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CS ENERGY PROCEDURE

PLANT MODIFICATIONS CS-AM-010

Responsible Officer: Specialist Asset Management
 Responsible Manager: Head of Engineering
 Responsible Executive: Executive General Manager Asset Management

DOCUMENT HISTORY

Key Changes	Prepared By	Checked By	Approved By	Date
Original Issue – Portfolio-wide Plant Modification Procedure to replace existing site procedures which differ across each site, developed with consideration of all procedures.	R Conaghan	D Bell B Sinclair	J James D Bell	Dec 2010
New Temporary Modification process added.	W Underhill	D Bell B Sinclair	J James D Bell	Dec 2010
Amendments to process flow diagrams and check sheet from first site review and procedure entered into new logo template.	W Underhill	D Bell	D Bell	Feb 2012
Updated and Reformatted	S Collard	W Underhill	D Bell	Mar 2012
Temporary modification section updated to provide better definition. Full copy of checklist form removed from attachments and direct link to form added.	R Ravell	R Ravell D Bell	D Bell	17/12/2012
Changes identified from February 2014 review of process and Check Sheet	R. Ravell	D Kendrick	D Bell	19/05/2014
Changes identified in the December 2015 Audit	P Schmidt	D Kendrick	K Lines	06/10/2016
Update to engineering roles and responsibilities	W Underhill	D Kendrick	B Lawrence	07/05/2019
Incorporated Learnings from Incidents	A Shaw	D Kajewski C Lamari	D Kendrick	19/06/2020

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1 DEFINITIONS

For the purposes of this procedure, the following key definitions apply

Term	Definition
Advisor	Person with relevant knowledge in a certain area, e.g. WH&S Advisor, Environmental Advisor, operations specialist, maintenance specialist, etc. Referred to on the Quality Plan and Check Sheet for supporting evaluation of the modification.
As Built	State of the plant and process as per the Approved design and manufacture, including any Approved modifications which have since been implemented
Asset	A physical asset that has potential or actual value to CS Energy. Physical assets usually refer to plant and equipment, inventory and properties owned by CS Energy. A grouping of assets referred to as an asset system could also be considered as an asset. Is inclusive of integrated systems such as control systems.
Asset management	Coordinated activity of an organisation to realise value from physical assets. Realisation of value will normally involve a balancing of costs, risks, opportunities and performance benefits.
Asset management system	A management system for asset management.
Emergency changes	A change necessary to avoid personnel injury, equipment damage, environmental impacts, community complaints and the situation means that it is not possible to utilise the normal plant modification process. Generally, the situation is such that action is required quickly, and the persons required to provide approvals may not be available to meet the requirements of the written MOC process.
Head of Engineering	The Manager accountable for all technical / engineering matters.
Modification	Any change to the physical asset or process from the "As Built" status which may result in a change in process, operation, maintenance or performance, requires a new drawing or a change to an existing drawing / procedure, and which may affect the safety or integrity of people, process or plant. Modifications can be permanent, temporary or emergency changes
Modification File	An official registry file created to contain all documentation relevant to the modification. TRIM is the Document Management System used to manage the official files
Modification Register	A database for the recording and tracking of modification details and status.
Operating Envelope	If you define a set of parameters that are critical to the operation of something, then the operating envelope is the space between the minimum allowed and maximum allowed values for each parameter. Parameters may be temperature, flow rate, pressures, etc.

Term	Definition
Physical Asset	Plant, machinery, property, buildings, vehicles and other items and related systems that have a distinct and quantifiable business function or service and includes any software code that is critical to the delivery of the function of the asset
Plant	Plant means Physical Asset
Plant Modification Review Committee	The Plant Modification Review Committee is the governance body to oversee the Plant Modification process.
Replacement-in-kind	<p>The replacement of one item of equipment or component by another that is functionally identical, of similar design standards, specifications and performance characteristics (e.g. size, dimensions, pressure rating, flow rating, metallurgy, etc). Includes:</p> <ul style="list-style-type: none"> – Changes in operating parameters / setpoints <u>within</u> approved safe operating / design limits <p>If a replacement is an improvement on the original, then it is most likely a modification. A change in supplier may indicate a modification.</p>
Responsible Engineering Manager	Engineering manager responsible for an engineering function, discipline or area of plant. This is a defined plant modification process role where depending on the scope the responsibility can be owned by plant operations or asset management engineering managers. The titles for these roles include - Plant Engineering Supervisors (plant operations), Manager Boiler, Manager Balance of Plant, Manager Electrical, Instrumentation & Control and Manager Turbines (asset management area engineering manager's).
Technical and Support Requirements	All requirements necessary to support the asset over all phases of its life. Includes, but is not limited to: drawings, manuals, competency & training, spares, procedures, schedules, BOMS, identification, labelling, signage, ITP's, SDS's, maintenance routines, operating procedures, etc.
Temporary Modification	Plant Modification which can be implemented for short term durations, <u>not</u> exceeding 60 days, used to resolve unexpected risks associated with safety, Plant failure, unusual process issues or non-compliance.
Work Pack	Package of documents to detail the complete scope of work for the Plant Modification Implementation phase. This pack should include at a minimum the Final Design, technical specification, drawings for construction, ITPs, Inspection and test procedures, commissioning plans and procedures

2 INTRODUCTION

NOTE: No modification shall be made to plant or associated systems without proper assessment, authorisation, implementation and documentation. Proper assessment includes evaluation for workplace health, safety and environmental impacts.

Management of Change (MOC) is a critical and essential element of a robust and comprehensive risk-based asset management and safety management system, as changes to plant can introduce new hazards/ defects, or impact on existing risk control measures. There needs to be effective management of all changes to assets and asset systems.

This procedure covers the managing of changes (modifications) to physical asset or process. Plant modifications will be required from time to time due to new technology, obsolescence, plant performance, reliability, safety, access issues, etc. These modifications require rigid control to ensure that the modification is properly assessed, authorised, implemented and documented.

Why?

Failure to properly manage changes can significantly increase the risk of incidents / introduce unintended hazards or defects or reduce the effectiveness of existing controls. Many incidents can be traced, in part, to a MOC process that was not in place or not effective. Many operational incidents can be traced to operating conditions being changed beyond their safe range.

It is so important it is a requirement under the following:

- WH&S regulation 2011, s205
- WH&S Code of Practice – Managing Risks of plant in the workplace, s3.5
- ISO 55001:2014, s8.2 – Asset Management Standard, Management of Change

In addition, proper management of plant modifications procedure will ensure everyday work can be carried out in a safe and efficient way by ensuring the technical and support requirements accurately matches the “as built” configuration of the plant such as:

- Drawings supplied, updated and registered
- Manuals supplied or updated and registered
- Plant identification (KKS) labelling assigned and labels attached to Plant
- Associated procedures updated and approved
- Plant changes communicated effectively, and training carried out where necessary
- Preventative maintenance task updated or developed, approved and implemented in SAP
- Equipment spares list detailed in SAP and held as stock where necessary
- Process control settings aligned with the capabilities and limitations of the plant

3 PURPOSE AND SCOPE

To establish the minimum requirements for managing changes to physical plant and support systems including the:

- Identification and assessment of risks relating to the proposed change
- Establishing the authorities and responsibilities for authorisation and management of the proposed changes, and

- Proper documentation of the change and updating of all associated technical and support requirements.

This procedure applies to all modifications to CS Energy owned and / or operated plant and support systems.

The procedure covers:

- risk assessment of modifications
- the technical approval of the modification design and
- the methodology for monitoring, reporting and closing of the modification.

The procedure does NOT cover:

- the financial approval of capital projects covered under the Project Management Framework and
- the implementation of capital projects.

The implementation of modifications funded by the operational budget is carried out using the current on-site work management processes.

4 WHAT IS A PLANT MODIFICATION?

The most challenging aspect of managing modifications is identifying that the proposed modification is in fact a change or is a replacement-in-kind.

Modifications can include:

- Installation of new plant
- removal of redundant plant
- the replacement of plant or components other than replacement in kind
- addition or removal of ICMS, PLC or other controller logic
- changes which are performed on a temporary or trial basis
- changes to plant protection or design/safe operating parameters

In determining what constitutes a modification it is helpful to understand what is meant by “replacement-in-kind”.

Replacement-in-kind - A replacement of one item of equipment or component by another that satisfies the same design specification and performance characteristics and does not change the function of the plant / process. Replacements in-kind are not modifications and thus do not require any further action or documentation.

Equipment of similar configuration may have a different detailed specification (e.g. a new model of pump may have a higher discharge pressure or contain a different material) – this is not replacement in kind!

Examples of a plant modification include:

- change of lubricant type
- the substitution of a material type
- partial or complete changes to plant and equipment other than replacement-in-kind
- Removal of plant from use, i.e. obsolete
- Change to approved safe operating parameters

- installing a control system parameter change that alters a function output
- installing or changing a platform or monorail
- replacing an item with a different make and model
- extending a handrail / adding toe-boards
- adding a cubicle to a switchboard
- replacing a section of pipeline on a different alignment
- Equipment / component replacements where documentation or information changes. This includes like for like replacements when one or more of the technical and support requirements listed in section 3 of the *Plant Modification Quality Plan and Check Sheet* (refer to Reference [13]) require supply, updating or replacing
- Building structural changes (extensions, upgrade, change affecting layout, structure strength/integrity)
- Chemical: Process chemical changes, additives, water treatment changes
- Placing plant into storage where additional equipment is utilised (e.g. dehumidifier)
- Anything that requires a change to P&ID's
- Change of pressure set points for relief valves

Attachment 1 contains a guide to determining whether a change is subject to the modification process or not.

4.1 Control System Modifications

What is a control system modification?

- Changing an existing safe/design/established operating envelope
- Changing an existing upper or lower protection limit
 - Establishing/removing a protection limit
 - Adding, removing or changing protection logic
- Change to logic as part of another plant modification

What is not a control system change?

- Changes to control loop tuning parameters within design/safe operating parameters as defined in the OEM manuals or other relevant documentation.
- Changes to sequences and alarms within safe/design/established operating envelope as defined in the OEM manuals or other relevant documentation.

For changes to the control system that are not regarded as modifications, it is sufficient to utilise another system to record/approve the changes, otherwise the modification procedure is to be followed. The establishment of a TRIM folder titled 'Control System minor changes' is required and is to be used to record all changes including the before and after logic diagram with the approval signature of the Control System Engineer, Supervisor Instrumentation & Control or Manager Electrical, Instrumentation & Control.

4.2 Modification Exclusions

Specific scope exclusions are:

- Changes within safe/design/established operating envelopes such as control loop tuning
- Changes that are replacement-in-kind as defined above
- Changes that are required for routine temporary modifications that are part of approved and frequent operating or maintenance procedures and where such procedure ensures the change is evaluated and managed to ensure the health, safety and environment risks arising from these changes remain at an acceptable level
 - E.g. attachment of lubricant filtration trolley
- Changes to technical support requirements where the purpose of the change is to reformat, clarify, or to correct typographical errors. Mark-up of field changes to P&ID's may require a Plant Modification to be registered pending a review of the change by the Safety Advisor or Technical RPEQ.
- Changes to maintenance PM's are to be made in accordance with the PM Change Procedure
- Changes to the ICT system are to be made in accordance with the ICT Change Control Procedure
- Changes to procedures are to be made in accordance with CS Energy Procedure Review Process
- Changes that are covered by the Obsolete Component Change Approval Form.

These exclusions do not remove the need for normal safe working practices and procedures to be applied such as the PTW requirements and risk assessments.

4.3 Types of Modification

Modifications can be permanent, temporary or emergency.

A temporary modification may be considered under certain circumstances but must still be viewed as a plant modification and must carry the appropriate approvals. An example of a temporary plant modification may be testing a control system parameter change prior to alleviating some operational problem. Refer to section 8 for further details on the Temporary Plant Modification process.

4.4 Quality Plan and Check Sheet

A check sheet is provided that is to be used for modifications. The check sheet can be found here: [B/D/10/39813](#).

Approvals in TRIM

The use of TRIM to record storage and approvals is encouraged. It provides a permanent record and a paperless process. Where this is used the approving officer can enter their name in the 'signature' box on the form and enter a comment in the TRIM 'Notes' section as outlined in [B/D/20/8140](#).

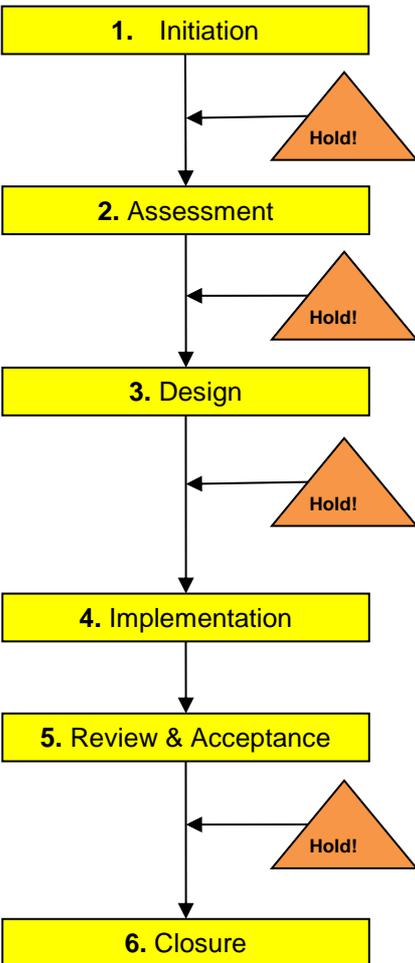
4.5 Modification Register

A plant modification register shall be maintained at all sites in order to manage plant modifications. This register shall be subject to review for accuracy and effectiveness of modification progress, status and completion/deferment/cancellation.

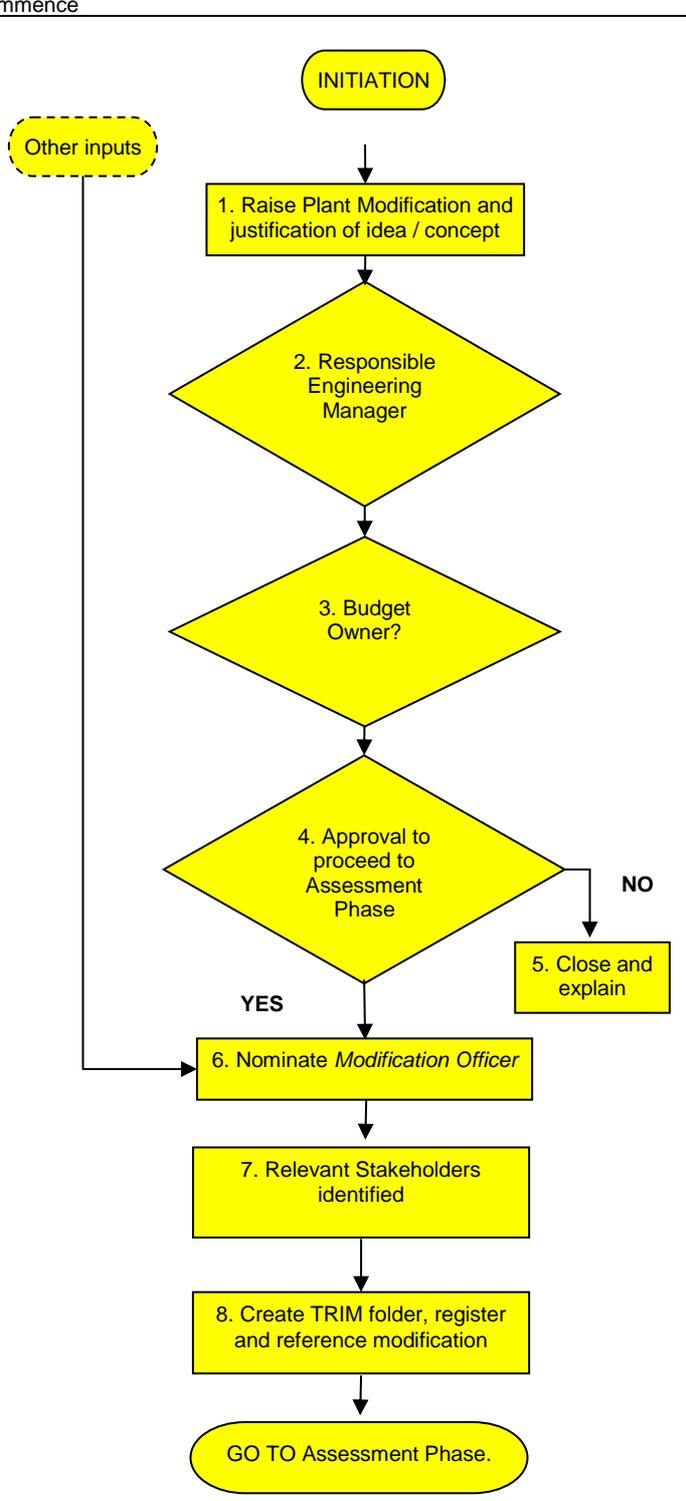
For emergency modifications the operators log is adequate documentation in the first instance, until such time as the proper modification process can be applied.

5 MODIFICATION PROCESS

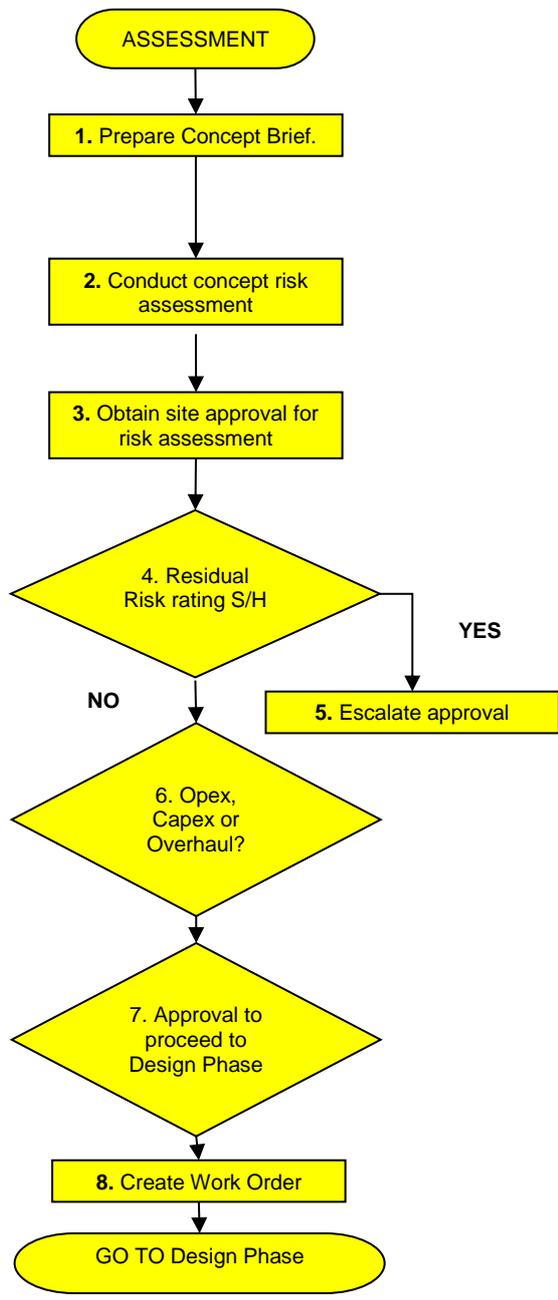
Unless categorised as temporary or emergency, modifications must follow the full modification process.

Process	Step	Comments
	1	<p>The initiation process takes the initial concept / idea to improve the plant or process to approval to proceed with design, assignment of a modification number and registration into the site Plant Modification Register. NOTE: Any CS Energy personnel may initiate a Plant Modification.</p> <p>HOLD Point: modification or not?</p>
	2	<p>Concept Brief developed to allow initial risk assessment. An extremely important step to assess the risks associated with the proposed change. Requires approval dependent on residual risk level.</p> <p>HOLD Point: Risk assessment completed & adequate?</p>
	3	<p>Design commences with the identification of Technical and Support Requirements and the ongoing amendments to requirements as the design progresses. Signifies that the modification design and associated risk assessment have been reviewed, revised and are ok to implement. This ensures that all the risk assessment control measures are satisfied and both regulatory and engineering requirements have been met.</p> <p>HOLD Point: Ok to Implement?</p>
	4	<p>Approved change is implemented in accordance with all relevant safety, project and work control processes. The implementation process approves and releases the SAP work order to initiate implementation of the Plant Modification through to completion and commissioning of the Plant Modification.</p>
	5	<p>The review and acceptance process ensures the completion of the works, testing and commissioning, acceptance from all stakeholders, technical & support requirements met and affected personnel are aware of the change and have received relevant training.</p> <p>HOLD Point: Ok to release for operations?</p>
	6	<p>Final Closure approval signifies all technical and support requirements completed, filing of documentation and close out of <i>Modification File</i> and SAP work order.</p>

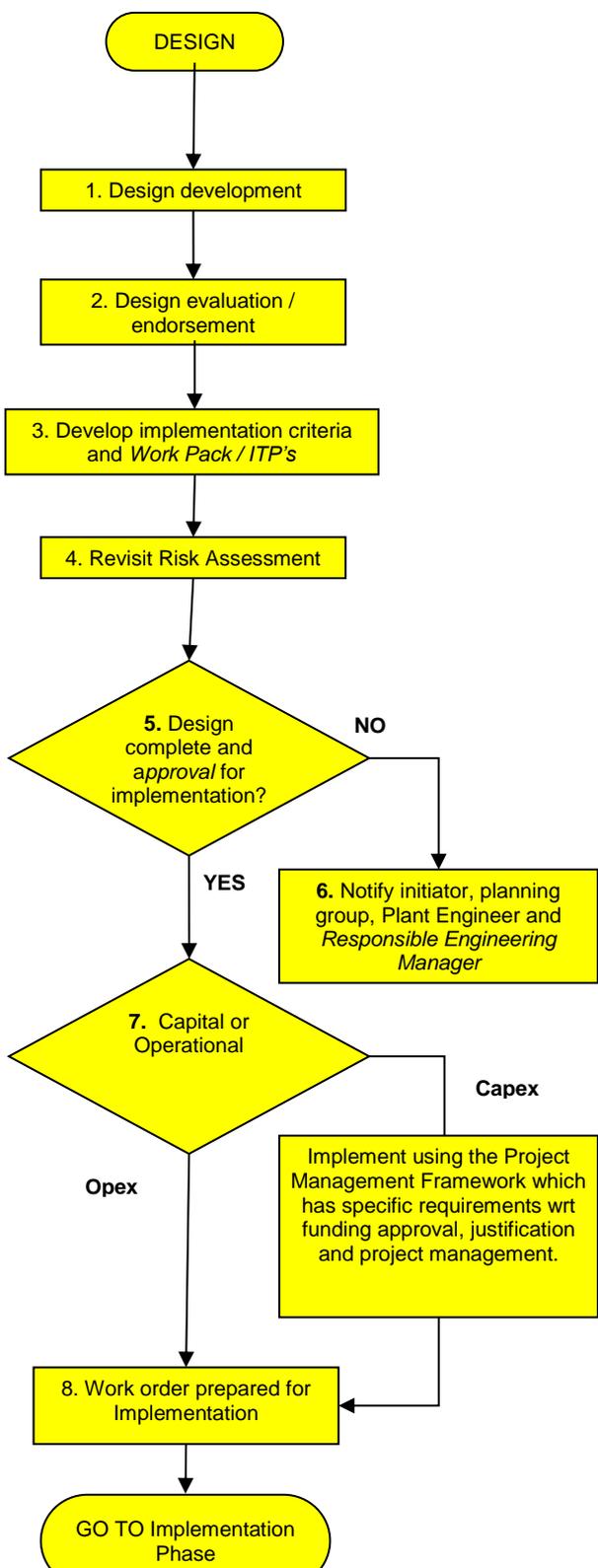
5.1 Initiation

Process	Step	Responsible	Comments
<p>Commence</p>  <pre> graph TD Start([INITIATION]) --> Step1[1. Raise Plant Modification and justification of idea / concept] OtherInputs([Other inputs]) -.-> Step1 Step1 --> Dec2{2. Responsible Engineering Manager} Dec2 --> Dec3{3. Budget Owner?} Dec3 --> Dec4{4. Approval to proceed to Assessment Phase} Dec4 -- NO --> Step5[5. Close and explain] Dec4 -- YES --> Step6[6. Nominate Modification Officer] Step6 --> Step7[7. Relevant Stakeholders identified] Step7 --> Step8[8. Create TRIM folder, register and reference modification] Step8 --> End([GO TO Assessment Phase.]) </pre>		This can be anyone	Initial idea or concept, may also come from other inputs & projects
	1	Modification Initiator	Complete Section 1.1 to 1.6 of Plant Modification Quality Plan and Check Sheet (Form S1977)
	2	Responsible Engineering Manager	Discuss and agree with relevant stakeholders and / or asset management engineering managers. Identify relevant budget owner.
	3	Budget Owner	The Budget Owner is required to approve associated costs in the subsequent phases.
	4	Responsible Engineering Manager	The Responsible Engineering Manager is required to Approve 'Plant Modification Quality Plan and Check Sheet' to approve the modification proceeding to the Assessment Phase.
	5	Responsible Engineering Manager	Notify / consult all stakeholders of decision to cancel modification.
	6	Responsible Engineering Manager or Plant Engineering Manager	Nomination of Modification Officer
	7	Responsible Engineering Manager	Identify relevant stakeholders of the plant modification. Determine required fields of 'Plant Modification Quality Plan and Check Sheet' given modification scope
8	Relevant Administrator	Create TRIM folder / Tag and enter details into the Plant Modification Register. Reference Modification Number on notification.	

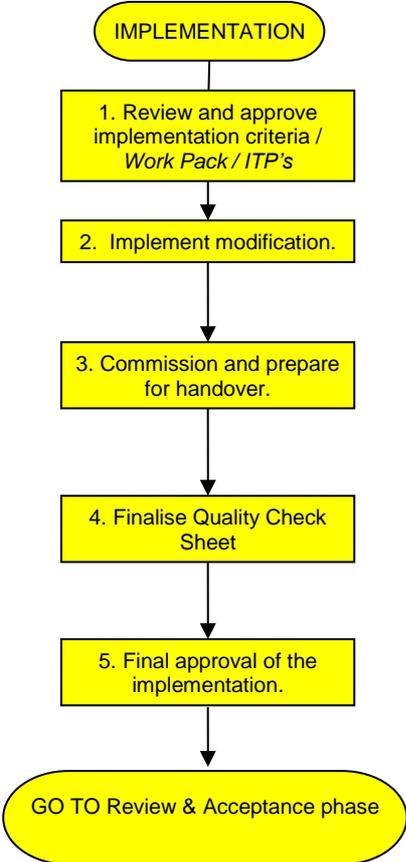
5.2 Assessment

Process	Step	Responsible	Comments
 <pre> graph TD Start([ASSESSMENT]) --> Step1[1. Prepare Concept Brief.] Step1 --> Step2[2. Conduct concept risk assessment] Step2 --> Step3[3. Obtain site approval for risk assessment] Step3 --> Step4{4. Residual Risk rating S/H} Step4 -- YES --> Step5[5. Escalate approval] Step4 -- NO --> Step6{6. Opex, Capex or Overhaul?} Step6 --> Step7{7. Approval to proceed to Design Phase} Step7 --> Step8[8. Create Work Order] Step8 --> End([GO TO Design Phase]) </pre>	1	Modification Officer	Prepare a Concept Brief. This can be used as a basis for the Investment Approval if the modification is funded through the Project management framework.
	2	Modification Officer	Assess concept risk in conjunction with other relevant specialists / disciplines as required. Use Operations Plant Risk Assessment Template. Basis of risk assessment: what potential hazards/risks may be introduced, or current control measures affected by the proposed change?
	3	Responsible Engineering Manager	Evaluate and approve risk assessment
	4	Modification Officer / Responsible Engineering Manager	Significant/High risks to be escalated for evaluation/approval according to CSE Risk Management guidelines.
	5	Head of Engineering	Head of Engineering to evaluate / approve.
	6	Responsible Engineering Manager	Evaluate and determine whether the modification will be implemented as an operational expense, capital project or overhaul project. Capital projects and Overhaul work is to be implemented using the Project Management Framework.
	7	Responsible Engineering Manager / Budget Owner	Based on all the information to date Responsible Engineering Manager and Budget Owner approves (or not) the promotion of the modification to the Design phase.
	8	Modification Officer/Planner	Z200 Work Order Status = CREATED

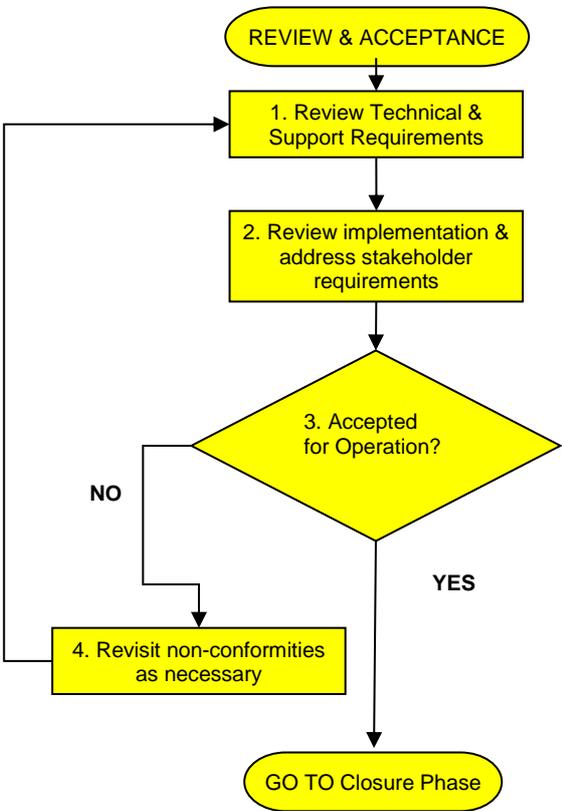
5.3 Design

Process	Step	Responsible	Comments
 <pre> graph TD DESIGN([DESIGN]) --> 1[1. Design development] 1 --> 2[2. Design evaluation / endorsement] 2 --> 3[3. Develop implementation criteria and Work Pack / ITP's] 3 --> 4[4. Revisit Risk Assessment] 4 --> 5{5. Design complete and approval for implementation?} 5 -- NO --> 6[6. Notify initiator, planning group, Plant Engineer and Responsible Engineering Manager] 5 -- YES --> 7{7. Capital or Operational} 7 -- Capex --> 8[Implement using the Project Management Framework which has specific requirements wrt funding approval, justification and project management.] 7 -- Opex --> 8[8. Work order prepared for Implementation] 8 --> 8[8. Work order prepared for Implementation] 8 --> GO([GO TO Implementation Phase]) </pre>	1	Modification Officer	Facilitate the design development through the relevant internal or external resource/s. Ensure all statutory & engineering requirement are met. Consider all safety and environmental regulatory requirements. Populate the Technical and Support Check Sheet and maintain the currency of the Check Sheet throughout the project.
	2	Modification Officer	Consult / review with Stakeholders and gain Approval from RPEQ's / Advisors. Responsible Engineering Manager signs Quality Plan & Check Sheet where RPEQ disciplines / advisors not required.
	3	Modification Officer	Requirements will vary from one modification to another. Refer to Work Pack examples – Reference [12]. Work Packs / ITP's are important for implementation.
	4	Modification Officer	Revisit risk assessment and finalise in conjunction with RPEQ's and relevant advisors (safety & Environment). Gain approval for revised risk assessment & Controls
	5	Head of Engineering	Approval signifies Modification design & risk assessment have been reviewed & approved for implementation. Risk control measures are satisfied and both statutory and engineering standard requirements are met.
	6	Modification Officer	Notify stakeholders of decision to defer modification until the next budget planning period, conduct design review if required
	7	Project Team	If the modification is a Capital project and Overhaul work it is required to be implemented using the Project Management Framework.
	8	Modification Officer	Update the Work Order

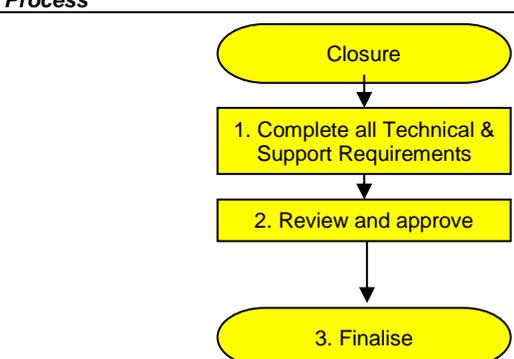
5.4 Implementation

Process	Step	Responsible	Comments
 <pre> graph TD Start([IMPLEMENTATION]) --> Step1[1. Review and approve implementation criteria / Work Pack / ITP's] Step1 --> Step2[2. Implement modification.] Step2 --> Step3[3. Commission and prepare for handover.] Step3 --> Step4[4. Finalise Quality Check Sheet] Step4 --> Step5[5. Final approval of the implementation.] Step5 --> End([GO TO Review & Acceptance phase]) </pre>	1	<i>Plant Engineer / Responsible Engineering Manager</i>	Review and approve the implementation criteria including work packs and ITPs.
	2	<i>Nominated Planner group and Work centre</i>	Implement Modification
	3	<i>Modification Officer (Opex) or Project Manager (Capex)</i>	Commission and prepare package for handover.
	4	<i>Modification Officer (Opex) or Project Manager (Capex)</i>	Finalise all aspects of the Quality Plan and Check Sheet
	5	<i>Modification Officer (Opex) or Project Manager (Capex)</i>	The Project Manager and the Modification Officer must sign the Quality plan and Check Sheet to indicate that the modification has been implemented in accordance with the approved design and ready for handover.

5.5 Review and Acceptance

Process	Step	Responsible	Comments
 <pre> graph TD Start([REVIEW & ACCEPTANCE]) --> Step1[1. Review Technical & Support Requirements] Step1 --> Step2[2. Review implementation & address stakeholder requirements] Step2 --> Decision{3. Accepted for Operation?} Decision -- NO --> Step4[4. Revisit non-conformities as necessary] Step4 --> Step1 Decision -- YES --> End([GO TO Closure Phase]) </pre>	1	Modification Officer	Ensure all technical & support requirements are complete, or a plan and date is noted on form Section 3a.
	2	Modification Officer	Final review to be carried out by <i>Modification Officer</i> and <i>relevant RPEQ's / advisors / stakeholders</i> - consideration of physical result and documentation required
	3	<i>Responsible Engineering Manager (Section 3a) AND Maintenance Manager and Production Manager</i>	Signifies that modification is implemented to final design, all requirements are met, all affected personnel have been communicated with and trained as necessary, all technical and support requirements have been completed or an agreed plan and date is in place to finalise.
	4	Modification Officer	Revisit non-conformities and correct as necessary before returning to "Accepted for Operation."

5.6 Closure

Process	Step	Responsible	Comments
 <pre> graph TD Start([Closure]) --> Step1[1. Complete all Technical & Support Requirements] Step1 --> Step2[2. Review and approve] Step2 --> End([3. Finalise]) </pre>	1	Modification Officer	Ensure all technical & support requirements are complete.
	2	<i>Project Officer / Modification Officer / Relevant Administrator</i>	Verification of completion of all requirements and performance of modification
	3	<i>Project Officer / Modification Officer / Relevant Administrator</i>	Finalise work orders / update modification register / close files.

6 TEMPORARY MODIFICATION PROCESS

While Temporary Modifications have a limited duration, they may affect plant performance, risk and design. They require control and rigor to regulate their use. Temporary modifications shall have a specified end date.

The Temporary Modification process shall only apply when:

1. The initiator considers the effects to be low risk AND the modification:
 - a) Is planned to be reversed on repair or modification of Plant, OR,
 - b) Is required as trial to confirm the effectiveness before making permanent.
2. A temporary system or equipment has to be connected to the permanent installation for a limited period of time.

These situations may arise:

- When something physically breaks
- When a short-term configuration change is required during significant maintenance refurbishment or upgrades
- When recommissioning or plant maintenance requires third party equipment to be connected to the permanent system.

6.1 Risk Assessment

Prior to implementing a temporary modification, a risk assessment shall be performed by the modification initiator or a technical person responsible for the plant area. The risk assessment must consider the following aspects:

- All hazards/ risks that may be introduced by the proposed modification
- All hazards/ risks that may be introduced during the act of implementing the modification
- All current risk controls that the modification may mitigate when implemented

6.2 Approval for Implementation

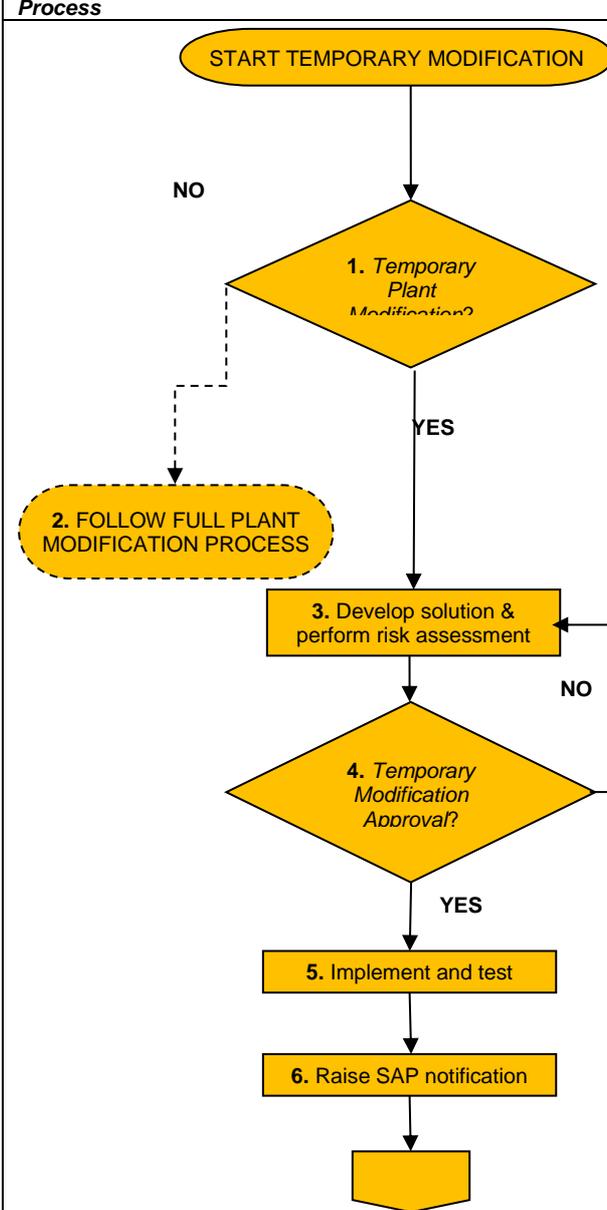
The Responsible Engineering Manager shall approve the implementation of a Temporary Modification. This approval shall be documented on [B/D/10/39813](#), this documentation shall clearly state that this is a temporary modification and the specified end date.

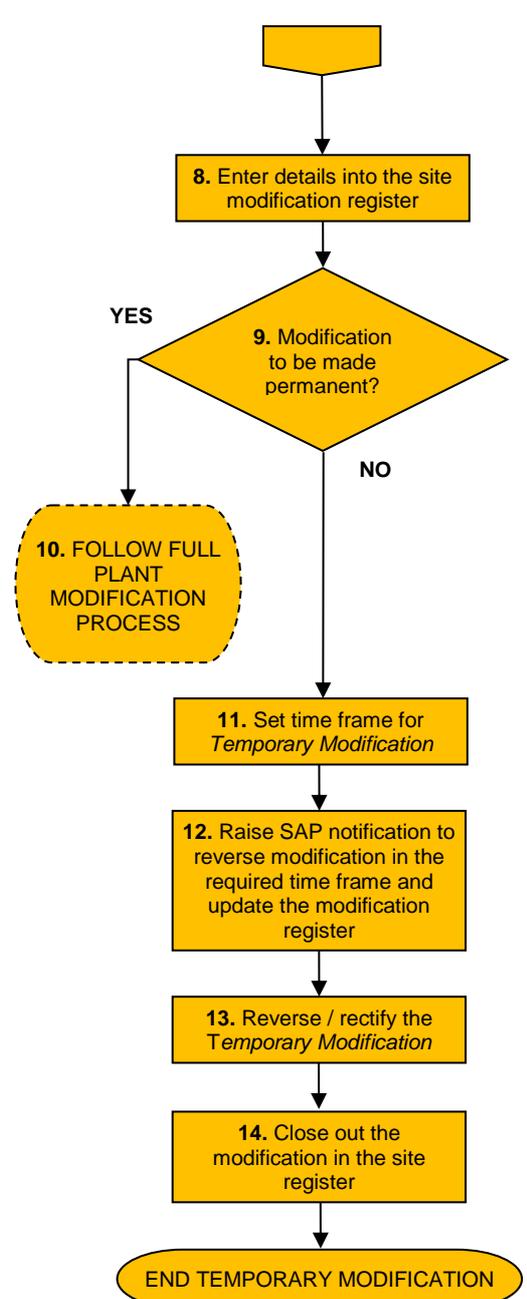
6.3 Approval for Continued Use

The site Responsible Engineering Manager or delegate shall review the implemented Temporary Modification prior to the specified end date at which point the modification is to be:

- Removed and the plant reinstated to the prior state, or
- Made permanent by the application of the modification process

Temporary modification Process Flow Diagram

Process	Step	Responsible	Comments	Signature
 <pre> graph TD Start([START TEMPORARY MODIFICATION]) --> D1{1. Temporary Plant Modification?} D1 -- NO --> F2([2. FOLLOW FULL PLANT MODIFICATION PROCESS]) D1 -- YES --> S3[3. Develop solution & perform risk assessment] S3 --> D4{4. Temporary Modification Approval?} D4 -- NO --> S3 D4 -- YES --> S5[5. Implement and test] S5 --> S6[6. Raise SAP notification] S6 --> End{{}} </pre>			Initial idea or concept this can be anyone	Responsible person to sign each step completed
	1	Modification Initiator	The Temporary Modification process shall only apply when: 1/ The initiator considers the effects to be low risk, AND (a) the modification: Solves an urgent need to protect people, plant or production, OR; (b) Is planned to be reversed on repair or modification of Plant, OR, (c) Is required as trial to confirm the effectiveness before making permanent. 2/ A temporary system or equipment has to be connected to the permanent installation for a limited period of time.	
	2	Modification Initiator	Refer to 6.1 Plant Modification Initiation Process	
	3	Modification Initiator	Document suggested solution and associated risks avoided and created. Example Reference [2] Operation Plant Risk Assessment Template	
	4	Responsible Engineering Manager	Approve the temporary modification after consultation with relevant technical staff.	
	5	Modification Initiator	Document implementation	
	6	Modification Initiator	Use SAP transaction (ZW25), include all modification documentation and forward to the Responsible Engineering Manager for review	
			Flow chart continues on the next page	

 <pre> graph TD Start([Start]) --> Step8[8. Enter details into the site modification register] Step8 --> Step9{9. Modification to be made permanent?} Step9 -- YES --> Step10(10. FOLLOW FULL PLANT MODIFICATION PROCESS) Step9 -- NO --> Step11[11. Set time frame for Temporary Modification] Step11 --> Step12[12. Raise SAP notification to reverse modification in the required time frame and update the modification register] Step12 --> Step13[13. Reverse / rectify the Temporary Modification] Step13 --> Step14[14. Close out the modification in the site register] Step14 --> End([END TEMPORARY MODIFICATION]) </pre>			Flow chart continued from previous page	
8	<i>Document Management Officer</i>	Site register saved in TRIM		
9	<i>Responsible Engineering Manager</i>	Is the modification to remain indefinitely?		
10	<i>Responsible Engineering Manager</i>	Assign modification officer to commence the plant modification process, refer to 6.1		
11	<i>Responsible Engineering Manager</i>	Determine the review frequency for the temporary modification		
12	<i>Modification Initiator</i>	Corrective maintenance notification (Z100) to reverse / rectify the temporary modification. Workgroup to be assigned as per usual maintenance responsibilities		
13	<i>Assigned workgroup</i>	Rectify and close out the temporary modification		
14	<i>Responsible Engineering Manager</i>	Enter and attach all information to the Notification		

7 EMERGENCY MODIFICATION

An emergency change is a change that must be performed on a true emergency basis because of any of the following conditions”

- To correct a deficiency that would otherwise cause a hazardous condition that is an immediate threat to personnel or the environment
- To correct a deficiency that would otherwise result in a trip of the unit and/or damage to the plant due to equipment fault or design error

Such changes may involve the **temporary** bypassing, bridging or forcing of a piece of equipment, software or ICS code or alarm such that the intended functionality is altered.

Emergency changes are to be approved in the first instance by the shift supervisor and documented in the operator’s log; a risk assessment must still be performed to the extent possible and may not be documented. The shift supervisor should notify the Production Manager. All attempts shall be made to gain verbal approval from Responsible Engineering Manager before implementation, approval or otherwise shall be recorded in the plant log.

Within 24 hours, the change shall be reviewed and approved by both the Production Manager and a relevant RPEQ. At which time the modification is reversed, or the proper modification process initiated.

8 ROLES AND RESPONSIBILITIES

8.1 General Requirements

It is the responsibility of everyone involved in a modification to review the change with respect to their area of responsibility, keeping in mind the following:

- The change and its effects should be fully understood
- The changes should not result in undesirable consequences such as increased hazards to personnel, environment or equipment, or dilution of existing risk control measures
- WH&S and environmental regulatory requirements and impacts must be considered
- Engineering codes, standards and good practice must be used in design, manufacture and installation

8.2 Initiator

Then initiator is the person who raises a proposed modification.

- Identifying the need for a change – including Safety / Financial justification.
- Attaches to modification notification all relevant details such as:
 - Modification description (dot points)
 - Purpose for modification (how does it improve the Plant / process)
 - Suggested solution
 - Sketches
 - Photos

8.3 Modification Officer

The modification officer is the person assigned responsibility for “shepherding” the plant modification through to completion. It is the role of the Modification Officer to follow the Plant Modification procedure, ensure all information is recorded in TRIM/ SAP where necessary and complete the Plant Modification Quality Plan and Check Sheet. The Modification Officer will coordinate all meetings, risk assessments, reviews, obtain approvals where required, effectively report and close all nominated Plant Modifications.

- Ensures the modification is managed in accordance with the Plant Modification procedure/ process
- Ensures all relevant Officers, RPEQ’s and Advisors are informed and consulted as necessary in all phases of the process
- Ensures all relevant sections of the modification Quality Plan and Check Sheet and other associated documentation / files are completed and accurate
- Coordinating the risk assessment for the modification
- Closing out the modification once all requirements/approvals are met or the proposed modification is cancelled
- Co-ordinate the registering of the Plant Modification and creation of a TRIM folder / tag
- Enter the Plant Modification number into the long text of the SAP work order
- Ensure the Modification Register is updated with all relevant modification details including the current status at any time
- Save all documents associated with the Plant Modification in the nominated Plant Modification folder in the Document Management System (TRIM)
- Initiate a HAZOP study on all proposed high and significant risk modifications. A copy of the HAZOP study report shall be included with the Final Design in the review process
- Develop Work Pack for Plant Modification which may include:
 - Final Design
 - Drawings
 - Technical specification
 - Implementation criteria
 - Inspection and test plans
 - Commissioning plans
 - Commissioning procedures
 - List of support documentation to be updated (Section 2 of Quality Plan & Check Sheet)
- Ensure all work associated with the Plant Modification complies with the specification as defined in the Final Design. Any variations from the technical specification must be approved and recertified by the relevant Technical Specialists (including RPEQs) prior to implementation.
- Ensure that all relevant inspections and tests, including statutory requirements, are carried out and are within the acceptance criteria as defined in the Final Design
- Ensure all commissioning documentation, including ITPs etc as detailed in the acceptance criteria and Work Pack are completed

- Ensure the modified plant has been properly inspected, tested and commissioned
- Ensure all stakeholders are notified of modification completion

The Modification Officer may change during the life cycle of a Plant Modification. In all cases the modification Officer will ensure adequate handover of “in process” modifications.

8.4 Production Manager or Maintenance Manager

The Production Manager or Maintenance Manager responsibilities are derived from the need to ensure the operators and maintainers of the plant are aware of changes that may affect them and the need to ensure the technical and support requirements match the “as built” status of the plant. They may delegate their duties but will remain ultimately responsible where nominated in this procedure for the following:

- Ensure they are aware of and endorse any proposed plant modifications
- Ensure that all proposed modifications are evaluated and dealt with in the morning meetings
- Ensure adequate input into the modification assessment/evaluations and the identification/completion of all relevant technical and support requirements
- Ensure operations and maintenance personnel affected by the change understand the change and its impacts and are trained as appropriate prior to “acceptance for Operation”
- Be satisfied as to the integrity of implemented plant modifications and hazard/risk control measures prior to “acceptance for operation”
- Review and approve temporary and emergency changes as required

8.5 Responsible Engineering Manager

The Responsible Engineering Manager will remain ultimately responsible where nominated in this procedure.

- Initial assessment including review of the priority score to determine acceptance or rejection of the proposal
- Ensures that all Plant Modifications are captured and effectively managed in accordance with the Plant Modification procedure in their area of influence
- Monitor status of all Plant Modifications and review/evaluate as required
- Ensure that nominated Modifications Officers are trained and competent for the role
- Ensure that all site operations personnel are aware of and understand the plant modification process and requirements
- Ensure all changes are properly classified as replacement in kind / modification / temporary modification
- Ensure all necessary Technical Specialists and relevant stakeholders have input into assessments/ evaluations.
- Ensure all modifications do not increase the risk to people, plant or production without due diligence to the assessment and mitigation of such risks. Any acceptance of residual increased risks shall be at the appropriate organisational level.

8.6 RPEQ's and Advisors

- Ensure compliance with all relevant regulatory, design standards, codes, etc are considered, applied in the modification
- Review and technically approve the design where RPEQ signoff is required.

8.7 Head of Engineering

The Head of Engineering is the single point of accountability for the modification process.

For each modification;

- Review and approve to implement of each modification, considering only the following:
 - That the modification procedure up to and including design has been adequately followed, giving consideration to the flexible application of the process based on complexity and risk to physical plant or processes;
 - A suitable risk assessment has been carried out and approved by the required cross section of stakeholders;
 - The required RPEQ disciplines have approved the design, where these are required within the obligations of the PE (Professional Engineers) Act;
 - The required advisor approvals have approved the design.
- Ensure consistent approach and process to Plant Modifications across all CS Energy Sites
- Review and approve Plant Modifications which have a residual risk of significant or high
- Periodically review the procedure and Quality Plan & Check Sheet
- Ensure awareness of modification procedure and requirements across all CS Energy divisions, including Operations, Asset Management, Procurement, Projects and Overhauls.
- Periodically review/ audit compliance with modification procedure requirements

9 REVIEW AND AUDIT

The following governance and controls are to be in place to verify the integrity of the modification process.

Modification Register: Used to monitor the progress and status of modifications.

Plant Modification Review Committee: The site governance body to oversee the Plant Modification process. and ensuring:

- a) Plant Modifications are progressed and managed in accordance with CS Energy Plant Modification Procedure (CS-AM-010);
- b) Plant Modification completion is achieved in a timely manner; and
- c) Operations and maintenance teams review the quality of a modification closure.

Self Assurance Checks: The Responsible Engineering Managers are responsible for conducting periodic self-assurance checks on plant modifications.

Every 3 months, the Responsible Engineering Managers are to review a sample a total of 6 plant modifications (3 at Kogan Creek and 3 at Callide) completed in the prior period in an engineering area not under their delegation.

A checklist is to be completed for each plant modification reviewed.

Procedure No: CS-AM-010
TRIM Ref No: B/D/10/7377
Reviewed: 06/20
Amended: 06/20
Review Due: 06/22



Any gaps or issues identified should be rectified at the time of the review where possible.

Once the checklist is completed and signed off, scan and store in TRIM (F/20/2296).

A summary of self-assurance check outcomes will be presented at the Plant Modification Review Committee.

Audits: Periodic Audits shall be conducted by both the Asset Management Group and the Internal Audit Department.

10 REFERENCES

Reference No	Reference Title	Author
Intranet Link	Project Management Framework	CS Energy
B/D/12/66357	Procedure - CS-GOV-10 - Determination of RPEQ Responsibility for Engineering Work	CS Energy
B/D/10/39813	Form - S1977 - Plant Modification Quality Plan and Check Sheet	CS Energy
B/D/13/15225	Form - S2122 - Operations Plant Risk Assessment Template	CS Energy
B/D/20/7497	Form - S2303 - Plant Modification Self-Assurance Checklist	CS Energy
B/D/20/9246	Charter – Plant Modification Review Committee	CS Energy
Network Link	Email Request – Modification Folder – Callide	CS Energy
Network Link	Email Request – Modification Folder – Kogan Creek	CS Energy
B/D/20/8140	TRIM Tip - Adding Notes to Modification Quality Plans	CS Energy

11 RECORDS MANAGEMENT

In order to maintain continual improvement, suitability, safety and effectiveness of the organisation, CS Energy's registered documents will be reviewed on a two-yearly basis or at intervals specified by legislative or regulatory requirements. Review of controlled documents should occur where it has been identified that there are changes in technology, legislation, standards, regulation or where experience identifies the need for alteration to the content. Registered documents should also be reviewed following an incident, change management process, modification or where directed as part of a risk assessment process. A 'review' can simply mean that it has been identified, confirmed and appropriately recorded that no changes are required and that the existing process remains the same.

CS Energy must ensure that records are retained according to accountability, legal, administrative, financial, commercial and operational requirements and expectations. In compliance with records retention and disposal, all documentation created in relation to CS Energy business must be retained in line with minimum retention periods as detailed in legal retention and disposal schedules.

12 ATTACHMENT 1 – GUIDE TO PLANT MODIFICATION

NOTE: If in Doubt Ask the Responsible Engineering Manager

