

Transmission Operational Asset Performance - Operations & Maintenance Readiness Process

Lines, Cable, Substations, Primary, Secondary, Buildings and Grounds

DOCUMENT HIERARCHY

This document resides within the Planning component of Western Power’s Asset Management System (AMS).

DOCUMENT DATE

This document was last updated July 2026

IMPLEMENTATION DATE

This document came into service 30/05/2025

DOCUMENT CONTROL

Record of endorsement, approval, stakeholders, and notification list is provided in [ID05-2127512311-214738](#)

RESPONSIBILITIES

Western Power’s [title] Function is responsible for this document

CONTACT

Western Power welcomes your comments, questions, and feedback on this document, which can be emailed to standards.excellence@westernpower.com.au

DISCLAIMER

This document is published by Western Power for information purposes only. The user must make and rely on their own inquiries as to the quality, currency, accuracy, completeness, and fitness for purpose of any information contained in this document. Western Power does not give any warranty or make any representation concerning the information provided in this document. By using the information in this document, the user acknowledges that they are solely responsible for obtaining independent professional advice prior to commencing any project, activities, or other works. Western Power is not liable in any way for any loss, damage, liability, cost or claim of any kind whatsoever (including responsibility by reason of its negligence) arising from or in connection with the use of or reliance on the information contained in this document. Western Power reserves its rights to modify, supplement or cancel this document or any part thereof at any time and without notice to users.

COPYRIGHT

© Copyright 2024 Electricity Networks Corporation trading as Western Power. All rights reserved. No part of this work may be reproduced or copied in any form or by any means without the written permission of Western Power or unless permitted under the Copyright Act 1968 (Cth). Product or company names are trademarks or registered trademarks of their respective holders

© Western Power
ABN 18540492861



Uncontrolled document when printed

© Copyright 2026 Western Power

Contents

Revision Details	1
1. Process Overview	2
1.1 Introduction	2
1.2 Operations & Maintenance Readiness Scope.....	2
1.3 Operations & Maintenance Readiness Process Initiation.....	3
1.4 Operation and Maintenance Readiness inspection and operational readiness certificate	3
1.5 Asset Data Requirement for Operation and Maintenance Readiness.....	5
1.6 Asset Data Handover Process for Operation and Maintenance Readiness.....	6
1.7 Asset Data Readiness Timeline	7
1.8 Introduction to service of new asset class.....	7
2. Transmission Substations Asset Inspection.....	8
2.1 Power Transformers, Reactors, and/or Earthing Compensator Inspections.....	8
2.1.1 Initial “Post Assembly” Inspection	8
2.1.2 Final Inspection prior to Energisation	8
2.2 Medium Voltage Switchboard Inspection.....	9
2.3 Other Primary Plant	9
3. Transmission Overhead Lines and cables Inspection	11
3.1 Transmission Lines and cables	11
3.1.1 Reporting Timeframe	12
4. Criteria for Acceptance or Rejection of New Assets.....	13
4.1 Safety	13
4.2 Reliability.....	13
4.3 General.....	13
5. Related Policies and Documents	14
6. Appendix - Lines Methodology / Compliance Inspection	15
7. Appendix - Operations Maintenance Readiness Process Flow Chart	17
8. Appendix - Asset Data Handover for Operational Readiness Process Flow Chart.....	19
9. Appendix - Operations Maintenance Readiness Process RACI Matrix	20
10. Appendix - Asset Data Handover for Operation Readiness Timeline	21

Revision Details

This procedure will be reviewed and evaluated by the content owner at least once in every three-year period considering the purpose of the procedure and the outcome of the compliance review.

Alternative, a review could be triggered as a result of a change in work practice / core process.

Version	Date	Summary of change	Section
0	19/09/2011	Initial Document	
1	24/07/2012	To include SCADA, COMMS and Protection Commissioning notices	
2	7/03/2013	To Include OAA internal process	
3	20/05/2013	To align with new Transmission Integrated Design Group - COM review processes.	
4	03/01/2014	To align with new Organisation functional change	
5	4/09/2014	To include Switchboard requirements	
6	02/09/2019	Increase scope of inspected equipment and reflection of WP restructures.	
7	30/05/2025	To align with current WP operating structure	

1. Process Overview

This procedure outlines the details, steps, and business requirements for new transmission assets before they are energised and handed over to Asset Management.

As the custodians of all transmission in-service assets, Transmission Operational Asset Performance (OAP Tx) is responsible for this procedure and for issuing an Operational Readiness Certificate (he Volt# [ID05-2127512311-214741](#)).

1.1 Introduction

The Operation & Maintenance Readiness process is effectively the mechanism to transfer new transmission assets to Western Power (WP) 's Asset Management business unit. It ensures that the new assets are in a safe condition to be energised prior to their Operation and Maintenance (O&M) life and that the relevant asset management systems are updated so that these assets can be effectively managed.

All new assets must be fit for their intended operational and maintenance purposes. These requirements must be considered during the project scoping and planning phases to ensure assets are delivered ready for long-term service.

The Project Delivery team is responsible for ensuring compliance and quality assurance (QA) throughout the project lifecycle. This includes engaging compliance and QA subject matter experts (SMEs) to provide ongoing monitoring during construction and commissioning, and to identify any issues or required modifications.

Prior to energisation and handover, OAP Tx, as the custodians of in-service transmission assets, will issue an Operational Readiness Certificate. This certificate will only be granted following a successful operations and maintenance readiness inspection and the resolution of all outstanding punch list items.

For transmission substation assets, OAP Tx SMEs will lead and conduct the readiness inspection.

For transmission lines and cables, the Project Delivery team (typically the Project Manager) is responsible for coordinating an internal or external inspector to carry out the inspection. The resulting inspection report must be submitted to OAP Tx SMEs for review and approval.

1.2 Operations & Maintenance Readiness Scope.

This process is applicable to all transmission projects, in green-field and brown-field transmission substations and sites, including:

- Green-field substations.
- New power transformers.
- New medium voltage switchboards.
- New primary plant assets.
- New switch rooms, relay room, fence upgrades or replacement projects.
- New Transmission lines and transmission lines circuits in substations.
- New Transmission cables and transmission cable circuits in substations.

Notes and exceptions:

Inspection of new outdoor primary plant assets equal or below 66kV is not included in this procedure. Therefore, an operational readiness certificate is not required to be issued by OAP Tx before energisation.

Transformers, Oil Filled Reactors and Earthing Compensators of any voltage do need to be included.

1.3 Operations & Maintenance Readiness Process Initiation

The Operations & Maintenance (O&M) Readiness Process is formally initiated with the issuance of the **Pre-In-Service Notification**. The Project Manager is responsible for issuing this notification, which must be sent via email and include the following:

- Project Number
- Project Management Plan
- Brief description of the project
- Completed Data Requirements Template (as outlined in Section 1.5 – Asset Data Readiness)

The Pre-In-Service Notification must be issued at least eight (8) weeks prior to asset energisation, and sent as an email communication to the following distribution groups:

- OAP Tx: am.asset.performance-OAP.Trans@westernpower.com.au
- Network In-Service Notification: networks.in.service@westernpower.com.au
- Commissioning Team: commissioning@westernpower.com.au
- Engineering & Design: engineering.services.inbox@westernpower.com.au
- Data Operations & Analytics Team:
td.transmission.maintenance.delivery.eru@westernpower.com.au &
tx.linear.updating.information@westernpower.com.au
- Network Operations: network.operations.engineering@westernpower.com.au
- Asset Performance Transmission Ratings:
asset.performance.transmission.ratings@westernpower.com.au

Issuance of this notification will trigger the following key activities:

- Updates to asset data systems.
- Asset Ratings creation and updates.
- Commencement of the Operations & Maintenance Readiness Process.

1.4 Operation and Maintenance Readiness inspection and operational readiness certificate

The following outlines the steps to arrange an operational readiness inspection and obtain an operational and maintenance readiness certificate:

- a) The project delivery team (i.e., the Project Manager) is responsible for arranging field Inspections.
- b) For transmission substations assets, the project delivery team (i.e., the Project Manager) must request from the substations OAP TX Team Leader a site inspection from their SMEs, to ensure attendance in line with the project schedule.

- Confirmation following the Pre-In-Service Notification eight (8) weeks prior. OAP Tx Substations contact details: am.asset.performance-OAP.Trans-Plant@westernpower.com.au
- c) For transmission substations lines and cables, the project delivery team (i.e., the Project Manager) must arrange the inspection with an internal or external service provider. Project delivery team shall arrange this inspection in advance to ensure resource availability from the selected service provider.
- Confirmation following the Pre-In-Service Notification eight (8) weeks prior. OAP Tx Lines and cables contact details: am.asset.performance-OAP.Trans-Lines@westernpower.com.au.
- d) The project shall fund the cost of the inspection, and the Project Manager shall provide a work order to OAP Tx Team Leaders for the inspections (substations) and/or review of the inspections (for Lines and Cables).
- e) For substation assets inspections, the assets entering to service must be fully functional and able to be operated to confirm reliable and safe functionality. Commissioning personnel need to be on-site for this step.
- f) In addition to commissioning personnel, the switching operator must be on-site for switchgear inspections (disconnectors and switchboards).
- g) The project manager is responsible for coordinating the commissioning and switching resources required for the operational readiness inspections.
- h) For all power transformers and oil-filled reactors, there are two inspections:
 - Near completion of the assembly on site. (before de-mobilisation of the contractor/manufacturer).
 - Nearing the end of the commissioning phase, when secondary and DC supplies are available on the asset.
- i) Transmission substations OAP Tx SMEs are responsible to attend site and conduct the operational readiness inspection at the completion stage of the projects.
- j) Transmission substations OAP Tx SMEs are responsible to document all the inspection findings in the relevant inspection form. Any defects or remediation works must be documented in the relevant inspection form.
- k) Transmission substations OAP Tx SMEs are responsible to submit the inspection report within three business days of the inspection. Any defects that can pose safety risks to personnel or the asset and require rectification before energisation are to be highlighted in the report.
- l) Upon completion of the substation assets inspection stage, the OAP Tx Team Leader is responsible for initiating the operational readiness certificate.
- m) For transmission lines, upon completion of the inspection by the designated service provider, and submission of report, the OAP Tx Team Leader is responsible for initiating the operational readiness certificate.

- n) The operational readiness certificate must include records of all the immediate remediation works.
- o) OAP Tx Team Leader is responsible for issuing the operational readiness certificate and to send it to the project manager. The certificate must highlight any outstanding works and pending actions before the assets are energised.
- p) The project manager is responsible for reviewing the inspection results and addressing any remediation works. Defects must be remediated before energisation as a priority.
- q) If outstanding items can't be addressed before energisation, the project manager is responsible for implementing a remediation plan to complete the work post energisation. Including timeframes, and responsible areas responsible in addressing the work. The remediation plan must be included in the operational readiness certificate.
- r) The project manager is responsible for signing off on the operational readiness certificate and confirming that all the remediation works (if any) have been completed.
- s) The project manager must then send the operational readiness certificate to OAP Tx Team leader for final review and approval.
- t) After review and approval, OAP Tx Team Leader must send the approved operational readiness certificate to the project manager and include all relevant stakeholder email groups:
 - Network Operations Engineering: network.operations.engineering@westernpower.com.au
 - Network Operation control room: control.room.inbox@westernpower.com.au
 - Engineering and Design: engineering.services.inbox@westernpower.com.au
 - Switching Operators: switching.operators@westernpower.com.au
 - OAP Tx: am.asset.performance-OAP.Trans@westernpower.com.au
- u) The project manager is responsible for uploading a copy of the operational readiness certificate in OPPM as supporting evidence and a mandatory requirement for Gate 4 approval as part of the Investment Governance Framework.

1.5 Asset Data Requirement for Operation and Maintenance Readiness

The Project Delivery team must complete the following Data Requirement Templates to enable updates to the relevant asset management systems prior to asset energisation and handover to Asset Management.

 [Transmission Substation Data Requirements Template.xlsx](#)

 [Transmission Lines-Cables Data Requirements Template.xlsm](#)

The above template will enable the below critical activities:

- Creation / Update of asset register in ellipse.
- Creation / update of asset ratings in the Asset Management Portal (AMP Tx).
- Creation / update of Maintenance Schedule Task (MST).
- Creation and updating of GIS.

Critical asset information cover in the above template includes (not limited to):

- Photographic record of the new asset.
- Photographic record of the nameplate against functional location (i.e. SNXXX in Phase A).
- Serial numbers against functional location/circuit numbers.
- As built drawings.
- Factory Acceptance Tests.
- Site Acceptance Tests.
- Maintenance Manuals.
- Transmission line Name / line designation
- Transmission line structure description (e.g. single pole firtree with OHEW, dual circuit tower etc)
- Transmission line material type (wood, concrete, steel pole, lattice tower)
- Construction manuals including conductor and conductor support accessory, stay etc. information, DGN CAD files needed for cables.

Data and system updates are to be done by the Data Operations & Analytics team in the Strategy, Enterprise Architecture and Data Function.

The project manager is responsible for completing the Data Requirement Templates and to submit it as part of the **pre-in-service notification** as per section 1.3 – Operations and Maintenance Operational Readiness Process Initiation.

1.6 Asset Data Handover Process for Operation and Maintenance Readiness

The asset data readiness process begins with the Project Manager completing two mandatory templates (per section 1.5) and submitting them alongside the Pre-in-Service Notification (per Section 1.3).

Upon submission, the Data Operations & Analytics Team initiates pre-validation, system backups, and updates to core asset systems i.e., Ellipse, AMP Tx and GIS etc.

OAP Tx team actively monitors data template submissions and completion of data populated in the templates as part of operational and maintenance readiness certificate acceptance process.

At the point of First Energisation, a critical milestone is reached: 80–90% of data validation must be complete. This baseline signifies that asset registers, hierarchies, and maintenance assignments in Ellipse are operationally functional, while thermal ratings in AMP Tx are validated and GIS spatial relationships are confirmed. Achieving this threshold is non-negotiable, as it enables real-time asset monitoring, load management, and safety protocols from the moment assets become live. Specifically, it ensures serial numbers, circuit identifiers, protection settings, and initial maintenance tasks are accurate and actionable.

Failure to meet this benchmark risks operational hazards, including overloads, isolation errors during emergencies, or missed critical post-commissioning inspections.

Following energisation, the Data Operations & Analytics Team integrates the red-lined As-Built package (submitted ≤1-week post-energisation) to address minor mark-ups, test certificates, and construction revisions.

Finally, within 3 weeks of the Commissioning Notice issuance, all residual data is uploaded to Ellipse and GIS etc., triggering formal handover notification to the OAP Tx Team.

1.7 Asset Data Readiness Timeline

Asset data readiness follows a phased timeline aligned with project milestones, beginning project kick-off (Week 0).

A visualised timeline 4 that defines project phases, key activities, milestones, and deliverables/outputs of each phase can be found in Appendix 12.

No later than 8 weeks before First Energisation (Week X), the Project Manager must submit all Issued for Construction (IFC) documents including drawings, construction schedules/manuals, data sheets, re-numbering registers, and cable test results to Data Operations & Analytics team via designated transmittal mailboxes:

td.transmission.maintenance.delivery.eru@westernpower.com.au for Substations, and

tx.linear.updating.information@westernpower.com.au for Lines and Cables

Concurrently, a Pre-in-Service Notification is issued by Project Manager to formalize the 8-week data preparation window.

Before First Energisation (Week Y), thermal ratings must be finalized in the Asset Management Portal. Within 1 week after First Energisation, the project delivery team must submit the red-lined As-Built package (including marked-up datasheets, drawings, and registers), while the Data Operations team achieves the Data Validation Baseline (80-90% data completion) for asset registers, hierarchies, and maintenance assignments.

The Commissioning Notice is issued 3 working days post-Energisation as per EDM#33974218V4, Transmission Protection Commissioning Manual Section 1 – Overview and processes, or 1 week if it falls on a weekend, triggering the final update window. All system updates reflecting As-Built changes must be completed by this notice date.

Finally, within 3 weeks after the Commissioning Notice (Week Z), all asset data must be fully uploaded to operational systems (Ellipse/GIS), with formal notification to the Operational Asset Performance (OAP) team, enabling project closure.

1.8 Introduction to service of new asset class

Introduction of any new asset class, type, group, component, or modifier installed in the Western Power network shall follow the introduction of assets to service procedure¹.

It is expected that during the scoping and planning process, the introduction of asset to services requirements are met.

¹ [G \(P\) - Introduction of Assets to Service.docx](#)

2. Transmission Substations Asset Inspection.

This section provides the relevant information, data and consideration for inspections to be done on transmission substation assets.

To arrange inspections, the project delivery team shall follow the steps outlined in section 1.4 of this procedure.

2.1 Power Transformers, Reactors, and/or Earthing Compensator Inspections

As per section 1.4, Power Transformers, oil filled reactors, and earthing compensators require two inspections:

- Initial post assembly inspection, and,
- Final inspection prior to energization.

2.1.1 Initial “Post Assembly” Inspection

- a) For the initial post assembly inspection to take place, the following works are to be completed in advance:
 - Transformer/oil-filled reactor/earthing compensator to be physically assembled.
 - Transformer/oil-filled reactor/earthing compensator to be with oil.
 - Contractor still on site.
- b) This Inspection is performed by OAP Tx SMEs, immediately following site assembly of the Transformer.
- c) OAP Tx SME is responsible for compiling the inspection report. Inspection report template EDM# 34056390 / Volt Document (Transformer Installation - Final Acceptance Inspection Sheet - Template)
- d) OAP Tx SME is responsible for sending the completed inspection report to the project manager, and Engineering and Design substations and Plant teams, containing the list of any actions and concerns.
- e) Inspection report is to be sent to within 3 business days of the inspection taken place. This to provide sufficient lead time and notice of required actions for the transformer overall installation.

2.1.2 Final Inspection prior to Energisation

- a) For the final post assembly inspection to take place, the following works are to be completed in advance:
 - All actions raised in the initial inspection report have been addressed.
 - High Voltage testing completed.
 - Primary connection to surrounding equipment completed.
 - Auxiliary power supply connected.
 - Oil sampling and laboratory analysis. This work shall be arranged by Project Manager and the results reviewed and passed to Operational Asset Performance, Engineering & Design.
- b) This Inspection is performed by OAP Tx SMEs, at the completion of the construction phase, following transformer high voltage testing and final primary connection.
- c) OAP Tx SME is responsible to compile the inspection report. Inspection report template EDM# 34056390 / Volt Document (Transformer Installation - Final Acceptance Inspection Sheet - Template)

- d) OAP Tx SME is responsible to send the completed inspection report to Project Delivery Team, and Engineering and Design substations and Plant teams, containing the list of any actions and concerns.
- e) Inspection report is to be sent to within 3 business days of the inspection taken place. This to provide sufficient lead time and notice of required actions for the transformer overall installation.
- f) OAP Tx Team leader shall include any items outstanding from this inspection in the O&M Readiness Certificate, with reference made to the applicable report. O&M Readiness certificate shall then be sent to the project delivery team.

2.2 Medium Voltage Switchboard Inspection

There are 2 types of MV switchboards currently in service in Western Power. Fixed pattern gas insulated switchboards and withdrawable air insulated switchgear. The inspection requirements are to be followed for both types of equipment, unless otherwise advised by OAP Tx Team Leader at the time the inspection is requested.

- a) For the inspection to take place, the following works are to be completed in advance:
 - Switchboard fully assembled.
 - Switchboard & switch room cleaning completed.
 - HV Testing completed and accepted by OEM representative.
 - Interlock logic drawing.
 - Interlocking and Circuit Breakers complete and ready for service.
 - Secondary power applied.
 - All commissioning checks have been completed to allow the switchboard to be considered as operational and ready for entry into service.
- b) OAP Tx SMEs will attend to inspect and operate the switchgear and to function check the interlocking of the switchboard (e.g., bus selection, earth switch/contactors function).
- c) OAP Tx SME is responsible to compile the inspection report. Inspection report template EDM# 25371014 / Volt Document (O&M readiness inspection check sheet indoor switchboard)
- d) OAP Tx SME is responsible to send the completed inspection report to Project Delivery Team, and Engineering and Design substations and Plant teams, containing the list of any actions and concerns.
- e) Inspection report is to be sent to within 3 business days of the inspection taken place. This to provide sufficient lead time and notice of required actions for the transformer overall installation.
- f) OAP Tx Team leader shall include any items outstanding from this inspection in the O&M Readiness Certificate, with reference made to the applicable report. O&M Readiness certificate shall then be sent to the project delivery team.

Note: If required, OAP Tx SME may attend the installation to verify actionable items from previous inspections have been addressed and confirm the readiness of the board for energisation.

2.3 Other Primary Plant

- a) For the inspection to take place, the following works are to be completed in advance:
 - Plant to be fully assembled.
 - HV Testing completed and accepted by OEM / representative.
 - Interlock logic drawing.
 - If applicable, interlocking (switchgear) complete and ready for service.
 - Secondary power is connected.

- All pre-commissioning checks have been completed to allow the equipment to be considered as operational and ready for entry into service.
- b) OAP Tx SME is responsible to compile the inspection report. Inspection report template EDM# 7414545 / Volt Document - Index of Post Assembly & Commissioning – Operation & Maintenance Readiness Certificate Checklists.
- c) OAP Tx SME is responsible to send the completed inspection report to Project Delivery Team, and Engineering and Design substations and Plant teams, containing the list of any actions and concerns.
- d) Inspection report is to be sent to within 3 business days of the inspection taken place. This to provide sufficient lead time and notice of required actions for the transformer overall installation.
- e) OAP Tx Team leader shall include any items outstanding from this inspection in the O&M Readiness Certificate, with reference made to the applicable report. O&M Readiness certificate shall then be sent to the project delivery team.

Note: If required, OAP Tx SME may attend the installation to verify actionable items from previous inspections have been addressed and confirm the readiness of the board for energisation.

3. Transmission Overhead Lines and cables Inspection

This section provides the relevant information, data and consideration for inspections to be done on transmission lines and cables assets.

The type of inspection required will depend on the design of the installed line and/or cable and its location of the inspection.

3.1 Transmission Lines and cables

- a) For discrete construction projects, OAP Transmission Lines requires a final inspection to be conducted.
- b) The intent of the final inspection is to identify any major outstanding defects or non-compliance and remediate prior to acceptance of practical completion and official asset handover.
- c) Project delivery team is responsible for organising a detailed visual compliance inspection (aerial or ground) during the project's Execution Phase soon after completion of the construction work.
- d) The inspection shall be carried out in conjunction with System Testing/Commissioning.
- e) Depending on the type of the transmission line design and/or configuration, there are different methodologies in which the inspection can be carried out. The below are the type of inspection accepted as part of this O&M readiness procedure:

- **Aerial methodical / detailed inspection** is the preferred method of delivery especially for:

- Steel poles and lattice tower structures, and assets constructed in country areas.

This type of inspection is cost effective and provides efficiencies in conducting the inspection works and relatively quick turning around of reports.

- **Ground patrols** is an optional method of delivery for:

- New wood pole sections/lines within metro areas (where flight restrictions exist).
- Location where permission is not granted to use aerial resources or in limited circumstances (i.e. where such new steel structures are in metro areas, safety related reasons).

- **UAV/Drone based inspections** is an optional method of delivery for:

- Locations where flight restrictions exist, and aerial option is not possible.
- Location where access from ground is not feasible.

- f) As part of the inspection, the inspector is expected to properly visually scrutinize and capture defects and severities in accordance with requirements as defined in the [Volt Document - Condition Catalogue - Transmission Linear Assets](#).
- g) In the appendix section of this report, a list of typical defects are outlined for reference. As well as guidance on how to capture any identified defects.

- h) **For overhead lines:** Project delivery team is responsible for submitting a detailed inspection report using Overhead Lines EDM# 68389157 / Volt Document - Transmission lines final inspection check sheet – Template.
- i) **For underground cables:** Project delivery team is responsible for submitting a detailed inspection report using Overhead Lines EDM# 68389720 / Volt Document - Transmission lines final inspection check sheet – Template.
- j) In addition to completing the Inspection Checklist summarising outcomes for each asset, the format for detailed inspection results including photographic records must conform with the minimum requirements containing the reporting fields as specified in Volt Document Operational Readiness Transmission Overhead Lines Compliance Inspections Reporting Requirements document (EDM# 53096696).
- k) As-built photos of entire structure are required for each and every asset that form the scope of works of the Compliance inspection, with the minimum requirements specified in Volt Document Operational Readiness Transmission Overhead Lines Compliance Inspections Reporting Requirements document (EDM# 53096696).
- l) For any type of inspection, OAP Tx SME may request Contract Compliance specialists for their QA/QC / Quality surveillance packages and punch list to monitor for completion, and augment reporting results.

3.1.1 Reporting Timeframe

- a) Due to the expected tight timeframes at pre-commissioning stage, preliminary reports are typically expected within 24 – 48 hours of completion of the detailed compliance Inspection Services.
- b) Where assets could not be inspected, these are identified clearly with reasons provided.
- c) OAP Tx Lines SME will review the inspection results based on the agreed timeframes with the project delivery team.
- d) OAP Lines engineer will bring to attention any non-conformance issues the Project delivery team, with the following criteria;

- Safety related issues
- Issues that prevent energisation of the assets
- Issues that impede the operation of the asset

The above with the purpose to come to a consensus on remedial actions and priority time-to fix for Practical Completion.

- e) Upon completion of the inspection stage, and as per section 1.4 on this procedure, OAP Tx Team Leader is responsible for initiating the operational readiness certificate from this point.

4. Criteria for Acceptance or Rejection of New Assets

Before energization, all new assets must be fit for their intended operational and maintenance purposes. For an Operational readiness certificate to be issued, asset shall be safe to operate.

4.1 Safety

Where an item of plant presents a risk of failure in such a manner that injury or harm to a maintainer, inspector, or other person can be reasonably expected, an Operational Readiness Certificate shall not be issued.

4.2 Reliability

Where an item of plant is installed in such a condition that it would require corrective maintenance within twelve (12) months of energization to ensure safe operation, an Operational Readiness Certificate shall not be issued.

4.3 General

Expectation is for all identified defects to be addressed before energization.

If correction is not viable, and defects do not pose safety or reliability risks, an Operation Readiness Certificate will be issued, containing a note of the safety/reliability issues that need to be addressed under the project with a work order in the core 'Western Power Enterprises Asset Management System Ellipse', for attention at the earliest opportunity.

Where such issues are identified as having a systemic cause, a request to update the appropriate equipment or design specification is required to be communicated to E&D via Substation Design substation.design@westernpower.com.au by the Asset Custodian including the wider group AM Asset Performance-OAP Transmission-Transmission Plant am.asset.performance-OAP.Trans-Plant@westernpower.com.au

5. Related Policies and Documents

EDM/The Volt#	Title of document
<u>7414545</u>	Index of Primary equipment – post assembly and commissioning – final inspection sheets template.
<u>6101402</u>	Transformer Installation inspection sheet (template)
12092920	Discussion paper on O&M readiness benefits
<u>58641561</u>	Introduction of Assets to Service
<u>ID05-2127512311-214741ID05-2127512311-214741</u>	Operational & Maintenance Readiness – Acceptance Certificate
<u>ID05-463247583-187132</u> (Page 105)	Asset Performance Process Library - Tx Operational Asset Management - Operations Maintenance Readiness Process
<u>ID05-463247583-18713</u> (page 105)	Asset Performance Process Library - Tx Operational Asset Management - Operations Maintenance Readiness Process
<u>ID05-463247583-18713</u> (page 106) <u>ID05-463247583-187132ID05-2127512311-216301</u> (Page 106)	Asset Performance Process Library - Tx Operational Asset Management - Asset Data Handover Process Asset Performance Process Library - Tx Operational Asset Management - Tx Operational Asset Management - Asset Data Handover Process
<u>ID05-2127512311-216302</u>	Transmission Operational Asset Management - Operations Maintenance Readiness Process - RACI Matrix
<u>ID05-2127512311-217687</u>	Transmission Operational Asset Management - Operations Maintenance Readiness Process - Asset Data Readiness Timeline
33974218V4	Transmission Protection Commissioning Manual Section 1 – Overview and processes

6. Appendix - Lines Methodology / Compliance Inspection

For transmission lines and cables, the inspector is expected to properly visually scrutinize and capture defects and severities in accordance with requirements as defined in the Volt Document - Condition Catalogue - Transmission Linear Assets, including but not limited to:

- Overhead earthing connections and down leads to be intact and properly installed,
- Location of birds' nests and presence of other fauna,
- Wooden cross-arms and attachments, for presence of termite damage, splits, all wood knots, signs of knot holes, splits, breaks, excessive bending etc.
- Steel members, distortion of the structure, bent, buckled, damaged or missing members, signs of corrosion, vehicular impact, peeling paint, damage to galvanising, salt stains etc.
- Corrosion of insulator bolt in vertically mounted post insulators on three-pole (cricket wicket) configurations, as well as mounting bolts for bracket, presence of warping/bulging of mounting plate,
- Clearances of structures in designated line easements and proximity to encroachment of vegetation and infrastructure,
- Signs of burning from electrical arcing, flashovers, or lightning damage,
- Absence of, deterioration or damage, corrosion, to anti-climbing guards, safety barriers and fencing
- Cracks, broken sheds on insulators, jumpers, terminations, evidence of tracking, flashovers, cracks, broken, pollution and corrosion, missing insulators, silicone coat condition etc,
- Looseness, missing, corrosion, incorrect installations of hardware such as nuts, bolts, hooks, eyes, pins etc.
- Damage and corrosion to conductors, signs of bird caging, broken strands, excessive grease migration.
- Deterioration of vibration dampers, incorrect displacements, and installations, drooping of more than 45 degrees, missing and evidence of corrosion.
- Conductor spacers for missing, or deteriorating bushings
- Aerial Marker balls or warning signage required, damaged, installed incorrectly,
- In the case of limitations from aerial inspectors, if visually possible from the aerial hovering position, and without compromising the safety and other flight protocols, other defects that may be recorded could include:
 - Nameplates and signs for any that are missing, faded, incorrectly installed, poorly secured, incorrectly located etc.
 - Foundations for signs of cracking, evidence of soil subsidence, settlement, and erosion (foundation movement, gaps between soil and tower), proper earthing connections, corrosion of legs at the concrete/steel interface, reporting

unauthorised attachments to the structure, tower legs and foundations to be clear of water.

- Access track clearances, and vegetation encroachment, intrusions, fallen trees.

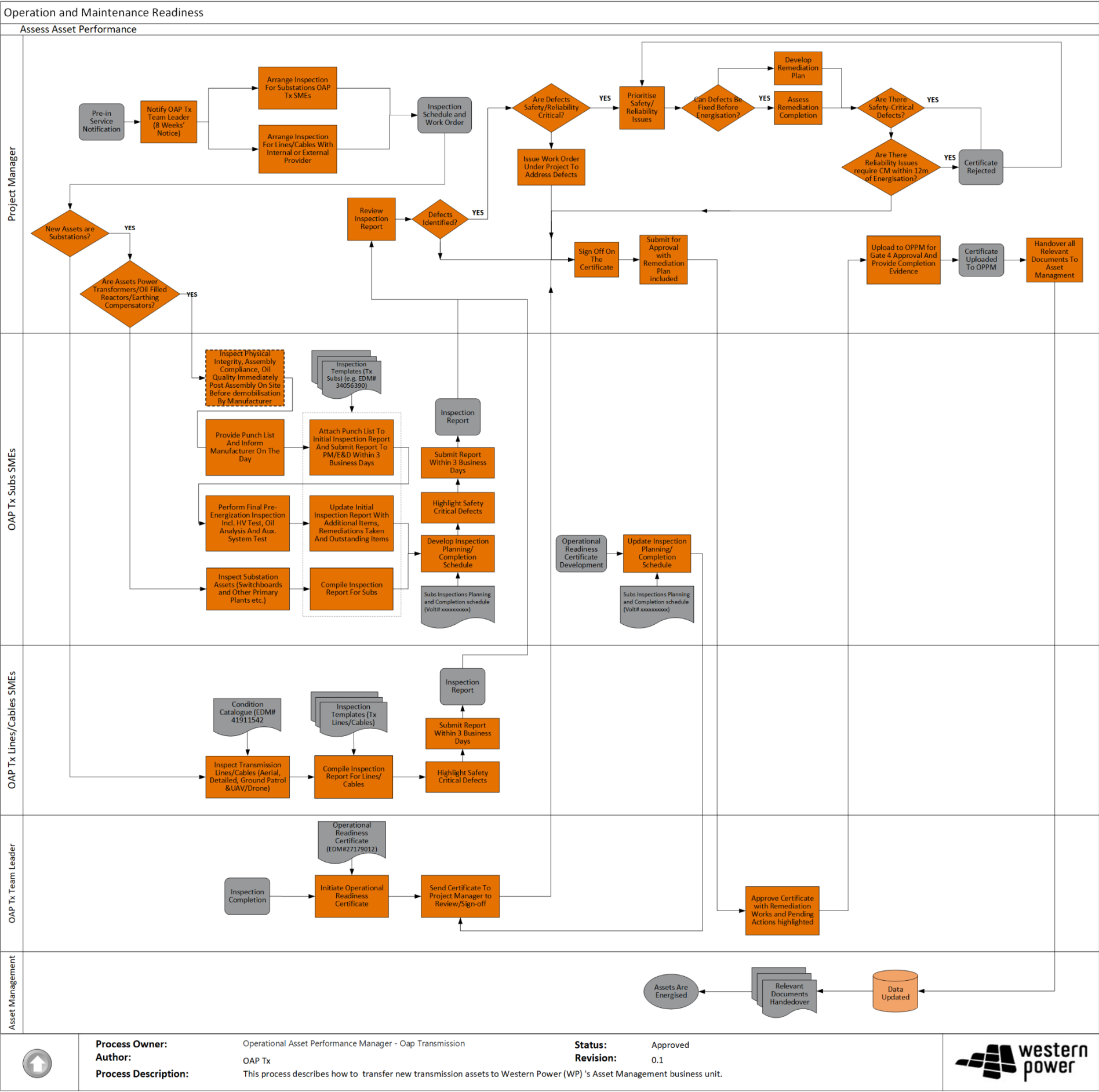
Additional survey information that may be requested and noted in inspection reports may include:

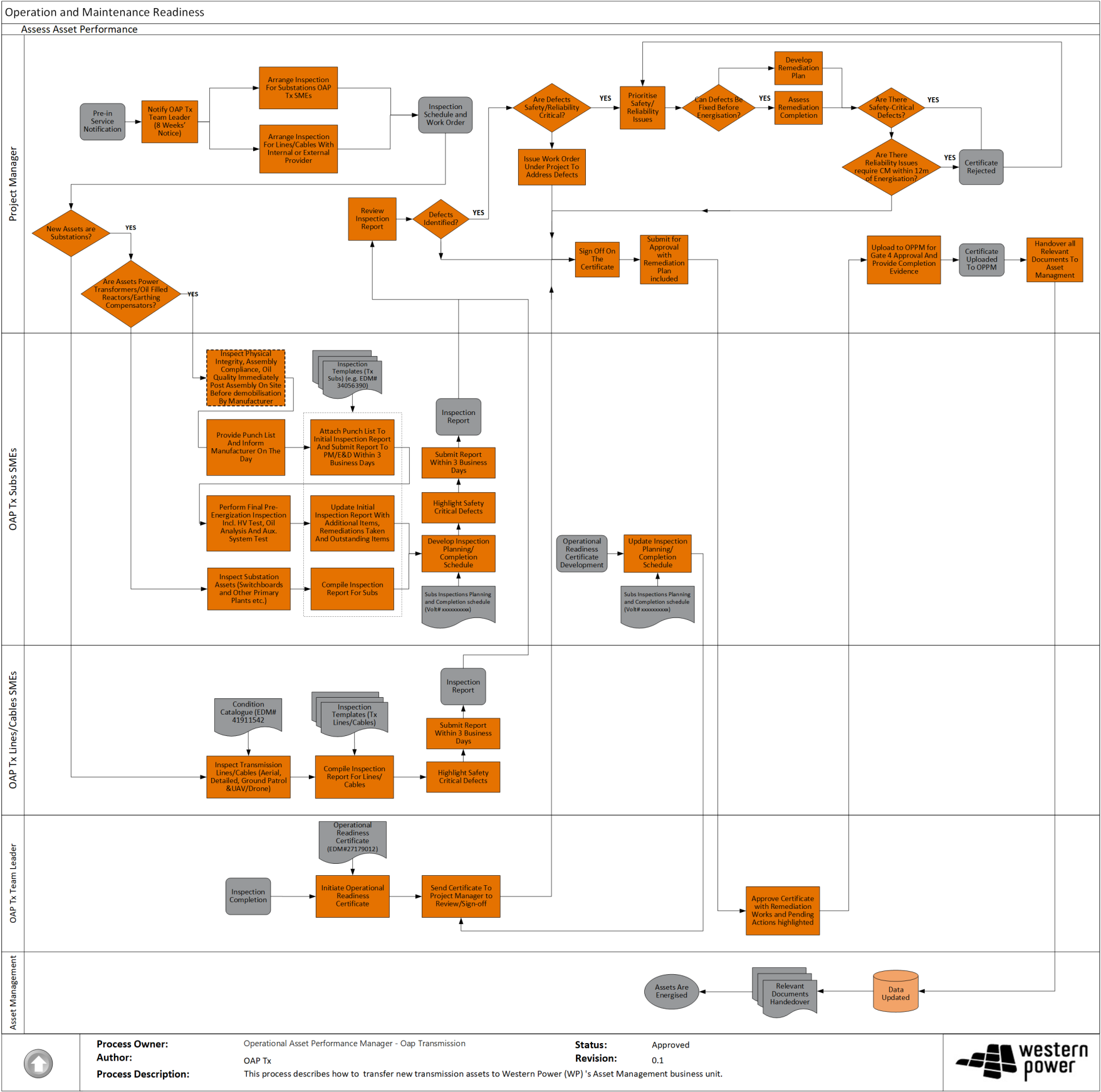
- Location of transpositions
- Location of spans where crossings with other transmission / distribution lines occur.
- Location of other crossings (railway, highway, river etc).
- Location of midspan joints and compression dead ends.
- Types of insulators installed on the asset.
- Count of number of discs on string insulators.
- Verification of conductor and/or earthwire type.

If a section of line cannot be inspected, then an indication of why would be required (e.g. NFZ restriction, horses / livestock, built-up area etc.)

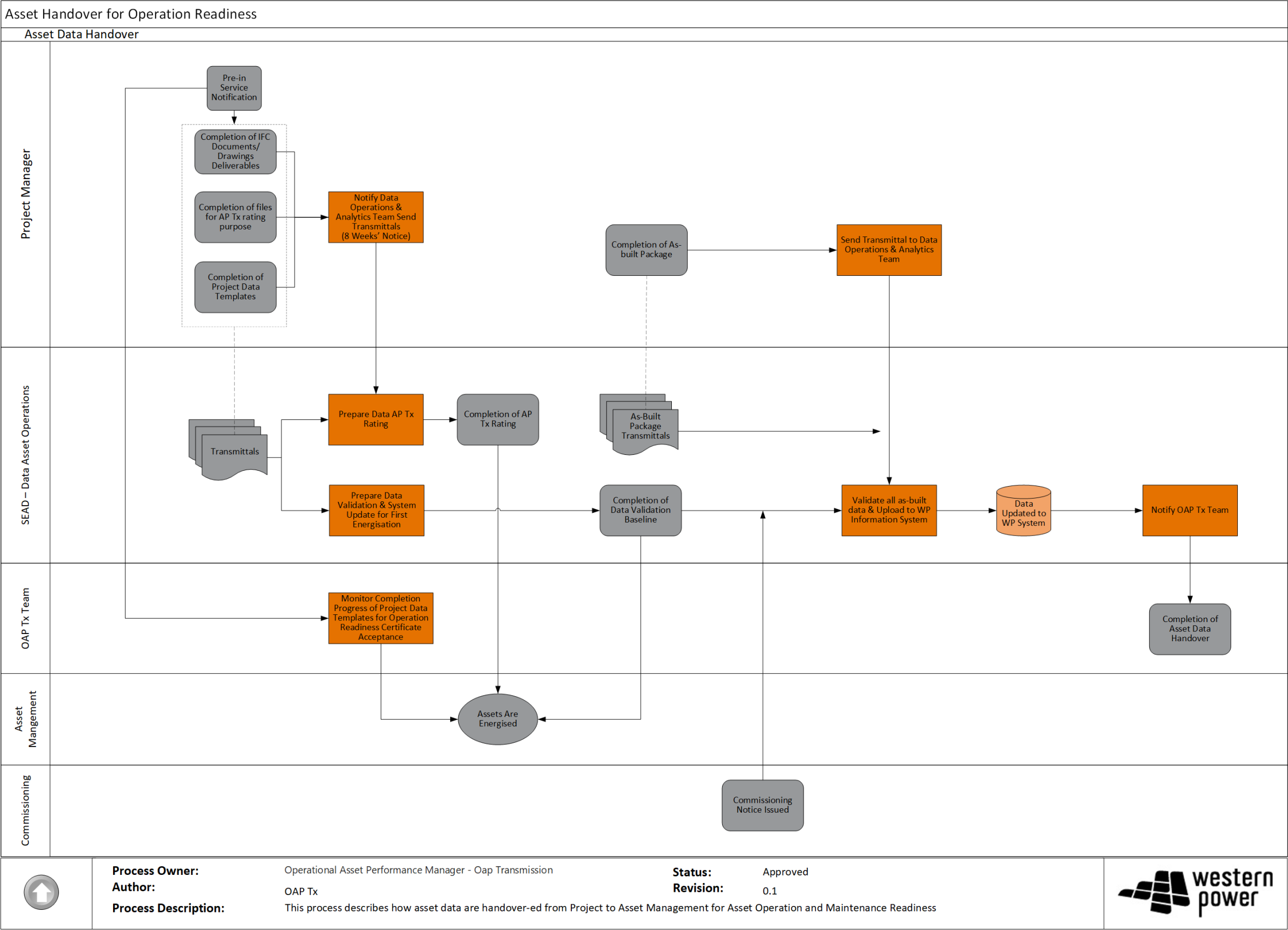
Any other defect(s) that may not necessarily be associated with the line being patrolled but still poses a risk to personnel and network (e.g. obvious defects on adjacent lines etc).

7. Appendix - Operations Maintenance Readiness Process Flow Chart





8. Appendix - Asset Data Handover for Operational Readiness Process Flow Chart



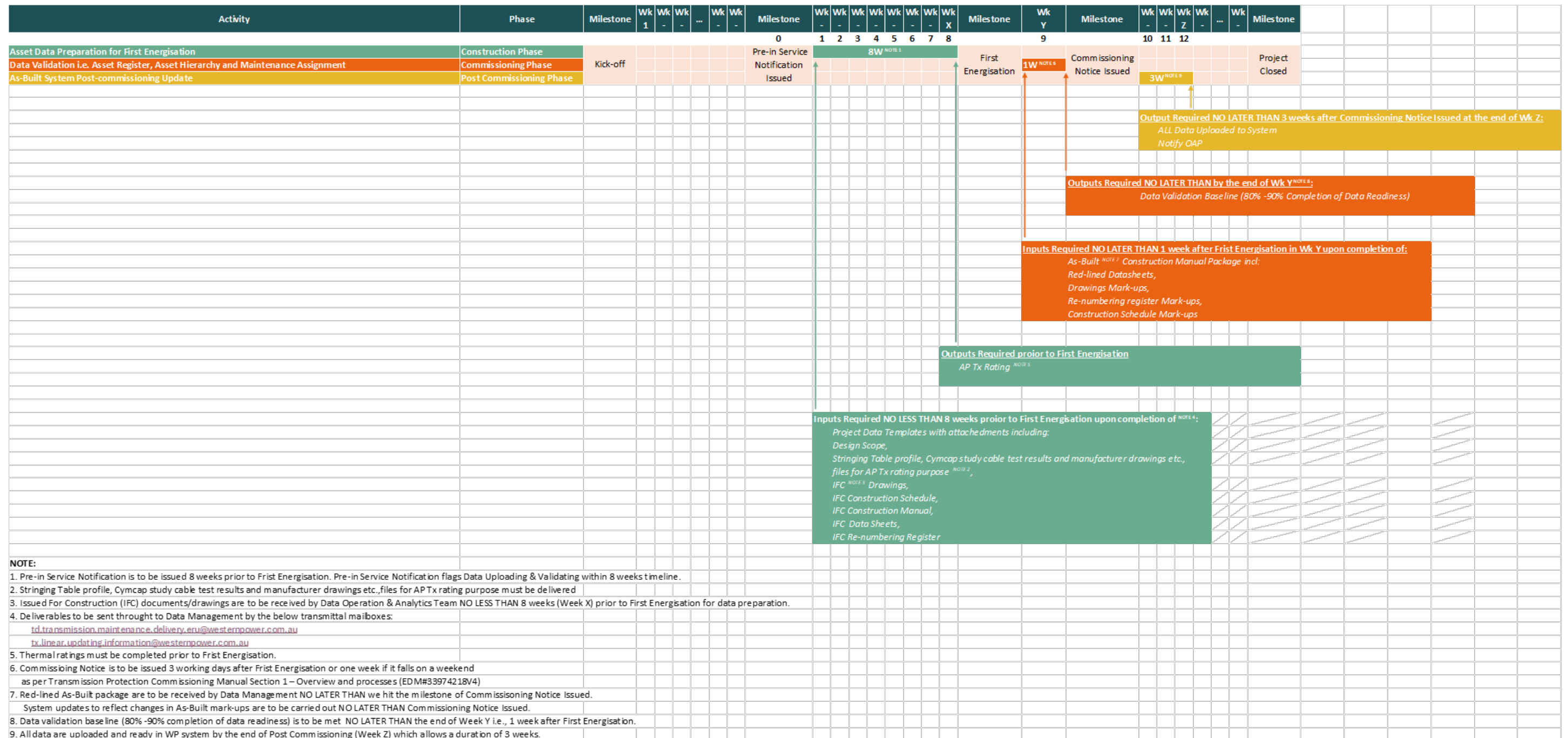
9. Appendix - Operations Maintenance Readiness Process RACI Matrix

RACI - Tx Operational Asset Management - Operations Maintenance Readiness Process

R Responsible
 A Accountable
 C Consulted
 I Informed

	Project Delivery Team (PM)	OAP Tx SMEs (Substations)	OAP Tx SMEs (Lines/Cables)	OAP Tx Team Leader	Inspectors	Commissioning Personnel	Manufacturer	Engineering & Design Team	Data Operations & Analytics
Pre In-service Notification									
Issue a pre in-service email notification	A/R	I	I	I	N/A	I	N/A	I	I
Inspection Request									
Notification to OAP Tx Substations Team Leader	A/R	N/A	N/A	I	N/A	N/A	N/A	N/A	N/A
Arrangement of inspection for lines/cables	A/R	N/A	N/A	I	N/A	N/A	N/A	N/A	N/A
Inspection Execution									
Initial post-assembly inspection of transformers/reactors	N/A	R	N/A	A	N/A	C	C	C	N/A
Final pre-energization inspection of transformers/reactors/Plant	N/A	R	N/A	A	N/A	C	C	C	N/A
Inspection of transmission lines/cables	A	N/A	N/A	I	R	C	C	C	N/A
Documentation of Findings									
Compilation of inspection report for substation assets	N/A	R	N/A	A	N/A	C	C	C	N/A
Compilation of inspection report for lines/cables	A	N/A	N/A	I	R	C	C	C	N/A
Defect Resolution									
Review of inspection report for lines / cables	I	C	R	A	C	N/A	C	C	N/A
Review and acceptance of inspection reports	A/R	C	C	I	C	N/A	C	C	N/A
Development of remediation plan if required	A/R	C	C	I	C	N/A	C	C	N/A
Acceptance/Rejection Decision									
Identification of safety-critical defects	C	R	R	A	C	N/A	C	C	N/A
Identification of reliability issues	C	R	R	A	C	N/A	C	C	N/A
Identification of non-critical defects	C	R	R	A	C	N/A	C	C	N/A
Certificate Issuance									
Initiation of Operational Readiness Certificate	N/A	N/A	N/A	A/R	N/A	N/A	N/A	N/A	N/A
Inclusion of required remediation works in certificate	N/A	C	C	A/R	N/A	N/A	N/A	N/A	N/A
Final Sign-off and Submission of certificate to Project Manager	I	I	I	A/R	N/A	N/A	N/A	I	N/A
Certificate Upload									
Practical Completion Sign-off on Operational Readiness Certificate	A/R	N/A	N/A	I	N/A	N/A	N/A	N/A	N/A
Upload of certificate to OPPM	A/R	N/A	N/A	I	N/A	N/A	N/A	I	I
Asset Handover									
Energization of assets	A/R	N/A	N/A	I	N/A	N/A	N/A	N/A	N/A
Handover of assets to Asset Management	A/R	N/A	N/A	I	N/A	N/A	N/A	N/A	N/A
Data Readiness									
Completion of Data Requirements Template	A/R	N/A	N/A	I	N/A	N/A	N/A	C	I
Data Update to WP Systems	A	N/A	N/A	I	N/A	N/A	N/A	C	R

10. Appendix - Asset Data Handover for Operation Readiness Timeline



4 - Asset Data Readiness Timeline Volt ID ID05-2127512311-217687