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CS ENERGY PROCEDURE

LEARNING FROM INCIDENTS
CS-IM-01

Responsible Officer: Head of Health and Safety
Responsible Manager: Head of Health and Safety
Responsible Executive: Executive General Manager Plant Operations

DOCUMENT HISTORY

Key Changes	Prepared By	Checked By	Approved By	Date
Rev 1 - Approved for Issue	D Clarke	B Andrew	B Andrew	17/12/2009
Rev 1.1 - Inclusion of section 11.5 Internal Legal Counsel Intervention	B Johnson	M Turner	M Turner	16/07/2010
Rev 2 - Formatting upgrade, Appendix 5 updated, Section 7 Communication updated	D Clarke	A Brown	A Brown	17/11/2011
Rev 2.1 - Updated requirement to notify 30 days after cat.3&4 incidents	D Clarke	A Brown	A Brown	04/06/2012
Rev 2.2 - Updated Appendix 5 to require line management to lead incident investigations. Section 12 adjusted to suit.	D Clarke	J Judge	J Judge	31/10/2012
Rev 2.3 – Updated First Aid and Medical treatment definitions	D Clarke	M Kelly	K Ussher	13/05/2013
Rev 3 – Complete revision (including RCA for Ops)	S Price (AusSafe)	D Clarke	S Faulkner	19/06/2017
Rev 4 – Clarified the interpretation of the WHSQ Serious Injury definition in the incident category matrix.	D Clarke	B Pike	S Faulkner	06/09/2017
Rev 5 – Inclusion of Process Safety Event (PSE) Management	Y Chok	L Kayess D Clark B Pike A Cashin	S Faulkner	23/10/2018
Rev 6 – Periodic update including housekeeping and Incident Management and Resolution Review (Audit) recommendations.	M Quintero Duran	A Cashin T Hoare T Vandenberg W Underhill	N Moran	04/02/2021

CONTENTS

1 PURPOSE

This procedure details the processes required to effectively report, notify, investigate and learn from incidents.

The purpose of this procedure is to ensure that incidents are met with an immediate and appropriate response and where required notified, reported and investigated effectively.

This procedure gives details of the steps required to effectively manage incidents.

2 SCOPE

This procedure applies throughout CS Energy, all its sites and activities under CS Energy's control. It applies to all CS Energy employees and contractors, including visitors to CS Energy workplaces.

This procedure applies to all health, safety, environmental, operational, security and process safety incidents.

3 INCIDENT TYPES

CS Energy has five different incident types. Refer to Attachment 1 – Incident Category Matrix for further information.

- Health and Safety;
- Environment;
- Operations;
- Security (& ICT); and
- Process Safety.

4 RESPONSIBILITIES AND ACCOUNTABILITIES

Roles and accountabilities of each step in the incident management process are outlined in Attachment 2 – Incident Management Process.

5 ACTIONS

5.1 All Employees and Contractors are required to report all incidents and injuries

Personnel who observe or are involved in an incident shall report details of the incident immediately to their manager.

5.2 Deliver immediate post incident response

To ensure that incidents are responded to promptly, any damaging impact is contained, and an investigation can be subsequently conducted, the response from the Supervisor and other site personnel shall be immediate and effective and ensure preservation of the scene / area.

Immediately following an incident at CS Energy, the worker and/or responsible supervisor shall:

- take any action necessary to prevent further harm e.g. isolating plant, turning ignition sources off, minimising chemical spills, etc;
- initiate emergency response, if required, in accordance with the site Emergency Response Plan;

- secure the incident scene; and
- notify the required roles as per Section 5.6.1 - Internal Notification.

The worker(s) and supervisor shall ensure the incident scene is preserved until the investigation team and any relevant statutory authorities have given approval to release the scene.

5.2.1 Respond to injury

The supervisor, in consultation with the site Health and Safety team and Emergency Response Team (ERT), is responsible for ensuring:

- that all work-related injuries or illnesses are promptly assessed by a qualified First Aider in accordance with the site Emergency Response Plan (ERP);
- depending on the assessment, where applicable, arrangements are made to transport injured workers to a certified medical practitioner or hospital;
- that the treating doctor or hospital receives a letter setting out the availability of CS Energy's Rehabilitation and Return to Work procedures and suitable duties programs; and
- arrangements are in place to inform next of kin and family as required.

5.2.2 Consider / Establish Legal Professional Privilege

Legal Professional Privilege (Privilege) attaches to certain confidential, oral and written communications between CS Energy and its legal advisers (including In House Legal) conducted for the dominant purpose of providing legal advice on an incident or preparing for anticipated legal proceedings arising from an incident. The privilege can attach to investigations and reports commissioned for those purposes.

Privilege supports CS Energy's comprehensive consideration and legal / operational response to an incident, while protecting aspects of that analysis and response from compulsory disclosure. However, Privilege will be lost where confidentiality is not maintained, or privileged information is voluntarily disclosed.

Privilege does not ordinarily attach to investigations and incident reports prepared in compliance with a statutory reporting obligation. Accordingly, care should be taken when complying with statutory reporting obligations not to waive CS Energy's rights by disclosing information that is properly protected by Privilege.

Where an incident could give rise to a potential legal exposure for CS Energy under either statute or common law, the Head of Health and Safety/ Environment/ Operations should immediately contact In House Legal to determine whether Privilege may apply to aspects of the incident investigation and response. A legal exposure could arise from a range of incidents, including:

- Incidents involving single or multiple fatalities, or significant injuries;
- Breach of material compliance obligations;
- Reportable incidents (to external authorities); and
- Incidents where the community is or may be affected.

Where legal advice is required, or legal proceedings are anticipated in connection with an incident, consideration should be given to the structure and scope of investigations and reports - to maintain appropriate segmentation of Privileged and non-privileged material. This could include the preparation of separate factual reports, and analysis and recommendation reports.

If an incident is to be investigated under Privilege, incident information should not be added to SAP without In House Legal guidance or approval.

Where Privilege applies, internal and external communications should be restricted and clearly marked to preserve confidentiality, and not circulated without approval from In House Legal.

The potential application of Privilege should be considered as an investigation progresses.

5.3 Undertake preliminary investigation including data collection and analysis

The supervisor (or delegate) shall attend the scene and arrange for the preliminary gathering of all relevant information, for example:

- collect photographs already taken by others and take additional ones;
- gather documents or other artefacts in conjunction with that work e.g. PTW, JSEA, KKS, plant drawings, training, etc;
- take measurements or re-enact the event (if suitable); and
- take statements using S2034 Witness Statement form or S2241 Record of Interview form (for further information on the interview process please refer to Section 5.9 of this Procedure).

The supervisor shall analyse information captured to support classification, notification, investigation and other activities required by this Procedure.

- *Data collection and analysis may be ongoing and continue concurrently with other activities. S1937 ICAM PEEPO tool can provide a useful checklist of data sources to consider during this phase of investigation.*

- *If an incident is reportable as Process Safety Event (either as the only incident type or as an additional impact to other incident types) and involves Loss of Primary Containment (LOPC), the following information is to be gathered to support categorisation of the Process Safety Event:*

- Operating parameters (as applicable) at the time of incident e.g. flow, pressure, temperature, level and volume;
- Release duration – from the time of release is identified up to the time of release is isolated or stopped;
- Material/s released during incident;
- Estimated volume or mass of material/s released during incident;
- Estimated release hole size (as applicable); and
- Relevant drawings that support the report (e.g. P&IDs, plant layout, GA, etc).

The Station Performance Engineer shall verify the above information before submitting for categorisation of Process Safety Event.

5.4 Categorise incident and determine appropriate investigation actions

The Site Manager (or delegate), in consultation with the relevant Site Functional Coordinator, shall categorise the incident based on the **actual outcome** and **maximum reasonable consequence**[1] in accordance with Incident Category Matrix – Attachment 1. The Head of Health and Safety, Head of Environment, EGM Operations and EGM Asset Management may be consulted (and the incident re-

[1] The maximum reasonable consequence is the largest realistic or credible consequence from an event, considering the quality of controls in place for that event (if any) and credible failure (energy release) of these at the time of the event.

categorised) as required to determine incident categorisation. Both **actual outcome** and **maximum reasonable consequence** is to be included in red/green banners and the incident report.

Following incident categorisation, the follow is to be determined and actioned:

- Internal and external notification requirements (see section 5.6.2);
- The level of investigation required (see section 5.8); and
- The investigation leader and investigation team, if required.

5.5 Categorisation of Process Safety incidents

CS Energy takes an integrated and collaborative approach to manage Safety. This is through the application of principles of hazard identification, risk assessment and control for both Process Safety and Health and Safety.

The categorisation of Process Safety Events (PSE) at CS Energy is based on a Tier system developed by the American Petroleum institute (API)[2] and used world-wide as a guide for Process Safety performance indicators. Figure 1 illustrates the relationship between these Tiers and CS Energy's incident categories for Health and Safety.

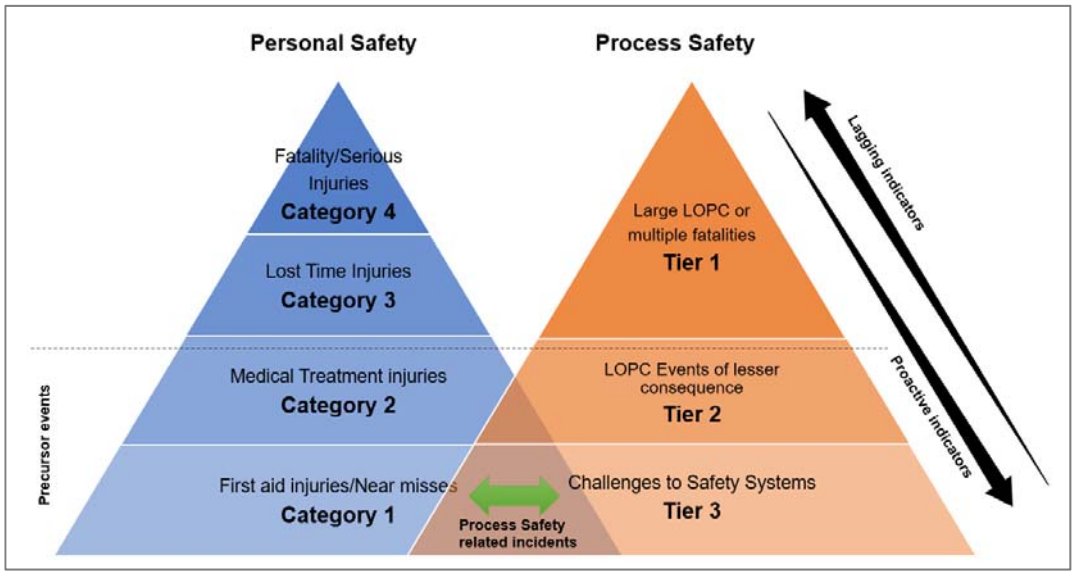


Figure 1. Process Safety Tiers and CS Energy's Incident Categories

PSE at CS Energy are related to one of the identified Major accident hazards (MAHs):

- High energy electricity;
- High energy/pressure fluids;
- Rotating plant;
- Explosive/flammable substances;
- Civil structures; and
- Toxic/ corrosive chemicals.

[2] The ANSI/API Recommended Practice 754 have been adapted to align thresholds and materials with CS Energy's operations and incident categorisation matrix.

5.5.1 Lagging indicators

Analysis of Tier 1 and 2 Process safety events through incident investigations provide lessons to prevent recurrence. To note, this analysis is retrospective and based upon relatively infrequent events. Incidents classified as Tier 1 PSE (Category 3 and 4 incidents) are to have actual or potential to cause multiple fatalities or major loss of containment.

5.5.2 Proactive indicators

The analysis of Tier 3 – Challenges to Safety systems events provide an opportunity to identify and correct weaknesses within the barrier system.

CS Energy tracks and reports on “Process Safety related events” and identifies challenges to or weaknesses in control barriers. Process Safety related events are incidents that although may not be classified as PSE, have process safety related causes or consequences. For example, a release of ash slurry due to a slurry line joint failure can be classified as an Environmental incident due to the potential consequences (e.g. contamination into Creek) of slurry released outside containment bund. However, as this incident is related to a Loss of Primary Containment (LOPC), it would also be classified as a Process Safety related event and weak / failed control barriers tracked through the incident management system.

5.6 Incident notification

All external and internal notifications shall be completed by the responsible person within the required timeframes and using the approved notification methods. Environmental incidents that are required to be reported to the regulator must be notified as soon as possible, but within the regulatory or approval requirements of becoming aware of the incident. Callide C incidents are to be reported to the CS Energy Joint Venture (JV) representative as soon as practicable to ensure applicable parties are promptly informed.

5.6.1 Internal notifications

There are various methods of communicating incidents within CS Energy, as outlined in Table 1.

Incident Type	Communication Activity	Format	Timeframe	Template	Report to	Internal Stakeholders to be Consulted	Responsible Person
All incidents	Initial notification	Verbal	As soon as practicable	N/A	Up through line management chain to the Site Manager	Health & Safety/ Environment/ Process Safety Team, Executive Leadership Team	Supervisor/ Investigation leader
	Incident record	SAP entry	Before end of shift	S0024	Line Manager	Functional Site Business Partner (H&S, OPS, ENV, PSE)	Supervisor/ Investigation leader
Medical Treatment or Category 3 & 4 incidents	Incident summary notification (initial)	Email	48 hours	S1819 (1) (Red banner)	All CS Energy personnel	Site Manager, Legal (if incident is under LPP)	Site Business Partners, Head of department
	Safety Alert (to notify business when there are potential hazards arising from incident)	Email	1-30 days	Safety Alert B/D/10/12649 (Template) Email Template	All CS Energy personnel	Site Manager, Legal (if incident is under LPP)	Head of department
Category 3 & 4 Incidents	Investigation report	Report saved in TRIM	21 days – report drafted for review 30 days – to finalise incident	S1937 RCA S2189 (1)	From Investigation Lead to nominated ELT member	Site Leadership Team, Executive Leadership Team, Legal (if incident is under LPP)	Site Manager
	Incident investigation outcomes (final notification)	Email	30 days	S1819 (3) (Green banner)	All CS Energy personnel	Legal (if incident is under LPP)	Site Business Partners, Head of department

Table 1: Internal notification requirements

5.6.2 External notifications

The Head of Health and Safety/ Environment is responsible for notifying statutory authorities as outlined in Table 2 and consulting In House Legal (if the incident gives rise to a potential legal exposure) prior to external notification as required to manage risk.

Incident Type	Communication Type	Communication Format	Time Frame	Template	External Stakeholders	Internal Stakeholders	Responsible Person
Notifiable Incident (Work Health and Safety Act 2011)	Notification	Verbal Ph: 1300 369 915	As soon as practicable	Not Applicable	- Department of Workplace Health and Safety QLD	Site Manager, EGM Ops	Head of Health, and Safety (HoHS)
		Written	48 Hours	Online Form 3 from WHS Website	- Department of Workplace, Health and Safety QLD	Site Manager, EGM Ops	Head of Health and Safety
First Aid, or injury/illness Event (as per s16 of Coal Mining Safety Health Regulation (CMSHA) 1999)	Notification	Written	30 Days	Online Monthly Incident Summary Form	- Mines Inspectorate	Site Manager Mine Manager	Nominated SSE for the mine
Notifiable Incident Serious Accident, High Potential Incident or a death (CMSHA s198 & 201)	Notification	Verbal	As soon as practicable	***Form 1A***	- Mines Inspectorate - Industry Health & Safety Representative - Site Safety Health Representatives	Site Manager, HoHS, EGM OPS	Nominated SSE for the mine
		Written	48 hours (24 hrs for a fatality)	***Form 1A***	- Mines Inspectorate - Industry Health & Safety Representative	Site Manager, HoHS, EGM OPS	Nominated SSE for the mine
	Report	Written (When required CMSHR Schedule 2 Part 2)	30 Days	Online Form 5A	- Mines Inspectorate	Site Manager, HoHS, EGM OPS	Nominated SSE for the mine
Material Environmental Incident and **Serious Environmental Incident**	Notification	Verbal	As soon as practicable (within EA specified timeframe)	Not applicable	- Environment Administering Authority – Queensland Government	Site Manager, EGM OPS	Head of Environment
		Written	48 Hours (within EA specified timeframe)	Not Applicable	- Environment Administering Authority – Queensland Government	Site Manager, EGM OPS	Head of Environment
	Report (If required)	Written	14Days (within EA specified timeframe)	Not Applicable	- Environment Administering Authority – Queensland Government	Site Manager, EGM OPS	Head of Environment
Serious Electrical Incident, or Dangerous Electrical Event	Notification	Written	24 hours	In addition to reporting under the WHSA, Online Form 3	- Electrical Inspectorate	Site Manager EGM OPS	Head of Health, and Safety
Radiation incident or **dangerous event** (Radiation Safety Act 1999)	Notification	Verbal or in writing	Immediately	Not applicable	- Chief Executive, Queensland Health	Radiation Safety Officer (RSO), Site Manager, HoHS, EGM OPS	CS Energy Radiation Possession License nominee
	Confirmation	Only if initial notification provided verbally	Within 7 days	Not applicable	- Chief Executive, Queensland Health	Radiation Safety Officer (RSO), Site Manager, HoHS, EGM OPS	CS Energy Radiation Possession License nominee
Prescribed Incident (Petroleum and Gas (Production and Safety) Act and Regulation 2004)	Notification	Verbal (1300 910 933)	Immediately	Not applicable	- Petroleum and Gas Inspectorate	Site Manager, EGM OPS	Head of Health and Safety
	Confirmation	Written (pgihotline@dnrm.qld.gov.au)	Within 5 days	Not applicable	- Petroleum and Gas Inspectorate	Site Manager, EGM OPS	Head of Health and Safety

Table 2: External notification requirements

For any incident that requires reporting to a statutory authority, the following shall be done:

- Liaise with In House Legal to provide a report to the statutory authority within the prescribed time period, particularly if aspects of the incident investigation and response could be subject to Legal Professional Privilege;
- Upload a copy of the report to the relevant incident folder in TRIM and/or SAP; If the incident was reported to WHSQ save a copy in F/17/4403;

- If applicable, liaise with In House Legal to distribute and communicate the report to internal stakeholders as per Table 2 above; and
- Keep a record of all verbal and written communications including time, date, who and what was communicated (information provided by verbal communication should be confirmed in writing to prevent misunderstanding).

- *Information provided during notification shall be factual (e.g., who, what, where, when) and should not include opinion or assumption (e.g. why, cause).*

5.7 Develop incident notification report and record incident data in SAP

Functional Site Coordinators (H&S, OPS, ENV, PSE) are responsible for reviewing and approving all incidents entered into SAP. Refer to Attachment 3 - SAP IMD Process Flow. All information entered into SAP shall be factual and contain no admission of liability.

The EGM Asset Management and EGM Operations shall assign competent persons to collate and coordinate incident reporting for the specific incident types.

All personnel reporting and recording incident data shall have received appropriate training, as outlined in the site training matrix.

- *When creating an SAP record, restrict the use of the names of the people involved in the description fields. Use the 'People Involved' tab to record this information.*

5.8 Incident investigations

CS Energy has three core incident investigation methodologies – refer to Table 3 for the level of investigation required for each incident:

1. 5 Why – A simple process to highlight probable causes of an incident.
2. ICAM – Primary investigation method to be used for significant Health and Safety, Environmental and Security incidents. This is the preferred method where the incident involves people interacting with plant or process.
3. RCA – Primary investigation method to be used for significant Operations incidents. This is the preferred method to identify plant and equipment failure root causes.

More than one incident investigation methodology can be used for each incident. For example, ICAM can be used as the main investigation methodology for any incident at CS Energy when the incident involves organisational factors or people interacting with Plant or Processes. This investigation can also be complemented with an RCA if the incident has a technical component.

- *When process safety has been reported as an additional impact to other incident types (e.g. OPS, H&S or ENV) and categorised as Tier 1 or Tier 2 PSE, the Head of Health and Safety will discuss and agree with relevant Site Functional Coordinators or Site Manager on the appropriate incident investigation methodology for such incidents. The Head of Engineering is to assign a delegate to be included in the investigation of Category 3 and 4 Process Safety incidents (Tier 1 incidents).*

The Site Manager is responsible to plan all activities required to execute an investigation, considering scope and timeframe, resources and logistics.

For incidents and injuries that occur with contractors, the Site Manager may request the contractor involved to investigate. The investigation method, team and template report[3] is to be agreed prior to commencing the investigation[4]. It is permissible to involve a CS Energy representative in these instances.

CS Energy shall determine the causation of all incidents and near misses. Investigations shall be at a depth commensurate with the actual and potential consequences of the incident.

For all incidents requiring investigation, incident investigation shall commence no later than 48 hours (but as soon as practicable) of the incident occurrence. Refer to Attachment 2 – Incident Management Process Flow for target investigation completion timeframes. In circumstances where an incident investigation cannot be completed within these timeframes, an extension of time may be requested. The Head of Health and Safety/ Environment shall be consulted, and justification provided in SAP, along with details of the proposed date for completion.

Incident investigations shall be managed in accordance with CS-IM-04 Incident Investigation Standard and CS-AM-017 Root Cause Analysis (RCA) Procedure.

Performance management arising from incidents is to be managed external to incident investigation with involvement by the Human Resources team.

Incident Category (Actual or Potential)	Investigation Type	Responsible	Accountable	Investigation Leader
C1	5 Why or SAP record S0024	Investigation Lead	Site Manager	Lead: Line Leader
C2	5 Why S0024	Investigation Lead	Site Manager	Lead: Line Leader
C3	ICAM[5] S1937 RCA S2189 (1)	Investigation Lead	Site Manager	Lead: Nominated by Site Manager[6]
C4	ICAM S1937 RCA S2189 (1)	Independent Investigator	Site Manager or Legal Counsel if the incident is an actual category 4	Lead: Nominated by Site Manager or Legal Counsel (if applicable)

Table 3 – Incident investigation level

5.8.1 Incident investigation capability

CS Energy shall ensure that there are adequate personnel trained and competent to lead an incident investigation. The incident investigation team shall include one person competent in incident investigation. If an ICAM or RCA is required, the data analysis at a minimum shall be facilitated by

[3] In the interests of progressing the investigation and its conclusion, CS Energy Management may choose to prepare a cover note containing independent observations to the external investigation report.

[4] The agreed investigation process is to be equal or better than CS Energy's process.

[5] Alternative ICAM templates may be used to document the investigation as approved by the Site Manager.

[6] The investigation of incidents involving external contractors may be led by representatives of that external company. Such occasions are to be approved by the Site Manager. Appointment of an investigation team with members from different companies may also be appropriate. There is no requirement for Contractors leading the investigation to use the CS Energy template. Contractors can use their own template and CS Energy is to provide feedback and document comments to the investigation report when completed.

someone with the appropriate ICAM or RCA training. The investigation team numbers shall be adequate to support the outcomes required to be achieved.

CS Energy shall consult In House Legal before engaging any third party as a member of an investigation team if the incident is being investigated under Legal Professional Privilege or it is an actual category 4 incident.

5.8.2 Retain investigation reports in TRIM

Functional Site Coordinators are responsible for recording incident investigation reports for discretionary category 2 and all category 3 and 4 incidents in the following TRIM BCS locations:

- Use - HEALTH SAFETY AND SECURITY MANAGEMENT >> INCIDENT MANAGEMENT - for health and safety or security related incidents
- Use - ENVIRONMENTAL MANAGEMENT >> INCIDENT MANAGEMENT - for environmental related incidents
- Use - GENERATION MAINTENANCE AND OPERATION >> INCIDENT MANAGEMENT - for plant operational related incidents
- Use – GENERATION MAINTENANCE AND OPERATION >> INCIDENT MANAGEMENT (PSE) – for Process Safety Events (PSEs).

Category 1 incidents are to be updated and closed out directly in SAP.

5.9 Interview process

An injured person, person who is involved in an incident or a witness to the incident should be interviewed as soon as practicable following the incident. This can be done by the person's supervisor, the site Health and Safety/ Environment team or assigned investigation team member.

The General Principles of Witness Interviewing includes:

- Timeliness – conduct interview as soon as possible after the incident. Delays in conducting interviews can affect the quality and quantity of information collected as memories deteriorate or are contaminated by outside influences.
- Preparation – preparation is essential to the success of the interview. Take the time to gather background information on the incident prior to the interview. Give some considered thought to information that is required, how best to structure the interview, who will be involved and the background of the witnesses.
- Location/setting – ensure witnesses are interviewed in a private setting with no distractions. It may be beneficial to interview witnesses at the incident site to allow the environmental context to aid recall. Use diagrams to assist the witness to recall the details of the incident.
- Record of interview – the record of the witness's statement should accurately and completely reflect all information obtained. Keep a set of notes as detailed as possible, using CS Energy templates, e.g. the Record of Interview form (S2241 - B/D/16/28439). The witness record should be verified by the witness after the interview by having them read the document.
- Witness Statement – if the worker is offsite or not available to be interviewed, the witness may want to write a documented description of events using the S2034 Witness Statement Form as a guide to gather detailed information on the incident.
- Explanation of the interview process – to avoid intimidation and enhance cooperation, introduce yourself and explain the aim of the interview prior to asking questions. Develop an early rapport with witnesses reassuring the witness.

- Open questions and active listening – ask open questions where possible and be attentive to ensure your body language reflects your interest. Avoid interrupting the witness. Create a calm and trustworthy setting.
- Communication – use everyday language. Try to avoid technical terms, jargon and acronyms to avoid misunderstanding or confusion.
- Understanding and empathy – remain conscious of the witness' emotional state e.g. defensive, anxious, stressed, confused, angry or distressed. If the witness would feel more conformable with a friend or representative present, try to arrange this,
- Ending the interview – always end the interview on a positive note and thank the witness for their time and cooperation. Ensure they have your contact details to pass on any information they may recall after the interview has finished.
- Follow up – after an interview, many witnesses spend time thinking about the event again, the information they related during an interview and quite frequently will recall additional details they did not remember during the interview. It may be worth following up after the initial interview.

5.10 Repeat Incidents

For incidents defined as repeat incidents (refer to definition) the following is to occur:

- The classification is to be agreed by EGM Operations and Head of Health and Safety;
- Initially Repeat Incidents are to be monitored by the H&S team to establish the merit of the measure as a value add indicator; and
- The Incident Challenge is to have an increased focus on higher order controls.

5.11 Significant Incident Challenge and Executive Approval

The site/ functional GM and respective EGM are accountable to organise and facilitate an Incident Challenge for all category 3 and 4 incident investigations, prior to presentation at Central Health, Safety and Environment (CHSE) committee meetings.

The purpose of Significant Incident Challenge is to ensure appropriate organisation learnings by:

- Reviewing the investigation to ensure it supports the recommendations for corrective actions and excludes any issues not relevant to the investigation;
- Determining if identified deficiencies are isolated to a specific site or are part of a CS Energy wide trend;
- Ensuring the proposed recommendations are feasible, realistic and sufficient to remedy the deficiency;
- Determining agreed incident actions are appropriately resourced; and
- Determining if there are any items that require follow-up, such as corrective actions that management may have taken that will conflict with formal recommendations.

Members of the Significant Incident Challenge Team should consist of the following people, this may vary depending on the type and location of the incident:

- Executive team member(s);
- Site General Manager(s);
- Head of Health & Safety/ Environment;
- Site H&S/ Environment Business Partner and Corporate Specialists;
- Investigation Leader; and
- EA and/ or Site EAs.

Significant incident investigations shall be subsequently presented at the next scheduled CHSE committee meeting for Executive / CEO challenge and approval.

Attendance, participation and challenge of the investigation information presented during a Significant Incident Challenge or CHSE committee meeting is equivalent to investigation report sign off by the accountable Executive when present. Details are to be included as a TRIM note in the investigation report.

Following Significant Incident Challenge or CHSE committee meeting, the Head of Department, (or delegate) is responsible for:

- Ensuring minutes are taken during the challenge session and saving them in the incident investigation folder in TRIM;
- Ensuring the draft investigation report is updated in a timely manner;
- Confirming report finalisation with responsible Managers; and
- Distributing findings as appropriate.

5.11.1 Updating incident records

Following an incident investigation, the Investigation Lead (or delegate) shall update the incident record in SAP and the investigation report. The responsible manager shall approve the updated SAP record.

5.12 Develop corrective action plan

The Investigation Team is responsible for proposing corrective actions[7] and making recommendations (optional/ to be considered) that will prevent recurrence, reduce risk and improve safety/ environment and operations.

When developing recommendations and corrective actions, the investigation team shall review and address each contributing factor and:

- Organise conclusions sequentially preferably in chronological order or in logical steps (e.g. equipment, procedures, people, organisation);
- Recommend improvements to limit the consequences of the contributing factor, so that the residual risk is reduced so far as is reasonably practicable;

[7] Actions are to be SMART actions:
- *Specific* – target a specific area for improvement;
- *Measurable* – quantify or at least suggest an indicator of progress;
- *Assignable* – specify who will do it;
- *Realistic* – state what results can realistically be achieved, given available resources; and
- *Time-related* – specify when the result(s) can be achieved.

- Base conclusions on the facts and results from subsequent analysis of the facts, considering the hierarchy of controls;
- Avoid too many or trivial recommendations/corrective actions;
- Before the establishment of long-term actions after an incident, make interim recommendations for immediate corrective actions (these are short term measures that will mitigate current risks); and
- When determining corrective actions and recommendations, consider the effectiveness of the control and any new hazards it may introduce (considering probability, severity, cost and impact).

Corrective actions shall address the causes of the incident and be prioritised appropriately (there may be more than one corrective action for each cause).

Line Managers are responsible for ensuring that actions are entered into SAP.

The Health and Safety team (H&S, PSE, SEC incidents) and respective functional groups (OPS, ENV incidents), in conjunction with the Site Manager, are responsible for performing the governance function on the effectiveness of incident actions as required.

The Site Manager is responsible for allocating resources required to implement corrective actions arising from incident investigations. Action owners are to agree to the timeframes for actions to be completed. An assessment of priority may be required with direct Supervisor and Site Leadership Team. Action dates are not to be pushed out unless approved by the Site Manager or H&S/ENV team.

5.13 Communicating investigation lessons learnt

The Head of Health and Safety/ Environment shall facilitate the issue of appropriate communication to share lessons learnt following a HSE incident or Process Safety Event investigation. Lessons learnt may be communicated via ‘green banner’ emails, site noticeboards, Toolbox Talks and Safety Shares.

If an incident has been investigated under Legal Professional Privilege, CS Energy shall not release any information related to an incident or investigation to an external party without authorisation by Legal Counsel.

5.14 Incident close out and completion

An incident can be completed in SAP by the Investigation Leader or Functional Coordinator when the following has occurred;

- Significant incident challenge completed (if required);
- Feedback and comments have been included in the incident investigation report;
- Investigation finalised; and
- Actions are raised in SAP from investigation recommendations.

- *Site Leadership Team shall track actions through to completion in SAP. When all actions are completed and verified, the incident can then be closed in SAP.*

5.15 Learning from safety initiatives/projects

CS Energy recognises the skills, knowledge and experience individuals and teams have and how they can contribute to making changes to reduce hazards and improve systems and processes. When individual/ team actions or projects contribute to a safety improvement, the key learnings and highlights can be shared across the business in the form of a blue banner. Communicating safety improvements at CS Energy support achieving our goal of developing a constructive culture and encouraging behaviours that reflect CS Energy's values. Projects or actions can be linked to a minor capital expenditure, a simple operational expenditure or administrative in nature.

5.16 Operations Management Team

For Operational incidents, the Operations Management Team is responsible for:

- Reviewing incident and investigation progress;
- Analysing data and trends; and
- Confirming corrective action close out.

5.17 Process Safety Team

For Process Safety Events, the Process Safety Team is responsible for:

- Reviewing event and investigation progress;
- Analysing data and trends; and
- Confirming corrective action close out.

5.18 Verify incident management process

The Head of Health and Safety/ Environment (or delegate) is responsible for carrying out an integrity check to verify the incident management process has been followed and all attachments are in order. Details of this verification process are contained within the annual H&S assurance plan. As a minimum the H&S assurance plan is to include action verification audits for category 3 and 4 incidents.

Where issues are identified, they will be raised with the responsible manager who is accountable for taking the appropriate actions to ensure compliance with the process.

6 DEFINITIONS

Term	Definition
Barriers	A functional grouping of safeguards, such as primary containment, process equipment, engineered systems, operational procedures, management system elements, or worker capabilities designed to prevent LOPC and other types of asset integrity or process safety events, and mitigate any potential consequences of such events. A set of barriers is also often referred to as a risk control system.
Destructive device	A flare scrubber, incinerator, quench drum, or other similar device used to mitigate the potential consequences of a PRD discharge.
Direct cost	Cost of repairs or replacement, clean-up, material disposal, environmental remediation and emergency response. Direct cost does not include indirect costs, such as business opportunity, business interruption and feedstock / production losses, loss of profits due to equipment outages, costs of obtaining or operating temporary facilities, or costs of obtaining replacement products to meet customer demand. Direct cost does not include the cost of the failed component leading to LOPC, if the component is not further damaged by the fire or explosion.
Explosion	A release of energy resulting from a LOPC that causes a pressure discontinuity or blast wave (e.g. detonations, deflagrations, and rapid release or high pressure caused by rupture of equipment or piping).
Fault or function compromised (corresponding to Safety Critical Equipment or Process Safety Protecting device)	Refers to Safety Critical Equipment or Process Safety Protecting device: • Failing to operate on demand • Found outside expected operating condition / range (e.g. found faulty on inspection or test)
Fire	Any combustion resulting from an LOPC, regardless of the presence of flame. This includes smouldering, charring, smoking, singeing, scorching, carbonizing, or the evidence that any of these have occurred.
Hazard	A hazard is anything (condition or situation) that has the potential to do harm and / or cause damage. Hazards may be present in processing equipment (e.g. flammable or toxic chemicals in a pipe or a vessel, stored electrical or mechanical energy) or in the occupational environment (e.g. fuel in a road vehicle, the potential and kinetic energy involved in helicopter travel or bullying in the workplace).
Incident	An unplanned event which causes injury, damage to plant or the environment, loss of production, theft, fraud, breach of the Code of Conduct or public interest.
Near Miss Incident	Any unplanned incident that occurs at the workplace or while undertaking CS Energy work, which, although not resulting in: a workplace injury, illness or damage to environment or plant, or loss of generation – had the potential to do so.
Incident Investigation	A systematic process of gathering and analysing information about an incident for the purpose of identifying causes and making recommendations to prevent recurrence.
Legal Professional Privilege	Legal Professional Privilege is a privilege attainable by a party if the party can establish that the dominant purpose for obtaining the advice or undertaking the investigation was in preparation for legal proceedings, whether existing or contemplated.
Loss of primary containment (LOPC)	An unplanned or uncontrolled release of any material from primary containment, including non-toxic and non-flammable materials (e.g. steam, hot condensate, nitrogen, compressed CO_2 or compressed air). LOPC is a type of event. An unplanned or uncontrolled release is a LOPC irrespective of whether the material is released into the environment, or into secondary containment, or into other primary containment not intended to contain the material released under normal operating conditions.

Term	Definition
Non-spurious activation (corresponding to Process Safety Protecting device)	Non-spurious activation of a Process Safety Protecting Device refers to: • Operator intervention upon a safety-critical process alarm; or • Instrumented trip system activation; or • Relief valve lifting
Officially declared	A declaration by a registered community official (e.g. fire, police, civil defence, emergency management) or delegate (e.g. Company official) authorised to order community action (e.g. shelter-in-place, evacuation).
Pressure Relief Device (PRD)	A device designed to open and relieve excess pressure (e.g. safety valve, thermal relief, rupture disk, rupture pin, deflagration vent, pressure / vacuum vents).
Primary Containment	A tank, vessel, pipe, truck, rail car, or other equipment designed to keep a material within it, typically for purposes of storage, separation, processing or transfer of gases or liquids. Note that primary containment for a specific material may comprise a vessel or pipe that is inside another vessel that is also designed as primary containment for a different material; for example, a heating tube is a primary containment for fuel gas or fuel oil, even though the tube may be inside a firebox which is in turn within an oil-water separator.
Process	Facilities used in the electric power generation operations. This includes process equipment (e.g. vessels, piping, valves, boilers, generators, pumps, compressors, exchangers) and includes ancillary support areas (e.g. boiler houses and waste water treatment plants), and distribution cable under control of CS Energy.
Process Safety Event (PSE)	A Loss of Primary Containment (LOPC) from a process that meets the Tier 1 or Tier 2 PSE definitions. Also includes other events that meets Tier 3 definitions.
Process Safety Protecting Device	Process emergency shutdown or trip functions including SIL rated and OEM protecting systems.
Repeat Incident	1. A Category 3 or above incident or near miss (where there has been a release of energy); **AND** 2. An incident with the same hazard type as a previous incident; **AND** 3. An incident with a similar incident mechanism (i.e. thing that caused the event). In assessing a repeat incident, the previous 3 years of incident data is to be taken into account.
Safe Operating Limits	Safe Operating Limits are the outer bound of plant conditions, or the set of limits and conditions, within which the operation of asset, plant, process and/or equipment must be maintained in order to comply with, e.g., regulatory requirements, safety design criteria, performance standards and Company safety management expectations.
Safety Critical Element	Any part of a Company facility or its plant (including a computer program): • that has the purpose of preventing, or limiting the effect of a Major Accident; or • the failure of which could cause or contribute substantially to a Major Accident.
Safety Critical Equipment	A subset of Safety Critical Elements pertaining to physical equipment / systems (hardware and software), including vessels, instrumentation, valves, pumps, control systems, etc. Examples for Safety Critical Equipment are emergency shutdown valves, fire and gas detectors, emergency power to maintain power to all safety systems required to function in the event of an emergency, certified electrical equipment for hazardous area, emergency lighting, chemical tank, pressure vessel etc.
Secondary Containment	An impermeable physical barrier specifically designed to prevent release of materials into the environment that have already breached primary containment (i.e. an LOPC). Secondary containment systems include, but are not limited to: tank dykes, curbing around process equipment, drainage collection systems into segregated oily drain system, the outer wall of a double walled tank, etc.

Term	Definition
Material release threshold quantity	The weight of gas, liquid, or solid material released from an LOPC which, if exceeded, results in the event being recordable as Tier 1 or Tier 2 PSE. The threshold quantities are described more fully in API RP 754 and follow the UNDG classification system.
Employee cooperation in internal investigations	The common law obligation of fidelity to one's employer requires employees to cooperate and participate in good faith in any lawful and reasonable internal investigation undertaken by their employer. This obligation binds the employee to disclose to its employer any facts relating to their employment, provided that the internal investigation is genuine and necessary to properly inform the employer of the true nature or extent of the employee's conduct, and the questions asked by the employer are put in a reasonable and fair manner.
Functional Site Coordinator	The Functional Site Coordinators are identified persons who are responsible for each incident type on that site e.g. H&S – Site Health and Safety Business Partner. The responsibilities of this role include: 1. Reviewing the detail assigned to the incident 2. Confirming the incident category as per the category definition 3. Appoint an Investigation Leader to follow up the incident and conduct an investigation

7 REFERENCES

Reference No	Reference Title	Author
TRIM Folder	Central HSE Committee Agenda	CS Energy
API RP 754	Process Safety Performance Indicators for the Refining and Petrochemical Industries	API
B/D/15/1991	Hierarchy of Control Poster PDF.	Pertrain
B/D/16/22919	Injury Classification Procedure	CS Energy
B/D/10/12649 T: DRIVE LINK	Safety Alert Word Template Safety Alert Email Template	CS Energy
B/D/16/24052	Incident Investigation Process - VISIO	CS Energy
B/D/15/22167	ICAM Investigation Steps Process Flow – Poster - PDF	CS Energy
B/D/12/45337	Procedure - CS-AM-017 - Root Cause Analysis (RCA) Process Guide	CS Energy
B/D/11/43851	Procedure - CS-IM-02 - Crisis Management	CS Energy
B/D/12/14048	Procedure - CS-IM-03 - Emergency Response Plan (Template)	CS Energy
B/D/14/33498	Procedure - CS-IM-04 - Incident Investigation Standard - Guide	CS Energy
B/D/11/36189	Form - S0024 - Incident Report	CS Energy
B/D/11/36240	Form - S1819 (1) - Incident Summary Notification (Initial) (Red Banner)	CS Energy
B/D/12/43791	Form - S1819 (3) - Incident Investigation Outcomes (Final) (Green Banner)	CS Energy
B/D/11/36202	Form - S1937 - Significant Incident Report Template	CS Energy
B/D/12/43915	Form - S2034 - Incident Witness Statement	CS Energy
B/D/16/28439	Form - S2241 - Incident Management - Record of Interview	CS Energy
B/D/14/7414	Form - S2160 - Incident Investigation - ICAM Report Assessment Process Audit	CS Energy
B/D/11/36208	Form - S1814 - Injury / Illness Report	CS Energy
B/D/15/438	Form - S2189 (1) – RCA Report Template	CS Energy
B/D/15/439	Form - S2189 (2) – Cause Tree Template	CS Energy
B/D/15/1453	Form - S2190 - Root Cause Analysis RCA Process Audit Template	CS Energy
B/D/20/9260	Form - H&S - S2301 - WHS Notifiable Incident Checklist	CS Energy

8 RECORDS MANAGEMENT

In order to maintain continual improvement, suitability, safety and effectiveness of the organisation, 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.

Government Owned Corporations 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 business must be retained in line with minimum retention periods as detailed in legal retention and disposal schedules.

ATTACHMENT 1 – INCIDENT CATEGORY MATRIX

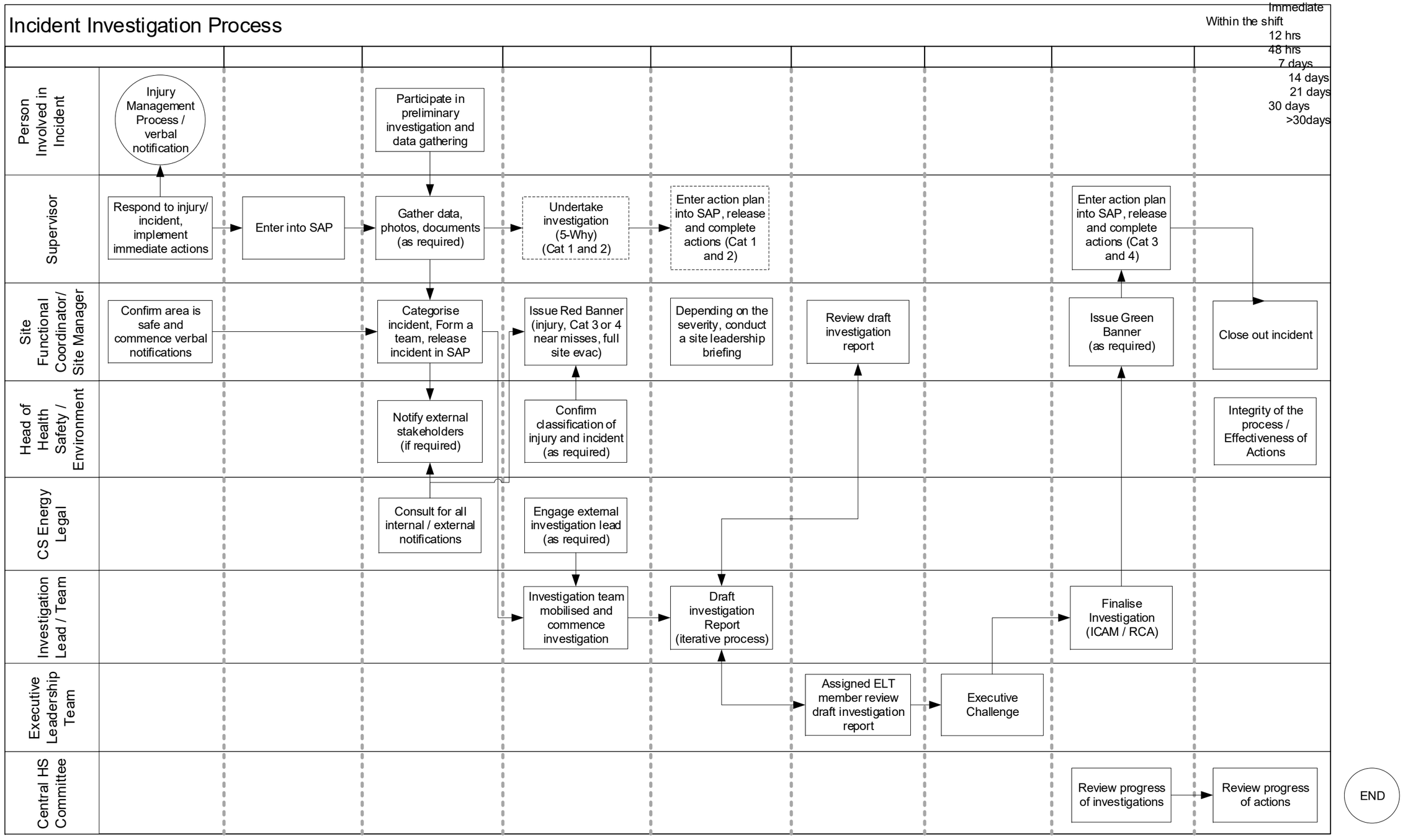
Category	Health and Safety [8]	Environment	Operations	Process Safety	Security
Non work related	Non work related injury or illness.	• N/A	• N/A	• N/A	• N/A
C1 Low	• First aid injury (FAI) - (actual or potential).	• Small contaminant release or land disturbance, localised on-site area affected. • Routine short-term clean-up/remediation.	• Near Miss / Potential Event risk assessed as Minor / Low using CSE Risk Matrix. • Single event or cumulative similar events – total cost of $75,000 to $250,000 including: • loss of generation (marginal cost) • Cost to repair (materials and labour) • Unit start-up costs (fuel oil). • Loss of Availability Thresholds / Station Unit: • Kogan Creek – equivalent loss up to 0.5 day offline, Callide C - up to 1 day offline, Callide B - up to 1.5 days offline, Wivenhoe - loss up to 7 days offline.	TIER 3 Process Safety Event: An operational situation, typically considered a Near Miss, which has challenged the safety system by progressing through one or more barrier weaknesses to result in an event or condition with: • Tier 3.1 - Safe operating limit excursions; • Tier 3.2 - Safety Critical Equipment or Process Safety Protecting device fault or function compromised; • Tier 3.3 - Non-spurious activation of a Process Safety Protecting device; • Tier 3.4 - Loss of primary containment (LOPC) less than the threshold quantities for a Tier 2 incident in Attachment 6 – Material Release Threshold Quantities for Different Materials; • Tier 3.5 - Error or gap in Process Safety Management System requirements, examples include: o Management of Change application error or failure o Failure to follow Safety Rules i.e. Life Savers o Override or bypass of Safety Critical Equipment without approval and / or adequate controls in place. o Prohibited items taken into a hazardous area o Failure related to Operational Procedures (e.g. Plant, shift handover, routine checks, etc) o Failure to meet competence requirements for working on Safety Critical Equipment	• Minor security incident (theft of company property) • Trespass resulting in low or very minor damage to property (graffiti) • Building doors found not locked • Maintenance issue with gate, fence, security cameras etc • Unidentified vehicle parked or travelling adjacent to the site after hours • Loss of ICT critical system/service for 1-4 hours All Sites, 4-8 hours for 1-2 Sites
C2 Moderate	• Medical Treatment Injury (MTI) - (actual or potential). • Positive AOD result.	• Moderate contaminant release or unauthorised land disturbance, localised on-site. • Routine short-term clean-up/remediation. • Low level compliance failure that does not result	• Unit trip • Near Miss / Potential Event risk assessed as LOW using CSE Risk Matrix. • Single event or cumulative similar events – total cost of $250,000 to $1,000,000 including: • loss of generation (marginal cost)	TIER 2 Process Safety Event: Loss of primary containment (LOPC) which is an unplanned or uncontrolled release of material (including non-toxic and non-flammable materials) or energy (including electrical and mechanical energy), from a process or uncontrolled ignition of coal or pulverised fuel (e.g. bunker fire) which results in one or more of the consequences listed below and is not reported in Tier 1: • Fire or Explosion - A fire or explosion resulting in greater than or equal to $2,500 of direct cost to the company; • Pressure Relief Device (PRD) (e.g. from hydrogen, chlorine, ammonia, sulphuric acid systems) Discharges - A pressure relief device (PRD) discharge to the atmosphere whether directly or via a downstream destructive device	• Fraud or theft or suspected fraud or theft where the value, money, equipment, materials or property involved does not exceed $10,000 • Trespass resulting in minor property damage or vandalism. • non-violent demonstration/protest outside but near company property

[8] The maximum reasonable consequence is to be considered when categorising incidents. It is the largest realistic or credible consequence from an event. The quality of controls in place (if any) are to be considered as well as the credible failure (energy release) of these at the time of the event.

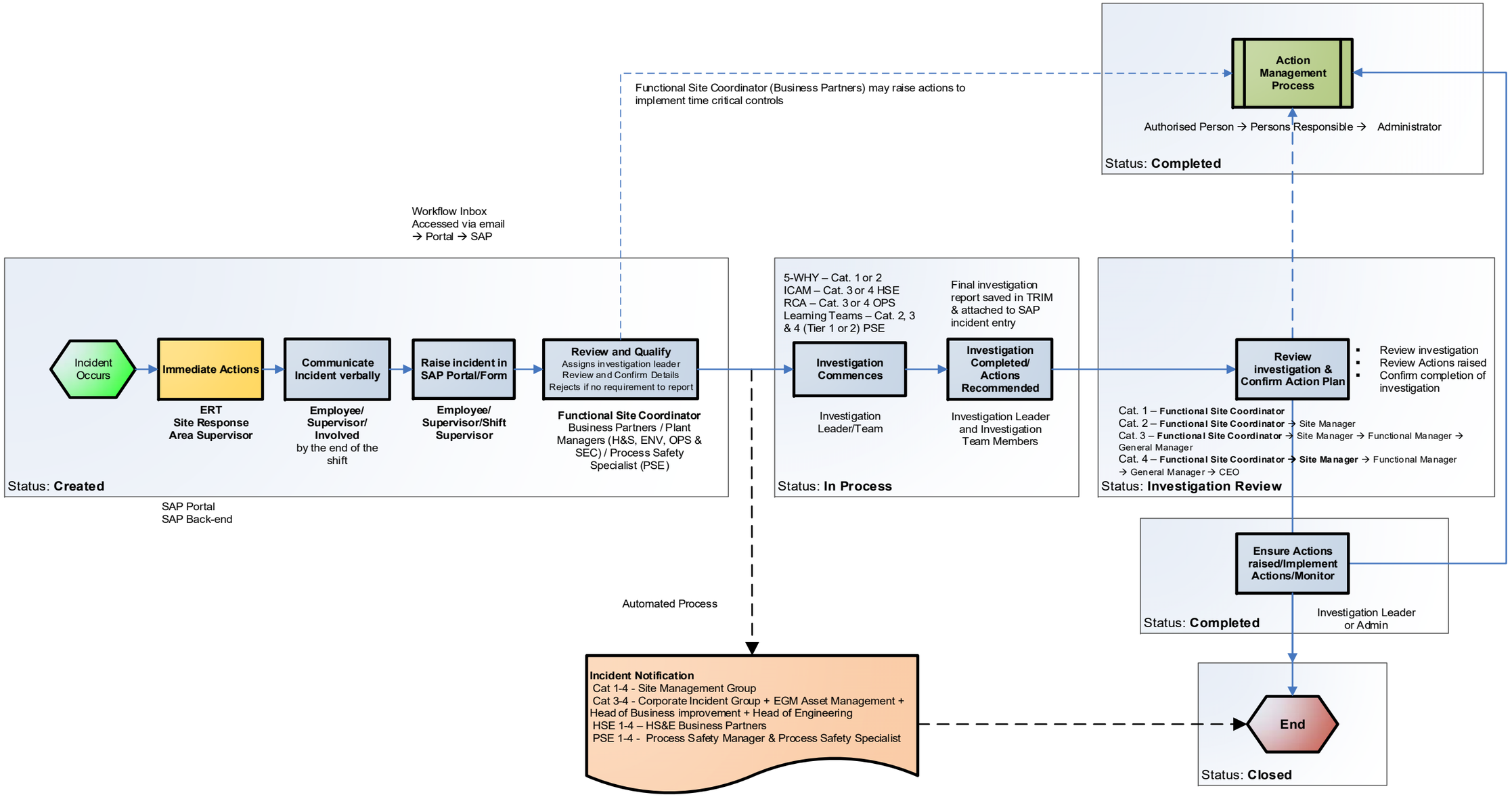
Category	Health and Safety [8]	Environment	Operations	Process Safety	Security
		in Regulator enforcement actions e.g. failure to correctly complete a waste tracking certificate.	• Cost to repair (materials and labour) • Unit start-up costs (fuel oil). • Loss of Availability Thresholds / Station Unit: • Kogan Creek – equivalent loss up to 2 days offline, Callide C - up to 4.5 days offline, Callide B - up to 6 days offline, Wivenhoe - loss up to 30 days offline.	that results in one or more of the following four consequences: • Liquid carryover/ Rainout; or • Discharge to a potentially unsafe location*; or • Public protective measures (e.g. road closure); and a PRD discharge quantity greater than the threshold for Tier 2 in Attachment 6 – Material Release Threshold Quantities for Different Materials in Table 4, 5 or 6; or • A release of material from primary containment of greater than the threshold quantities described in in Attachment 6 – Material Release Threshold. • A release of Pulverised Fuel (PF) from primary containment meeting the criteria described in Attachment 6 – Material Release Threshold. • Override or bypass of Safety Critical Equipment without approval and / or adequate controls in place. * A location which is exposed to a potential hazard, such as the formation of flammable mixtures at grade level or on elevated structures, or exposure of personnel to toxic vapours or corrosive chemicals.	• Attempt to hack or access CS Energy's secure ICT network • Activities observed offsite that identifies the potential for a security breach • Loss of ICT critical system/service for 4-8 hours All Sites, 8-24 hours for 1-2 Sites
C3 Significant	• Lost Time Injury (LTI) - (actual or potential) • Serious injury or illness, defined by WHSQ, where the reasonable maximum consequence is not a fatality (actual or potential).	• Large contaminant release or unauthorised unlawful land disturbance, localised on or off-site. • Short-term clean-up/remediation. • Likely enforcement action from Regulator.	• Near Miss / Potential Event risk assessed as MEDIUM using CSE Risk Matrix. • Single event or cumulative similar events – total cost of $1,000,000 to $10,000,000 including: - loss of generation (marginal cost) - Cost to repair (materials and labour) - Unit start-up costs (fuel oil). • Loss of Availability Thresholds / Station Unit: • Kogan Creek – equivalent loss up to 20 days offline, Callide C - up to 46 days offline, Callide B - up to 56 days offline,	TIER 1 Process Safety Event: Loss of primary containment (LOPC) which is an unplanned or uncontrolled release of material (including non-toxic and non-flammable materials) or energy (including electrical and mechanical energy), from a process or uncontrolled ignition of coal or pulverised fuel (e.g. bunker fire) which results in one or more of the consequences listed below: • Impact to Third Party - A hospital admission and/or fatality of a third-party; • Impact to the Community - An officially declared community evacuation; • Fire or Explosion - A fire or explosion resulting in greater than or equal to $25,000 of direct cost to the company; • Pressure Relief Device (PRD) (e.g. from hydrogen, chlorine, ammonia, sulphuric acid systems) Discharges - A pressure relief device (PRD) discharge to the atmosphere whether directly or via a downstream destructive device that results in one or more of the following four consequences: • Liquid carryover/ Rainout; or • Discharge to a potentially unsafe location*; or • Public protective measures (e.g. road closure);	• Trespass with clear criminal intent e.g. theft • Violent/non-violent demonstration/protest outside or near company property • Breach of site security systems which allows unauthorized entry onto site or into computer systems resulting in escalated damage • Successful hack or unauthorized access CS Energy's secure ICT network on site that results in MAJOR risk to personnel, plant, systems. • A bomb threat or threat of violence by any means. • Fraud or theft or suspected fraud where the value, money, equipment, materials or

Category	Health and Safety [8]	Environment	Operations	Process Safety	Security
			Wivenhoe - loss up to 90 days offline.	and a PRD discharge quantity greater than the threshold for Tier 1 in Attachment 6 – Material Release Threshold Quantities for Different Materials; • A release of material from primary containment of greater than the threshold quantities described in Attachment 6 – Material Release Threshold Quantities; • A release of Pulverised Fuel (PF) from primary containment meeting the criteria described in Attachment 6 – Material Release Threshold Quantities. * A location which is exposed to a potential hazard, such as the formation of flammable mixtures at grade level or on elevated structures, or exposure of personnel to toxic vapours or corrosive chemicals.	property involved exceeds $10,000 • Loss of ICT critical system/service for 8-24 hours All Sites, 24-48 hours for 1-2 Sites
C4 High	• Fatality or multiple fatalities - (actual or potential). • Serious injury or illness, defined by WHSQ, where the reasonable maximum consequence is a fatality - (actual or potential).	• Large to very large contaminant release or unlawful land disturbance, localised off-site (in breach of environmental licence). • Long-term or complex long-term clean-up/remediation, potentially irreversible. • Major fine and/or prosecution imposed or likely to be imposed.	• Near Miss / Potential Event risk assessed as MAJOR or greater using CSE Risk Matrix. • Single event or cumulative similar events – total cost greater than $10,000,000 including: • loss of generation (marginal cost) • Cost to repair (materials and labour) • Unit start-up costs (fuel oil). • Loss of Availability Thresholds / Station Unit: • Kogan Creek – equivalent loss greater than 20 days offline, Callide C – greater than 46 days offline, Callide B – greater than 56 days offline, Wivenhoe - greater than 90 days offline.		• An actual attack on facilities or assault on staff. • Violent demonstration on company property. • Successful hack or unauthorized access CS Energy's secure ICT network causing malicious damage or breach of privacy or confidentiality • Loss of ICT critical system/service for 24-48 hours All Sites, >48 hours for 1-2 Sites

ATTACHMENT 2 – INCIDENT MANAGEMENT PROCESS FLOW

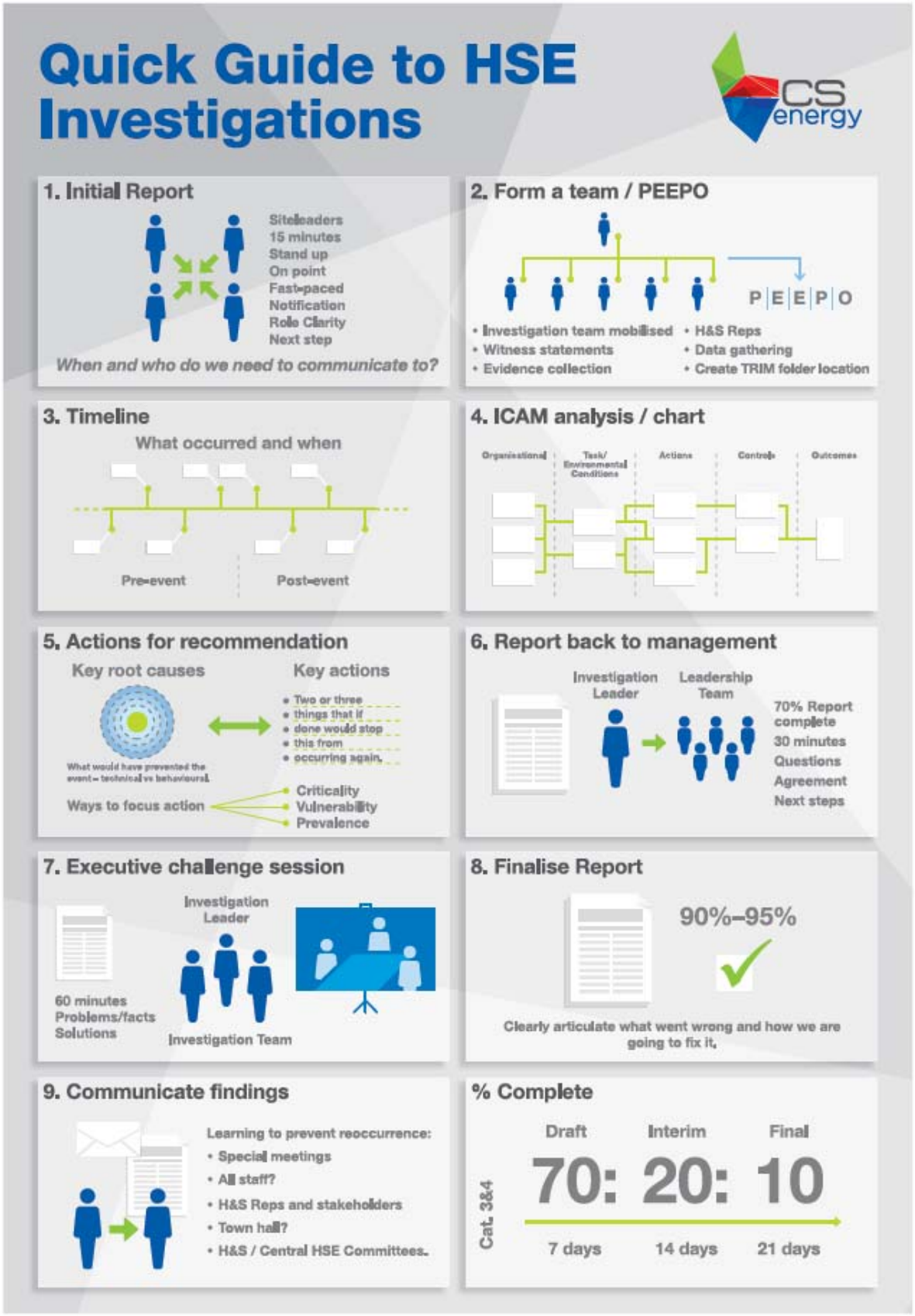


ATTACHMENT 3 – SAP IMD PROCESS FLOW

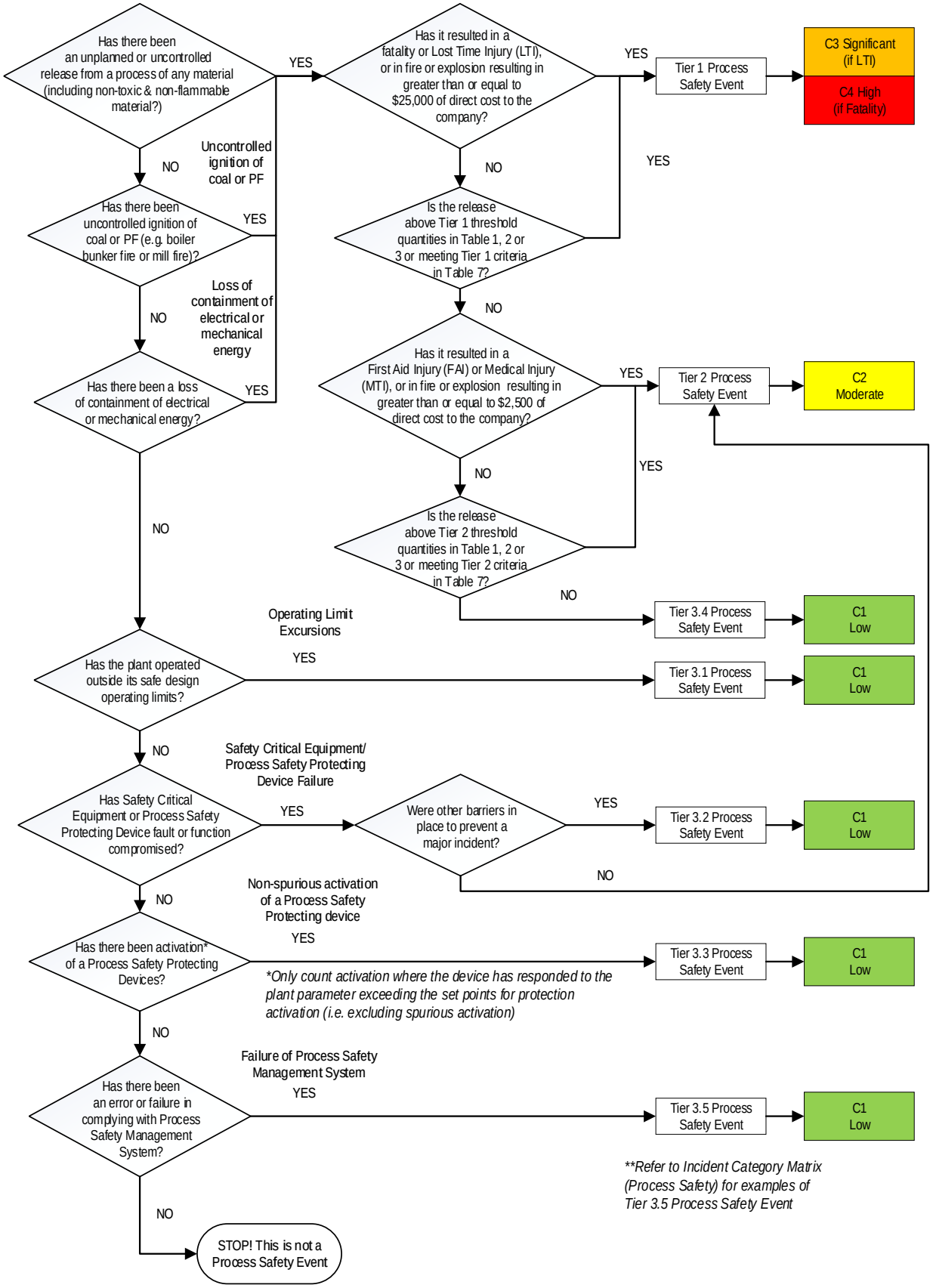


Note: SAP Workflow will be used to transfer the incident between the steps outlined above

ATTACHMENT 4 – CSE GUIDE TO HSE INVESTIGATIONS



ATTACHMENT 5 – PROCESS SAFETY - EVENT CATEGORISATION FLOWCHART



ATTACHMENT 6 – PROCESS SAFETY - MATERIAL RELEASE THRESHOLD QUANTITIES FOR DIFFERENT MATERIALS AND PSE TIER CRITERIA FOR PULVERISED FUEL RELEASE

Table 1. Non-Toxic Material Release Threshold Quantities for LOPC

LOPC is recordable as a PSE only when release is "acute" i.e. exceeds a threshold quantity in any one-hour period.	Tier 1 (Categories below refer to API/ANSI standard RP 754)		Tier 2 (Categories below refer to API/ANSI standard RP 754)	
Material hazard classification (with example materials)	**Outdoor Release**	**Indoor Release**	**Outdoor Release**	**Indoor Release**
Flammable Liquids with Boiling Point ≤ 35°C (95°F) and Flash Point < 23°C (73°F) – e.g. • Liquefied petroleum gas (LPG)	500kg (1,100lb)	250 kg (550lb)	50 kg (110lb)	25 kg (55lb)
Flammable Liquids with Boiling Point > 35°C (95°F) and Flash Point < 23°C (73°F) – e.g. • Gasoline/petrol, toluene, xylene	1,000kg (2,200lb) or 7bbl	500kg (1,100lb) or 3.5bbl	100kg (220 lb) or 1bbl	50 kg (110 lb) or 0.5bbl
Combustible liquids with Flash Point ≥ 23°C (73°F) and ≤ 60°C (140°F) – e.g. • Diesel, most kerosene's	2,000kg (4,400lb) or 14bbl	1,000kg (2,200lb) or 7bbl	100kg (220 lb) or 1bbl	50kg (110 lb) or 0.5bbl
Liquids with Flash Point > 60°C (140°F) released at a temperature above its flash point – e.g. • Molten Sulphur, • Lubricating or insulating oil	2,000kg (4,400lb) or 14bbl	1,000kg (2,200lb) or 7bbl	100kg (220 lb) or 1bbl	50 kg (110 lb) or 0.5bbl
Liquids with Flash Point > 60°C (140°F) released at a temperature below its flash point – e.g. • Molten Sulphur, • Lubricating or insulating oil	Not applicable	Not applicable	1,000kg (2,200lb) or 7bbl	500kg (1,100lb) or 5bbl

Table 2. Toxic Material Release Threshold Quantities for LOPC Quantities for LOPC

LOPC is recordable as a PSE only when release is "acute" i.e. exceeds a threshold quantity in any one-hour period.	Tier 1 (Categories below refer to API/ANSI standard RP 754)		Tier 2 (Categories below refer to API/ANSI standard RP 754)	
Material hazard classification (with example materials)	**Outdoor Release**	**Indoor Release**	**Outdoor Release**	**Indoor Release**
TIH Hazard Zone B materials, includes: • Chlorine (Cl_2)	25 kg (55lb)	12.5 kg (27.5lb)	2.5 kg (5.5lb)	1.3 kg (2.8lb)
TIH Hazard Zone C materials, includes: • Sulphur dioxide (SO_2)	100kg (220lb)	50kg (110lb)	10 kg (22lb)	5 kg (11lb)
TIH Hazard Zone D materials, includes: • Ammonia (NH_3) • Carbon monoxide (CO)	200 kg (440lb)	100kg (220lb)	20 kg (44lb)	10 kg (22lb)

Table 3. Other Material Release Threshold

LOPC is recordable as a PSE only when release is "acute" i.e. exceeds a threshold quantity in any one-hour period. PSE Tier is highest of all that apply	Tier 1 (Categories below refer to API/ANSI standard RP 754)		Tier 2 (Categories below refer to API/ANSI standard RP 754)	
Material hazard classification (with example materials)	**Outdoor Release**	**Indoor Release**	**Outdoor Release**	**Indoor Release**
Other Packaging Group III materials – includes: • Sulphur	2,000kg (4,400lb) or 14bbl	1,000kg (2,200lb) or 7bbl	100kg (220lb) or 1bbl	50kg (110lb) or 0.5bbl
Strong Acids or Bases – includes: • Sulphuric acid, • Sodium hydroxide (caustic), • Calcium hydroxide (lime)	2,000kg (4,400lb) or 14bbl	1,000kg (2,200lb) or 7bbl	100kg (220 lb) or 1bbl	50kg (110 lb) or 0.5bbl

Table 4. Pulverised Fuel (PF) PSE Tier Criteria for LOPC

LOPC is recordable as a PSE only when release is "acute"		Tier 1	Tier 2			Tier 3
Pulverised Fuel (PF)	**LOPC Location**	**Indoor or Confined Area**	**Indoor or Confined Area**	**Indoor or Confined Area**	**Outdoor or Opened Area**	**Outdoor or Opened Area**
	Is coal dust in suspension post LOPC?	Yes	Yes	No	Yes	No
	Visibility at vicinity post LOPC	< 3m	> 3m	Not Applicable	Not Applicable	Not Applicable