Treatment*.
- (f) Pay particular attention to prevailing meteorological conditions, immediate environmental concerns and to preserving integrity of non-target species of *Vegetation*. Ensure drift and environmental contamination is prevented / minimised.
- (g) Ensure *Herbicides* are not applied to *Vegetation* near to or on *Hazardous Areas* (without holding a distribution permit and complying with the distribution permit conditions) or certified organic farmland and chemical-free properties and land (e.g., Cattlecare, HACCP and other quality-controlled properties) where contamination of the crops or farmland could occur, and livestock could be injured.
- (h) Comply with provisions of the particular *Herbicide's* Safety Data Sheet at all times and be aware of hazards involved in (and not limited to) transport, handling, diluting in liquid and spraying *Herbicides*.
- (i) When *Herbicides* are being used, tasks carried out efficiently with an awareness of hazards and sensitivity of public.

14.2 Transport of Herbicides

Transport *Herbicide* in accordance with the *Laws*, product label and Safety Data Sheets.

14.3 Storage of Herbicides

- (a) Provide secure storage facilities for *Herbicide* used to control *Vegetation Regrowth*.
- (b) Storage of *Herbicides* complies with the requirements of the *Laws* including Chemical Usage (Agricultural and Veterinary) Act (Qld) and the advisory Standard "Storage and use of Chemicals in Rural Workplaces".

14.4 Access in Private Property

- (a) Contact and advise the *Landholders* or *Occupiers*, of proposal to chemically treat *Vegetation* on their property so that specific treatments can be finalised with the *Landholder* or *Occupier* prior to *Services* being planned / organised by the *Operator*. (Areas of certified organic farmland and chemical-free properties and land (e.g., Cattlecare, HACCP and other quality-controlled properties) or *Hazardous Areas* may require limitations being placed on treatments that can be used and land that can be treated by spraying or other methods of application).
- (b) Contact all *Landholders* or *Occupiers* of affected properties, use the *Landholder* or *Occupier* permission form and provide 7 *Business Days*' notice of intentions to commence *Herbicide Treatment*. Obtain completed *Landholder's* or *Occupier's* permission, signed by *Landholder* or *Occupier* before any *Herbicide Treatment* can commence. These forms are to be returned with monthly invoice. Carry out the *Herbicide Treatment* within 20 *Business Days* of notice being provided to *Landholder* or *Occupier*.
- (c) *Service Providers*, where permission is not given by the *Landholder* or *Occupier*, arrange an alternate solution in the first instance; otherwise immediately notify the *Energy Queensland Officer* so that alternate treatment can be negotiated by *Energy Queensland*.
- (d) Leave gates in an "as found" condition unless directed in writing by the *Landholder* or *Occupier*.

14.5 Hazardous Areas, State Forests, National Parks, Vegetation Protected By Vegetation Protection Orders (VPOS)

Determine if any of the areas to be treated are in a declared "*Hazardous Area*", a State Forest, and National Park, subject to a *Vegetation* Protection Order (VPO) or other restrictions under the *Laws* including the Nature Conservation Act. Determine the requirements / restrictions that apply and ensure requirements of any Codes and *Laws* including the Agricultural Chemical Distribution Control Act and Regulations (Qld) are complied with.

Specification for Land Management Construction



14.6 Control of Invasive Plants (Weeds)

Use all reasonable and practical measures to minimise spread of *Invasive Plants (Weeds)* and comply with requirements of Clause 8.6 of the WCS133.

14.7 Environmental Criteria

When using chemicals, environmental considerations are extremely important, and ensure adherence to set criteria below:

- (a) Only chemicals approved for use on targeted species and within the field environment in which they are required to operate on *Energy Queensland Overhead Conductors* and supporting infrastructure corridors and *Access tracks* can be used by suitably commercial licensed and qualified employees (*Operators* or *Subcontractors*).
- (b) When engaged to conduct *Herbicide Treatment, Service Providers'* chemicals are NOT permitted to be stored at *Energy Queensland* sites.
- (c) All chemicals used, acceptable to the *Authority* administering the area and used in strict accordance with manufacturer's requirements and if established, any additional requirements required by *Authority* or *Energy Queensland*. Records of which chemical used, and areas treated, documented, and maintained in accordance with *Laws* and as part of project / contact documentation.
- (d) Disposal of any waste chemical or control of any chemical spill, in strict accordance with the *Laws* and manufacturer's (generally detailed in the *SDS*) and *Authority* requirements.
- (e) Immediately report to *Energy Queensland Officer*, any spill that does or has potential to result in environmental nuisance or harm being caused.
- (f) Near to or on certified organic farmland and chemical-free properties and land (e.g., *Cattlegare, HACCP* and other quality-controlled properties), apply *Herbicides* to *Vegetation* with extreme caution ensuring contamination of crops or farmland and injury to livestock by spray drift does not occur.

14.8 Application

- (a) Fit appropriate signs to vehicles to alert other traffic when applying *Herbicides* from a moving vehicle.
- (b) *Herbicides* considered for use subject to the reviewing of their *SDS* sheets for their specific applications (targeted species and the field environment in which they are required to be applied).
- (c) Select and apply *Herbicide* that achieves a 95% kill-rate over a minimum of 12 months.
- (d) Read the label and apply *Herbicide* at correct application rate, in optimal weather conditions and using correct application method / equipment.
- (e) Properly maintain and correctly calibrate equipment. Maintain all spray equipment in a leak free condition.

14.9 Methods of Application

14.9.1 Foliar Application

- (a) Foliar application can be used on *Vegetation* and the application is to be directed at the target, to the point where it runs off. The selectivity of the foliar spray technique is achieved through application to the non-desirable species while not applying to desirable (or low growing) species or by the use of species selective *Herbicides*.
- (b) Apply the *Herbicide* in strict accordance with chemical manufacturer's specification for application including any addition of *Surfactant* (wetting agent).

14.9.2 Distribution of Ground Application Herbicide

- (a) Ground application *Herbicide* can be used on *Vegetation* where weeds are growing (usually on grazing land). This treatment becomes effective after sufficient rainfall has occurred to move the chemical into the root zone where it is absorbed by plants.
- (b) Ground applied *Herbicide* should not be applied in the following situations (if required seek direction from the *Energy Queensland Officer*):

Specification for Land Management Construction



- (i) Salt or *Erosion* prone areas.
- (ii) Within 100 metres of a recognised *Watercourse*.
- (iii) On land with a *Slope* greater than 20% (11 degrees).
- (iv) Under conditions which will cause pellet movement to non-target areas during application.

14.9.3 Special Requirements for Herbicide Use

- (a) Near Creeks, Dams, Sensitive Crops and Other Sensitive Areas (e.g., Paddocks Containing Livestock) – Trees or sapling *Regrowth* to be treated near creeks, dams, sensitive crops, and other sensitive areas with a suitably registered *Herbicide*, or as otherwise agreed by the *Landholder* or management agency.
- (b) Certified organic farmland and chemical-free properties and land (e.g., Cattlecare, HACCP and other quality-controlled properties) property owners and *Operators* will need to liaise where *Herbicides* are to be used. *Herbicides* will be used in accordance with label and *SDS* requirements.
- (c) Use of residual *Herbicides* [remain active in the soil for an extended period of time (months) and can act on successive weed germinations] needs to manage potential movement of the *Herbicide* into sensitive or adjoining areas.

14.10 Worksite Documentation for Herbicide Treatment

At all times, provide at the *Worksite*, the following documents (as amended from time to time):

- (a) "Regulations and Code of Practice for Management of Hazardous Substances at Workplace", issued by Work Health and Safety Queensland.
- (b) The Unrestricted Commercial *Operators* Licence issued under the licensing provisions of the *Agricultural Chemicals Distribution Control Act (ACDC)*.
- (c) *SDS* of every *Herbicide* being used or being transported / stored on vehicle.
- (d) Product labels for particular *Herbicide* being used (Manufacturer's instructions).
- (e) Record details in accordance to Section 26 of the *Agricultural Chemicals Distribution Control Act* for example, location of treatment site, date and time, *Herbicide* used and application rate, *Vegetation* treated and meteorological conditions.
- (f) Equipment operating and maintenance manuals for the equipment being used.

Specification for Land Management Construction



15 Design and Minor Rural New Construction Clearing and Access Tracks

15.1 Design and Minor Rural New Construction - General

- (a) This Section 15 provides for the clearing (green field) of the routes of proposed overhead power lines in rural areas; the heaping of fallen timber and *Vegetation* along the routes, the provision of *Access tracks* along the centreline / route(s) and from existing public roadways or property *Access roads* and the provision of *Access gates*. *Vegetation* clearing profile(s) *Access Track(s)* nominated on the Site-specific route plan(s) or *Construction Issue Plan(s)* distributed for identification of route and the extent of the clearing. It is not applicable to clearing and removal of *Vegetation* on existing lines. Section 15 is NOT for specification is not for High-Risk Works. Refer Back to WCS 1.5
- (b) The specific requirements for clearing of *Vegetation* at green field Site(s) required under Section 15 of this Specification includes;
- (c) Clearing of *Vegetation* to the nominated profile including removal by machinery, hand felling and chemical treatment of trees, and the treatment of nominated *Marginal Trees* along the route as directed.
- (d) Where identified in the Site-specific Environmental Management Plan, the burning of timber heaped along the Overhead Conductor (powerline) route.
- (e) Removal of timber from Site for disposal, where nominated on the Site-specific *Drawings* [route plan(s) or *Construction Issue Plan(s)*].
- (f) Clean up and reinstatement of the Worksite as necessary to the satisfaction of the Authority or *Landholder(s)* and the *Energy Queensland Officer*.
- (g) The provision of *Access tracks* suitable for traffic by pneumatic tyred conventional two-wheel drive vehicles and articulated vehicles.

15.1.1 Risk Management

- (a) Level 1 Projects – *Access tracks* and land *Stabilisation* and rehabilitation construction and maintenance projects of high complexity and /or high estimated expenditure with requirements for working in environmentally and / or culturally sensitive areas. Where the *Service Provider* will generally be engaged as the *Principal Service Provider* for the works. Often involving multiple stages and with requirements for working in conjunction with other electrical infrastructure construction and maintenance. The degree of construction complexity may require direct specialist environmental or cultural and / or civil engineering input and assessment (e.g., new construction or extension to existing *Access tracks*, land *Stabilisation* and rehabilitation, *Watercourse* crossings, point or distributed load bearing construction of pads, civil construction in areas with surface water and water flow management issues.)
- (b) Level 2 Projects – *Access tracks* and land *Stabilisation* and rehabilitation construction and maintenance projects of medium complexity and / or medium estimated expenditure that may involve minimal multiple staged works with minimal requirements for working around and in environmental and cultural heritage sensitive areas (e.g. new minor construction or extension to existing *Access tracks*, installation and maintenance of construction pads, existing *Infrastructure Drainage* and *Access track drainage* maintenance).
- (c) Level 3 Projects – *Access tracks* and land *Stabilisation* and rehabilitation construction and maintenance projects of low complexity and / or low estimated expenditure with no requirements for working around and in environmentally and / or culturally sensitive areas, (e.g. gate installation and maintenance, grading and patch repair of existing *Access track spots*).

15.2 Main Specification to Take Precedence

Where a Main Specification accompanies this specification and differs from this specification, the Main Specification shall take precedence.

Specification for Land Management Construction



15.3 Identification of Route and level of Clearing

Route plans or construction plans for the power line are included, with selected structure positions of existing and proposed power line/s (where applicable) clearly marked. Plans include details of the clearing Profile which applies to the various sections of the clearing and Access works. The attached *Environmental Plan* details specific clearing standards / methods and Access works to be taken (if any) in identified areas along the route and these take precedence over the requirements of this Specification.

15.4 Scope of Works

Works required under this Specification include:

- (a) Clearing to the nominated profile including removal by machinery, hand felling and chemical treatment of trees, the treatment of flagged trees and felling or directional pruning of *Marginal Trees* as directed.
- (b) The provision of Access tracks suitable for traffic by pneumatic tyred conventional two-wheel drive vehicles and articulated vehicles.
- (c) The heaping or removal of fallen trees and other *Vegetation* to the specified requirements.
- (d) Removal of timber from site for disposal, where nominated on the *Drawings*.
- (e) Stacking of commercial and useable timber.
- (f) The installation of Access gates in existing fences were shown on the *Drawings* and as nominated by the *Liaison Person*.
- (g) Clean up and reinstatement as necessary to the satisfaction of Landholders and the *Liaison Person*.

15.5 Marking of Line Route

The actual Overhead Conductor (powerline) route to be cleared will be shown on a Construction Issue Plan or route plan or a detailed sketch endorsed for use by the *Energy Queensland Officer*. *Energy Queensland* may establish infrastructure locations (for example pole positions) beforehand or alternatively the line route including infrastructure locations will be clearly conveyed by the *Energy Queensland Officer* to the *Service Provider / Operator*.

The centreline of proposed power lines will normally be marked by pegs. Structure and stay pegs may also be marked. Offset finder stakes may also be used to show the limits of the clearing.

Marginal Trees: All trees outside the cleared corridor, within the Risk Management Zone, any part of which could fall to within the following safe distances from the centreline of the power line, unless otherwise specified:

- 132kV 3.0 metres;
- 66kV 2.5 metres;
- 33 kV, 22kV or 11kV 2 metres;
- 19.1kV, 12.7kV or 11kV Single Wire Earth Return (S.W.E.R.) line 1 metre;
- Low Voltage line 1.5 metres.

These trees will be flagged/marked with fluorescent pink tape or paint prior to the commencement of work and the cost of treatment of these trees will be included in the scope of the work.

15.5.1 EMP/EWP/SPRMP (including Cultural Heritage)

Where a project has an area or particular item identified that requires special consideration then it shall be noted on the *Environmental Plan* or SPRMP. These items will also be flagged/marked, unless otherwise stated on the *Environmental Plan* or SPRMP, with Blue tape or paint beforehand by the Designer, *Liaison Person*, Environmental Representative, Cultural Heritage Officer or *Energy Queensland* Representative.

Specification for Land Management Construction



15.6 Details of requirements for Clearing

The clearing profile for the *Vegetation* clearing at green field Site(s) is either full width or narrow width profile in accordance with the requirements of the provided *Drawings* (Construction Issue Plan or route plan) for the nominated Overhead Conductor (powerline) route, and the Environmental Management Plan and the Cultural Heritage Management Plan as specified, unless directed otherwise in writing by the *Energy Queensland Officer*.

Clearing to the narrow width profile cannot proceed without a completed written approval being provided. The written approval is to be endorsed (signed) by the Regional Asset Manager, Environmental Manager, and Community Liaison Manager, and approved (signed) by the *Vegetation Specialist*.

Where a Main Specification accompanies this specification and differs from this specification, the Main Specification shall take precedence.

15.6.1 Requirements Track and Clearing Requirements - General

The overriding principle is to reduce the extent of bare earth and topsoil disturbance and to encourage low growing *Vegetation* that does not impact on line clearances and *Access* areas. Clearing by chain saw or by using slashers, mega mulchers or groomers that minimise soil disturbance are preferred. Machine clearing methods using the front mounted stick-rake may be used for *Vegetation* clearing works on larger projects. Large rubber tyred articulated machines are preferred to minimise soil disturbance and maintain grass and shrub ground cover where practicable. The method used for clearing each section of line shall be agreed and specified before work commences. Provision is required for a follow up *Herbicide* application to regrowth approximately 3 – 6 months after any mechanical clearing technique to ensure effective control of *Vegetation*. These areas will be identified on a plan at the completion of the initial clearing to assist the *Herbicide* applicator.

Remove all stumps within the width nominated in the clearing profile, with the following exceptions:

- The banks of *Watercourses*.
- Terrain which is too steep or inaccessible for Machine Clearing.
- Areas subject to *Erosion* or where danger of *Erosion* exists.

beyond 5 metres each side of the centreline, stumps of large trees (approx. 400mm diameter) away from the centreline clearing required for conductor stringing may remain if cut off at stump height (1.0 metre to 1.2 metres above ground) and treated with *Herbicide* as specified in subsection 14.1.

There should be no remaining stumps within 3 metres of the centreline to ensure that line stringing and future maintenance *Access* is not impeded.

Fill all large holes and other damage to the ground surface created by the clearing activities with soil from the adjacent disturbed area and leave the surface generally in such condition as to present no hazard to livestock, vehicles, or horsemen.

Felled trees and other *Vegetation* shall be removed from any firebreak, fence line or *Access* track and from the firebreak between standing timber and the heaps stacked along the power line and shall not be left caught-up in or leaning on any standing timber.

Shade or ornamental trees and wind breaks may require special treatment as directed on-site by the *Landholder* and the *Liaison Person*.

Fire shall not be used by the *Service Provider* as a clearing tool. Any use of fire shall be authorised beforehand by the *Liaison Person* and necessary permits obtained as required under Fire and Rescue Authority Act.

15.6.2 Clearing Width

- (a) For Rural *Vegetation* Zones, the nominated corridor clearing width on each side of the route centreline for the relevant Overhead Conductor (powerline) type and voltages is provided in the Table L-1 and Table L-2 below. For Urban *Vegetation* Zones the nominated corridor clearing width on each side of the route centreline for the relevant Overhead Conductor (powerline) type and



Specification for Land Management Construction

voltages is provided in WCS1.6, Appendix A -Vegetation Management Profiles, Figure A1 - Profile for Urban Area Powerlines.

- (b) These nominated corridors clearing width are restricted to the initial clearing of *Vegetation* at green field Site(s) along the nominated Overhead Conductor (powerline) route to gain *Access* for further works (for example, Overhead Conductor (powerline) construction), and all other clearing of *Vegetation* at green field Site(s) in the Overhead Conductor (powerline) corridor(s) is to be in strict accordance with Appendix A - *Vegetation* Management Profiles, of WCS1.6.
- (c) This nominated corridor clearing width may be varied, and is dependent on the local geographical conditions, for example the *Vegetation* species and mature height of trees, climate and topography of the Site and in accordance with the Site-specific Environmental Management Plan.

Table L-1 – Rural *Vegetation* Zone - Corridor Clearing Widths - Bare Overhead Conductor

Line Voltage	Clearing Width on each side of the centreline
132kV	20 metres
66kV	15 metres
33 kV, 22kV or 11kV	10 metres
19.1kV, 12.7kV or 11kV Single Wire Earth Return Line	7.5 metres
Low Voltage Open Wire Line	5 metres

Table L-2 – Rural *Vegetation* Zone - Corridor Clearing Widths - Aerial Bundled Cable and Covered Conductor

Line Voltage	Clearing Width on each side of the centreline
33 kV, 22kV or 11kV	3 metres
Low Voltage ABC Line	1.5 metres (The clearing width may be extended to 3 metres on one side where vehicular <i>Access</i> is required)

15.6.2.1 Full Width clearing

The clearing profile is to be in accordance with, WCS1.6 -*Vegetation* Management Profiles, Appendix A , Figure A2 - Profile for Rural Area Powerlines detailing the nominated clearing width distance either side of the centre line (DFCL) that is applicable for the specified Overhead Conductor (powerline) voltage.

Marginal Trees are to be treated as directed by the *Energy Queensland Officer*.

Marginal Trees are flagged / marked with fluorescent pink tape or paint and the specific *Vegetation* management requirements will be stated on the Site-specific route plan(s), Construction Issue Plan(s) and / or in the approved clearing instructions provided by the *Energy Queensland Officer*.

At infrastructure positions along the Overhead Conductor (powerline) route the clearing width either side of the centre line may need to be increased to allow the *Access* track to be divided and permit vehicles to drive each side of the infrastructure position for construction and maintenance activities to occur.

15.6.2.2 Narrow Width Clearing

The clearing profile is to be in accordance with WCS1.6 - *Vegetation* Management Plan, Appendix A - *Vegetation* Management Profiles, Figure A2 - Profile for Rural Area Powerlines.

At infrastructure positions along the Overhead Conductor (powerline) route the clearing width either side of the centre line may need to be increased to allow the *Access* track to be divided and permit vehicles to drive each side of the infrastructure position for construction and maintenance activities to occur. An *Access* track is to be prepared which is trafficable by conventional 4-wheel drive vehicles and also articulated heavy

Specification for Land Management Construction



vehicles, as per *Access* track standards in Section 9. The location of *Access* tracks will be marked in the field before commencement of clearing.

At structure positions the *Access* track shall divide to allow vehicles to drive each side of the structure to allow for construction and maintenance activities.

15.6.3 Infrastructure Sites

Infrastructure locations may be pegged along the Overhead Conductor (powerline) route.

Even though a narrower width of clearing for the corridor may be specified for areas along the Overhead Conductor (powerline) route, *Complete Clearing* including the removal of all stumps is required at each infrastructure location to allow for the establishment of laydown areas and heavy plant pads for construction and maintenance activities to occur at the Site.

Sufficiently cleared areas of *Vegetation* (including trees) are required for the construction and maintenance of laydown areas and heavy plant pads at each infrastructure location. The radial dimensions of the areas for *Vegetation* (including trees) required to be cleared will be determined by the type of heavy plant and equipment that will need to *Access* the Worksite at the infrastructure location. The radial dimensions of the areas for *Vegetation* (including trees) required to be cleared at each infrastructure location will be specified on the site-specific construction issue plan(s) or route plan(s).

15.6.4 Water Courses, Areas Subject to Erosion, and Steep Terrain

Machine clearing shall not be undertaken within a zone of 10 metres from the banks of any *Watercourse*. Within such zones, hand clearing procedures shall be adopted, and trees felled at stump height. All fallen timber is to be snigged or winched above the flood zone. Pushing or falling of trees and debris into a *Watercourse* is prohibited.

Clear only the minimum amount of *Vegetation* required below the banks of any *Watercourse*. Only *Vegetation* that has the potential to breach safe electrical clearances shall be removed, as directed by the *Liaison Person*.

Areas subject to *Erosion* or inaccessible for machine clearing, including a 10-metre perimeter, shall be cleared by hand clearing procedures and trees felled at stump height. Every endeavour shall be made to fell all timber into a position that will not concentrate the flow of runoff. The *Liaison Person* shall direct the extent of any additional *Erosion* prevention measures or techniques required. Payment for additional works directed by the *Liaison Person* shall be made at the hourly rates nominated in the Applicable Schedule.

The *Liaison Person* may instruct the *Service Provider* in writing to fell trees in other areas at stump height, at no price variation.

Vegetation cleared by hand is to be cut as close as possible to the ground (<150mm). Higher stumps may be retained if required by the *Landholder*. Felling of trees at stump height shall be by axe or saw, without sharp protrusions being left on stumps.

With the exception of stumps remaining in a *Watercourse*, all stumps must be treated with an approved *Herbicide* in accordance with the manufactures recommended method of application. Stumps remaining in a *Watercourse* are to be swabbed with Roundup Bioactive at the recommended dose immediately after cutting to reduce the potential for regrowth.

15.6.5 Steep Side Slopes

Where land *Slopes* steeply across the route of the line (greater than 15 degrees) and no instruction is given on the plans, the *Liaison Person* may direct:

- (a) The clearing width be displaced towards the higher side of the centreline and the *Service Provider* shall then clear the full displaced width; or
- (b) The clearing width is displaced towards the higher side of the centreline and selective clearing be employed on the lower side of the centreline.

Specification for Land Management Construction



15.6.6 Deep Gullies

In areas such as deep gullies and valleys where the line conductors will be high above the tops of mature trees, only a portion of the gully may require clearing or no clearing may be required. In these cases, instructions are provided in the *Environmental Plan*. The extent of clearing shall be to the satisfaction of the *Liaison Person*.

15.6.7 Structure Sites (If pegged)

Even though a narrower width of clearing may be specified for a general area, *Complete Clearing* including the removal of all stumps is required at each structure site to allow for construction and maintenance activities.

Unless shown otherwise on the *Drawings* or directed otherwise by the *Liaison Person*, the following clearing is required:

- (a) On Road Easements – the felling or Directional Pruning of trees and other *Vegetation* as directed by the *Liaison Person*
- (b) All Other Locations – clearing and levelling of the following size, centred about the structure location:
 - 66kV line 900 square metres (30mX30m)
 - 33kV, 22kV or 11kV line 400 square metres (20mX20m)
 - 19.1kV or 12.7kV Single Wire Earth Return 225 square metres (15mX15m)
 - Low Voltage line 100 square metres (10mx10m)

15.6.8 Clearing Works Required Outside the Defined Clearing Width

The *Service Provider* shall fell, or directional prune as directed, *Marginal Trees*, irrespective of the direction in which they may at present be leaning.

Trees and other *Vegetation* felled outside the defined clearing width shall be removed from any firebreak, fence line or *Access* track and from the firebreak between standing timber as described in subsection 8.2.

15.6.9 Clearing on Roads, State land and Freehold land

On main roads and local authority roads, preservation of trees is required where possible. Subject to the relevant Authority's requirements, the *Liaison Person* may direct particular trees and other *Vegetation* to be felled or directionally pruned.

(a) Main Roads

The *Service Provider* shall comply with the conditions of the agreement granted to Ergon Energy by the Department of Main Roads for clearing works along Highways.

(b) Local Authority Roads

The *Service Provider* shall comply with the conditions of the agreement granted to Ergon Energy from a Local Authority to clear along roads under their jurisdiction.

(c) State Controlled Land

Timber on roads and certain leasehold land and reserves etc. remains the property of the Crown. The *Service Provider* will comply with any specifications and directions regarding the salvage and disposal of merchantable timber provided to Ergon Energy by the responsible State Government Agency. (DERM, DPI or Main Roads)

(d) Freehold Land

The *Service Provider* shall comply with the conditions of the permit granted to Ergon Energy from the Department of Environment and Resource Management for clearing on freehold land where required in accordance with the Sustainable Planning Act and the *Vegetation* Management Act.

Specification for Land Management Construction



The *Liaison Person* will reinforce with the *Service Provider* the requirements of relevant Authorities, contained in permits or authorisations.

15.6.10 Heaping or windrowing (if agreed by the land holder)

Gather together all fallen timber including *Marginal Trees*, branches, scrub, undergrowth, and combustible material resulting from the clearing operation together with any leaf litter and logs, and stack in neat compact heaps (compressing the heaps after stacking). Stick rakes or other approved equipment shall be used to minimise ground surface disturbance and soil content in the heaped material. Trunks, tops, limbs, and roots shall be trimmed, and the heaps formed parallel to the centre line clear of all road works, drains, *Watercourses*, banks, fences, gates, or structures.

Locate heaped material clear of power lines and at least 10m clear of all drains and *Watercourses* or their flood banks, to prevent obstruction to water flow. Stacking shall be carried out in such a manner that any flow of water shall not dislodge the heaps. Where practicable, without contravening any other provision of this Specification the heaps should be located on the lower side of the centre line only, and where any danger of flooding exists the heaps shall be located on the downstream side of the centre line and any structure.

Heaps shall not be in a continuous unbroken line but shall be not more than 20 metres long and 3 metres high, with 5 metre gaps provided between heaps to permit the passage of stock and vehicles. The heaps shall be left in such a way that burning may be carried out without further stacking and without danger to any adjacent property or to the overhead power line.

A definite fire break shall be required between the heaps and standing *Vegetation*, the gap distance to be determined in consultation with the property owner. The *Service Provider* shall liaise with the *Landholder* for any special instructions regarding *Access* to the site before clearing work commences on the property.

All large loose stones, rocks or boulders shall be moved to the edge of the cleared area, or to specific positions within the cleared area as directed by the *Liaison Person*. Location of all heaps of rubble is subject to the approval of the *Liaison Person*.

15.6.11 Preservation of Timber of Commercial Value

The *Service Provider* shall trim any logs of commercial value to currently accepted standards and any other timber required by *Landholders* for their own use and leave neatly and compactly stacked. Locate clear of the centre track, power lines and clear of heaps of fallen timber, to the approval of the *Liaison Person*.

15.6.12 Trimming or Pruning of Remaining Trees

Where trees are to be retained and pruned, the pruning shall be carried out to AS 4373 Pruning of Amenity Trees. The Standard details techniques that reduce the risk of hazard development, branch failure, fungal infection, or premature tree death. The procedures in the Standard are based on the widely accepted theories of compartmentalisation of decay in trees.

15.7 Access Tracks

15.7.1 Access Tracks - General

The *Service Provider* shall provide vehicular *Access* to the whole line route, with additional *Access* tracks from existing public roadways or property *Access* roads where detailed on the *Drawings* and marked in the field. Designated avoidance areas such as Cultural Heritage sites, steep *Slopes* or riparian zones shall also be marked in the field. *Access* track location and construction shall be in accordance with WSC 1.5. *Access* Tracks Construction Standards and Specifications

The centre line *Access* track shall be as straight as practical, and generally follow the power line centre line for the entire line route except in areas of cultivation and where, because of steep *Slopes*, impassable creeks or other obstructions, the track would not be trafficable by conventional four-wheel drive pneumatic tyred vehicles and articulated vehicles. At structure positions the track shall divide to allow vehicles to drive each side of the structure to allow for construction and maintenance activities.

Specification for Land Management Construction



Construction of *Access* tracks shall be finished by power grader or by bulldozer blade where an adequate travel surface standard to the satisfaction of the *Liaison Person* can be achieved. Every effort shall be made to preserve existing grass cover and no windrows of soil or debris are to be left on the lower side of the track or across drainage lines. Drainage is to be directed away from the centre line of the route.

Access tracks shall be free of stumps, stakes, timber, protruding rocks, holes, or any unevenness which could restrict the progress of vehicles along the route during construction, patrol, or maintenance of the power line. In addition, overhanging branches shall be removed up to 5 metres above tracks to provide clear *Access* for vehicles. Table 3 details the minimum standard for construction of *Access* tracks constructed under this specification.

The *Service Provider* is responsible for ensuring that existing *Access* tracks are adequate and safe for use by all users during the course of the clearing works, and is responsible for upgrading if required, at no cost to Ergon Energy. All *Access* tracks and crossings shall be maintained in a good trafficable condition, and where damage is caused by activities of the *Service Provider*, reconstructed as necessary on completion of works. Such maintenance and reconstruction shall be to the satisfaction of and at no cost to *Energy Queensland* Energy.

15.7.2 Access Track Standards and Specifications

Table 3: Access Track Standards and Specifications

Design parameter	Standard
Formation	Crowned with cross fall of 1-3 degrees on ridge top or flat ground Out Sloped with 1-3 degrees outfall inside cut locations
Pavement surface	Natural weathered surface with <i>Patch Gravelling</i> on clay soils to improve traffic-ability. The desirable surface is short grass to minimise <i>Erosion</i> .
Pavement width	2.8 metres minimum, 4 metres maximum
Shoulder width	0.6 metres
Clearing width for track, if track is away from powerline easement	1 metre either side of earthworks (track formation)
Maximum gradient	10 degrees but may be steeper where construction results in less disturbance and the surface provides good traction.
Formation in Wet Tropics, National Parks, and State Forest	3-metre-wide formation. 4-metre-high to <i>Vegetation</i> .

15.7.3 Gullies and Watercourses

Where the *Access* track crosses gullies or *Watercourses* the *Service Provider* shall make the approaches so that, as far as possible, no scouring will occur during flooding or heavy rain. Where cutting is required, a wide mound of earth (*Whoa-boy*) should be left at the head of the cutting to prevent runoff water being funnelled into the cutting. Crossings should neither be built up above nor undercut below the bed of the *Watercourse* or gully at the crossing. Placing of logs, stones, pipes, etc. is generally not required. If the *Watercourse* or gully is such that, in the opinion of the *Liaison Person* a track constructed across it would not be or remain trafficable, then no track shall be provided. If clearing or *Access* tracks impact on the bed or banks of a *Watercourse*, work should be conducted under the conditions of a Riverine Protection Permit issued under part 8 of the Water Act.

In such cases an *Access* track not nominated on the plan may be required around the obstacle and advised in writing by the *Liaison Person*.

15.7.4 Steep Terrain

Where the *Access* track must be located off the contour or directly down a *Slope*, the grade of the track should not exceed 10 degrees. When the natural *Slope* is over 10 degrees, the track may be cut around the

Specification for Land Management Construction



side of the hill or ridge to gain extra length to achieve the required grade. In areas of side *Slope* where cutting is required, the track shall be constructed with a slight out *Slope* so that runoff water discharges along the full outer edge of the track, as per table 3.

15.7.5 Drainage Control

'*Whoa-boys*' (earth mounds) shall be constructed on tracks of 6% (1 in 16) (3.5 degrees) or greater *Slope* to prevent water flowing along the track. The height of '*Whoa-boys*' should be approximately 300mm (compacted) and the spacing in metres along the track may be calculated by using the formula:

$$200 / \% \text{ Grade}$$

For example: On a 10% grade, '*Whoa-boys*' would be 20 metres apart.

On small grades, '*Whoa-boys*' should be constructed from the downhill side with either a grader or bulldozer, so the topsoil and *Vegetation* on the uphill side of the mound remains undisturbed. On steep grades, '*Whoa-boys*' may be constructed from the uphill side provided the soil is collected gradually so as not to leave a deep gutter next to the mound. All '*Whoa-boys*' shall be rolled with the wheels or tracks of the machine to help stabilise the newly constructed mound.

Where required, discharge drains shall be constructed from the lower end of '*Whoa-boys*', extended where necessary to discharge onto a stable vegetated area, and also to prevent runoff water flowing onto other sections of the *Access* track.

Where earth is excavated to construct benching for crane operations on steep sites topsoil from the excavation shall be stockpiled and spread over the banks to encourage *Stabilisation*, to enable future use of the benching by maintenance plant. Provision may be made for *Stabilisation* of these disturbed sites with grass seed or other recognised soil *Stabilisation* techniques, to be nominated in the Main Specification.

15.8 Access Gates

The *Service Provider* shall install *Access* gates of the size and style nominated in either the *Drawings* or in the Main Specification, along the route of the power line. Gates, posts, and fittings shall be supplied and delivered by *Energy Queensland* to a single site along the line route to be agreed beforehand by the *Liaison Person* and the *Service Provider*.

Installation includes cutting of the existing fence and removal of posts where necessary, the piecing, re-tensioning, and retying including repair, if necessary, to restore the fence to as good as or better condition as existed prior to the erection of the gate.

15.9 Additional Works and Variation of Clearing

The *Service Provider* shall undertake such additional clearing and *Access* works not provided for in the previous sections, as may be directed by the *Liaison Person* in writing during the course of the contract, under the terms and conditions of the Specification. Payment for such works shall be at the rates tendered in the applicable Schedule.

15.10 Damage to Property

15.10.1 Damage to Property - General

For the purpose of clearing and *Access* work this clause shall take precedence over the 'Damage to Property' clause in other Standard Specifications.

The *Service Provider* shall plan and carry out the work under this specification in such a manner as to minimise the occurrence of damage to or loss of any property, improvements, services, livestock, poultry, cultivation, crops, etc. Any such damage or loss (including time spent searching for straying livestock, payment of pound fees, etc.) caused by the *Service Provider* or plant shall be at the expense of the *Service Provider* and shall be immediately repaired, replaced, or otherwise rectified by the *Service Provider* to the satisfaction of the *Liaison Person* and *Landholder*.

Specification for Land Management Construction



Failing restoration of damaged property or payment of adequate compensation to the injured party, the *Service Provider* shall indemnify Ergon Energy against all actions, proceedings, claims, demands, damages, penalties, costs, charges, and expenses of any description in respect of or arising out of such damage.

15.10.2 Improvements and Services

The *Service Provider* shall be responsible for locating and avoiding damage being caused to water mains, cables, drains, culverts, roads, grids, bridges, power lines, telephone lines and other improvements or services.

15.10.3 Fencing and Gates

Gates and fences shall be kept stock proof at all times, and timber shall be felled and disposed of so that damage to fencing or gates is avoided. No timber or debris shall be left lying on or adjacent to any fence or gate. Any damage caused to fencing or gates shall be immediately repaired to the satisfaction of the *Liaison Person* and the *Landholder*. If the *Service Provider* requires removing fences to obtain working space, the *Service Provider* shall immediately provide and install, at no cost to *Energy Queensland*, suitable temporary stock-proof fencing of sound construction to the satisfaction of the *Liaison Person* and the *Landholder*.

Gates shall be left as found and where closed shall be closed and fastened immediately after ingress or egress. All temporary fences or gates shall be removed by the *Service Provider* immediately they are no longer required, and the original fence shall be restored by the *Service Provider* to the satisfaction of the *Liaison Person* and the *Landholder*.

15.10.4 Hedges and Other Barriers

Other than work agreed to by the *Liaison Person* and *Landholder*, any damage to hedges and other barriers between properties or paddocks within properties shall be immediately rectified by installation of a suitable fence at the expense of the *Service Provider* and to the satisfaction of the *Liaison Person* and *Landholder*.

15.10.5 Crops and Cultivated Areas

The *Service Provider* shall ensure that the work under this Specification is carried out in such a manner that damage to cultivated areas and crops, including pasture grass and fruit trees, is kept to a minimum. In levelled cultivated areas no *Access* track dozing or grading shall be required. Where possible, *Access* tracks shall be located to avoid such cultivated areas, crops etc., and vehicles and plant shall travel around and not through such areas except when necessary to carry out actual work within their confines.

Any damage or loss caused by the *Service Provider* or *Service Provider's* plant to cultivate areas and crops etc., which in the opinion of the *Liaison Person* could reasonably have been avoided, shall be at the expense of the *Service Provider*.

15.11 Obstructions to Roads & Bridges

Any obstructions to roads, bridges, tracks, *Watercourses*, dams that prevent normal *Access*, caused during clearing shall be removed immediately, and the original conditions restored without delay.

15.12 Straying Livestock

The *Service Provider* at all times shall be entirely responsible for ensuring that livestock do not stray on roadways or from their confined pastures due to any fault, negligence or damage caused by the *Service Provider*, or the *Service Provider's* plant. If any claim shall arise in respect of any livestock which have strayed as a direct or indirect cause of any work performed by or on behalf of the *Service Provider*, then such claim shall be the responsibility of the *Service Provider*, whether such claim arises during the execution of the work or at any later date.

15.13 Permission to enter properties

Where work is to be carried out on private property *Energy Queensland* will obtain an easement, a wayleave or alternatively "Consent to Enter" before work is commenced. On major projects a schedule setting out the

Specification for Land Management Construction



real property description of all land to be crossed by the power line, together with any special requirements of the *Landholder* that are known to *Energy Queensland*, will be provided to the *Service Provider* prior to the commencement of field work.

Before entering any property, the *Service Provider* shall notify the respective *Landholder* of the intention to enter the property for the purpose of carrying out clearing or *Access* works and for ascertaining any additional requirements concerning work on the particular property. Such notice shall be given at least forty-eight (48) hours before commencing clearing or *Access* work on that property.

15.14 Benchmarks & Reference Trees

Before interfering with any marked trees associated with the powerline survey the *Service Provider* shall advise the *Liaison Person* of the intentions. Care should also be taken to avoid disturbance to trees that may have indigenous cultural heritage value (scar trees). Discovery of Indigenous Cultural Heritage and any trees carrying benchmarks. That are required to be removed shall require *Energy Queensland* approval first. They shall be cut one metre above such marks, where practicable, and the cut

must have a *Slope* of 25mm/300mm. After cutting, the exposed end grain shall be protected by a galvanised iron or sheet aluminium cap securely fixed to the stump.

Reinstatement of any marked trees disturbed or removed by the *Service Provider* shall be at the *Service Provider's* expense.

15.15 Pegs & Survey Marks

The *Service Provider* shall be held responsible for any pegs or survey marks destroyed, removed, or disturbed during clearing operations and shall bear the cost of resurvey where necessary and replacing of such pegs or survey marks, including any survey pegs previously placed by Ergon Energy to indicate the proposed power line. The *Service Provider* shall immediately advise the *Liaison Person* in writing of any pegs disturbed.

15.16 Working in Proximity to Electrical Parts

The *Service Provider* shall ensure that all workers observe the exclusion zones (in most cases, at least 3 metres) prescribed under the Electrical Safety Regulation, and the Code of Practice for Work in proximity to Electrical Parts. All workers shall be treated as untrained persons for exclusion zones purposes unless they have been specifically designated as Authorised Persons pursuant to section 59 of the Electrical Safety Regulation.

Trees (or any parts of trees) that are considered to be within these exclusion zones are to be avoided and reported to the *Liaison Person* immediately.

The *Service Provider* shall ensure by mechanical restraint that falling trees do not infringe on the exclusion zones.

When using rope as a restraint, use a fibre or synthetic rope of adequate strength in preference to a steel wire rope for increased electrical safety in situations of marginal clearances.

A tree branch or limb shall only be cut when it is below the conductors or would not fall onto the conductors when cut. Where there is no such assurance the line shall be de-energised prior to undertaking tree trimming work.

15.17 State Forests, National Parks, Conservation Parks

Under no circumstances shall the *Service Provider* undertake any work within a State Forest, National Park, or Conservation Park, without first having obtained explicit instructions from the *Liaison Person*. Operations here will be under a specific *EMP*, and boundaries will be clearly identified. Site specific inductions to communicate the requirements of the *EMP* will be conducted for all workers before work commences on these sites. State Forest, National Parks and Conservation Parks including area with CH are considered not to be MINOR works.

Specification for Land Management Construction



15.18 Acts, Regulations, By-Laws and Approvals

Service providers shall have all required Acts, Regulations, By-Laws, as per a work site.

The *Service Providers* shall have all relevant Acts, Regulations, By-Laws, Approvals and shall observe the requirements of any Government or Semi-Government Department, Local Authority, owner, or lessee of property through which the route passes or adjoins.

16 Construction and Maintenance of Wash Down Facilities

16.1 Construction and Maintenance of Wash Down Facilities - General

All construction methods and materials used are to be in accordance with the included clauses of this Specification and attached *Drawings* (specification) of this Section 16:

- (a) Figure M-1 – Access Track Infrastructure – Temporary Wash Down Facilities – Construction and Maintenance Details.

Specification for Land Management Construction



Figure M-1 – Access Track Infrastructure – Temporary Wash Down Facilities – Construction and Maintenance Details.

ner: Chief Operating Officer

Release: 1 24 Apr 2024 | Doc ID: 19285

Specification for Land Management Construction



17 Construction and Maintenance of Helicopter Landing Sites

17.1 Construction and Maintenance of Helicopter Landing Sites - General

All construction methods and materials used are to be in accordance with this Specification, Section 17, and in accordance with the *Energy Queensland Aviation Standard*.

- (a) Figure N-1 – Helicopter Landing Sites – Maintenance Standard – General Arrangement Sheet 1.
- (b) Figure N-2 – Helicopter Landing Sites – Maintenance Standard – General Arrangement Sheet 2.

Specification for Land Management Construction

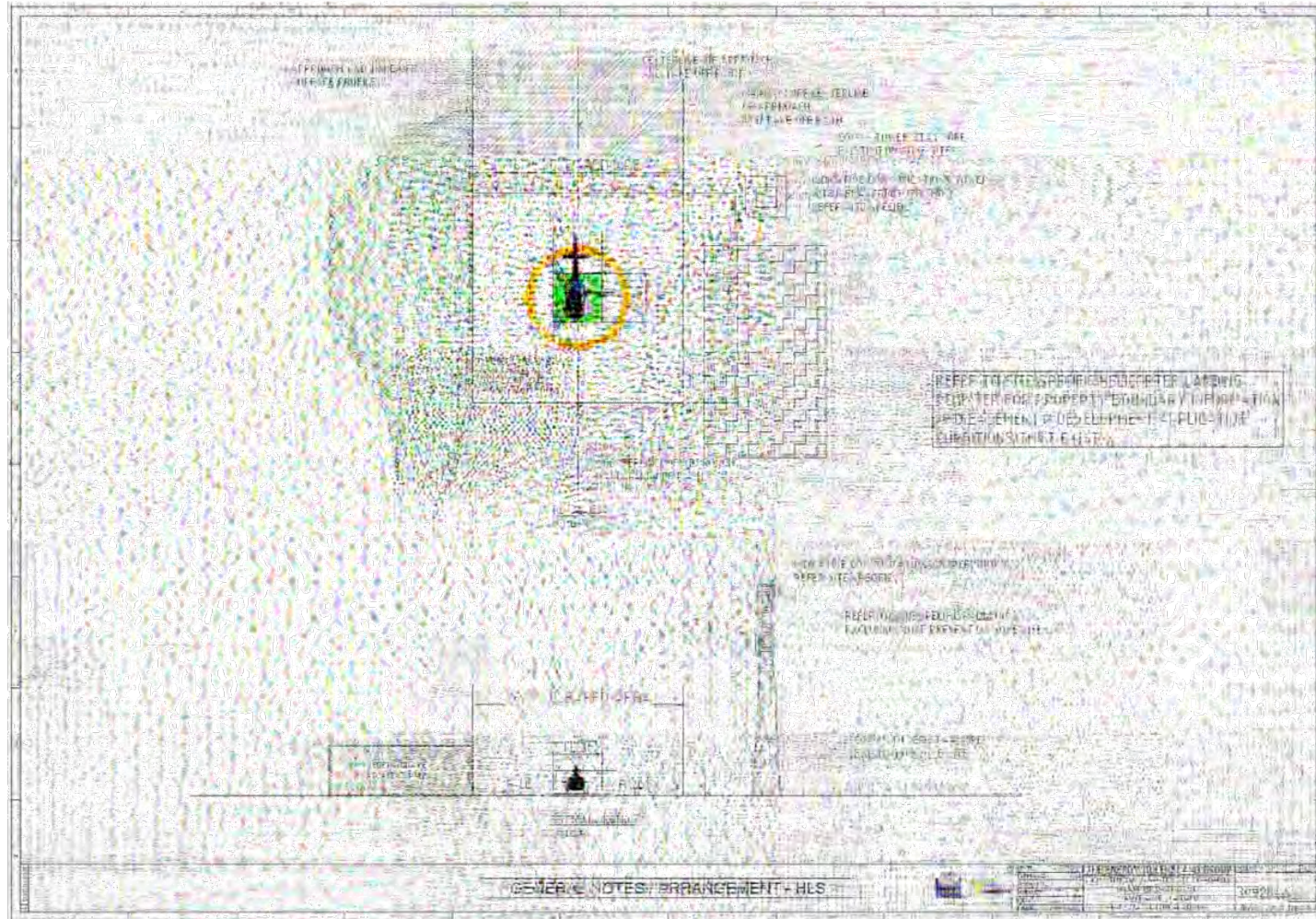


Figure N-2 – Helicopter Landing Sites – Maintenance Standard – General Arrangement Sheet 2.

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Release: 1 24 Apr 2024 | Doc ID: 19285

Work Category Specification WCS1.5



Land Management

[Table of Contents](#)

1. SCOPE

This Work Category Specification (*WCS1.5*) documents the *Service* requirements for land management (including the construction, condition assessment and maintenance of *Access* track infrastructure, and land *Stabilisation* and Rehabilitation) in the vicinity of *Energy Queensland*'s electricity network.

1.1 General

- (a) As part of and in conjunction with this *WCS1.5*, read *WCS133* for the general standards and conditions that are relevant to, and are incorporated into this category of work.
- (b) For the avoidance of doubt, a breach of a general standard or condition contained in *WCS133* is a breach of *WCS1.5*.
- (c) The civil construction and maintenance relative to land management including and not limited to *Access* tracks, infrastructure projects at remote and inaccessible locations and land *Stabilisation* and rehabilitation. Typically, this work occurs at *Sites* with varying degrees of construction / maintenance complexity and environmental sensitivity (e.g., significant environmental and cultural heritage areas, *Watercourses*, and tidal land in accordance with *WCS133*). This involves projects of varying duration, expenditure and complexity as outlined below:
 - (i) Level 1 Projects – *Access* tracks and land *Stabilisation* and rehabilitation construction and maintenance projects of high complexity and /or high estimated expenditure with requirements for working in environmentally and / or culturally sensitive areas. Where the *Service Provider* shall generally be engaged as the Principal Contractor for the works. Often involving multiple stages and with requirements for working in conjunction with other electrical infrastructure construction and maintenance. The degree of construction complexity may require direct specialist environmental or cultural and / or civil engineering input and assessment (e.g., new construction or extension to existing *Access* tracks, land *stabilisation* and rehabilitation, *Watercourse* crossings, point or distributed load bearing construction of pads, civil construction in areas with surface water and water flow management issues.)
 - (ii) Level 2 Projects – *Access* tracks and land *stabilisation* and rehabilitation construction and maintenance projects of medium complexity and / or medium estimated expenditure that may involve minimal multiple staged works with minimal requirements for working around and in environmental and cultural heritage sensitive areas (e.g. new minor construction or extension to existing *Access* tracks, installation and maintenance of construction pads, existing *Infrastructure Drainage* and *Access* track drainage maintenance).
 - (iii) Level 3 Projects – *Access* tracks and land *stabilisation* and rehabilitation construction and maintenance projects of low complexity and / or low estimated expenditure with no requirements for working around and in environmentally and / or culturally sensitive areas, (e.g., gate installation and maintenance, grading and patch repair of existing *Access* track spots).

Note: Level 3 *Service Providers* only perform Level 3 land management and land *stabilisation* / rehabilitation projects.

Note: Level 2 *Service Providers* may perform Level 2 or Level 3 land management and land *stabilisation* / rehabilitation projects.

Note: Level 1 *Service Providers* may perform Level 1, Level 2 or Level 3 land management and land *stabilisation* / rehabilitation projects.

1.2 Application

- (a) The application of land management Services includes, but is not limited to, the following functions:
 - (i) ~~Construction, condition assessment and maintenance of Access tracks.~~

Work Category Specification WCS1.5



Land Management

- (ii) Construction, condition assessment and maintenance of *Minor Creek Crossings*.
 - (iii) Construction, condition assessment and maintenance of *Infrastructure Drainage*.
 - (iv) Construction, condition assessment and maintenance of gates.
 - (v) Construction, condition assessment and maintenance of pads / laydown areas.
 - (vi) Construction, condition assessment and maintenance of wash (clean) down facilities (bays) for the control of *Invasive Plants (Weeds)*.
 - (vii) Construction, condition assessment and maintenance of helicopter landing sites.
 - (viii) Installation and maintenance of *Access* directional and structure location signage.
 - (ix) Clearing of *Vegetation* limited to the width of *Access* track footprint.
 - (x) Chemical control of *Invasive Plants (Weeds)*.
 - (xi) Land *stabilisation* and rehabilitation.
 - (xii) Clearing of *Vegetation* limited to either side of the proposed *Overhead Conductor* (powerline) route centreline at green field sites.
 - (xiii) undertaken to facilitate the construction of new or maintenance of existing electrical *Overhead Conductors* and supporting infrastructure and the installation of electrical underground cables on public or private property and other nominated areas.
- (b) The applications excluded from *Services* being provided, are:
- (i) Clearing of *Vegetation* for maintenance utilising mechanical plant on easements and corridors (outside the width of *Access* track footprint).
 - (ii) Pruning of *Vegetation* (working from an Elevated Work Platform (*EWP*) or rope and harness [tree climbing] or utilising Live Work *Vegetation* removal technique).
- (c) Service Providers are required to carry out the construction, condition assessment and maintenance of *Access* tracks (including associated civil infrastructure), and land *stabilisation* and rehabilitation in varying locations throughout the nominated *Energy Queensland* regions.
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Work Category Specification WCS1.5



Land Management

2. AMENDMENT RECORD

Release	Release Date	Change
9	04/04/2024	<p>Section 4 Competencies, Training and Qualifications</p> <ul style="list-style-type: none"> Aligned/Updated EQL/Esitrain course codes: Removed courses: <ul style="list-style-type: none"> E295 – Environmental Awareness E298 - Sediment Control Awareness T0524 – Cultural Heritage <p>Section 6.2 Equipment used for Herbicide Treatment</p> <ul style="list-style-type: none"> Inserted: <ul style="list-style-type: none"> In accordance with the Chemical Usage (Agricultural and Veterinary) Control Regulation. <p>Section 8 Environment</p> <ul style="list-style-type: none"> Inserted: <ul style="list-style-type: none"> Section 8.4 Biosecurity Section 8.5 Fire Ants in South East Queensland Section 8.6 Cultural Heritage <p>Section 9.1</p> <ul style="list-style-type: none"> Inserted: <ul style="list-style-type: none"> EQL Specification for Land Management <p>Section 9.1 General</p> <ul style="list-style-type: none"> Inserted: <ul style="list-style-type: none"> Work Category Specification <i>WCS1.6A – Vegetation Management Assessment</i> EQL Standard - Environmental Management Standard EQL Specification - Land Management Removed: Civil Aviation Advisory Publication CAAP 92-2(1) - Guidelines for the establishment and operation of onshore Helicopter Landing Sites. <p>Section 12 Glossary</p> <ul style="list-style-type: none"> Included: <ul style="list-style-type: none"> RGVM - Registered Gross Vehicle Mass Whoa-boy - Trafficable Diversion Banks <p>Section 13.1 Available Documents</p> <ul style="list-style-type: none"> Removed: <ul style="list-style-type: none"> Guidelines for the establishment and operation of onshore Helicopter Landing Sites CAAP 92-2(1) <p>Section 12 Glossary</p> <ul style="list-style-type: none"> Included: <ul style="list-style-type: none"> RGVM - Registered Gross Vehicle Mass Whoa-boy - Trafficable Diversion Banks

Work Category Specification WCS1.5



Land Management

Release	Release Date	Change
		<p>Section 13.1 Available Documents</p> <ul style="list-style-type: none"> Removed: Guidelines for the establishment and operation of onshore Helicopter Landing Sites CAAP 92-2(1) <p>Section 13.2.1</p> <ul style="list-style-type: none"> Inserted: Standard for Remote and Isolated Work Removed: WCS1.5 Appendix K Water Crossing Works Checklist <p>Section 13.2.2 Queensland Acts and Regulations</p> <ul style="list-style-type: none"> Inserted: Agricultural Chemicals Distribution Control Act Agricultural Chemicals Distribution Control Regulation Chemical Usage (Agricultural and Veterinary) Control Act. Chemical Usage (Agricultural and Veterinary) Control Regulation. Fisheries Act <p>Section 13.2.3 Australian Standards and Other Documents</p> <ul style="list-style-type: none"> Inserted: Fish Habitat Area Code of Practice - The lawful use of physical, pesticide and biological controls in a declared Fish Habitat Area.

3. AIMS / OBJECTIVES

The aims and objectives of this WCS1.5 is to ensure:

- (a) The overall aims and objectives detailed in WCS133, Section 3 - Aims and Objectives, are met by the application of procedures herein.
- (b) The additional category of work specific aims and objectives below are met:
 - (i) Construction and maintenance operations are to occur in a safe manner near to electricity network infrastructure.
 - (ii) Access tracks (including associated civil infrastructure), structural integrity maintained.
 - (iii) Land stabilisation and rehabilitation Site stable and Erosion free condition, preventing any likely environmental nuisance or harm.
 - (iv) Access tracks (including associated civil infrastructure) constructed and maintained for the provision of uninterrupted Site Access to undertake construction and maintenance of the electricity distribution and transmission network infrastructure.
 - (v) Ensure safe, environmentally appropriate operation and prevent interruption of electricity supply.

4. COMPETENCIES, TRAINING AND QUALIFICATIONS

- (a) Service Providers and their Operators / subcontractors performing the Services are suitably licensed and trained in accordance with WCS133, Section 4 - Competencies, Training and Qualifications.
- (b) For competencies, training and qualification requirements specific to this category of work refer to the below included references and clauses:

Work Category Specification WCS1.5



Land Management

4.1 EQL Competencies

Table 1 specifies the EQL Competencies / Authorisations (or combinations thereof) that are EQL requirements to be held by Operators.

Table 1- Operator Competencies

Course Code	Competency Description	Operator Requirements	
Operators hold the following competencies.			
1013	Access Electrical Network Infrastructure for the Individual of Workgroup (IWG) in QLD (Note 2 and Note 3).	R	
1006	Asbestos Awareness	R	
1003	Biosecurity Awareness (Note 1)	R	
1083	Generic Contractor Worker Induction (GCWI) in QLD	R	
1018	Fire Ant Management	R	
1656	Introduction to Electrical Network Infrastructure for Authorised Persons	R	
1583	Oil Spill Management (Note 1)	MO	
1073	Wet Tropics - World Heritage	AR	
1009	Working Safely On or Near Electrical Network Infrastructure in QLD (System Key for EQL Contractors ONLY)	R	
	Excavator / Dozer / Grader / or similar plant [wheeled or tracked] (Note 4).	AR	
	Certificate III in Civil Construction Plant Operations [RII30813] (Note 5).	AR	
	Electricity Officer (Note 6)		
CPCWHS1001	Prepare to work safely in Construction Industry (White Card)	R	
Operators hold the following competencies when undertaking Powerlink works			
		EQL	Powerlink
EXT01001	Unexploded Ordnances ¹	AR	R
POW01511	Land Access Protocol		R

Legend:

- R Required.
- AR As required.
- MO A minimum of one person on Worksite holds this competency.

Note 1: Service Providers with their own environmental training system equivalent as a minimum to the EQL environmental training system may train and assess their own Operators as competent.

Note 2: Hold this Authorisation if required to sign onto an Access Permit as a Work Group member, for HV circuit(s) isolated as per SAHV procedures.

Note 3: Service Providers or their Operators while working exclusively on or in transmission line, easements / corridors are not required to hold this competency.

Note 4: Operators are to be trained and assessed as competent by a Registered Training Organisation (RTO) with appropriate scope for the plant being operated. Provide Energy Queensland Officer

¹ This competency is exclusive to Operators undertaking Powerlink works.

Work Category Specification WCS1.5



Land Management

with a copy of current 'Statement of Attainment' or 'Nationally Recognised Qualification' for all Operators of Excavator / Dozer / Grader / or similar plant.

Note 5: *Primary Operators on Worksites* where:

Level 1 Project works are being conducted are to hold this qualification.

Level 2 Project works are being conducted may be required to hold this qualification.

Note 6: Only *Operators* carrying out work directly for and on behalf of *Energy Queensland* need to be authorised by *Energy Queensland* as Electricity Officers.

5. VEHICLES AND PLANT

- (a) For vehicles and plant requirements, refer to WCS133, Section 5 – Vehicles and Plant.
- (b) For vehicles and plant requirements specific to this category of work refer to the below included references and clauses.

5.1 Energised Electrical Plant

All mobile plant (e.g., general purpose vehicles, excavators, dozers, graders or similar plant) used in performance of work in the vicinity of energised electrical *Overhead Conductors* and plant is to strictly comply with requirements of the *Laws* and including and not limited to the following listed Acts and Codes of Practice:

- (a) Work Health and Safety Act.
- (b) Work Health and Safety Act – Plant Code of Practice.
- (c) Work Health and Safety Act – Mobile Crane Code of Practice.
- (d) Work Health and Safety Act – Safe Design and Operation of Tractors Code of Practice.

6. MATERIALS, TOOLS AND EQUIPMENT

- (a) For materials, tools, equipment requirements, refer to WCS133, Section 6 – Materials Tools and Equipment.
- (b) For materials, tools, equipment requirements specific to this category of work refer to the below included references and clauses.

6.1 Lifting Equipment

All lifting equipment complies with the *Laws* and relevant Australian Standards, and test / certification certificates available for all lifting equipment.

6.2 Equipment used for Herbicide Treatment

Operate, clean, and maintain all equipment used for *Herbicide Treatment of Vegetation* in accordance with the equipment manufacturers' directions. In accordance with the Chemical Usage (Agricultural and Veterinary) Control Regulation.

Operate, clean and maintain all equipment used for *Herbicide treatment of Vegetation* In accordance with the equipment manufacturers direction. (NB records are to be kept from use for a minimum of 2 years in accordance with the Chemical Usage (Agricultural and Veterinary) Control Regulation).

6.3 Nominated Tools and Equipment

[Table 2](#) defines specific materials, tools and equipment required when providing *Services* for this category of work.



Work Category Specification WCS1.5

Land Management

Table 2- Materials, Tools and Equipment

Description	Supplier
Suitable instruments for measuring / estimating vertical fall on all civil works only (e.g. (and not limited to) dumpy level or laser device).	Service Provider
Digital Camera (high definition).	Service Provider
Worksite communications system, e.g. (and not limited to) two-way radios with multi-channel function to limit interference.	Service Provider
Oil Spill Kit (on all oil filled plant appropriate for the volume of oil to be contained).	Service Provider
Vehicle clean down equipment (where required; generally, Site specific Access restrictions).	Service Provider
Spatial data / recording device (GPS capability)	Service Provider
Personal Protective Equipment to safely manage the Herbicide specified by the label and Safety Data Sheets for the Herbicide.	Service Provider
First Aid Kit including a supply of medicinal material as per the Herbicide manufacturer's directions, (label and Safety Data Sheets) for all Herbicides being transported and distributed.	Service Provider

7. SAFETY

- (a) For general safety requirements, refer to WCS133, Section 7 – Safety.
- (b) For additional safety requirements specific to this category of work refer to the below included references and clauses.
 - (i) Energy Queensland have implemented critical controls for fatal hazards specific to work environments encountered in connection with the distribution of electricity across Queensland. The fatal hazards in Table 3 below have been deemed specific to this category of work and the listed critical controls must be met or exceeded within the Service Provider's specific WHS Management Plan or Safe Work Method Statements.

Table 3 – Fatal Hazards

Fatal Hazard	Critical Control
Working on or near electricity	Establish and maintain safe working distances and exclusion zones
Mobile Plant Operations	Conduct pre-start checks to ensure all safety features are in good operational condition and not over-ridden
	Set up vehicle/plant to manufacturer's instructions
	Never exceed safe working limits
Driving	Use a spotter when reversing, and if not available do a walk around
	Ensure vehicle and trailer is in a serviceable condition by conducting a pre-start check
	Ensure all loads are secure and cannot come free during travel
	Safety features are used when in operation, including seat belts worn whenever vehicle in forward motion
	Drive to the conditions, especially in the rain and on dirt roads

Work Category Specification WCS1.5



Land Management

	Establish a journey management plan when driving more than 2 hours and ensure rest breaks are planned and taken
Remote or Isolated Work	Two forms of effective communication are always present, with the ability to raise alarm when needed
	Enough drinking water is available
	A plan is in place if an emergency arises

- (c) Additional implement control measures are also required to eliminate and / or reduce the following (but not limited to) risk exposures:
- (i) Vehicles traversing over existing Access tracks with potential for steep gradients, excessive cross-falls, slippery or loose surfaces, washouts or Erosion, boggy surfaces, Watercourse crossings or running causeways.
 - (ii) Oncoming and passing vehicles on Access tracks with narrow running surface width or tight corners.
 - (iii) Operating over rugged terrain.
 - (iv) Operating of plant and equipment near exposed live parts.
 - (v) Incensed and or sensitive Landholders / Occupiers.
 - (vi) Operating in severe weather conditions.
 - (vii) Operating in high fire risk conditions.
 - (viii) Operating on high altitude terrain with limited to aerial Access only.

7.1 Safety Observer for Works

- (a) Ensure that a suitably trained and competent Safety Observer is utilised when all mobile plant (for example, general purpose vehicles, excavators, dozers, graders, helicopters, or similar plant) is used for the performance of work in the vicinity of electrical Overhead Conductors and Plant and or where other hazards (for example, telecommunications tower) have been identified by Operator(s) or the Energy Queensland Officer.
- (b) The Operator(s) is to establish and utilise a communication's system for communicating with the Safety Observer(s) that is suitable and effective for the Worksite conditions.
- (c) Ensure the nominated worker (Operator) has a thorough knowledge of the safe operation of the mobile plant and equipment they may be exposed to while performing the role of a Safety Observer.

7.2 Induction from Energised Powerlines

When locating new fences or maintaining existing fences that are parallel to High Voltage powerlines, seek technical advice for developing the Service Providers own safe system of work in regard to minimising the potential for induction from the energised High Voltage powerlines before the commencement of works.

7.3 Radio Frequency Electro-Magnetic Energy Radiation

The Service Provider is to implement control measures to eliminate and / or reduce all risk exposures from helicopters operating in the vicinity of any parties' radio frequency electro-magnetic energy radiation emitting telecommunications installation(s) installed on the telecommunications tower and other party adjacent infrastructure.

8. ENVIRONMENT

- (a) For environmental requirements, refer to WCS133, Section 8 - Environment.
- (b) For environmental requirements specific to this category of work, refer to the below included references and clauses.
- (c) At Sites where works occur, the Service Provider is to comply with the following:

Work Category Specification WCS1.5



Land Management

- (i) All Commonwealth, State and Local Government legislative requirements
 - (ii) Environment and Cultural Heritage Conditions for Contracted Work
 - (iii) Environmental Assessment Response T111
 - (iv) Cultural Heritage Assessment
 - (v) Environmental Impact Assessment.
 - (vi) Environmental Management Plan (EMP)
- (d) The service provider is only to carry out an activity after all measures to prevent or minimise the potential for environmental and cultural heritage harm have been taken.
- (e) Implement documented environmental and cultural heritage risk / impact assessments and environmental plans at each Worksite.
- (f) Maintain and leave the worksite in a condition ensuring no potential for environmental nuisance or harm.
- (g) Before commencing works in significant/sensitive environmental or cultural heritage areas, for example (and not limited to) World Heritage Areas, National Parks, Conservation Areas, Marine Parks, marine plants areas, wetlands, *watercourses*, tidal areas or identified cultural heritage sites or landscapes seek direction from the *Energy Queensland* Officer. Notification of work must occur prior to works commencing to the relevant Administrating Authority where required and submission of an Environmental Management Plan in accordance with the relevant legislation, codes and policies is required and is to be implemented for the period the Services are being provided.
- (h) Before commencing works, *site specific* inductions are required to be undertaken in areas covered under the Code of Practice - Maintenance of Electricity Corridors and Infrastructure in Queensland's Parks and Forests.
- (i) During *Site* works take all reasonable and practicable measures to ensure an activity does not harm cultural heritage.
- (j) During *Site* works where there is the potential for additional disturbance of areas outside the existing Access track footprint, seek direction from the *Energy Queensland* Officer to ensure an activity does not harm environmental or cultural heritage values. New clearing works outside the existing footprint may require additional permits, notifications or engagement.

8.1 Watercourse, wetland and tidal Protection

- (a) The following requirements apply to works in and adjacent to drains, *watercourses*, tidal areas, and wetlands :
- (i) Drains, *watercourses*, tidal areas, and wetlands are not to be polluted by rubbish, *vegetation*, soap, toilet waste, silt, or fuel or oil spillage.
 - (ii) Spoil and *vegetation* that is disturbed are not to be pushed into or within 10 metres of any drain, *watercourse*, tidal areas or wetlands.
 - (iii) Chemicals are not to be decanted, mixed, or stored within 30 metres of a drain, *watercourse*, tidal area or wetland.
 - (iv) Heavy plant is not to enter a *drain, watercourse, tidal area or wetland* without a management plan to remediate the *Site*.
- (b) In the event of any accidental spillage of any chemicals on *Worksite(s)* the *Service Provider's Operator* is to notify the *Service Provider* immediately and the *Service Provider* is to take immediate steps to control and clean up any spillage. The *Service Provider* is to report all major and minor chemical spills (e.g. oil spill) on ground surfaces and / or one that may reach a *drain, watercourse, tidal area or wetland* to the *Energy Queensland Officer* within 24 hours of the occurrence. Reporting is to comply with Guide for Managing Minor and Major Oil Spills.

8.2 Soil Conservation and Erosion Control

- (a) Where mechanical means are used to construct and maintain an *Access track* appropriate sediment and *Erosion* controls are to be implemented by the *Service Provider* to prevent *Erosion* and release

Work Category Specification WCS1.5



Land Management

of sediments from within the *Access* track footprint, so that, on completion of the works the *Site(s)* shall be in a stable. The *Service Provider* shall provide (for acceptance by the *Energy Queensland Officer*) a *Site-specific* plan detailing *Erosion* and siltation control measures with particular emphasis on the following:

- (i) *Erosion* controls.
 - (ii) Drainage controls.
 - (iii) Sediment controls.
 - (iv) *Stabilisation* controls
- (b) Sediment and *Erosion* controls must be in accordance with Best Practice *Erosion* and Sediment Control, International *Erosion* Control Association.
- (c) Topsoil stripped from the *Access* track footprint prior to foundation preparation (excavation for boxing out to the desired depth) shall be contained and stored in a nominated area and returned to the *Access* track footprint prior to landscaping works.
- (d) Any spoil materials removed from the *Site* shall be disposed of at an appropriate facility/site nominated by the *Service Provider* or *Energy Queensland Officer*.
- (e) Suitable dust suppression measures shall be employed by the *Service Provider* to limit dust nuisance on and off the *Site(s)*.

8.3 Department of Agriculture and Fisheries – Marine Plant Advice

- (a) Prior to carrying out any *Access* track infrastructure works (including inspection and condition assessment) in a marine plant area, declared fish habitat area, or works that may create a waterway barrier consult the following Department of Agriculture and Fisheries documents:
- Accepted development requirements for operational work that is the removal, destruction, or damage of marine plants.
 - Accepted development requirements for operational work that is constructing or raising waterway barrier works.
 - Accepted development requirements for operational work that is completely or partly within a declared fish habitat area.
- (b) If the proposed *Access* track infrastructure works meet the definition of accepted development set out in the above listed documents, they are to be implemented in accordance with the requirements of the above listed documents including pre and post works notifications.
- (c) If the proposed *Access* track infrastructure works do not meet the definition of accepted development set out in the above listed documents seek direction from the *Energy Queensland Officer* as a Development Application may be required prior to commencing *Access* track infrastructure works.

8.1 Biosecurity

- (a) The service provider has a general biosecurity obligation to take all reasonable and practicable measures to prevent or minimise their biosecurity risk and to ensure they meet their general biosecurity obligation the service provider must develop and implement biosecurity controls to prevent any biosecurity risk posed or likely to be posed by the activity at the site. The controls should consider but not limited to:
- (i) Vehicle and plant clean down (and maintaining records of such clean downs)
 - (ii) Vehicle, equipment, and employee hygiene
 - (iii) Chemical control (where permitted)
 - (iv) Following the Landowner's invasive plant management plans (where requirements are reasonable and practical).



Work Category Specification WCS1.5

Land Management

- (b) If vehicles or machinery are brought in from outside the region they must be washed down before commencing work at the site. Vehicles and machinery must be washed down after the completion of the works. All washdown records must be recorded and retained for auditing purposes.
- (c) Ensure compliance with relevant Biosecurity Management Plans under the *Biosecurity Act*, Biosecurity Regulation, and subordinate legislation.

8.5 Fire Ants in South East Queensland

- (a) To prevent the spread of Fire Ants in Queensland the Service Provider must undertake all works in accordance with:
 - (i) Biosecurity Act
 - (ii) Biosecurity Regulation
 - (iii) Department of Agriculture and Fisheries - Fire Ant Movement Controls (Biosecurity Qld website);
 - (iv) General Biosecurity Obligation.
- (b) Service Providers are to:
 - (i) Have systems and processes in place to demonstrate compliance with their General Biosecurity Obligation. These can include a Fire Ant Management Plan and Operators who are competently trained to identify Fire Ants and conduct Fire Ant inspections.
 - (ii) Ensure Operators are aware of their responsibility to identify Fire Ants and measures to be taken to prevent their spread.
 - (iii) Have a minimum of one Trained Operator shall present on each Worksite in a Fire Ant Biosecurity Zone.

8.6 Cultural Heritage

- (a) The Service Provider is to comply with all Laws pertaining to Indigenous cultural heritage, including the *Queensland Aboriginal Cultural Heritage Act* and *Queensland Torres Strait Islander Cultural Heritage Act* and take all reasonable and practicable measures to ensure an activity does not harm cultural heritage (the "cultural heritage duty of care").
- (b) The Service Provider is to comply with all Laws pertaining to Historical heritage, including the *Queensland Heritage Act* and take all reasonable and practicable measures to ensure an activity does not impact on heritage items or places.
- (c) The Service Provider must comply with any cultural heritage management directions relating to works under a Cultural Heritage Management Agreement, Field Inspection Agreement or within a Special Instruction area.
- (d) In the event of a cultural heritage find (both Indigenous and Historical) during the works the Service Provider is to Stop work immediately in the vicinity of the find and contact an *Energy Queensland* Officer.

9. EXTENT OF WORK

9.1 General

- (a) For extent of work requirements, refer to WCS133, Section 9 – Extent of Work.
- (b) For extent of work requirements specific to this category of work refer to the below included references and clauses.
 - (i) Provide Services in accordance with (but not limited to):

EQL Work Category Specifications

- Work Category Specification WCS1.5 – Land Management
- Work Category Specification WCS1.5A – Land Management Assessment

Work Category Specification WCS1.5



Land Management

- Work Category Specification WCS1.6 – *Vegetation* Management Plan.
- Work Category Specification WCS1.6A – *Vegetation* Management Assessment
- Work Category Specification WCS1.7 – *Vegetation* Treatment Near Electricity Networks
- Work Category Specification WCS1.7A – *Vegetation* Treatment Near Electricity Networks Assessment
- Work Category Specification WCS1.8 – *Vegetation* Clearing by Mechanical Plant near Electricity
- Work Category Specification WCS1.8A – *Vegetation* Clearing by Mechanical Plant near Electricity Networks Assessment.
- Work Category Specification WCS133 – General Standards and Conditions.

EQL Standards

- Environmental Management Standard

EQL Specifications

- Land Management

EQL Manuals & Procedures

- Environmental Assessment Response T111.
- Implement Controls - Handling and Disposal of Redundant Poles.

EQL Forms

- Access Track Condition Assessment Data Capture Sheet
- Clean Down Record
- Record of Distribution of *Herbicides*
- Cultural Heritage Assessment form

Codes of Practice

- Code of Practice - Maintenance of Electricity Corridors in Queensland's Parks and Forests.
- Code of Practice - Working in the Vicinity of Overhead and Underground Electric Lines. Safe Work Australia.
- Fish Habitat Area code of practice - The lawful use of physical, pesticide and biological controls in a declared Fish Habitat Area.

Other Relevant Documents

- Accepted development requirements for operational work that is completely or partly within a declared fish habitat area.
- Current plans detailing existing underground essential services infrastructure in the immediate area and surrounding the Worksite.
- Department of Agriculture and Fisheries document - Accepted development requirements for operational work that is the removal, destruction, or damage of marine plants.
- Department of Agriculture and Fisheries document - Accepted development requirements for operational work that is constructing or raising waterway barrier works.
- *Herbicide* Safety Data Sheets and Labels.
- Plant and equipment manufacturers' manuals.
- Safety Data Sheet and Labels for all chemicals used at Worksite, for example fuel, hydraulic oil.
- Service Provider's Safe Systems of Work.
- The requirements of the *Energy Queensland* approved Construction Issue Plan and associated Construction Drawings and instructions.

Work Category Specification WCS1.5



Land Management

9.2 General Project Level Entry Requirements

- (a) All *Service Providers* are able to demonstrate sufficient previous construction experience involving similar infrastructure projects to the land management and land *stabilisation / rehabilitation* project level for which they are applying to undertake for *Energy Queensland*. This assessment is based on examples of recent projects and confirmed referee reports that are satisfactory to *Energy Queensland*.
- (b) *Service Providers* who initially cannot demonstrate sufficient previous construction experience in either of the higher Level 1 or Level 2 type land management infrastructure projects respectively may apply for reassessment after the satisfactory completion of three *Energy Queensland* land management and land *stabilisation / rehabilitation* infrastructure projects at the *Service Provider's* current accepted project level (e.g., Level 2 or Level 3).

9.3 Service Provider Responsibilities

- (a) Notify as soon as practical, the *Energy Queensland* Officer of the presence of any additional previously un-identified *Access track*, *Minor Creek Crossing*, helicopter landing site and wash (clean) down facility condition(s) that may require further investigation to determine their structural and environmental integrity and / or potential remedial maintenance of the *Access track(s)*, *Minor Creek Crossing(s)*, helicopter landing site(s) and / or wash (clean) down facility(s) that may be required.
- (b) While actioning construction, condition assessment and maintenance of *Access track*, *Minor Creek Crossing*, helicopter landing site, wash (clean) down facility, and land *stabilisation* and rehabilitation ensure that all work is compliant with the relevant documented safe system of work.
- (c) During the routine condition assessment of *Access track*, *Minor Creek Crossing*, helicopter landing site and wash (clean) down facility infrastructure, notify as soon as practical, the *Energy Queensland* Officer of the presence of any structural and environmental condition identified requiring immediate investigation and / or remedial maintenance.

9.4 Standards of Dress

- (a) *Service Providers* are to ensure all Operators and Sub-contractors maintain a suitable dress standard when representing the *Service Provider* and *Energy Queensland* at the *Worksite(s)*.
- (b) Operators are to ensure they wear the appropriate Personal Protective Equipment (PPE) in strict accordance with the *Service Provider's* Safe System of Work.

9.5 Landholders / Occupiers

Energy Queensland fosters goodwill of *Landholders / Occupiers* and others when accessing private property. *Energy Queensland* relies on this goodwill to effectively maintain network infrastructure. Make every effort to foster and enhance this goodwill.

9.6 Maintenance of Barricades and Environmental Controls

- (a) Place no spoil materials recovered from the *Services* being provided where the spoil materials or any sediment from the spoil materials can enter *Watercourse* or stormwater drainage.
- (b) Retain all spoil, material, plant and equipment within the barricaded *Worksite*.
- (c) Spoil is not being placed on the carriageway or in gutters and drains.
- (d) Any stockpiling of spoil is not to exceed the maximum volumes allowed by the controlling Authority of the Site.

9.7 Worksite Conditions

- (a) Ensure an area with controlled *Access* is established to safeguard *Landholders / Occupiers*, pedestrians, motorists and ground workers against injury or damage.
- (b) During and following completion of *Services*, maintain and leave *Worksite* in a safe, hazard free condition at all times, and reinstate and maintain *Worksite* to at least the condition satisfactory to *Energy Queensland* Officer.

Work Category Specification WCS1.5



Land Management

9.8 Exclusion Zones

- (a) All Operators (including ground staff) are aware of the location of mobile plant being operated in relation to *Overhead Conductors* and electrical plant, and telecommunication towers when constructing and maintaining *Access* tracks, *Minor Creek Crossings*, helicopter landing sites and wash (clean) down facilities and undertaking land *stabilisation* and rehabilitation.
- (b) Treat all *Overhead Conductors* and electrical plant as energised unless an *Access* permit has been received.
- (c) Only operate mobile plant in the vicinity of the HV electrical apparatus (*Overhead Conductors* and electrical plant) described in Section 6 of the *Access* permit received.
- (d) Only construct and maintain *Access* tracks and *Minor Creek Crossings*, wash (clean) down facilities and undertake land *stabilisation* and rehabilitation between operator earths. At least one earth is visible from the *Worksite*.
- (e) Treat all radio frequency electro-magnetic energy radiation emitting telecommunications installation(s) as transmitting unless the installation has been powered down and confirmed as being de-energised, so that safe *Access* for helicopter works can proceed.

9.9 Environmentally and Culturally Sensitive Areas

- (a) A significant portion of the construction, condition assessment and maintenance of *Access* tracks, *Minor Creek Crossings*, helicopter landing sites and wash (clean) down facilities and undertaking land *stabilisation* and rehabilitation project works require the works to occur through environmentally and /or culturally sensitive areas. Consider the likely possible occurrences and impact on environmental and cultural aspects and the control measures that need to be in place while working in environmentally or culturally sensitive areas.
- (b) Works in environmentally or culturally sensitive areas shall require control measures. It is recommended that suitable control measures be utilised on the *Worksite* during this critical phase of the construction and maintenance of *Access* tracks, *Minor Creek Crossings*, helicopter landing sites and wash (clean) down facilities, and undertaking land *stabilisation* and rehabilitation to prevent the following from occurring:
 - (i) Accidental spillage of any chemicals.
 - (ii) Sediment run off.
 - (iii) Dust nuisance.
 - (iv) Over clearing and / or unauthorised clearing.
 - (v) Culture heritage disturbance.
 - (vi) Contamination of certified organic farmland and chemical-free properties and land (e.g., Cattlecare, HACCP and other quality-controlled properties).
 - (vii) Invasive Plant species spread.
 - (viii) Disease spread in relation to intensive animal and horticulture industries; or
 - (ix) Noncompliance with the protocols for *Accessing* and exiting properties with identified Livestock Protection Assurance Plan and / or Biosecurity Regulation Plan in place and identified with signage at the points of entry to the property.
- (c) The Service Provider where required, is to ensure compliance to the relevant components of the Environmental Legislation to develop and implement a project *Erosion and Sediment Control Plan*, before civil construction and maintenance works of *Access* tracks, work pads, ingress and egress from *Worksite*, *Minor Creek Crossings*, *Infrastructure Drainage*, gates, helicopter landing sites and wash (clean) down facilities, commence at a *Worksite* in significant environmental area, for example (and not limited to) *Watercourses*, wetlands, tidal lands, national parks, state forests, certified organic farmland or other sensitive areas.

Work Category Specification WCS1.5



Land Management

9.10 Plans and Permits

- (a) Areas listed below require specific permits and plans from the controlling Authority to be issued before *Access* track infrastructure work can commence. This may cause delays to the commencement of work if sufficient lead time for the application is not provided:
- (i) Riverine Zones.
 - (ii) Fish Habitat Areas.
 - (iii) Marine Parks Habitat Areas.
 - (iv) Acid Sulphate Soil Areas.
 - (v) Cultural Heritage and Queensland Heritage Areas.
 - (vi) Remnant, Endangered or Of Concern Regional Ecosystems.
 - (vii) State Forests, National Parks, and World Heritage Areas.
 - (viii) Properties with Livestock Protection Assurance Plan and / or Biosecurity Regulation Plan.
- (b) Construction work is not to commence on any of these areas (listed above) until both the *Service Provider* and the *Energy Queensland Officer* are satisfied all environmental, biosecurity and cultural considerations / requirements have been addressed and all the necessary *Authority* permits, and plans have been issued to enable the work to commence.
- (c) Ensure that these *Authority* issued permits and plans are current and available at the *Worksite*.

9.11 Clearing Vegetation Along Overhead Conductor Powerline Route

- (a) The clearing of *Vegetation* (including trees) at greenfield sites along the proposed *Overhead Conductor* (powerline) route(s) and in the vicinity of selected infrastructure (that supports the *Overhead Conductor*) locations is to be in accordance with the *Vegetation* clearing profile(s) specified on the route plan(s) or Construction Issue Plan(s) issued and in accordance with Section 15 of EQL Specification for Land Management, and this WCS1.5.
- (b) The *Vegetation* clearing profile which applies to the nominated sections of the *Overhead Conductor* (powerline) route(s) shall vary as specified on the route plan(s) or construction plan(s) issued for the *Vegetation* clearing *Services* to be provided.
- (c) In addition, the Environmental Management Plan and the Cultural Heritage Management Plan specific to the *Vegetation* clearing in identified areas along the *Overhead Conductor* (powerline) route(s) take precedence over the requirements of this WCS1.5 and are to be strictly complied with.

9.12 Distribution of Herbicide

- (a) When *Herbicide* application is to occur (that is the period from preparation to completion of clean up):
- (i) The distribution and use of *Herbicide* shall require a minimum of one suitably qualified person holding a current Commercial Operators Licence for *Ground Distribution of Herbicide – Unrestricted on Site* at all times, for the following areas:
 - All ACDC Act Regulated *Hazardous areas*.
 - Queensland National Parks and State Forests and Reserves.
 - (ii) For all ACDC Act Regulated areas and ACDC Act Excluded (non-regulated) areas outside of Queensland National Parks and State Forests and Reserves; the distribution of *Herbicide* shall be required to be undertaken by a *Competent Person* in strict accordance with the *Laws* and legislation specified below as a minimum:
 - Agricultural Chemicals Distribution Control Act
 - Agricultural Chemicals Distribution Control Regulation
 - Chemical Usage (Agricultural and Veterinary) Control Act
 - Chemical Usage (Agricultural and Veterinary) Control Regulation

Work Category Specification WCS1.5



Land Management

- (b) Low growing *Vegetation* species and *Invasive Plants* requiring management may be treated with *Herbicide* provided:
- (i) The application of *Herbicide* is restricted to the to the width of *Access* track footprint, wash down facilities' footprint and other nominated locations (for example around tower legs, mono and multi structure poles and columns);
 - (ii) The *Vegetation* is not of recognised significant ecological, visual, cultural or economic importance.
 - (iii) Safe approach and *Vegetation* clearance distances are maintained; and
 - (iv) It cannot damage other property (including certified organic farmland and chemical-free properties and land under production) and / or cause a safety issue.
- (c) The application of *Herbicide* is to be undertaken in accordance with Section 14 of EQL Specification for Land Management, and this WCS1.5.
- (d) Wherever possible, *Invasive Plants* are to be identified and treated with *Herbicide* within the width of the *Access* track footprint, wash down facilities' footprint and other nominated locations to prevent the spread of the *Invasive Plant(s)*. *Treatment* methods should ensure as much of the *Invasive Plants* are removed as possible, with broad scale *Herbicide Treatments* being preferred.
- (e) All records and forms associated with the distribution of *Herbicide* are to be maintained for the period nominated in Section 26 of the Agricultural Chemicals Distribution Control Act.

9.13 Land Management Infrastructure

- (a) Construct new and maintain existing land management infrastructure, civil works, in accordance with EQL Specification for Land Management, and this WCS1.5.
- (b) *Access* track infrastructure (for example, tracks and *Minor Creek Crossings*) is constructed and maintained for the following allowable two levels of vehicle loadings on the *Pavement*:
- (i) Constructed and maintained *Pavement* for light vehicle loads only (e.g., 4wd *Access*) that provides, as a minimum standard, four-wheel drive vehicle *Access* to all structures at the nominated locations (generally more remote and isolated areas) across the *Energy Queensland* network.
- Note:** The *Service Provider* is to check with the local *Energy Queensland Officer* for any specific *Site* exceptions to the above clause.
- (ii) Constructed and maintained *Pavement* for all weather and / or heavy vehicle loads with a maximum allowable *RGVM* of 30 Tonnes (6T steer axle / 17T rear axles), for example elevated work platforms and concrete trucks, providing *Access* to high priority electricity network infrastructure (for example sub-transmission line feeders). This requires uninterrupted *Site Access* to undertake additional construction, switching and maintenance of the electricity distribution and transmission network infrastructure. Additionally, at these *Sites* there may be a requirement to provide two-wheel drive vehicle *Access*.
- (c) For the construction of additional all weather and / or heavy vehicle load *Access* track infrastructure, for example the extension and / or realignment of *Access* track and *Minor Creek Crossings*, obtain approval from the relevant *Energy Queensland Officer* before the commencement of construction works.
- (d) For the provision of *Access* track and *Minor Creek Crossings* initially identified to support *Access* for heavier mobile plant with *RGVM* of > 30 Tonnes (>6T steer axle / >17T rear axles) and / or for all weather *Access* across unsuitable substrate soils, request a *Site-specific* construction design and / or maintenance specification from the relevant civil and structural engineering via a *Energy Queensland Officer*.
- (e) The Specifications and practices adopted for *Access* track and *Minor Creek Crossings* construction and maintenance are to provide for safe and effective *Access* to *Energy Queensland* network infrastructure with minimal environmental impact.

Work Category Specification WCS1.5



Land Management

9.14 Access Track and Minor Creek Crossings – General

- (a) Provide vehicular and mobile plant *Access* to the nominated section of *Energy Queensland's* electricity network *Overhead Conductor* (power line) route, with additional *Access* tracks from existing public roadways or property access roads where detailed on the Construction Issue Plan drawings and any *Site* variations are to be marked on the drawings in the field. Designated avoidance areas, for example Cultural Heritage sites, steep slopes or riparian zones are also detailed on the Construction Issue Plan drawings and any *Site* variations are to be marked on the drawings in the field.
- (b) Consultation with the relevant Authority and the acceptance and the approval of the *Energy Queensland Officer* is required before any new *Access* track construction is commenced in order to remedy *Site Access* difficulties.
- (c) Where existing *Access* tracks are impassable, eroded, or overgrown, consider alternative locations and opportunities to rebuild the *Access* track in a more suitable location, to reduce long term environmental impact and continuing maintenance resources. This relocation is not to occur without Authority consultation and the acceptance and the approval of the *Energy Queensland Officer*.
- (d) Specifications utilised for *Access* track and *Minor Creek Crossing* location and construction are to be in accordance with Section 5, 6, 7 and 8 of EQL Specification for Land Management, and this *WCS1.5*.
- (e) Specifications utilised for *Access* track and *Minor Creek Crossing* maintenance are to be in accordance with in accordance with Section 5, 6, 7, 8 and 9 of EQL Specification for Land Management, and this *WCS1.5*.
- (f) The centre line of the *Access* track is to be as straight as practical, and generally follow the electricity network *Overhead Conductor* route centre line for the entire length of *Overhead Conductor* route except:
- (i) In areas of cultivation; and / or
 - (ii) Where steep slopes, impassable creeks or other obstructions make the *Access* track and *Minor Creek Crossing Pavement* un-trafficable by conventional four-wheel drive pneumatic tyred vehicles and articulated vehicles or for all weather *Access* and / or heavy vehicle and mobile plant.
- (g) Consideration should be given to dividing the *Access* track at the location of a structure supporting *Overhead Conductors* (power line) location to allow vehicles and heavy mobile plant to travel each side of the structure to allow for ongoing construction and maintenance activities to be undertaken on the *Site*.
- (h) *Access* tracks and *Minor Creek Crossings* are to be constructed and maintained free of stumps, stakes, timber, protruding rocks, holes, or any unevenness which could restrict the progress of vehicles and heavy mobile plant while undertaking construction, condition assessment patrol(s) or maintenance of the *Access* track, *Minor Creek Crossing*, and electricity network *Overhead Conductor* (power line).
- (i) In addition, for *Access* tracks outside of the electricity network easements / corridors, overhanging branches need to be removed up to five metres above *Access* track *Pavement* travel surface to provide clear *Access* for vehicles and heavy mobile plant.
- (j) The *Service Provider* is responsible for ensuring that during *Access* track and *Minor Creek Crossing* construction and maintenance works that existing *Access* tracks, *Minor Creek Crossings* and all associated infrastructure (e.g. gates and pads / laydown areas) are maintained in an adequate and safe condition for all required vehicle and heavy mobile plant operations and the *Service Provider* is responsible for all reinstatement of damage as and when required, at no cost to *Energy Queensland*, and excludes damage by third parties and from severe weather events.
- (k) Where the *Access* track crosses gullies or *Watercourses* the *Service Provider* is to construct and maintain the approaches so that, as far as practical, no scouring shall occur during flooding or heavy rain events. Where a cutting is required, a wide mound of earth (*Whoa-boy*) is to be constructed at the head of the cutting to prevent runoff water being funnelled into the cutting. *Minor Creek Crossing*

Work Category Specification WCS1.5



Land Management

should neither be built up above nor undercut below the bed of the *Watercourse* or gully at the point of crossing. The placing of loose logs, stones, and pipes in the bed of the *Watercourse* or gully is generally not permitted.

- (l) If the *Watercourse* or gully is such that, in the opinion of the *Energy Queensland Officer* an *Access* track constructed across the *Watercourse* or gully would not be or remain trafficable, then no track is to be constructed.
- (m) If initial clearing, *Access* track construction or *Minor Creek Crossing* construction impact on the bed or banks of a *Watercourse*, work is to be conducted in compliance with the conditions of a Riverine Protection Permit issued under the Queensland Water Act.
- (n) In such cases as detailed above, an *Access* track not nominated on the Construction Issue Plan drawings may be required to be established around the obstacle (e.g., *Watercourse* or gully) and advised in writing by the *Service Provider* to the *Energy Queensland Officer* seeking approval prior to the commencement of construction.
- (o) Where the *Access* track has to be located off the contour or directly down a slope, the grade of the *Access* track slope should not exceed 10 degrees, where practical.

9.15 Drainage Control

- (a) Construct drainage control on *Access* tracks of 6% (1 in 16) [3.5 degrees] or greater slope to prevent water flowing along the track *Pavement* in accordance with Section 12 of EQL Specification for Land Management, and this *WCS1.5*.
- (b) Where native soil (earth) is excavated on steep sites, stockpiled, and spread topsoil from the excavation over the banks to encourage *stabilisation* to enable future use of the benching by maintenance plant. *Stabilise Disturbed* sites with grass seed or other recognised soil *stabilisation* techniques, in accordance with this *WCS1.5* and / or as nominated on the *Construction Issue Plan* drawing(s).
- (c) Construct and maintain drainage control including land *stabilisation* and rehabilitation in accordance with EQL Specification for Land Management, and this *WCS1.5*.

9.16 Access Gates and fencing locking rail

- (a) Fabricate, supply and construct *Access* gates and fencing locking rails in accordance with Section 10 of EQL Specification for Land Management, and this *WCS1.5*. The style and size shall be nominated on the *Construction Plan drawing(s)* and / or by the *Energy Queensland Officer*.
- (b) Installation includes the cutting of the existing fence and the extraction of the existing posts where necessary, the piecing, re-tensioning and retying including repairs, if necessary, to restore the fence to as good as or better condition as existed prior to the construction of the gate or fencing locking rail in accordance with Section 10 of EQL Specification for Land Management, and this *WCS1.5*.
- (c) Disposal of chemically treated poles and posts used as gate posts are to be transported and disposed of in accordance with *WCS133* clause 8.4 and 8.13.

9.17 GPS Tracking

- (a) *Service Providers* are to provide at *Site* during all construction, condition assessment and maintenance activities the ability to electronically map the location (latitude and longitude geographic coordinates) of all *Access* track routes and the associated infrastructure (e.g., gates, water crossings, wash down facilities, helicopter landing sites) and this shall also include other locations of interest (e.g., significant changes of direction and steep *Pavement* grades).
- (b) Provide the *Access* track location data (latitude and longitude geographic coordinates) to the *Energy Queensland Officer* in the nominated electronic file format. Enter this data into the relevant *Energy Queensland* electronic operating system data base directly when requested to do so by the *Energy Queensland Officer*.
- (c) The horizontal accuracy of the electronically mapped geographic coordinates for all locations is to be within 3 metres (commercial grade equipment accuracy) of the actual infrastructure geographic ground point.

Work Category Specification WCS1.5



Land Management

9.18 Access Track Inspection and Condition Assessment

9.18.1 Condition Assessment and Hazard Assessment of Access Track Infrastructure – General

Operators carrying out the condition assessment of Access track infrastructure are required to assess potential hazards encountered as they progress along the Access track(s), conduct the risk assessment(s) for the Operator's own protection and to assist other personnel using the Access track(s) into the future. The personnel using the Access track(s) into the future may be Vegetation Management Workgroups, Asset Inspectors or Operators / Workgroups involved in switching, repairing, replacement and / or system augmentation of Energy Queensland electricity network assets in the vicinity.

9.18.2 Issue of Inspection and Condition Assessment Works

- (a) For inspection and condition assessment of Access track infrastructure (including wash down facilities), prior to the commencement of works for the switching, repairing, replacement and / or system augmentation of Energy Queensland electricity network assets, the Energy Queensland Officer shall raise an inspection request in the relevant electronic operating system data base. Generally, an inspection request shall be raised for all Access track infrastructure (including wash down facilities) in the nominated maintenance zone.
- (b) For each inspection request, the Energy Queensland Officer shall provide the Service Provider with the following parameters:
 - (i) Description of the maintenance zone including any specific instructions associated with the Access track infrastructure (including wash down facilities).
 - (ii) Network maps showing the extent or boundaries of the Access track infrastructure (including wash down facilities) to be assessed.
 - (iii) Landholder / Occupier details.
- (c) The Operator is to:
 - (i) Ensure timely and accurate information is returned to Energy Queensland Officer in regard to negotiations with Landholders / Occupiers and provide details of any specific requirements or requests made by Landholders / Occupiers.
 - (ii) Advise by e-mail on a daily basis their location in accordance with the program schedule provided by the Service Provider.
 - (iii) Review the completed field works to ensure that all required condition assessments have been performed. Such reviews are to include examination of the data to identify any anomalies and ensure that the data is in a format acceptable to the Energy Queensland Officer.
 - (iv) Determine the most appropriate maintenance techniques for managing the restoration of Access track infrastructure to a trafficable condition for vehicles and / or heavy mobile plant Access and managing the restoration of wash down facilities to a fully operational condition for vehicles and / or heavy mobile plant clean downs.
 - (v) Inspect and assess the condition of the Access track infrastructure (including wash down facilities) in accordance with this clause and in accordance with EQL Specification for Land Management, and this WCS1.5.
 - (vi) Record the Access track infrastructure's condition and the maintenance required (e.g., washout or Erosion, slips or subsidence, damaged culvert or bridge type structure, boggy surface, slashing, blading, Patch Gravelling / rocking).
 - (vii) Record the wash down facility infrastructure's condition and the maintenance required (e.g., washout or Erosion, slips or subsidence, accumulated soil and debris, boggy surface, Invasive Plant growth, geotextile fabric degradation).
 - (viii) Negotiate with Landholder / Occupier (property owners) for Access to their properties to undertake the required maintenance (subject to the works being approved by the Energy Queensland Officer).

Work Category Specification WCS1.5



Land Management

- (d) The Service Provider is to:
- (i) Enter the inspection and condition assessment data utilising the nominated electronic file format into the relevant *Energy Queensland* electronic operating system data base. Alternatively refer to *Energy Queensland Access Track Condition Assessment Data Capture Sheet* for reference and assisting *Service Providers* to develop their own data sets for uploading of this type of inspection data into the relevant *Energy Queensland* electronic operating system data base.
 - (ii) Provide the inspection and condition assessment data for the *Access track* infrastructure (including wash down facilities) assessed within 10 *Business Days* of completion of the field assessments by the *Operators*.
- (e) Data requirements to be provided include and is not limited to:
- (i) Inspection date.
 - (ii) Real property address (if available).
 - (iii) Location (to include latitude and longitude geographic coordinates).
 - (iv) From pole (where following the electricity network *Overhead Conductor* route) and / or *Access* entry location.
 - (v) To pole (where following the electricity network *Overhead Conductor* route) and / or *Access* exit location.
 - (vi) Identified potential hazards [Refer clause 9.18.3 (c)].
 - (vii) Recording type and location of *Invasive Plants (Weeds)* and pest infestations.
 - (viii) Required repairs or maintenance to restore *Access track* infrastructure (including wash down facilities) to serviceable condition as specified in this *WCS1.5*.
 - (ix) Resources required for repairs and maintenance works.
 - (x) *Access Track Priority*.
 - (xi) *Wash Down Facility Priority*.
 - (xii) Special requirements [including *Landholder / Occupier* (property owners) requests that are subject to approval by the *Energy Queensland Officer*].
 - (xiii) Comments.
- (f) The Service Provider is to download from and enter data into the relevant electronic operating system data base in strict accordance with *WCS133*, clause 10.4 - *Access to Energy Queensland Electronic Systems and Customer Information*.

9.18.3 Condition Assessment and Hazard Assessment – Methodology

- (a) This section is included to assist with condition assessment and in the application of a hazard identification methodology using assessment / as found data and recording and photographing in field observations.
- (b) There may be a point where specialised geotechnical consultancy advice is required if there is any doubt about landslide hazards or specialist knowledge is required for assessing the stability of soils. If you are not sure about the risks associated with a particular feature such as a landslip it should be highlighted in your field notes for inspection and assessment by a suitably qualified and *Competent Person* who is to provide construction details for land *stabilisation* of the *Site*.
- (c) The list below provides examples of potential hazards (and is not limited to those provided) that shall be encountered / identified on some *Access track* infrastructure that service *Energy Queensland* assets:
 - (i) *Invasive Plants (Weeds)*.
 - (ii) Cultural Heritage sites.
 - (iii) Steep *Pavement* gradients.

Work Category Specification WCS1.5



Land Management

- (iv) Excessive cross-fall on *Pavement* surface.
 - (v) Slippery or loose *Pavement* surface.
 - (vi) Washout or *Erosion*.
 - (vii) Slips or subsidence.
 - (viii) Damaged culvert or bridge type structure.
 - (ix) Boggy *Pavement* surface.
 - (x) Fallen trees or *Vegetation* debris.
 - (xi) Regrowth or long grass.
 - (xii) Narrow *Pavement* width or tight corners with potential for oncoming and passing vehicle traffic.
 - (xiii) *Vegetation* overhanging *Access* track infrastructure (potential for restricting high loads or high vehicles *Access*).
 - (xiv) *Watercourse* crossing / flooded causeway
 - (xv) Wheel ruts in *Pavement* surface.
 - (xvi) Springs or ponding.
- (d) To assist with condition assessment, identifying hazards and assessing risk, the *Operator* is to:
- (i) Prior to inspecting and assessing condition of sections of *Access* track(s) and associated infrastructure (e.g., *Minor Creek Crossings*, *water crossings*). Undertake analysis of:
 - The area and existing *Access* track assets in a spatial data system (imagery data from aerial asset surveillance technology) to commence an initial assessment of (and not limited to) slope of land and *Access* tracks, *Minor Creek Crossings*, *water crossings*,
 - Deterioration of *Access* track *Pavement* surfaces and *Invasive Plants* and *Vegetation* type that shall assist in the identification of hazards.
 - (ii) With the availability of high-resolution imagery from the aerial asset surveillance technology, this imagery data shall facilitate more effective preplanning for *Site* assessment works. [Imagery data from aerial asset surveillance technology services shall be provided to the *Service Provider* where available to facilitate more targeted field-based assessment (particularly in remote and or isolated locations) and to provide better directions to *Work Groups* Accessing these types of locations.]
 - (iii) Traverse the *Access* track(s) by light vehicle, four-wheel drive vehicle or on foot to inspect and assess *Access* track infrastructure conditions and for identification of potential hazards prior to the commencement of construction and maintenance of network assets in the vicinity.
 - (iv) Walk *Access* track(s) where required, to undertake a more detailed ground-based inspection for the condition assessment of *Access* track infrastructure and identification of potential hazards.
 - (v) Evaluate potential risks associated with progressing further along *Access* track(s) where the *Pavement* surface of the running lane is inadequate for traversing by light or four-wheel drive vehicle or for other heavy mobile plant (e.g., lifter borer, elevated work platform) that may need to follow in the near future.
 - (vi) Identify *Access* track conditions that would prevent any traversing by vehicles or heavy mobile plant and required repairs or maintenance to restore *Access* track(s) to a trafficable condition for vehicles or heavy mobile plant *Access*.

9.18.4 Identification of Access Track Route Section and Level of Maintenance

- (a) Identify each *Access* track route section and the level of repairs or maintenance required to restore that section to a trafficable condition.
- (b) The goal of *Access* track maintenance is to provide, as a minimum standard, four-wheel drive vehicle *Access* to all structures, unless otherwise specified in an Environmental Management Plan /



Work Category Specification WCS1.5

Land Management

Environmental Program of Work for a sensitive area. Some works on high priority lines, for example sub-transmission lines require the provision of *Access* track maintenance to a standard to allow for all weather and / or heavy vehicle / mobile plant load of a maximum allowable *RGVM* being 30Tonnes (6T steer axle / 17T rear axles) *Access* plus two-wheel drive vehicle *Access*.

- (c) The maintenance standards adopted for *Access* track infrastructure are to provide for safe and effective *Access* to *Energy Queensland* network infrastructure with minimal environmental impact. For the provision of *Access* track infrastructure maintenance to all weather tracks initially constructed to support heavy vehicle / mobile plant load (maximum allowable *RGVM* of 30 Tonnes - 6T steer axle / 17T rear axles) *Access*, refer to the maintenance specification, in accordance with Section 6 of EQL Specification for Land Management, and this *WCS1.5*.
- (d) *Energy Queensland Officer* shall provide, or the *Service Provider* shall have direct *Access* to *Access* track route and /or network maps or *Construction Plans* for the electricity distribution and transmission network infrastructure that is to be included, with the location of structures supporting existing power line(s) [where applicable] and marked clearly. plans should include details of the thoroughfares, entry locations for *Site Access*, environmentally sensitive and protected areas, and tenure details that apply over the extent of sections of the *Access* track infrastructure to be assessed.
- (e) In identified areas along the *Access* track infrastructure route, the *Site*-specific maintenance activities (if any) detailed in the Environmental Management Plan(s) or Environmental Program of Work(s) are to be taken and these maintenance activities take precedence over the requirements specified in this *WCS1.5*.
- (f) In emergency situations where the inspection process is required to facilitate restoration works to the electricity distribution and transmission network infrastructure, and *Access* to difficult *Site* locations is required under adverse weather conditions, it may be necessary to consider constructing a new *Access* track away from the existing *Access* track *Pavement*. The *Service Provider* is to make good all damage caused by such works. This restoration work is to be undertaken to ensure meeting *Energy Queensland's* obligations under the Queensland Electrical Act.

9.18.5 Vehicle Accessibility Criteria

- (a) During inspection process, consideration should be given to that different vehicle types have limitations and also seasonal conditions have a big effect on the ability of various vehicle types to utilise the *Access* track(s). For example, two wheeled drive vehicles are limited by clearance and traction, with a gradient limit of about 15 degrees maximum on a dry clay *Pavement*. Large trucks and heavy vehicle / mobile plant have the same traction and gradient limitations and require wider track *Pavement* widths especially on bends. Refer to [Table 4](#) below for a guide to the maximum grade of slope various vehicle configurations can negotiate in ideal conditions.
- (b) *Sites* that do not meet the range provided below for *Access* are to be risk assessed to provide a suitable engineered and environmental solution.

Table 4 - Maximum Grade of Slope – Various Vehicle Configurations

Vehicle Configuration	Slope as Percentage (%)	Slope in Degrees
High Clearance 4WD	30%	18°
High Clearance 2WD	20%	11°
Low Clearance 2WD	18%	10°
Rigid Body Truck	15%	8°



Work Category Specification WCS1.5

Land Management

Articulated Truck	10%	5°
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9.18.6 Access Track Pavement Type

For the *Access track* infrastructure being assessed, individual sections of the *Access track Pavement* shall be recorded in the data set as one of the following types:

- (a) Bitumen surface.
- (b) Concrete surface.
- (c) Raw material running surface (e.g., CBR 20, gravel, rock).
- (d) Bare earth surface.
- (e) Grassy surface.

9.18.7 Management of Prohibited and Restricted Biosecurity Matter

- (a) The *Service Provider* is to provide training to *Operators* on the management of prohibited and restricted biosecurity matter to ensure that their spread is prevented or minimised.
- (b) *Service Providers* and *Operators* are to have an awareness of the prohibited and restricted biosecurity matter occurring at particular *Sites* (the local areas across Queensland where they are operating) when undertaking *Access track* infrastructure condition assessment.
- (c) Training should include vehicle inspection and clean down procedure such as those provided by the Queensland Department of Agriculture and Fisheries (daf.qld.gov.au) "Come clean go clean" website or alternatively their Vehicle and machinery clean down procedures brochure for reference and assisting *Service Providers* to develop their own vehicle inspection and clean down procedure.
- (d) Where *Invasive Plants* are observed during an *Access track* infrastructure (including wash down facility) inspection and condition assessment, their location, species, and area of infestation is to be recorded in the nominated electronic file format for uploading into the relevant *Energy Queensland* electronic operating system data base.
- (e) Where infestations of *Invasive Plants* are identified on or in the vicinity of *Access tracks* (including wash down facilities), record the conditions for vehicle and mobile plant clean down (entry to and exit from the Site, dedicated wash (clean) down bays and other applications) requested by the *Authority / Landholder*.
- (f) *Operators* undertaking condition assessment works are to record and provide evidence of their own clean downs (for example, person who cleaned down, date, time, location, method of clean down) on the *Service Providers* supplied form that is equivalent to or exceeds the details of *Energy Queensland Clean Down Record*.
- (g) The *Operators* undertaking the *Access track* (including wash down facility) infrastructure inspection and condition assessment are to be trained and competent in *Invasive Plants* identification.
- (h) *Operators* undertaking condition assessment works are to record and provide evidence of their own compliance with the protocols for *Accessing* and exiting properties with identified Livestock Protection Assurance Plan and / or Biosecurity Regulation Plan in place and identified with signage at the points of entry to the property.

9.19 Land Stabilisation

- (a) Identify the cause of existing and potential future on-site *Erosion* problems, and consider the off-site impacts of any proposed drainage, *Erosion*, and sediment controls.
- (b) While undertaking any land management *Service* works, ensure appropriate practices are employed to manage and control soil *Erosion* and sediment movement.
- (c) This clause identifies the effects of soil *Erosion* and sediment runoff and the *Erosion* minimization and sediment control systems for use on and near to *Access track* (including wash down facility) infrastructure.

Work Category Specification WCS1.5



Land Management

- (d) The widely varying *Site* and soil conditions across *Energy Queensland* distribution network require the availability of a number of solutions to adequately address on-site *Erosion* and sediment control. In accordance with Section 12 of EQL Specification for Land Management - Table H5 - Summary of *Stabilisation Techniques*,) for the *stabilisation* techniques that are available for use.
- (e) *The Service Provider* is to develop, implement, maintain, and monitor *Erosion* and sediment control program for the full period land management *Service works* are being provided to prevent controllable *Erosion* and to minimise the adverse effects of *Sedimentation* transport. The degree of *Sedimentation* runoff shall adversely affect downstream environment, for example, the downstream concerns may be related to one of the following forms of pollutant:
 - (i) Coarse sediment runoff.
 - (ii) Fine-sediment runoff (turbidity).
 - (iii) Nutrient runoff (often associated with the finer sediments).
- (f) Identify possible *Site* constraints during the pre-works stage of any construction and maintenance, for example:
 - (i) Soil limitations.
 - (ii) Topographic limitations.
 - (iii) Water limitations.
- (g) Stage works:
 - (i) To make best use of existing buffer zones and *stabilized* areas.
 - (ii) So that most of the ground disturbance occurs outside periods when rainfall is highly erosive.
- (h) Materials utilised are to maintain their structural integrity during the construction and maintenance phases and until the *vegetation* (or other final surface condition) establishes effective *Erosion* control.
- (i) The widely varying *Site* and soil conditions across the *Energy Queensland* distribution network require the availability of a number of solutions to adequately address on-site *Erosion* and sediment control. In accordance with Section 12 of EQL Specification for Land Management, for the management practices or combination thereof available for given *Site* conditions.
- (j) Monitoring the effectiveness of an *Erosion* and sediment control program is an essential part of responsible *Site* management.

9.20 Creek, Gully and Watercourse Crossing Reinstatement

- (a) As far as possible, creek, gully and *Watercourse* crossing reinstatement should:
 - (i) Cross at right-angles.
 - (ii) Be situated to avoid box cuts.
 - (iii) Have minimal associated clearing.
 - (iv) Be protected by drainage structures immediately above the approach slopes.
 - (v) Be in accordance with *WCS1.5* Appendices and the specifications contained within.
- (b) If the *Watercourse* bed requires reinstatement with gravel, rock, or stone, excavate the existing *Watercourse* bed surface to the depth of anticipated fill material. The reinstated *Watercourse* crossing surface should be approximate to the original *Watercourse* bed surface level. Remove any resulting spoil from the *Watercourse* bed and banks of the *Watercourse* and dispose of as directed by the *Energy Queensland Officer*.

9.21 Erosion control measures

- (a) *Erosion* control measures for use on and near to *Access* track infrastructure during construction and maintenance include and are not limited to:
 - (i) Reducing *Access* track *Pavement* slope grade and length.



Work Category Specification WCS1.5

Land Management

- (ii) Surface roughening, for example contour ripping, tracking.
 - (iii) Surface protection utilising:
 - Mulches.
 - Hydro mulch.
 - *Erosion* control matting.
 - Rock mulching.
 - Brush matting.
 - Respreading cleared Vegetation.
 - (iv) Progressively rehabilitating *Disrupted Surfaces* of land.
 - (v) Diversion banks to divert clean *Surface Run-Off* away from *Disrupted Surfaces* of land.
 - (vi) Installation of 'U' shaped drains not 'V' drains.
 - (vii) Reducing flow velocities (flow velocities on unlined drains should not exceed 1 ms^{-1}).
 - (viii) Lining drainage with *Erosion* control mattress, rock, or concrete.
 - (ix) Installation of energy dissipaters and stilling ponds.
 - (x) Installation of grade *stabilisation* structures (for example weirs, flumes and drop structures).
 - (xi) Correct levelling and grade changes to *Access track Pavement* surface.
- (b) For a detailed summary of *Erosion* control *stabilisation* techniques refer to Section 12 of EQL Specification for Land Management - Land *Stabilisation*, Table H5, - Summary of Available *Stabilisation* Techniques, of this WCS1.5, that specifies the advantages, disadvantages, application, and technical aspects of each *Erosion* control *stabilisation* technique.

9.22 Access Track Windrows

Windrows on either side of the *Access track Pavement* surface are to be brought back onto the *Access track Pavement* surface during maintenance. Unavoidable windrows are only to be on the lower side of an *Access track Pavement* surface and gaps are to be constructed at intervals of 20 to 30 metres to allow dispersal of accumulated runoff (water flow).

9.23 Land Rehabilitation

- (a) The aim of land rehabilitation is to prevent or minimise environmental harm, and is to:
 - (i) Reinststate a "natural" ecosystem as similar as possible to the original ecosystem.
 - (ii) Reinststate previous land use (e.g., construction *Site* for electricity distribution and transmission network infrastructure).
- (b) For land rehabilitation there may be requirements to:
 - (i) Establish *Vegetation* communities that are demonstrably similar to a pre-existing ecosystem (especially where native *Vegetation* is the proposed land use).
 - (ii) Establish or enhance the habitat of an endangered species.
 - (iii) Restore stream patterns where there has been a temporary stream diversion.
 - (iv) Achieve water quality that meets initial specific beneficial use.
 - (v) Maintain or restore some specific aesthetic values.
 - (vi) Preserve specific Cultural Heritage that has been registered for the *Site* (note that these values are managed under legislation).
 - (vii) Achieve specific socio-economic outcomes (for example, restore high value land necessary to maintain a viable industry).

Work Category Specification WCS1.5



Land Management

- (viii) Contractors are to check site for Earth Matting and ensure Gate Assembly doesn't breach Earth Matting on EQL assets. Allowing effective separation and distance from all Earthing.

9.23.1 Land Rehabilitation Compliance

All landscaping construction and maintenance for land rehabilitation is to be in strict compliance with Section 13 of EQL Specification for Land Management, and this WCS1.5.

9.23.2 Land Rehabilitation Plan

- (a) A land rehabilitation plan is to comprise of drawings that:
 - (i) Are approved by *Authority* and / or *Landholder* consultation for implementation (Subject to any additional works being approved by the *Energy Queensland Officer*) on the *Site*.
 - (ii) Outlining *Site* conditions.
 - (iii) Contain all practice, measures and specifications that are needed to undertake the rehabilitation works.
 - (iv) Detail *Site* attributes relevant to land rehabilitation works (e.g., soils, topography, drainage, aspect, *Site* resilience and descriptions of reference communities).
 - (v) Detail rehabilitation landscape zones and selected treatment options. It should reference any opportunities, constraints, or key management considerations (for example bushfire hazard, topsoil management and significant fauna values).
 - (vi) Clearly depict rehabilitation landscape zones and describe treatments to be undertaken in each zone (for example natural regeneration, assisted natural regeneration, reconstruction, or new planting).
- (b) Land rehabilitation plan drawings are to include as a minimum:
 - (i) *Site* preparation details, for example soil preparation and *Site stabilisation* methods for all areas of exposed soil.
 - (ii) Proposed plants including species, planting palette, stock size, quantities, locations, and planting modules to demonstrate densities.
 - (iii) *Invasive Plant* species inventory and details of proposed control techniques.
 - (iv) Target / reference regional ecosystem for each landscape zone.
 - (v) Specification for planting methods, preparation fertilizers, plant guards and watering.
 - (vi) Details of special habitat features to be provided for the enhancement or restoration of habitat values, including specifications for design, installation, and ongoing management (e.g., wildlife movement solutions, nest boxes, ground logs and coarse woody debris).

9.23.3 Land Rehabilitation Maintenance and Monitoring

- (a) The maintenance and monitoring plan is to include clear and concise maintenance practices, schedules, and responsibilities to ensure the area is properly maintained over the *Plant Establishment Period* and into the longer term, for additional requirements refer to Section 13 of EQL Specification for Land Management, and this WCS1.5.
- (b) Methods for monitoring, reporting, and recording data are outlined in Section 12 of EQL Specification for Land Management.

9.23.4 Land Rehabilitation Initial Construction and Implementation

- (a) The initial landscaping and implementation of the land rehabilitation plan is to include clear and concise landscape practices, schedules, and responsibilities to ensure the area is properly established, for additional requirements refer to Section 13 of EQL Specification for Land Management and this WCS1.5.

Work Category Specification WCS1.5



Land Management

- (b) The *Service Provider* is to hold the necessary permits, licenses or qualifications that are required to be held while being responsible for implementing rehabilitation works.
- (c) Implement the landscaping construction in accordance with the landscaping and maintenance plan documentation provided to the *Service Provider* that includes and is not limited to:
 - (i) Section 13 of EQL Specification for Land Management
 - (ii) Landscape revegetation master plan.
 - (iii) Detailed planting plan for each landscape zone.
 - (iv) Planting schedule that includes as a minimum:
 - Plant location code.
 - Scientific name of plant.
 - Common name of plant.
 - Plant spacing.
 - Supplied pot size range.
 - Mature height x spread of plant.
 - Number of each species of plant supplied in various pot sizes (e.g., 45 litre pot, 200 mm pot, tube stock).
 - Identification of plant species for planting on fire breaks (if required).
 - (v) Final tree survey plan.
 - (vi) Landscape maintenance and monitoring plan.
 - (vii) Controlling *Authority* imposed and / or negotiated *Landholder* acceptance of land rehabilitation conditions and subject to approval by the *Energy Queensland Officer* for any additional works.

9.24 Construction and Maintenance of Access Gates and Fencing Locking Rails

9.24.1 Fencing Gate and Locking Rail Type Specification

Table 5 – Fencing Gate and Locking Rail Type Specification

Fencing Gate Types	Clear Opening (millimetres)	Number of Gate Frames	Availability / Fabrication	Comments
Type 1	4500	1	F&SBSP	-
Type 2	9000	2	F&SBSP	-
Type 3	4800	2	AASIRQ	-
Type 4	2400	1	AASIRQ	Restricted use only: For maintenance of existing gates, Regional Queensland. New installation only with approval of <i>Energy Queensland Officer</i> .
Locking Rail	3000	-	F&SBSP	-

Work Category Specification WCS1.5



Land Management

Legend:

F&SBSP	Fabricated and supplied by <i>Service Provider</i> .
AASIRQ	Available as stores item Regional Queensland

9.24.2 Extent of Work – General

- (a) The work included comprises of and is not limited to:
- (i) Fabrication of gate and locking rail components (unless directly supplied as a stores item).
 - (ii) Clearing of the Worksite (including existing gates and timber posts as required).
 - (iii) Excavation of foundations.
 - (iv) Post and stay construction.
 - (v) Hanging of gates and locking rails.
 - (vi) Reattachment of existing fencing wire.
 - (vii) Treatment and disposal of spoil.
- (b) Clearing of the *Site*:
- (i) Clear gate and locking rail *Sites* of all shrubs, scrub, undergrowth, recovered timber gates and posts, dumped material and surface boulders.
 - (ii) Remove all debris resulting from *Worksite* clearing to the nearest approved refuse tip off *Site* accepting this class of debris and material.
- (c) Excavation of foundations:
- (i) Undertake ground excavation for foundation construction where required to suit the clear opening dimensions and surface levels nominated for the gate's and locking rail's construction.
- (d) Treatment and disposal of spoil:
- (i) Dispose of excess spoil away from *Site* when required in accordance with controlling Authority requirements for transport and disposal and negotiated *Landholder* acceptance.
 - (ii) Implement appropriate control measures on *Sites* containing acid sulphate soils.

9.24.3 Construction Materials – General

- (a) Concrete:
- (i) All concrete used is to be commercial premixed concrete of minimum Grade 20.
- (b) Steel gate and locking rail components:
- (i) Galvanise all steel fabricated components to AS/NZS 4680.

9.24.4 Construction of Works – General

- (a) Place foundation materials in layers and compact between the placements of each successive layer.
- (b) Place premixed concrete with sufficient moisture content to ensure the chemical reaction of cement.
- (c) After fixing chain latching eye to the post, destroy the thread to prevent the removal of the nut.
- (d) Reinstate any minor damage to galvanising of steel components during construction with cold galvanising paint in accordance with paint manufacturer's specification for application.

9.24.5 Detailed Fabrication and Construction Specification

In accordance with Section 10 of EQL Specification for Land Management, and this WCS1.5, for detailed fabrication and construction of gates and locking rails specification.

Work Category Specification WCS1.5



Land Management

9.25 Construction and Maintenance of Wash Down Facilities

9.25.1 Inspection of Existing Wash Down Facilities

- (a) The *Operator(s)* is to complete a visual inspection of the wash down facility(s) on each site visit to confirm the wash down facility(s) is still fit for purpose and identify any defects.
- (b) The *Operator(s)* is to determine the most appropriate maintenance techniques for managing the restoration of wash down facilities to a fully operational condition for vehicles and / or heavy mobile plant clean downs.
- (c) Record (including photographs) the wash down facility infrastructure's condition and identified defects including and not limited to:
 - (i) Washout or *Erosion*.
 - (ii) Slips or subsidence.
 - (iii) Accumulated soil and debris.
 - (iv) Boggy surface.
 - (v) *Invasive Plant* growth.
 - (vi) Geotextile fabric deterioration.
 - (vii) Silt fence (sediment fence) deterioration.
- (d) Where *Invasive Plants* are observed in the vicinity of a wash down facility during inspection and condition assessment, their location, species, and area of infestation is to be recorded in the nominated electronic file format for uploading into the relevant *Energy Queensland* electronic operating system data base.
- (e) Inspect and assess the condition of wash down facility infrastructure in accordance with this clause and Section 16 of EQL Specification for Land Management, and this WCS1.5.
- (f) *Energy Queensland Officer* shall provide, or the *Service Provider* shall have direct Access to the Access track route and / or network maps and as constructed plans [where applicable and available] for existing wash down facility infrastructure that shall include the clearly identified location of wash down facility infrastructure. Included shall be details of the thoroughfares, entry locations for *Site Access*, environmentally sensitive and protected areas, and tenure details that apply over the extent of the wash down facility infrastructure to be assessed.

9.25.2 Maintenance of Existing Wash Down Facilities

- (a) At identified wash down facility infrastructure along the *Access* track route, the *Site-specific* maintenance activities (if any) detailed in the Environmental Management Plan(s) or Environmental Program of Work(s) are to be taken and these maintenance activities take precedence over the maintenance requirements specified in this WCS1.5.
- (b) *Energy Queensland Officer* shall provide, or the *Service Provider* shall have direct Access to the Access track route and / or network maps and as constructed *Construction Issue Plans* [where applicable and available] for existing / permanent wash down facility infrastructure that shall include the clearly identified location of wash down facility infrastructure. Included shall be details of the specified maintenance works to be constructed, thoroughfares and entry locations for *Site Access*, environmentally sensitive and protected areas and tenure details that apply over the extent of the wash down facility infrastructure and the surrounding area.
- (c) Wash down facility infrastructure and the surrounding area are to be maintained free of stumps, stakes, timber, protruding rocks, holes, or any unevenness which could restrict the *Access* of vehicles and heavy mobile plant required to undertake wash downs of vehicles and heavy mobile plant over the wash down bay prior to leaving the *Site*.
- (d) Maintenance construction of wash down facility infrastructure is to be in accordance with this clause, existing as constructed plans [where applicable and available] for existing / permanent wash down

Work Category Specification WCS1.5



Land Management

facility infrastructure and in accordance with Section 16 of EQL Specification for Land Management and this WCS1.5.

- (e) Where an existing wash down facility(s) is inaccessible, eroded, or overgrown, consider alternative locations and opportunities to rebuild the wash down facility infrastructure in a more suitable location, to reduce long term environmental and biosecurity impact and continuing maintenance resources. This relocation is not to occur without *Authority* consultation and the acceptance and the approval of the *Energy Queensland Officer* for the new construction, the decommissioning of the existing wash down facility infrastructure and the rehabilitation of the land at the *Site*.
- (f) The Specifications and practices adopted for wash down facility infrastructure construction maintenance are to provide for safe and effective wash downs of vehicles and heavy mobile plant over the wash down bay with minimal environmental and biosecurity impact. Wash down facility infrastructure once maintained is to fully comply with all current environmental and biosecurity standards and regulations.
- (g) The *Service Provider* is to develop, implement, and maintain a maintenance program for accumulated soil and debris removal and disposal, and *Erosion* and *Sedimentation* control for the full period the wash down facility(s) is operational (prior to decommissioning) to prevent controllable *Erosion* and to minimise the adverse effects of *sediment* transport.
- (h) Maintain drainage control including land *stabilisation* and rehabilitation in accordance with this WCS1.5 and the EQL Specification for Land Management.
- (i) Wash down facilities that are not fully operational are to be rectified as soon as practical and prior to vehicles and heavy mobile plant movements along *Access* tracks for electricity network infrastructure construction and maintenance works in the surrounding area.

9.25.3 Construction of New Wash Down Facilities

- (a) Specifications utilised for new temporary wash down facility location and construction is to be in accordance with this clause, Section 16 of EQL Specification of Land Management and this WCS1.5.
- (b) Specifications utilised for new permanent wash down facility location and construction is to be in accordance with this clause, Section 16 of EQL Specification for Land Management, this WCS1.5, and the *Site* specific civil and structural engineering design drawing.
- (c) Consultation with the relevant *Authority* and the acceptance and the approval of the *Energy Queensland Officer* is required before any new construction is commenced in order for wash down facility infrastructure to provide for safe and effective wash downs of vehicles and heavy mobile plant over the wash down bay with minimal environmental and biosecurity impact.
- (d) The Specifications and practices adopted for new wash down facility infrastructure construction are to provide for safe and effective wash downs of vehicles and heavy mobile plant over the wash down bay with minimal environmental and biosecurity impact.
- (e) Construction work is not to commence on any new wash down facility infrastructure until both the *Service Provider* and the *Energy Queensland Officer* are satisfied all environmental, biosecurity and cultural considerations / requirements have been addressed and all the necessary *Authority* permits, and plans have been issued to enable the work to commence.
- (f) New wash down facility infrastructure and the surrounding area are to be constructed free of stumps, stakes, timber, protruding rocks, holes, or any unevenness which could restrict the *Access* of vehicles and heavy mobile plant required to undertake wash downs of vehicles and heavy mobile plant over the wash down bay prior to leaving the *Site*.
- (g) Construct drainage control including land *stabilisation* and rehabilitation associated with new wash down facility infrastructure works in accordance with this WCS1.5, the EQL Specification for Land Management and / or as nominated on the *Construction Plan* drawing(s).
- (h) Install appropriate *Erosion* and *sediment* control devices during the construction of and while the new wash down facility infrastructure remains operational, or the environmental hazards being controlled cease to exist. Provide anti-erosion controls, for example rock spalls to "V" drains, in accordance

Work Category Specification WCS1.5



Land Management

with this WCS1.5, the EQL Specification for Land Management and / or as nominated on the *Construction Plan* drawing(s).

- (i) For general wash down facility infrastructure construction criteria and parameters, refer to the following and not limited to listed requirements:
- (i) Clear *Site(s)* of wash down facility infrastructure along the *Access* track route, of all shrubs, scrub, undergrowth, dumped trees and timber, and surface boulders.
 - (ii) Remove all debris resulting from *Worksite* clearing to the nearest approved refuse tip off *Site* accepting this class of debris and material.
 - (iii) Undertake excavation where required to suit the dimensions and levels nominated for the construction of the wash down facility infrastructure.
 - (iv) Dispose excess spoil away from the *Site* where required in accordance with the controlling *Authority* requirements for transport and disposal.
 - (v) Implement appropriate control measures on *Sites* containing acid sulphate soils.
 - (vi) Using geotextile fabric as an underlay, install Polyester / non-woven or woven geotextile fabric complying with requirements set out in Australian Standard AS 3706 or approved equivalent in the wash down bay. The geotextile fabric is to be continuous and extend fully to the silt fence line.
 - (vii) The *Pavement* for wash down bay(s), comprises of a single course of quarried 75 – 150 mm diameter grading rock spalls (or equivalent material), with a thickness that is not less than 300 mm below the finished surface of the wash down bay.
 - (viii) Construct silt fence (sediment fence) around the full perimeter of the wash down bay to contain any *sediment* flows away from the wash down bay. Silt fencing is to extend a minimum of 150 mm below ground level and supported by star pickets. Construction of silt fencing (sediment fencing) is to comply with this WCS1.5 and Sections 11 and 16 of EQL Specification for Land Management, and / or as nominated on the *Construction Plan* drawing(s).
 - (ix) Where wash down facility infrastructure is established on grazing land, suitable fencing (for example barbed wire fencing) [including gates in accordance with Section 9.24, Construction and Maintenance of *Access Gates* and *Fencing Locking Rails* of this WCS1.5] are to be constructed to prevent livestock *Access* to the silt fencing (sediment fencing) and wash down bay.
 - (x) Where native soil (earth) is excavated on sites, stockpile for later use (for example the decommissioning of a temporary wash down facility) and / or spread topsoil from the excavation over the surroundings to encourage *stabilisation* of the surrounding area. *Stabilise Disturbed* sites with grass seed or other recognised soil *stabilisation* techniques, in accordance with this WCS1.5 and / or as nominated on the *Construction Plan* drawing(s).
 - (xi) Label the wash down facility infrastructure with signage that is consistent with environmental and biosecurity protocols for the operation of the facility.

9.25.4 Decommissioning of Wash Down Facilities

- (a) All wash down facility infrastructure that is no longer operational is to be decommissioned and the *Site* is to be fully rehabilitated.
- (b) Record and electronically map the location (latitude and longitude geographic coordinates) of wash down facility infrastructure including the perimeter of the *Site*. Provide the location data (latitude and longitude geographic coordinates) to the *Energy Queensland* Officer in the nominated electronic file format.
- (c) Clear from the *Site(s)* of wash down facility infrastructure all biosecurity material (for example accumulated *Sedimentation* potentially containing Invasive Plant's seed) and remove to the nearest approved landfill off *Site* accepting this class of biosecurity material.

Work Category Specification WCS1.5



Land Management

- (d) Clear from the Site(s) of wash down facility infrastructure, all construction materials including and not limited to geotextile fabric, rock spalls, silt fencing (sediment fencing), star pickets, livestock fencing and gates.
- (e) Remove all discarded construction materials and debris resulting from the clearing of wash down facility infrastructure to the nearest approved refuse tip off Site accepting this class of debris and material.
- (f) Fully *Stabilise* and rehabilitate the area where the wash down facility infrastructure was located. The aim of land rehabilitation is to prevent or minimise environmental harm, and is to:
 - (i) Reinststate a "natural" ecosystem as similar as possible to the original ecosystem.
 - (ii) Reinststate previous land use (e.g., establishment of pasture species as requested by *Landholder*).
 - (iii) Establish *Vegetation* communities that are demonstrably similar to a pre-existing ecosystem (especially where native *Vegetation* is the proposed land use).
- (g) All landscaping construction and maintenance for land rehabilitation is to be in accordance with Section 13 EQL Specification for Land Management, and this WCS1.5.
- (h) Undertake *Invasive Plant* eradication of rehabilitated areas by the application of *Herbicide* in accordance with Section 12 of EQL Specification for Land Management, and this WCS1.5.
- (i) For the first 12 months after land rehabilitation of the Site, the Service Provider is to conduct three monthly Site inspections making note of any plant / grass die-off, Invasive Plant / pest infestations, *Erosion* issues and report back to *Energy Queensland Officer* with any issues identified.

9.26 Construction and Maintenance of Helicopter Landing Sites

9.26.1 General – Helicopter Landing Sites

- (a) Existing helicopter landing sites are generally located in remote locations and / or at high altitude locations (for example, a communications site located upon the top of a mountain range peak).
- (b) Access to existing helicopter landing sites is generally restricted and the majority of *Sites* can only be reached by transporting personnel, materials, and equipment by helicopter to the *Site*.
- (c) For helicopter landing sites where the take-off landing area is only a grass / gravel / concrete slab on ground landing area, all construction and maintenance work is to be performed in accordance with this WCS1.5.
- (d) For helicopter landing sites where the take-off landing area is an elevated / suspended concrete or steel or timber structural pad of the ground, all construction and maintenance work is to be performed in accordance with Section 17 of EQL Specification for Land Management, Refer to the *Energy Queensland Officer* and the *Energy Queensland* civil and structural engineering group for the take-off landing area structural pad inspection requirements and their frequency, and the maintenance requirements and their frequency.
- (e) *Energy Queensland Officer* shall provide, or the *Service Provider* shall have direct Access to the site-specific helicopter landing site register and as constructed plans [where applicable and available] for existing helicopter landing site(s) that shall include the clearly identified location of the helicopter landing site(s). Included shall be and is not limited to details of:
 - (i) *Site* latitude and longitude geographic coordinates and elevation.
 - (ii) Helicopter landing site dimensions, weight limits, markings, lighting, and wind direction indicator locations.
 - (iii) Helicopter landing site orientation, Visual Flight Rules (VFR) approach and departure path information.
 - (iv) Adjacent airspace restrictions.
 - (v) Environmentally sensitive and protected areas.
 - (vi) Tenure details that apply over the extent of the helicopter landing site to be assessed.

Work Category Specification WCS1.5



Land Management

9.26.2 Inspection of Helicopter Landing Sites

- (a) The *Operator(s)* is to complete a visual inspection of operational helicopter landing site(s) on each *Site* visit to confirm the operational helicopter landing site(s) is still fit for purpose, complies with current CASA Guidelines and the requirements of this WCS1.5, in accordance with Section 17 of EQL Specification for Land Management, EQL Aviation Standard of this WCS1.5. and identify any defects.
- (b) The *Operator(s)* is to determine the most appropriate maintenance techniques for managing the restoration of helicopter landing site to a fully operational condition for helicopter operations.
- (c) Record (including photographs) the helicopter landing site infrastructure's condition and identified defects including and not limited to:
 - (i) Structural integrity of the take-off landing area (for example, concrete landing pad surface damage, cracking, and spalling of concrete or grassed / gravelled landing pad surface washout or *Erosion*, or boggy surface).
 - (ii) Washout or *Erosion* present over the full extent of the 26-metre wide (circular or square) cleared safety area
 - (iii) Slips or subsidence present over the full extent of the 26-metre wide (circular or square) cleared safety area
 - (iv) Accumulated soil, debris, and rubbish present over the full extent of the 26-metre wide (circular or square) cleared safety area
 - (v) Boggy surface present over the full extent of the 26-metre wide (circular or square) cleared safety area
 - (vi) *Vegetation* regrowth present over the full extent of the 26-metre wide (circular or square) cleared safety area.
 - (vii) *Vegetation* regrowth impacting the approach and take off surface profile in accordance with Section 17 EQL Specification for Land Management and EQL Aviation Standard
- (d) Inspect and assess the condition of the helicopter landing site infrastructure in accordance with this clause of this WCS1.5 and in accordance with Section 17 of EQL Specification for Land Management and EQL Aviation Standard.

9.26.3 Maintenance of Helicopter Landing Sites

- (a) At the identified helicopter landing site, the *Site*-specific maintenance activities (if any) detailed in the Environmental Management Plan(s) or Environmental Program of Work(s) are to be taken and these maintenance activities take precedence over the remainder of the maintenance requirements for the helicopter landing site as specified in this WCS1.5.
- (b) Maintenance construction of helicopter landing site(s) is to be in accordance with this clause, existing as constructed plans [where applicable and available] for existing helicopter landing site(s), in accordance with EQL Aviation Standard and Section 17 EQL Specification for Land Management and of this WCS1.5.
- (c) The Specifications and practices adopted for helicopter landing site(s) maintenance (including associated construction works) are to enable the landing and take-off of helicopters to be completed safely from the take-off landing area on the helicopter landing site with minimal environmental and biosecurity impact. Helicopter landing site(s) once maintained is to full comply with all current CASA regulations and guidelines, and current environmental and biosecurity standards and regulations.
- (d) For helicopter landing site(s) maintenance (including associated construction works) criteria and parameters, refer to the following and not limited to listed requirements:
 - (i) Helicopter landing site is to be site specific and with a minimum cleared area of 26 metres (circular or square) [for example, to accommodate at a minimum a single engine performance class 3 helicopter].

Work Category Specification WCS1.5



Land Management

- (ii) Helicopter land site is to be cleared of regrowth *Vegetation* for a minimum area of 26 metres (circular or square) or in accordance with existing development application conditions.
- (iii) Ensure the take-off landing area is cleared of regrowth *Vegetation*, debris and rubbish. The *Service Provider* is to ensure all resulting debris from the *Site* maintenance is removed from the *Site* with no debris remaining unless approved otherwise by the controlling *Authority*.
- (iv) The cleared area is to be free draining away from take-off landing area at completion of the maintenance works.
- (v) Grade any scour(s) or areas where exposed *Erosion* has occurred and reinstate by the placement and compaction of CBR 45 graded material, where the CBR 45 graded material is placed on the take-off landing area, the material is required to be compacted to 98% of the modified dry density of the material to AS1289.5.2.1.
- (vi) The preferred reinstatement method of surface for the helicopter landing site during maintenance is the establishing of grass cover, or hardstand gravel is also an acceptable reinstatement surface.
- (vii) The take-off landing area pad surface is to slope evenly down from crown to the pad perimeter edge, ensuring no ponding on the take-off landing area. (Typically, a 200mm fall in height from the centre point to the edge of pad perimeter where practical.)
- (viii) Where practical construct local cut-off drains to re-direct storm water runoff around the take-off landing area pad.
- (ix) Clear *Vegetation* regrowth impacting the approach and take off surface profile in accordance with Section 17 of EQL Specification for Land Management, EQL Aviation Standard and this WCS1.5. (Note that there may be the retention of *Vegetation* in the approach and take off surface profile that is outside of *Energy Queensland's* control.)

9.26.4 Construction of New Helicopter Landing Sites

- (a) Specifications utilised for construction of a new helicopter landing site is to be in accordance with this clause, Section 17 of EQL Specification for Land Management, this WCS1.5 and the *Site* specific civil and structural engineering design / construction drawing provided by the *Energy Queensland* Officer (e.g., *Energy Queensland* civil and structural engineering group).

9.27 Completion Of Work

The *Service Provider* is to confirm completion of *Services* when they have finalised all construction, condition assessment and maintenance works at the *Worksite(s)*.

9.28 Damage

- (a) For the prevention and management of damage, refer to WCS133, Clause 9.23 - Damage.
- (b) For the prevention and management of damage specific to this category of work refer to the below included references and clauses.
- (c) Rebuild without delay; any infrastructure it may damage and, in all cases, make temporary arrangements to restore / replace to its former effectiveness immediately following the occurrence of the damage.

10. RECORDS

- (a) For records requirements, refer to WCS133, Section 10 - Records.
- (b) For records requirements specific to this category of work refer to the below included references and clauses.
- (c) Incorporate photographs in the report of the 'as found condition' of *Access tracks, Minor Creek Crossings, Infrastructure Drainage, and gates* including the extent of degradation, *Erosion* or corrosion of infrastructure.

Work Category Specification WCS1.5



Land Management

- (d) Records and data transfers between *Energy Queensland* and the Service Provider are to be in the nominated format. (For example, nominated electronic file format enter into the relevant *Energy Queensland* electronic operating system data base directly when requested to do so by the *Energy Queensland Officer*.)

10.1 Returned Powerlink Documentation

Service Providers undertaking the Powerlink construction and maintenance works shall be required to provide additional completed works documentation and data when and as requested by the *Energy Queensland Officer*. Powerlink documentation and data includes and is not limited to:

- (a) Access track restoration report.
- (b) Wash down record and external party certificates.
- (c) Hygiene declaration for imported materials.
- (d) Creek crossing checklist.
- (e) L.I.R.A (*Landholder* interaction recording application).
- (f) QESI Code pre and post work notifications for protected areas.
- (g) Plant and machinery daily pre-start with machinery hours / kilometres recorded.

11. WORK VERIFICATION

For work verification requirements, refer to WCS133, Section 11 – Work Verification.

12. GLOSSARY

- (a) For standard definition of words, acronyms and abbreviations used in this WCS, refer to WCS133, Section 12 - Glossary.
- (b) For additional definitions of words, acronyms, and abbreviations specific to this category of work, refer below.

Term	Definition
Access	Means to approach <i>Energy Queensland</i> infrastructure in field locations, primarily <i>Access</i> track infrastructure, helicopter landing points and four-wheel drive remote and isolated terrain (<i>Access</i> routes).
Access Track Priority / Access Track Priorities	The categories given to <i>Access</i> track infrastructure that defines how quickly the maintenance / reinstatement work shall be required, for example: <ul style="list-style-type: none"> ▪ P1 requires immediate maintenance / reinstatement as it presents a hazardous condition for <i>Access</i> purposes. ▪ P2 requires maintenance / reinstatement within nine months. PM requires reassessment on the next maintenance cycle.
ACDC	Agricultural Chemicals Distribution Control
Batter / Slope Face	The vertical (usually on an angle) surface of an area that has been cut or filled to create a bench or <i>Access</i> track.
Competent Person	A person who has acquired through training, qualification, experience or a combination of these, the knowledge and skill enabling that person to correctly perform the required task.
Disrupted / Unprotected Surfaces	Surfaces that have been stripped bare of <i>Vegetation</i> cover or ripped up during the course of undertaking construction / maintenance activities and which remain unprotected and susceptible to erosive forces (e.g., rain, wind).

Work Category Specification WCS1.5



Land Management

Term	Definition
Energy Queensland	Any member of the Energy Queensland Group of companies for example Energex, Ergon Energy Network etc.
EQL	Energy Queensland Limited
Erosion	The wearing away of the land surface by water, rainfall, wind or other natural geological agents.
EWP	Elevated Work Platform
Ground Distribution **	The spraying or dispersing of <i>Herbicide</i> from ground equipment.
Hazardous Area **	An area determined by an <i>Authority</i> , which would be adversely affected by the application of <i>Herbicides</i> .
Herbicide	A chemical which kills plants (<i>Vegetation</i>).
Herbicide Treatment**	Means the application of <i>Herbicide</i> formulations, either neat or diluted, to <i>Vegetation</i> . This may include the addition of other chemical formulations to the <i>Herbicide</i> mixture to enhance the effectiveness of the mixture (<i>Surfactants</i>). There are various means of <i>Herbicide Treatment</i> which include <i>Herbicide</i> spraying, basal bark application, <i>Stem Injection</i> , cut stump or the application of pelletised <i>Herbicide</i> .
Infrastructure Drainage	Defined as a system of drainage to prevent moisture (e.g., storm water) ponding around and the build-up of soil and debris around tower legs, mono and multi structure poles and columns (wood / concrete / steel) and their foundations at ground level.
Invasive Plants (Weeds)	<i>Vegetation</i> identified under the <i>Laws</i> including the Biosecurity Act (as amended), which have or could have a serious economic, environmental, or social impact.
Landholder	Means the owner or an <i>Occupier</i> or <i>Authority</i> having jurisdiction over the particular parcel or land, easement, road reserve or similar.
Minor Creek Crossing	Defined as a dry or shallow crossing with water an average depth of up to 500 mm during periods of flow.
Occupier	The tenant, who may not necessarily be the owner of the land.
Overhead Conductors	<i>EQL</i> overhead mains (that are conductors of electricity) energised at voltages up to and including 132kV including open and insulated services.
Patch Gravelling	A process of laying a mixture of coarse mineral particles less than 75mm in equivalent diameter on the driving surface of the <i>Access track Pavement</i> .
Pavement	The <i>Access track</i> running surface.
RGVM	Registered Gross Vehicle Mass
Sedimentation	The deposition of soil or rock particles that have been transported by water or wind which have slowed down to the point where the transported particles drop out or accumulate.
Stabilise / Stabilising / Stabilisation	Protecting a surface to prevent (further) <i>Erosion</i> of an area – can use <i>Vegetation</i> or artificial means (e.g., rock, concrete, or matting).

Work Category Specification WCS1.5



Land Management

Term	Definition
Surface Run-Off	Water from rainfall that is not absorbed or detained, and so becomes surface flow.
Vegetation	Any plant growth living or dead.
Watercourse	As per the Water Act (Qld) description being, "a river, creek, or stream, including a stream in the form of an anabranch or tributary, in which water flows permanently or intermittently, regardless of the frequency of flow events: (a) in a natural channel, whether artificially improved or not; or (b) in an artificial channel that has changed the course of the stream and includes in-stream islands, benches, and bars". Refer to the Queensland Water Act for the complete definition and for the meaning of other terms used in that Act.
Whoa-boy	A trafficable diversion banks - (They are constructed to divert water off the track without causing erosion and allowing vehicles or people to cross over them).
WCS	Means work category specification.
**	Specific to <i>Herbicide Treatment</i> .

13. REFERENCES

- (a) For reference requirements, refer to WCS133, Section 13 - References.
- (b) For additional reference requirements specific to this category of work refer to the below included references and clauses.

13.1 Available Documents

Make available (at all times) to Infield Operators, the relevant documents / forms listed in [Table 6](#) for verifying Service requirements.

Table 6 – Available Documents

Document Reference	Detail / Description
Electrical Safety Office	Code of Practice Working in the Vicinity of Overhead and Underground Electric Lines
EQL	EQL approved Construction Plan and associated drawings and instructions.
EQL Form	Access Track Condition Assessment Data Capture
EQL Form	Environmental Assessment Response T111
EQL Form	Clean Down Record
EQL Form	Cultural Heritage Assessment
EQL Work Category Specification	WCS1.5 Land Management.
EQL Work Category Specification	WCS1.5A Land Management Assessment
EQL Work Category Specification	WCS1.6A Vegetation Management Plan - Assessment
EQL Work Category Specification	WCS1.7A Vegetation Treatment Near Electricity Networks
EQL Work Category Specification	WCS133 General Standards and Conditions
Energy Queensland Electrical Network System drawings	Relevant Electrical Network geographical information required for actioning all work at the Worksite.
Energy Queensland	Record of Distribution of <i>Herbicides</i> .
Manufacturer's Safety Data Sheet	<i>Herbicide</i> Safety Data Sheets and Labels.
Manufacturer's operation and maintenance manuals	Operation & Maintenance manuals specific to plant and equipment being supplied/used onsite.
Department of Agriculture and Fisheries	Fish Habitat Area code of practice - The lawful use of physical, pesticide and biological controls in a declared Fish Habitat Area
Powerlink Qld - LIRA	<i>Landholder</i> Interaction Recording Application

Work Category Specification WCS1.5



Land Management

Document Reference	Detail / Description
Safe Work Australia – Safety Data Sheets	Safety Data Sheet and Label for all chemicals used at Worksite, for example fuel, hydraulic oil.
Service Provider	Safe Work Method Statements & associated Work Instructions.
Service Provider	Service Provider's <i>Herbicide</i> application data

13.2 Recommended Documents

Refer below for the recommended documents that are of relevance.

13.2.1 EQL Documents

Table 7 – EQL Documents

Document Reference	Detail / Description
EQL	Access Track Condition Assessment Data Capture Sheet
EQL	Clean Down Record
EQL	Environment and Cultural Heritage Conditions for Contracted Work
EQL	Environmental Management Plan (EMP)
EQL	HSE Incident Management Requirements
EQL	Specification for Land Management
EQL	Standard for Fatigue Management
EQL	Standard for Heat Stress Management
EQL	Standard for Remote and Isolated Work
EQL	Work Health and Safety Conditions for Contracted Work R116
EQL Work Category Specification	WCS1.5A Land Management Assessment
EQL Work Category Specification	WCS1.6 <i>Vegetation</i> Management Plan
EQL Work Category Specification	WCS1.6A <i>Vegetation</i> Management Plan - Assessment
EQL Work Category Specification	WCS1.7 <i>Vegetation</i> Treatment Near Electricity Networks
EQL Work Category Specification	WCS1.7A <i>Vegetation</i> Treatment Near Electricity Networks
EQL Work Category Specification	WCS1.8 <i>Vegetation</i> Clearing by Mechanical Plant Near Electricity Networks.
EQL Work Category Specification	WCS1.8A <i>Vegetation</i> Clearing by Mechanical Plant Near Electricity Networks - Assessment
EQL Work Category Specification	WCS133 General Standards and Conditions

13.2.2 Queensland Acts and Regulations

- (a) For Queensland Acts and Regulations, refer to WCS133, Section 13.2.2 – Queensland Acts and Regulations.
- (b) For additional Queensland Acts and Regulations specific to this category of work, refer to the latest version of the Acts & Regulations below:

Acts

- Aboriginal Cultural Heritage Act.
- Agricultural Chemicals Distribution Control Act
- Biosecurity Act
- Chemical Usage (Agricultural and Veterinary) Control Act.
- Environment Protection and Biodiversity Conservation Act.
- Environmental Protection Act.
- Fire and Emergency Services Act.
- Fisheries Act
- Marine Parks Act.
- Nature Conservation Act
- Pest Management Act.
- Torres Strait Islands Cultural Heritage Act.

Work Category Specification WCS1.5



Land Management

- *Vegetation Management Act.*
- Regulations
 - Agricultural Chemicals Distribution Control Regulation
 - Biosecurity Regulation.
 - Chemical Usage (Agricultural and Veterinary) Control Regulation.
 - Environmental Protection Regulation.
 - Marine Parks Regulation.
 - Nature Conservation (Administration) Regulation.
 - Nature Conservation (Wildlife) Regulation.
 - Work Health and Safety QLD- Managing the risks of plant in the workplace - Code of Practice.
 - Work Health and Safety QLD – Mobile Crane Code of Practice.
 - Work Health and Safety QLD – Safe Design and Operation of Tractors Code of Practice.

13.2.3 Australian Standards and Other Documents

- (a) For Australian Standards and other documents, refer to WCS133, Section 13.2.3 – Australian Standards and other Documents.
- (b) For additional Australian Standards and other documents specific to this category of work, refer below:
 - Australian Standard AS 4454 - Composts, soil conditioners and mulches.
 - Australian Standard AS/NZS 1418.5 - Cranes, hoists, and winches-Part 5: Mobile cranes (EN 13000, MOD).
 - Australian Standard AS 2550.5 - Cranes, hoists, and winches - Safe use - Mobile cranes.
 - Australian Standard AS 3706.0 - Geotextiles - Methods of test - General introduction and list of methods.
 - Australian Standard AS/NZS 4680 - Hot-dip galvanized (zinc) coatings on fabricated ferrous articles.
 - Australian Standard AS1289.5.2.1 - Methods of testing soils for engineering purposes; Method 5.2.1: Soil compaction and density tests — Determination of the dry density / moisture content relation of a soil using modified compaction effort.
 - Australian Standard AS 3743 - Potting mixes.
 - Australian Standard AS 4970 - Protection of trees on development sites
 - Australian Standard AS 4373 – Pruning of amenity trees.
 - Australian Standard AS 4419 - Soils for landscaping and garden use.
 - Code of Practice - Maintenance of Electricity Corridors in Queensland's Parks and Forests.
 - Department of Agriculture and Fisheries - Accepted development requirements for operational work that is the removal, destruction, or damage of marine plants.
 - Department of Agriculture and Fisheries - Accepted development requirements for operational work that is constructing or raising waterway barrier works.
 - Fish Habitat Area Code of Practice - The lawful use of physical, pesticide and biological controls in a declared Fish Habitat Area

Work Category Specification WCS1.5



Land Management

Contents

1.	SCOPE.....	1
1.1	General	1
1.2	Application.....	1
2.	AMENDMENT RECORD	3
3.	AIMS / OBJECTIVES	4
4.	COMPETENCIES, TRAINING AND QUALIFICATIONS	4
4.1	EQL Competencies	5
5.	VEHICLES AND PLANT	6
5.1	Energised Electrical Plant.....	6
6.	MATERIALS, TOOLS AND EQUIPMENT	6
6.1	Lifting Equipment.....	6
6.2	Equipment used for Herbicide Treatment	6
6.3	Nominated Tools and Equipment.....	6
7.	SAFETY	7
7.1	Safety Observer for Works.....	8
7.2	Induction from Energised Powerlines	8
7.3	Radio Frequency Electro-Magnetic Energy Radiation	8
8.	ENVIRONMENT.....	8
8.1	Watercourse, wetland and tidal Protection	9
8.2	Soil Conservation and Erosion Control.....	9
8.3	Department of Agriculture and Fisheries – Marine Plant Advice	10
8.1	Biosecurity.....	10
8.5	Fire Ants in South East Queensland.....	11
8.6	Cultural Heritage	11
9.	EXTENT OF WORK.....	11
9.1	General	11
9.2	General Project Level Entry Requirements	13
9.3	Service Provider Responsibilities	13
9.4	Standards of Dress	13
9.5	Landholders / Occupiers	13
9.6	Maintenance of Barricades and Environmental Controls	13
9.7	Worksite Conditions	13
9.8	Exclusion Zones.....	14
9.9	Environmentally and Culturally Sensitive Areas	14
9.10	Plans and Permits	15
9.11	Clearing Vegetation Along Overhead Conductor Powerline Route.....	15
9.12	Distribution of Herbicide	15

Work Category Specification WCS1.5



Land Management

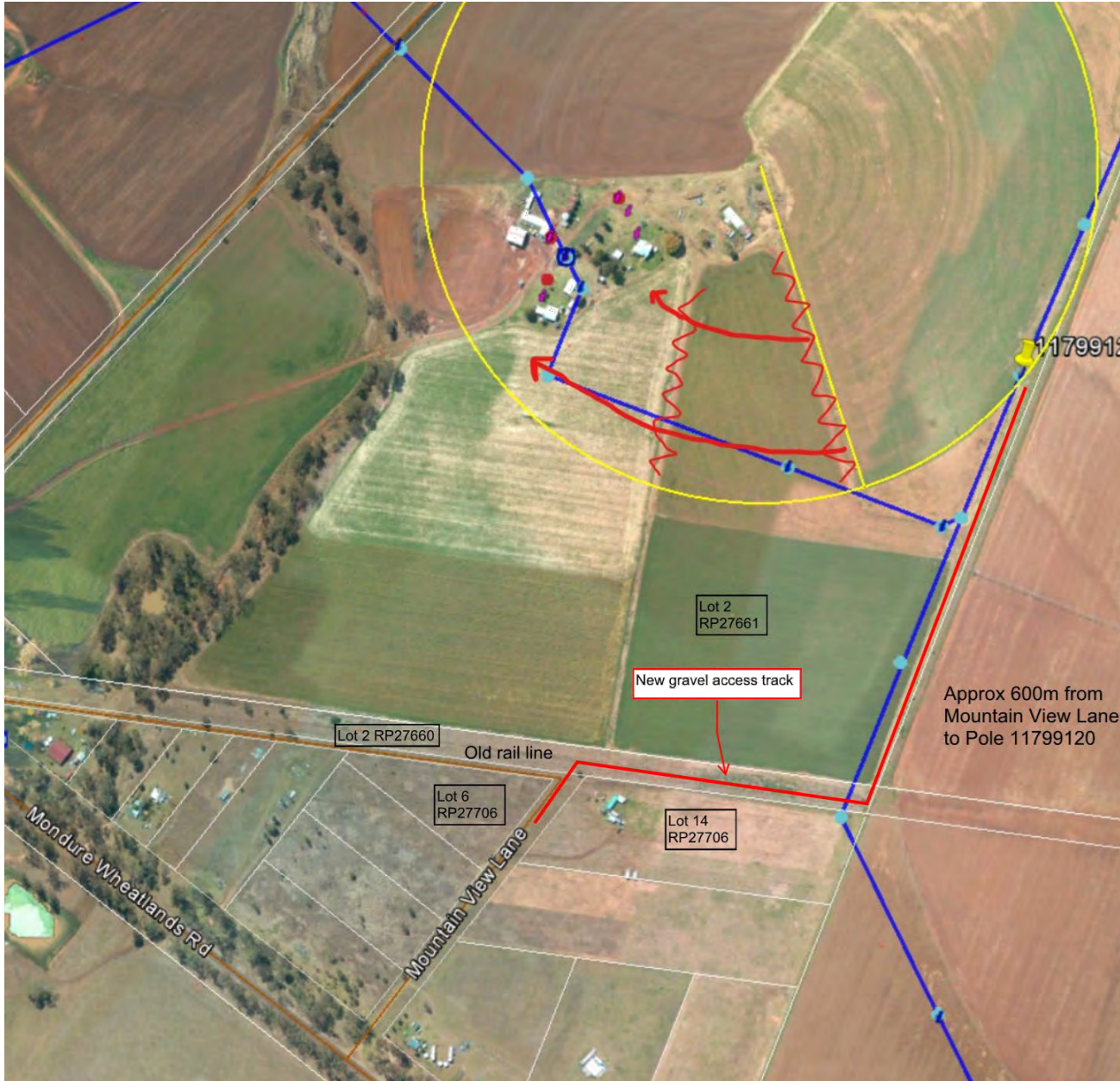
9.13	Land Management Infrastructure	16
9.14	Access Track and Minor Creek Crossings – General	17
9.15	Drainage Control	18
9.16	Access Gates and fencing locking rail	18
9.17	GPS Tracking	18
9.18	Access Track Inspection and Condition Assessment	19
9.18.1	Condition Assessment and Hazard Assessment of Access Track Infrastructure – General	19
9.18.2	Issue of Inspection and Condition Assessment Works	19
9.18.3	Condition Assessment and Hazard Assessment – Methodology.....	20
9.18.4	Identification of Access Track Route Section and Level of Maintenance	21
9.18.5	Vehicle Accessibility Criteria.....	22
9.18.6	Access Track Pavement Type	23
9.18.7	Management of Prohibited and Restricted Biosecurity Matter	23
9.19	Land Stabilisation	23
9.20	Creek, Gully and Watercourse Crossing Reinstatement	24
9.21	Erosion control measures	24
9.22	Access Track Windrows	25
9.23	Land Rehabilitation	25
9.23.1	Land Rehabilitation Compliance.....	26
9.23.2	Land Rehabilitation Plan.....	26
9.23.3	Land Rehabilitation Maintenance and Monitoring	26
9.23.4	Land Rehabilitation Initial Construction and Implementation	26
9.24	Construction and Maintenance of Access Gates and Fencing Locking Rails	27
9.24.1	Fencing Gate and Locking Rail Type Specification	27
9.24.2	Extent of Work – General	28
9.24.3	Construction Materials – General	28
9.24.4	Construction of Works – General	28
9.24.5	Detailed Fabrication and Construction Specification.....	28
9.25	Construction and Maintenance of Wash Down Facilities	29
9.25.1	Inspection of Existing Wash Down Facilities	29
9.25.2	Maintenance of Existing Wash Down Facilities	29
9.25.3	Construction of New Wash Down Facilities.....	30
9.25.4	Decommissioning of Wash Down Facilities.....	31
9.26	Construction and Maintenance of Helicopter Landing Sites	32
9.26.1	General – Helicopter Landing Sites.....	32
9.26.2	Inspection of Helicopter Landing Sites	33
9.26.3	Maintenance of Helicopter Landing Sites	33
9.26.4	Construction of New Helicopter Landing Sites	34

Work Category Specification WCS1.5



Land Management

9.27	Completion Of Work	34
9.28	Damage	34
10.	RECORDS	34
10.1	Returned Powerlink Documentation	35
11.	WORK VERIFICATION	35
12.	GLOSSARY	35
13.	REFERENCES.....	37
13.1	Available Documents.....	37
13.2	Recommended Documents.....	38
13.2.1	EQL Documents	38
13.2.2	Queensland Acts and Regulations	38
13.2.3	Australian Standards and Other Documents	39



INTERNAL CURRENT STATE TENURE SEARCH
QUEENSLAND TITLES REGISTRY PTY LTD

Search Date: 14/05/2024 14:06

Title Reference: 48005795
Date Created: 27/02/2010

Previous Title: 40008706

LAND DESCRIPTION

Estate in PERPETUITY

LOT 2 REGISTERED PLAN 27660
Local Government: SOUTH BURNETT

REGISTERED LESSEE

Dealing No: 712575711 07/07/2009

THE STATE OF QUEENSLAND
(REPRESENTED BY DEPARTMENT OF TRANSPORT AND MAIN ROADS)

PERPETUAL TENURE INFORMATION

For Conditions, Primary Tenure information including Purpose
and Term of Tenure, refer to title reference 40008706

ENCUMBRANCES, EASEMENTS AND INTERESTS

1. SUB LEASE No 710837899 24/07/2007 at 11:22
WONDAI SHIRE COUNCIL
TERM: 01/07/2007 TO 01/07/2037 OPTION AS THEREIN STATED
Lodged at 11:22 on 24/07/2007 Recorded at 09:25 on 09/08/2007

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

Caution - Charges do not necessarily appear in order of priority

** End of Current State Tenure Search **

Information provided under section 34 Land Title Act (1994) or
section 281 Land Act (1994)

14.6 VANDALISM AND DAMAGE TO MEMORIAL PARK KINGARROY**File Number:** 22/02/2023**Author:** Acting General Manager Liveability**Authoriser:** Chief Executive Officer**PRECIS**

Replacement cost and damage summary due to vandalism and property destruction at Kingaroy Memorial Park playground equipment, rubber soft-fall and shade sail.

SUMMARY

Kingaroy Memorial Park shade sail was set alight on the 19th July, 2024 causing significant damage to the playground equipment and soft-fall below. The damage was assessed the next morning and the park was closed for safety reasons.

OFFICER'S RECOMMENDATION

That South Burnett Regional Council:

1. Progress the repairs to the Kingaroy Memorial Park playground equipment, soft-fall and shade structure and install additional lighting and CCTV to improve community safety and reduce vandalism.
2. Reallocation building capital budget of \$223,405 from the existing 24/25 program and allocation \$51,595 from the Building Restricted Cash.
3. Consider funding of \$150,000 in the 25/26 capital expenditure budget to replace playground equipment that is at end of life, some of which has already been removed from site.

FINANCIAL AND RESOURCE IMPLICATIONS

The project represents a significant investment to replace damaged and vandalised infrastructure in the order of \$225,000 in the 24/25 capital expenditure budget. Also, the budget of \$50,000 to install security cameras and lighting is required to reduce the risk and occurrence of vandalism and to improve public safety.

To aid in affordability, a staged delivery is recommended with an additional capital expenditure budget allowance of \$150,000 in the 25/26 budget for replacement of playground equipment which has been removed due to being non-compliant and at end of life.

LINK TO CORPORATE/OPERATIONAL PLAN

EC1 Develop and implement initiatives to enhance community parks, gardens and recreational facilities, which may include: tree planting strategy, botanical gardens and perennial (drought tolerant) shrubs and flower planting programme.

OR2 Achieve community recognition as an ethical Council that values and practices community consultation, accountable governance and open and transparent decision-making.

OR3 Manage Council assets effectively through the development and implementation of Asset Management Plans.

OR6 Implement consultative, responsible and sound project management practices.

OR15 Continue to give priority to ongoing Audit and Risk and prudent management.

OPL/15 Provide well planned and maintained open space, parks and rail trails network to meet the recreation and social needs of the community.

OPL/39 Investigate options for the development of a program for the installation of unique recreational facilities in each community.

OPL/41 Review the operation and maintenance of security cameras throughout the region.

COMMUNICATION/CONSULTATION (INTERNAL/EXTERNAL)

Council’s Acting Manager of Parks and Parks Coordinator has communicated with Queensland Police Service regarding criminal charges and compensation for damages.

LEGAL IMPLICATIONS (STATUTORY BASIS, LEGAL RISKS)

Council’s officers have investigated Insurance for the replacement of Park Assets. Individual Park assets have not been insured under Council Building and Park Assets.

POLICY/LOCAL LAW DELEGATION IMPLICATIONS

Install of CCTV will be operated under Council’s Surveillance Camera Operations Policy.

ASSET MANAGEMENT IMPLICATIONS

The replacement improvements to Memorial Park will include replacement of assets and soft fall to reinstate a similar level of amenity that was present prior to the damage. The future design of park equipment to be rural and farming themed and aimed at a similar age group as the removed equipment. Ongoing maintenance of the park assets will reduce due to a lower level of maintenance and overall cost over life of reduction.

REPORT

Kingaroy Memorial Park precinct was vandalised five times in July with the most significant occurrence being on July 19th. Damage varied but included fires and vandalism in the amenities block, destruction of playground equipment, shade sail and rubber soft-fall.

Shade Sail	\$ 3,604	Replace burnt and damaged shade sail.
Four Tower Playground	\$ 67,617	Modern replacement of comparable equipment.
Soft-Fall Replacement	\$ 82,000	Replacing rubber soft-fall compatible with new equipment.
Replacement slides	\$ 23,000	Replacing slide and sections of tubular slide.
Fencing	\$ 2,000	Fix and replace section of damaged playground fence.
Demolition/Clean Up	\$ 15,000	Removed damaged equipment and make safe.
Equipment Installation	\$ 12,533	Installation of new playground equipment.
Contingency	\$ 20,000	Allowance for risk and cost escalation.
CCTV and Lighting Improvements	\$50,000	Improve community safety and manage community vandalism.
Total	\$275,000	

The people of the South Burnett: residents, visitors, existing and potential users of the park are negatively impacted by this deliberate damage.

In addition to the above damage there is a significant number of items in the park which is no longer compliant and at end of life and requires replacing. The cost of replacement equipment is tabled below;

Barn	\$ 42,970
Tractor and Slide	\$ 43,200
Horse Double Rocker	\$ 3,000
Cow Rocker	\$ 2,640
Animal See-Saw	\$ 11,600
Carousel Spinner with Seating	\$ 12,250
Platform Seating	\$ 5,000
Bench Seating	\$ 2,000
Contingency/Cost Escalation	\$ 22,500
TOTAL	\$150,000

The completion (and possibly order) of stages and activities will be dependent on Council resources and funding availability.

Capital Works Project budgets proposed to be reallocated to repair Kingaroy Memorial Park.

Kingaroy Aerodrome ARO Office	\$50,000
Cemetery Signage	\$43,405
Priority Playground Audit	\$20,000
Softfall – Kingaroy	\$100,000
Murgon PCYC Balustrading	\$10,000
Building Asset Restricted Cash	\$51,995
Total	\$275,000

ATTACHMENTS

1. **General Photo**
2. **Damaged Slide**
3. **Stair Damage**
4. **Four Towers Damage**
5. **Fire Damage**
6. **Fence Damage**
7. **New Equipment**
8. **Quote for New Equipment**







