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POWERLINK QUEENSLAND REVENUE PROPOSAL

Supporting Document - PUBLIC

Powerlink Queensland
Physical Access to Assets - Framework

Delivering better value

Powerlink – Physical Access to Assets - Framework

Policy stream	Asset Management	
Authored by	Group Manager Strategy & Planning	[redacted]
Approved by	Executive Manager, Investment and Planning	[redacted]

Version history

Version	Date	Section(s)	Summary of amendment
1.0	3/12/2015	New	Original version

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1. Introduction

1.1 Purpose

This document sets high level requirements for physically accessing Powerlink's network assets.

1.2 Scope

Powerlink is required to establish and maintain access to its assets to ensure its HV network can be operated safely, reliably, responsibly and efficiently.

Some assets are located in remote areas, away from public road infrastructure. These locations can traverse steep, highly erodible landscapes, placing significant challenges to maintain ground access. This guideline provides risk management principles for maintaining access to assets.

1.3 Objectives

The objective of this framework document is to:

A. Align access to asset documentation across the business, including:
   i. ASM-IP-PLN-A968358 Land Asset Methodology
   ii. ASM-IP-WKI-A2325084 Transmission Line Access – Work Instruction
   iii. AM-CL-0567 Substation and Communication Site and Associated Access Track Checklist
   iv. Substation Design Manual (V8.04). The Access Roads are covered under Section 7.12.2 (pages 63-65). Section 7.6.6 Helicopter Landing Pad (page 53). Section 7.11.4 Stock Proof Fence & Property Gate (page 62).
   v. Substation construction manual (V8.0). Section 2.8 Roadworks (pages 29-31).
   vi. AM-POL-0100 Helicopters – Requirements for Response to Substation Assets
   vii. ASM-IP-WKI-A580003 Management of Risks Associated with Unexploded Ordnances
B. Review the external environment (e.g. Main Roads standards) to determine expected life of tracks/roads before we can expect life extension work to be undertaken (input into asset life plans)
C. Establish data definitions for accessing assets
D. Ensure risk management principles are applied throughout the asset life, including:
   i. Planning/Approvals
   ii. Design/Construction
   iii. Maintenance/Operation
   iv. Decommissioning
   v. Monitoring the external environment for impacts (e.g. compliance and town planning)

1.4 References

Document code	Document title
ASM-I&P-FRA-A968358	Land Asset Methodology
Public Document	Powerlink's Land Access Protocol (LAP)
ASM-I&P-WKI-A2325084	Transmission Line Access – Work Instruction
AM-POL-0154	Transmission Line Patrols
AM-POL-0100	Helicopters – Requirements for Response to Substation Assets
AM-CL-0567	Substation and Communication Site and Associated Access Track Checklist
AM-GL-1095	Watercourse Characteristics & Appropriate Actions
ENV-SRCS-PRO-A513014	Biosecurity Management
A1-H-123125	Washdown drawings

Document code	Document title
A2-H-111147-02 and A1-H-100098-01	Gate drawings
A565912	Substation Design Manual
A343475	Substation Construction Manual
ASM-I&P-WKI-A580003	Unexploded Ordinances Work Instruction

1.5 Defined terms

Terms	Definition
Remote locations	>200km from major depots (e.g. Virginia, Rockhampton, Mackay, Townsville and Cairns)

1.6 Roles and responsibilities

Who	What
Group Manager Strategy & Planning, I&P	Setting standards for physically accessing assets
Group Manager Field Services, O&FS	Implementing access standards as part of field services
Group Manager Specialist Services, O&FS	Auditing access standards have been implemented in the maintenance phase, including Ergon Energy
Group Manager Infrastructure Delivery, ID&TS	Implementing access standards as part of Infrastructure Delivery
Group Manager Infrastructure Technical Services, ID&TS	Aligning design and other technical services with access standards
Group Manager Infrastructure Management Systems, ID&TS	Auditing access standards have been implemented in the construction phase, including contractors
Group Manager Network Property, ID&TS	Undertaking, planning and approvals associated with Legally securing or disposing of

2. Framework

The following diagrams provide an overview for physical access to assets for the following perspectives:

1. Delivery of physical access to assets
2. Decision making for physically accessing assets
3. Evaluating if physical access to assets are fit-for purpose

Figure 1. Delivery of Physical Access to Assets

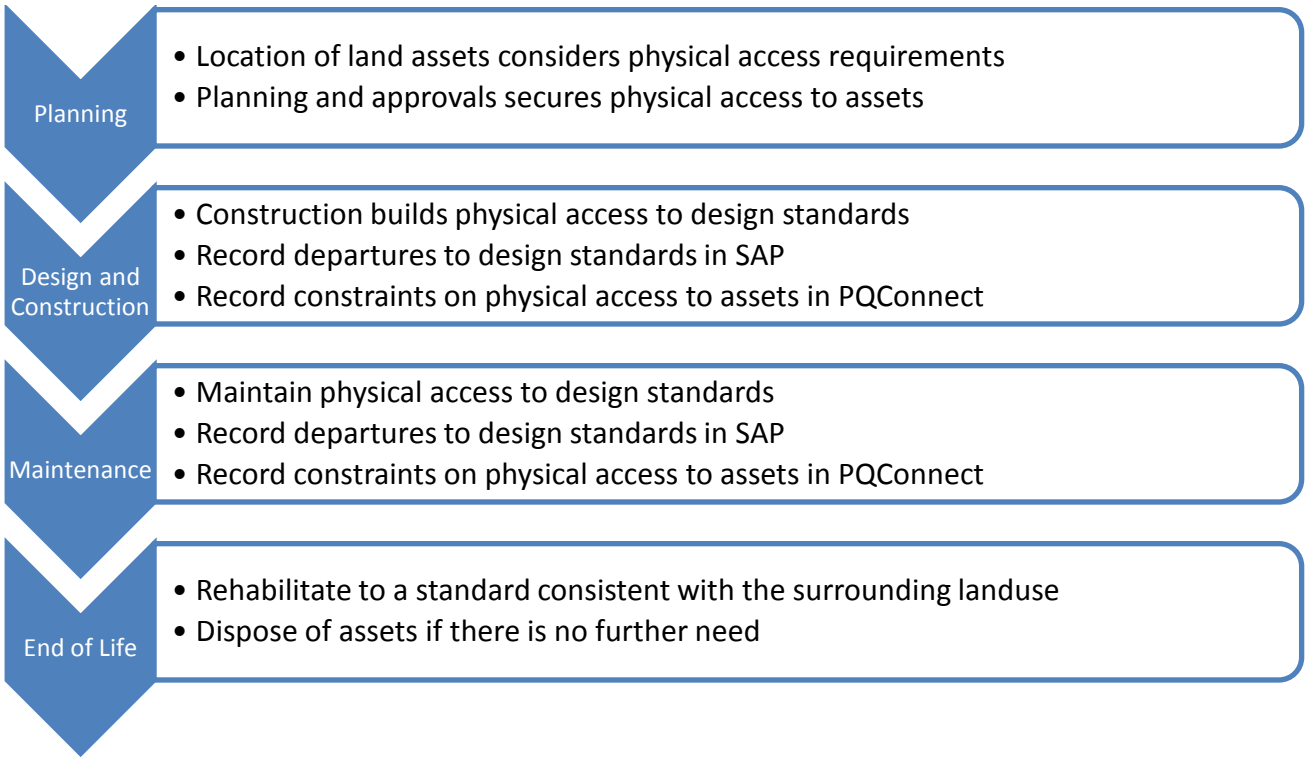


Figure 2. Decision Making for Physically Accessing Assets

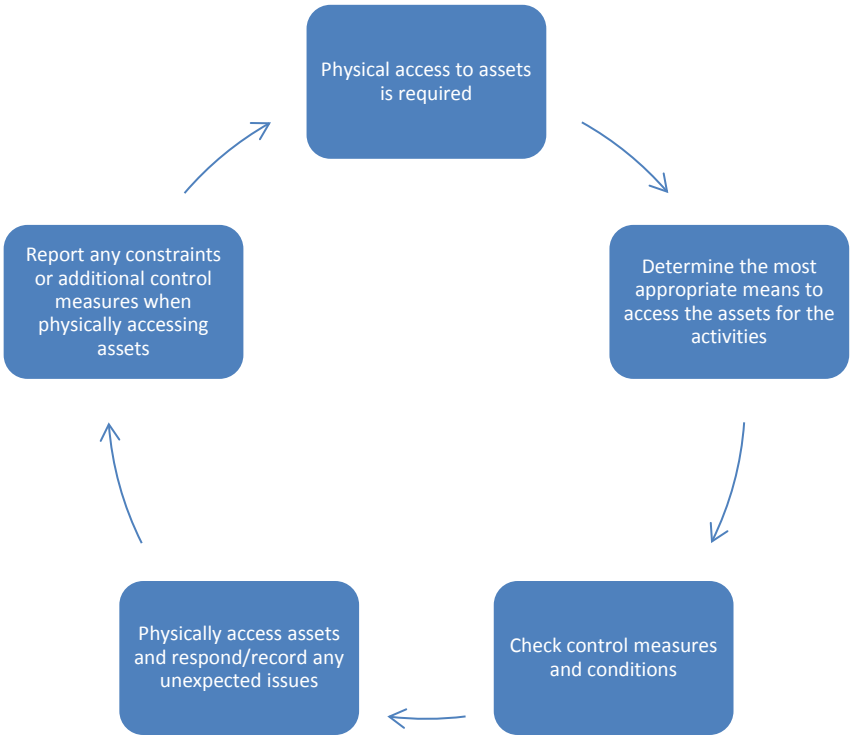
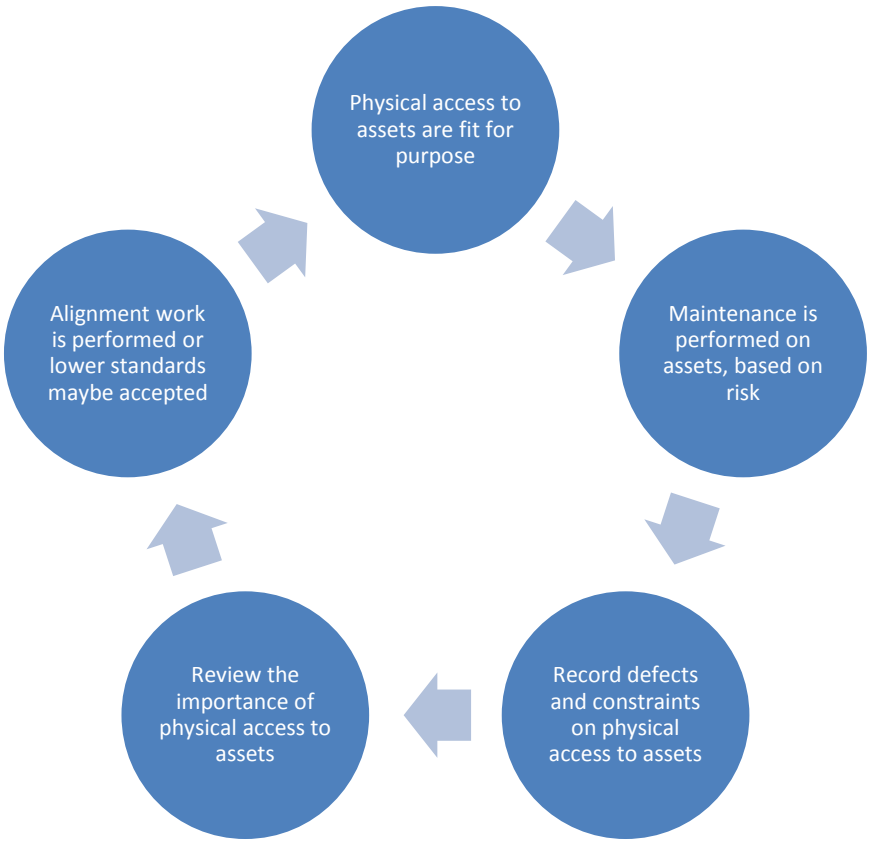


Figure 3. Evaluating if Physical Access to Assets are Fit-for Purpose



3. Requirements

Powerlink accepts that not all assets can be physically accessed safely in all weather conditions and applies risk management principles to form the following typical guidelines:

- Lines = dry weather 1 tonne 4WD ground access + some aerial and water access
- Substations = dry weather 2WD ground access where practical/economical to do so, otherwise dry weather 4WD access; emergency landing pads will also be maintained where they exist in remote locations
- Communication sites (PQ owned/controlled) = dry weather 1 tonne 4WD ground access, unless higher standards reduce long term costs (business case required) or commercial agreements are in place
- Non-operational assets = accountability for access is left with the tenants, unless commercial arrangements stipulate access requirements for Powerlink to maintain

Safety, whole of life costs, asset maintenance, project delivery, landholder requirements and environmental impacts all need to be considered as part of establishing and maintaining access to assets. This includes considering the following issues:

- Access types
- Criticality to HV Network
- Uses of access
- Asset life cycle
- Elements of access
- Stakeholders

- Alternatives to Accessing Assets

3.1 Access Types

The following types of access require maintenance and management:

- Ground
  - No access (some assets may have been constructed in a remote location and accessing them is not allowable or feasible unless an emergency or refurbishment project is needed); target <1% of assets
  - Pedestrian access (some assets can only be accessed on foot); target <2% of assets
  - Public access (some assets can be accessed using public roads); dependant on the route acquisition process
  - Restricted access (someone else places restrictions on Powerlink's access to the assets, including washdown requirements and inductions)
  - Private access: Dry weather 4WD (applies to 95% of lines and communication sites; EWP access should be <10%)
  - Private access: Dry weather 2WD (target 90% of substations)
- Air
  - Remote substation emergency landing pads; optional, but should meet standards if installed
  - Substation and communication emergency landing directions (i.e. safe entry and departure); target 99% of assets
  - Over canopy landing pads on towers; target <1% of assets
  - Flights paths: CASA + notifying Network Operations & Stakeholder Relations
- Water
  - Boat access to the base of towers or registered signage; target <1% of assets

3.2 Importance to HV Network

In planning, designing, constructing, maintaining and refurbishing access to assets, the importance of the access to the HV Network needs to be considered. In particular, importance will be applied to assist in determining priorities for funding refurbishment projects. Factors that impact the importance of access include:

- Criticality to network security
- Legal security of access
- Ability to use alternative access

3.3 Uses of Access

Access standards will also vary depending on the use of the access, including:

- Inspections and Audits
- Routine Maintenance
- Refurbishment Works
- Capital Works

Given routine maintenance for lines is typically designed for 1 tonne 4WD ground access, routine maintenance standards may not suit the needs for capital or refurbishment project delivery where heavy machinery may need to traverse the line. Subsequently, projects should have adequate budget allocation to upgrade access to meet required changes. Once completed, the standard of access should meet the requirements outlined in ASM-IP-WKI-A2325084.

3.4 Asset Life Cycle

Risk management principles need to be applied throughout the asset life cycle, including:

- Planning/Approvals

  - See Environmental Legislation Register
- Design/Construction
  - Road impact assessments (public and private)
  - Road usage plans (public and private)
  - Access for construction purposes (Powerlink)
- Maintenance
  - Routine maintenance
  - Refurbishment
  - Severe weather event works
- Decommissioning or surrendering
- Monitoring the external environment for impacts (e.g. compliance, town planning, development approvals and landuse changes)

3.5 Elements of Access

The following elements need to be considered in all stages of the asset life cycle, applying risk management principles:

- Road/track surface (Objective: provide the lowest long term cost access that manages the associated risks appropriately)
  - Grass
  - Compressed earth
  - Gravel (<15mm)
  - Rock (>15mm)
  - Bitumen
  - Concrete
- Drainage (Objective: drain water off the running surface of roads/tracks/pads to reduce long term costs)
  - Crowned surface
  - Out-slope surface
  - Whoa boys
  - Diversion drains
  - Turn out drains
  - Culverts
  - Camber
  - Cut and fill
- Water crossings as per AM-GL-1095 (Objective: safely cross waterways, while reducing long term costs)
  - Bed level crossings
  - Culverts
  - Bridges
- Washdowns as per ENV-SRCS-PRO-A513014 (Objective: install/maintain washdown facilities where they reduce long term costs)
  - Permanent washdown facility
  - Permanent washdown facility (no tank or pump)
  - Temporary washdown site (inspection point)
- Landholder requirements as per Powerlink's LAP and PQConnect (Objective: manage landholder requirements in a manner that reduces long term costs)
- Gates & Locks (Objective: install/maintain gates to reduce long term costs of accessing assets and maintaining security)
  - Landholder
  - Powerlink
  - Other
- Fences (Objective: install/maintain fences to reduce long term costs of accessing assets and maintaining security)
  - Landholder
  - Powerlink

- Helicopters as per AM-POL-0100 (Objective: manage helicopter movements near HV assets safely)
    - CASA flight restrictions
    - Landholder Notification
    - Network Operations
    - Identified safe entry/exit
        - Emergencies
        - Non-remote substations
        - Remote substations (designated landing pads)
- Safety (Objective: manage safety behaviours, while reducing long term costs of accessing assets)
    - Climbing at heights requirements
    - Signage
    - Speed
    - Entry/exit angles and obstructions/hazards
    - UXOs (as per ASM-I&P-WKI-A580003)
- Natural environment (Objective: consider the natural environment, while reducing long term costs of accessing assets)
    - Vegetation
    - Soils
    - Topography
    - Rainfall
- Surrounding landuse (Objective: consider surrounding landuse, while reducing long term costs of accessing assets)
- Customer connection agreements (Objective: comply with customer connection agreements, while reducing long term costs of accessing assets)
- Environmental compliance (Objective: comply with environmental regulatory requirements, while reducing long term costs of accessing assets)
    - Environmental work plans

3.6 Stakeholders

Stakeholders should be consulted when accessing our assets has potential to impact on their activities (e.g. mustering stock).

For substations sites, stakeholders would generally be restricted to distribution entities that may have shared access (e.g. Ergon and Energex), but may include generators and landholders. Referring to the relevant environmental work plan (EWPs) will assist with understanding the requirements.

For communication sites, this may require some planning and contact to landholders and/or owners of the assets to confirm access conditions and restrictions. This should include checking requirements of the relevant EWPs.

For lines and easements, detailed planning is needed to ensure that stakeholder considerations and access conditions have been considered as part of journey planning and work scheduling. This must include checking requirements of the relevant EWPs.

3.7 Alternatives to Physically Accessing Assets

Alternatives to physically accessing assets need to be evaluated to assist in minimising long term costs and impacts through reducing the need for physically accessing assets. This includes:

- Laser Surveys (assess asset conditions from data sets from laser surveys)
- Aerial photography (assess asset conditions from data sets from aerial photography)
- Satellite imagery (assess asset conditions from data sets from satellite imagery)

4. Distribution list

Internal	Contact details
☒ Finance and Business Performance	Group Manager Commercial & Legal
☒ Investment and Planning	Group Manager Strategy & Planning Group Manager Portfolio and Business Management Group Manager Network Customers
☒ Infrastructure Delivery & Technical Services	Group Manager Infrastructure Delivery Group Manager Infrastructure Technical Services Group Manager Infrastructure Management Systems Group Manager Network Property
☒ Operations and Field Services	Group Manager Field Services Group Manager Specialist Services Group Manager Technical & Network Services
☒ People and Culture	Group Manager Health & Safety Strategies
☒ Stakeholder Relations and Corporate Services	Group Manager Environmental Strategies Group Manager Stakeholder Relations