



## CS ENERGY PROCEDURE FOR PLANT MODIFICATIONS CS-AM-010

Responsible Officer: Specialist Engineer Asset Management  
 Responsible Manager: Group Manager Asset Management  
 Responsible Executive: Executive General Manager Operations

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### 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



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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.
Modification	Any change to the physical plant 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.
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



Term	Definition
Plant	Plant means Physical Asset
Replacement-in-kind	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: <ul style="list-style-type: none"><li data-bbox="563 544 1394 607">– Changes in operating parameters / setpoints <u>within</u> approved safe operating / design limits</li></ul> If a replacement is an improvement on the original then it is most likely a modification. A change in supplier may indicate a modification.
Technical Services Manager	The Manager responsible for all technical/ engineering matters on site. May also be known as the Engineering & Sciences Manager.
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

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 thus needs to be effective management of all changes to assets and asset systems.

This procedure covers the managing of changes (modifications) to assets. 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
- PAS 55-1:2008, s4.4.9 – Asset Management Requirements, Management of Change
- 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

An important element of any system for the prevention of major incidents is conducting a hazard and operability study (HAZOP) to identify hazards, operability and safety control systems problems associated with normal and transient operation of asset systems. Accordingly, CS Energy has developed this Guide as part of the system for managing asset management risks.

This procedure aims to provide guidance for personnel associated with the design and operation of a facility to appreciate the need for a HAZOP and also the general process that is followed in carrying out a HAZOP and reporting the study results. It provides a broad indication of what is required in



undertaking a HAZOP with a list of references for further information.

### 3 PURPOSE & 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:

- the financial approval for the Design Phase,
- 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, Senior Electrical Engineer or Technical Services Manager.

## 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 the site Procedure Review Process (e.g. at Callide: CMP-QM-0003)
- 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"](#).

### Plant Engineer

The Plant Engineer is responsible for the initial 'sanity check' of every Z3 notification. The Plant



Engineer's signature in Section 1.5 of the Quality Plan and Check Sheet indicates that, based on initial enquiries, there is merit in progressing the idea to the Assessment Phase of the process. If the decision is made not to progress the idea, the Plant Engineer must inform the initiator and immediately close the Z3 notification.

#### Hard Copy Required

A hard copy of the Quality Plan and Check Sheet must be retained throughout the entire modification process. At the end of each phase (Initiation, Assessment, Design, Implementation, Review and Acceptance and Closure) the appropriately signed Quality Plan and Check Sheet is to be scanned, saved in TRIM and attached to the Z200 work order.

#### Approvals in TRIM

The use of TRIM to record 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 such as:

*Section 1.5 Modification Endorsement – approved by 'your name'*

### **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.

Compliance with Section 4.7 is essential in order to facilitate SAP/Qlikview generated reports in the future.

### **4.6 Funding of Modifications**

The Plant Modification Procedure is intended to outline a process for the financial approval of the Design Phase. It does not cover financial approval to implement capital funded modification.

The following are the key points:

1. In general, most major modifications should result from periodic strategic reviews and the outcome documented in the Equipment Strategy. The proposed modification can then be recorded in the Life Cycle Plan ensuring that funding will be available in annual capital budgets..
2. All plant modifications commence as a Z3 notification,
3. All plant modification Z3 notifications must be converted to a Z200 work order (Activity code 030 or 0140) at the end of the Initiation Phase. This means that all design work is initially expensed to the Cost Centre provided in Section 2.5 of the Quality Plan and Check Sheet.
4. If it is subsequently decided that the modification will be funded by the Capex budget, a Z210 work order must be created. Costs on the Z200 that have been expensed to date will be journalled to the Capital account. The Z200 work order must remain open in order to monitor the status of the modification.
5. If the modification is to be funded by the Opex budget the Z200 work order must remain open until all work has been completed. The Technical Services Manager's signature in Section 3.3 of the Quality Plan and Check Sheet provides the approval to implement Opex funded modifications.



#### 4.7 Reporting and Monitoring

The Z200 work order template contains three standard operations (010, 020, 030). These must not be altered because they are essential for the SAP/Qlikview monitoring and reporting function. The pre-formatted Z200 standard operations are:

- 010 Design Phase
- 020 Implementation Phase
- 030 Review and Acceptance

The following table shows the link between SAP status and modification procedure status.

Description	Procedure Reference (Table –step)	Check Sheet Reference	Modification Status	Work Order status
Plant Engineer sanity check.	5.1 – 2	1.5	Sanity check completed.	Z3 Checked
Approval to Proceed to Assessment	5.1 - 4	1.6	Approved.	Z3 In process
Modification work order raised.	5.1 - 12	1.10	Initiation Phase completed.	Z200 Created
Modification assessed and approved to proceed to Design Phase	5.2 - 7	2.6	Assessment Phase completed.	Z200 Released
Design completed and approved for implementation.	5.3 - 9	3.3	Design Phase completed.	Z200 Operation 010 Final confirmed
Modification implemented, commissioned & handed over to Operations	5.4 - 8	4.3	Implementation Phase completed.	Z200 Operation 020 Final confirmed
Accepted for operations	5.5 - 5	5.1	Review and Acceptance Phase complete.	Z200 Operation 030 Final confirmed
Technical support requirements completed.	5.6 - 4	6.4	Modification closed.	TECO



## 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><b>HOLD Point:</b> modification or not? Technical &amp; support requirements identified?</p>
	2	<p>An extremely important step to assess the risks associated with the proposed change. Requires approval dependent on residual risk level.</p> <p><b>HOLD Point:</b> Risk assessment completed &amp; adequate?</p>
	3	<p>Design commences with the identification of Technical and Support Requirements and the ongoing amendments to requirements as the design progresses.</p> <p>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><b>HOLD Point:</b> Ok to Implement?</p>
	4	<p>Approved change is implemented in accordance with all relevant safety, project and work control processes.</p> <p>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 &amp; support requirements met and affected personnel are aware of the change and have received relevant training.</p> <p><b>HOLD Point:</b> 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             A[Other inputs] --&gt; B[INITIATION PROCESS]             B --&gt; C[1. Raise SAP notification]             C --&gt; D{2. Sanity Check}             D -- NO --&gt; E[3 Close and explain reason.]             D -- YES --&gt; F{4. Approval to proceed to Assessment}             F -- NO --&gt; G[5 Close and explain reason.]             F -- YES --&gt; H[6. Nominate Modification Officer]             H --&gt; I[7. Prioritisation Score]             I --&gt; J[ ]             A --&gt; H             style J fill:#ffff00,stroke:#000,stroke-width:1px             style B fill:#ffff00,stroke:#000,stroke-width:1px             style C fill:#ffff00,stroke:#000,stroke-width:1px             style D fill:#ffff00,stroke:#000,stroke-width:1px             style E fill:#ffff00,stroke:#000,stroke-width:1px             style F fill:#ffff00,stroke:#000,stroke-width:1px             style G fill:#ffff00,stroke:#000,stroke-width:1px             style H fill:#ffff00,stroke:#000,stroke-width:1px             style I fill:#ffff00,stroke:#000,stroke-width:1px             style J fill:#ffff00,stroke:#000,stroke-width:1px             style A stroke-dasharray: 5 5             </pre>		This can be anyone	Initial idea or concept, may also come from other inputs & projects
	1	<i>Modification Initiator</i>	Create a Z3 Notification (SAP transaction ZW25)
	2	<i>Plant Engineer</i>	<p>Conducts first line "sanity check". Plant Engineer must check the notification for clarity and sufficient information in order to evaluate it.</p> <p>Plant engineer may request more information, deem it corrective maintenance or decide it has insufficient benefits to implement.</p> <p>If the modification has value the Z3 Notification Status = CHECKED.</p>
	3	<i>Plant Engineer</i>	Notify / consult all stakeholders of decision to cancel modification.
	4	<i>Technical Services Manager</i>	<p>The Technical Services Manager is required to sign the 'Plant Modification Quality Plan and Check Sheet' to approve the modification proceeding to the Assessment Phase.</p> <p>Z3 Notification Status = IN PROCESS</p>
	5	<i>Technical Services Manager</i>	Notify / consult all stakeholders of decision to cancel modification.
	6	<i>Technical Services Manager</i>	Nomination of Modification Officer
7	<i>Modification officer</i>	Use the Prioritisation Template to calculate the Priority Score.	



<pre>       graph TD         Start([Start]) --&gt; D8{8. Score &gt; Justification Threshold}         D8 -- YES --&gt; B10[10. Preliminary identification of Technical &amp; Support Requirements]         D8 -- NO --&gt; B9[9. Close notification &amp; communicate reasons]         B10 --&gt; B11[11. Define Scope of Work, estimate hours]         B11 --&gt; B12[12. Convert Z3 Notification to Z200 Work Order]         B12 --&gt; B13[13. Create TRIM folder.]         B13 --&gt; End([GO TO Assessment Phase.])           </pre>	8	<i>Modification Officer</i>	<p>Enter all relevant details and attach <i>Prioritisation Score Sheet</i> to notification &amp; close out notification.</p> <p>If score is above threshold notify all involved and provide feedback on the <i>Prioritisation Score</i> being high enough to justify the modification.</p>
	9	<i>Modification Officer</i>	<p>Notify / consult all stakeholders of decision to cancel modification</p>
	10	<i>Modification Officer</i>	<p>Fill in all known information on the Quality Plan &amp; Check Sheet, Reference (Reference [13] - "<a href="#">B/D/10/39813</a>")</p>
	11	<i>Modification Officer / Planner</i>	<p><i>Modification Officer</i> plans <i>preliminary design</i> on Work Order. Enter Modification # and TRIM Folder / tag into Work Order long text</p>
	12	<i>Planner</i>	<p>Create a Z200 work order.</p> <p>Z200 Work order Status = CREATED</p>
	13	<i>Document Management Officer</i>	<p>Create TRIM folder / Tag and enter details into the Plant Modification Register.</p>



## 5.2 Assessment

Process	Step	Responsible	Comments
<pre> graph TD     Start([Assessment]) --&gt; Step1[1. Prepare Design Brief.]     Step1 --&gt; Step2[2. Conduct risk assessment]     Step2 --&gt; Step3[3. Obtain site approval for risk assessment]     Step3 --&gt; Step4{4. Residual Risk rating S/H}     Step4 -- YES --&gt; Step5[5. Escalate approval]     Step4 -- NO --&gt; Step6{6. Approval to proceed to Design Phase}     Step5 --&gt; Step6     Step6 --&gt; Step7[7. Release Work Order]     Step7 --&gt; End([GO TO Design Phase])           </pre>	1	Modification Officer	Prepare a Design 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 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	Technical Services Manager	Evaluate and approve risk assessment
	4	Modification officer / Technical Services Manager	Significant/High risks to be escalated for evaluation/approval according to CSE Risk Management guidelines.
	5	Group Manager Asset Management	GM Asset Management to evaluate / approve. If "High" EGM Operations to also evaluate / approve.
	6	Financial Representative	Financial approval is required for an appropriate cost centre for settling of Design Phase costs.
		Technical Services Manager	Based on all the information to date Technical Services Manager approves (or not) the promotion of the modification to the Design phase.
7	Modification Officer/Planner	Work order to be RELEASED indicating that this stage has been completed. Z200 Work Order Status = RELEASED	



### 5.3 Design

Process	Step	Responsible	Comments
<pre> graph TD     DESIGN([DESIGN]) --&gt; S1[1. Design development]     S1 --&gt; S2[2. Revisit Risk Assessment]     S2 --&gt; S3[3. Design evaluation / endorsement]     S3 --&gt; S4[4. Develop implementation criteria and Work Pack / ITP's]     S4 --&gt; D5{5. Design complete and approval for implementation?}     D5 -- NO --&gt; S6[6. Notify initiator, planning group, Plant Engineer and Technical Services Manager]     D5 -- YES --&gt; D7{7. Capital or Operational}     D7 -- Capex --&gt; S8[8. Implement using the Project Management Framework which has specific requirements wrt funding approval, justification and project management.]     D7 -- Opex --&gt; S9[9. Work order status OP 010 = Final Confirmed]     S6 --&gt; S9     S8 --&gt; S9     S9 --&gt; 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	Revisit risk assessment in conjunction with RPEQ's and relevant advisors in line with the final design.
	3	Modification Officer	Consult / review with Stakeholders and gain Approval from RPEQ's / Advisors. Technical Services Manager signs Quality Plan & Check Sheet where RPEQ disciplines / advisors not required.
	4	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.
	5	Technical Services Manager	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	Modification Officer and Finance Dept	Determine if the modification should be funded by the Capex or Opex budget.
	8	Project Team	Capital projects and Overhaul work is to be implemented using the Project Management Framework.
	9	Modification Officer	Operation 010 to be FINAL CONFIRMED to indicate that this phase has been completed.





### 5.4 Implementation

Process	Step	Responsible	Comments
<pre> graph TD     Start([IMPLEMENTATION]) --&gt; Step1[1. Determine how modification will be funded.]     Step1 --&gt; Step2[2. Review and approve implementation criteria / Work Pack / ITP's]     Step2 --&gt; Step3[3. Implement modification.]     Step3 --&gt; Step4[4. Commission and prepare for handover.]     Step4 --&gt; Step5[5. Finalise Quality Check Sheet]     Step5 --&gt; Step6[6. Final approve of the implementation.]     Step6 --&gt; Step7[7. Handover to Operations.]     Step7 --&gt; Step8[8. Work order status OP 020 = Final Confirmed]     Step8 --&gt; End([GO TO Review &amp; Acceptance phase])           </pre>	1	<i>Finance Dept</i>	Determine if the modification will be implemented through: <ul style="list-style-type: none"> <li>• Maintenance - Opex</li> <li>• Projects – Capex</li> <li>• Overhauls – Capex</li> </ul>
	2	<i>Plant Engineer / Technical Services Manager</i>	Review and approve the implementation criteria including work packs and ITPs.
	3	<i>Nominated Planner group and Work centre</i>	Implement Modification
	4	<i>Modification Officer (Opex) or Project Manager (Capex)</i>	Commission and prepare package for handover.
	5	<i>Modification Officer (Opex) or Project Manager (Capex)</i>	Finalise all aspects of the Quality Plan and Check Sheet
	6	<i>Modification Officer (Opex) or Project Manager (Capex)</i>	Both 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.
	7	<i>Modification Officer (Opex) or Project Manager (Capex)</i>	Formally handover to Operations including drawings and maintenance plans.
	8	<i>Project Manager/Planner</i>	Operation 020 to be FINAL CONFIRMED to indicate that this phase has been completed.



### 5.5 Review and Acceptance

Process	Step	Responsible	Comments
<pre> graph TD     Start([REVIEW &amp; ACCEPTANCE]) --&gt; Step1[1. Review Technical &amp; Support Requirements]     Step1 --&gt; Step2[2. Review implementation &amp; address stakeholder requirements]     Step2 --&gt; Decision{3. Accepted for Operation?}     Decision -- NO --&gt; Step4[4. Revisit non-conformities as necessary]     Step4 --&gt; Step1     Decision -- YES --&gt; Step5[5. Work order status OP 030 = Final Confirmed]     Step5 --&gt; End([GO TO Closure Phase])           </pre>	1	<i>Modification Officer</i>	Ensure all technical & support requirements are complete, or a plan and date is noted on form Section 3.
	2	<i>Modification Officer</i>	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>Technical Services Manager AND Plant Manager or 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	<i>Modification Officer</i>	Revisit non-conformities and correct as necessary before returning to "Accepted for Operation."
	5	<i>Modification Officer, Project Manager or Planner</i>	Operation 030 to be FINAL CONFIRMED to indicate that this phase has been completed.



## 5.6 Closure

Process	Step	Responsible	Comments
<pre> graph TD     A([Closure]) --&gt; B[1. Complete all Technical &amp; Support Requirements]     B --&gt; C[2. Review and approve]     C --&gt; D[3. Closeout]     D --&gt; E([4. Work order status = TECO])           </pre>	1	<i>Modification Officer</i>	Ensure all technical & support requirements are complete.
	2	<i>Technical Services Manager</i>	Satisfied with completion of all requirements and performance of modification
	3	<i>Project Officer</i>	Finalise work orders / update modification register / close files.  Close Operation 6 in Work Order – Closure.
	4	<i>Modification Officer</i>	Work order Status = TECO indicating that the modification has been completed and is now closed.



## 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 Technical Services 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 Technical Services 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]) --&gt; D1{1. Temporary Plant Modification?}     D1 -- NO --&gt; Dashed([2. FOLLOW FULL PLANT MODIFICATION PROCESS])     D1 -- YES --&gt; B3[3. Develop solution &amp; perform risk assessment]     B3 --&gt; D2{4. Temporary Modification Approval?}     D2 -- NO --&gt; B3     D2 -- YES --&gt; B5[5. Implement and test]     B5 --&gt; B6[6. Raise SAP notification]     B6 --&gt; 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	Technical Services 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 Technical Services Manager for review	
			Flow chart continues on the next page	



<pre> graph TD     Start([Start]) --&gt; Step8[8. Enter details into the site modification register]     Step8 --&gt; Step9{9. Modification to be made permanent?}     Step9 -- YES --&gt; Step10([10. FOLLOW FULL PLANT MODIFICATION PROCESS])     Step9 -- NO --&gt; Step11[11. Set time frame for Temporary Modification]     Step11 --&gt; Step12[12. Raise SAP notification to reverse modification in the required time frame and update the modification register]     Step12 --&gt; Step13[13. Reverse / rectify the Temporary Modification]     Step13 --&gt; Step14[14. Close out the modification in the site register]     Step14 --&gt; End([END TEMPORARY MODIFICATION])           </pre>			Flow chart continued from previous page	
	8	<i>Document Management Officer</i>	Site register saved in TRIM	
	9	<i>Technical Services Manager</i>	Is the modification to remain indefinitely?	
	10	<i>Technical Services Manager</i>	Assign modification officer to commence the plant modification process, refer to 6.1	
	11	<i>Technical Services Manager</i>		
	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>		
	14	<i>Technical Services 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 Technical Services 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
- Raising a Z3 work notification in SAP via transaction ZW25
- 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 Plant Engineer

The Plant Engineer is the person who carries out the initial “sanity check” of the proposed modification.

- Initial assessment and acceptance or rejection of the proposal
- Refer to Asset Engineers if not sure whether proposal is a modification or not
- Communicate with initiator as regards further information as necessary
- Ensure morning meetings review SAP modification notifications for content and quality; determine if it is a plant modification or not and action as appropriate (close notification, change to maintenance notification or request further information as required) and ensure reassignment of endorsed modification notifications to the site technical department

### 8.4 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
- Determine the Prioritisation Score with the assistance of the initiator and other technical advisors as required
- Close modification if the Prioritisation Score is less than 5
- 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)
- Facilitate 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 with Plant Engineer, 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.

### **8.5 Production Manager or Plant Manger**

The Production Manager or Plant 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. The site Production Managers may delegate their duties but will remain ultimately responsible where nominated in this procedure

- 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

### **8.6 Technical Services Manager**

The Technical Services Manager is the single point of accountability for the modification process on site. The site Technical Services Manager may delegate their duties to one or more of the sites lead engineers but will remain ultimately responsible where nominated in this procedure.

- Ensures that all Plant Modifications are captured and effectively managed in accordance with the Plant Modification procedure
- 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
- Evaluate and understand prior to any approval
- 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.
- Ensure adequate resources to fulfil modification procedure requirements

### 8.7 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

### 8.8 Group Manager Asset Management

- Ensure consistent approach and process to Plant Modifications across all CS Energy Sites
- Review and approve Plant Modifications which have an residual risk of significant or high
- Periodically review a the procedure and Quality Plan & Check Sheet
- Ensure awareness of modification procedure and requirements across all CS Energy division, particularly Purchasing
- 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.

**Meetings:** The technical Service Manager shall conduct regular meetings to review the progress and status of modifications and proposed modifications. Modifications are to be an agenda item in the periodic Technical Meetings between sites and the Asset Management Group.

**Work Management KPI's:** Used to monitor the planning, scheduling and delivery of relevant work orders.

**Self Assurance Checks:** The Technical Services Managers are responsible for conducting periodic self assurance checks on plant modifications under his delegation.

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



## 10 REFERENCES

Reference No	Reference Title	Author
"B/D/11/39690"	[1] Policy - Risk Management	CS Energy
"C/D/09/1349"	[2] TEMPLATE - Operation Plant Risk Assessment - 2010	Callide
"B/D/12/85976"	[3] Procedure - CS-AM-024 - HAZOP Guide	CS Energy
"B/D/11/39713"	[4] Policy - Authorities and Delegations	CS Energy
"B/D/10/17028"	[5] Procedure - CS-CSP-602 - Application of the Principles of Procurement Process and General Guidelines	CS Energy
"B/D/11/36432"	[6] Form - S1834 - Project and Capital Investment Approval <i>(Note found in ESS My Projects)</i>	CS Energy
<a href="#">Intranet Link</a>	[7] Project Management Process <i>(<a href="#">Sites &amp; Assets &gt; Projects &gt; Project Management &gt; Project management process</a>)</i>	CS Energy
"B/D/11/31607"	[8] Form - S2010 - CSPM Project Prioritisation Template	CS Energy
"B/D/11/31619"	[9] Form - S2007 - CSPM Project Statement of Work (SoW), Project Charter and Business Case Template (Project Concept)	CS Energy
"B/D/09/30368"	[10] CS-AM-004 Periodic Review of Plant Area Strategies	CS Energy
"B/D/09/30368"	[11] Procedure - CS-GOV-10 - Determination of RPEQ Responsibility for Engineering Work	CS Energy
"B/D/10/15955"	[12] Form - S2028 - Overhaul Operations Work Pack Template	CS Energy
"C/D/11/17305"	TEMPLATE - Callide Power Station Work Pack Plant Integration	Callide
"B/D/10/39813"	[13] Form - S1977 - Plant Modification Quality Plan and Check Sheet	CS Energy
"B/D/16/15703"	[14] Form - SXXX - Obsolete Material Change Approval Form	CS Energy

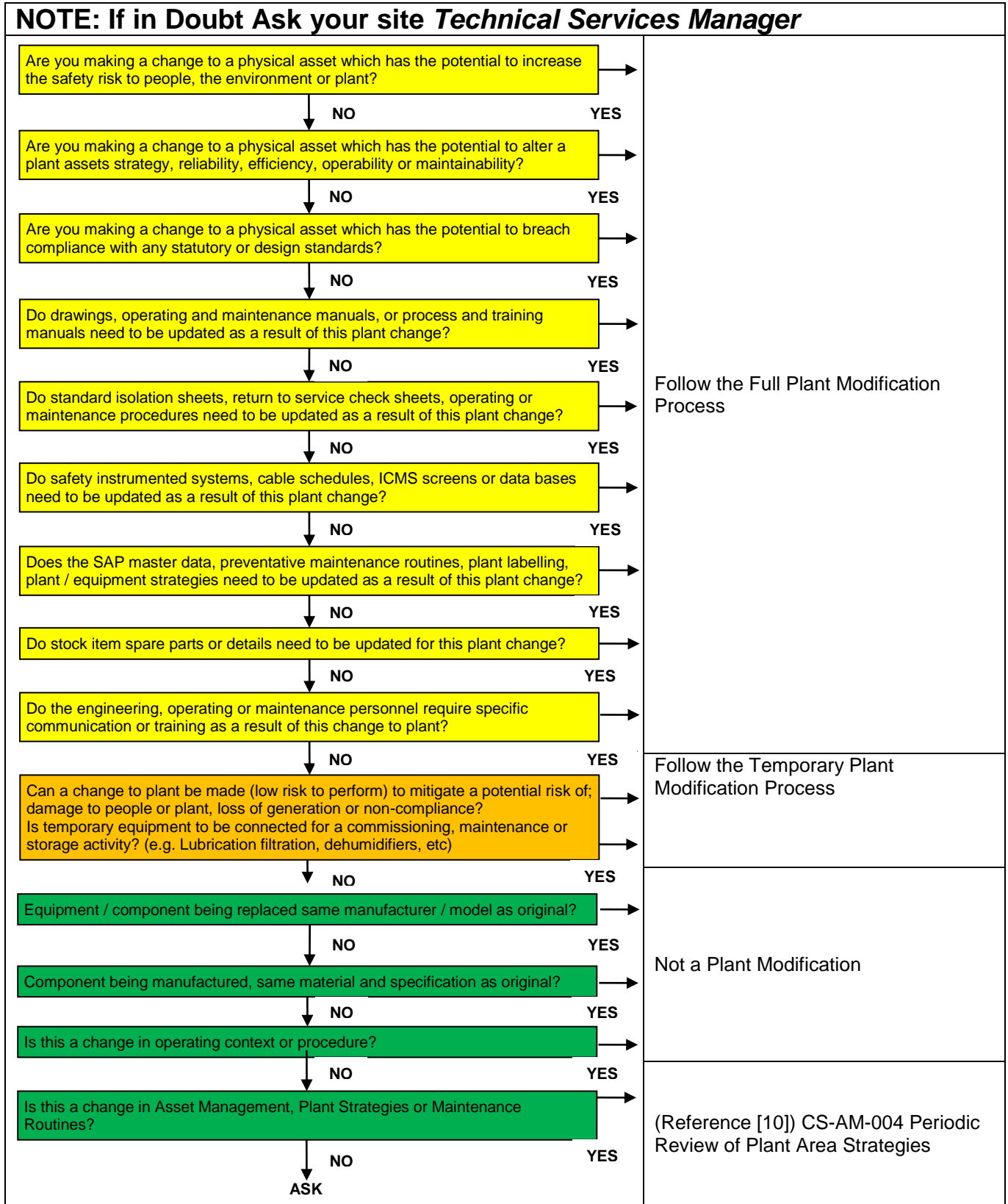
## 11 RECORDS MANAGEMENT

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.

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**





## 13 ATTACHMENT 2 – GUIDE TO MANAGEMENT OF OBSOLETE MATERIALS

### 13.1 Process

Approval for changes in stock are managed through the Stock Item Request System (ZSIR), technical approval is provided by the Site Technical Services Manager.

Justification and traceability for the decision to remove obsolete materials from the store is provided by Form S2233 [B/D/16/15703](#). All removals of stock items are to be endorsed by the relevant maintenance supervisor and approved by the asset engineer.

### 13.2 Records

A copy of the completed form is to be retained in TRIM RM. It is to be filed in the PM Change Folder for the relevant plant area. The TRIM RM reference is to be attached to the ZSIR application.