

# Incident Investigation Report

S4AN-741-FM1

## 1.0 Instructions

- a. This report is to be completed in line with the requirements set out in the Incident Management Procedure (S4AN-741-PR1).
- b. This report must be completed by the work group for all severity 2 incidents, and by the SH&E team for any severity 3 incidents. NB. Severity 1 investigation may be completed on the IndustrySafe system.
- c. Section 2.0 of this report provides supporting guidance for completing the actual Incident Investigation Report contained in Section 1.0
- d. Using the Severity Level chart in Section 2.3.1 of the Incident Management Procedure (S4AN-741-PR1), determine the severity level of the incident
  - i. For Severity level 2 complete PART A and PART C (minimum) of Section 1.0.
  - ii. For Severity level 3 complete PART A, PART B and PART C of Section 1.0.
- e. To complete Section 1.0, PART B, refer to the investigation guide and Investigation categories check lists contained in Section 2.0 - PART C.
- f. The investigative process is derived from the Incident, Cause, Analysis, Method (ICAM), a brief four step overview of actions is outline below:

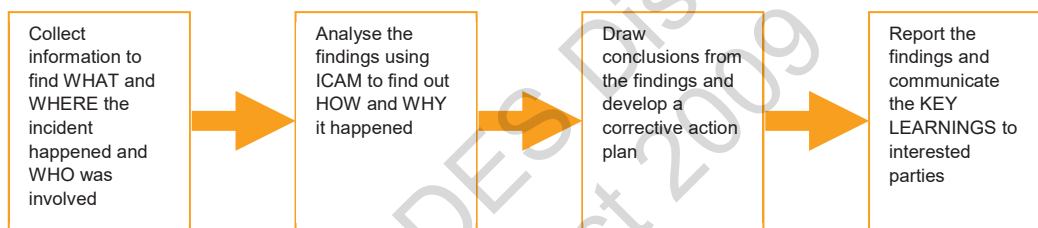


Figure 1 ICAM Model

- g. Please attach the original IndustrySafe notification or Incident Notification Form (S4AN-704-FM1) as an attachment to this completed form.
- h. Upon completion of this document please print Section 1.0 of this report and upload to the IndustrySafe system under the corresponding incident number. Ensure any corrective actions are logged in the system.

## 2.0 Supporting Guidance for Completing this Report

### a. Incident Investigation Process Checklist

This section provides a high level overview of the method required to complete the incident investigation. Please use the checklist below to guide you through the stages of investigation.

- ☐ Determine Investigation Team i.e. those to be involved in conducting the investigation.
- ☐ Gather documentation/information as soon as possible to avoid 'decay' of information.
- ☐ Interview appropriate personnel to confirm event FACTS and reveal causal factors.
- ☐ Prepare an Events & Conditions Timeline to ensure EXACT event details understood.
- ☐ Determine what 'defences' failed to prevent the event from occurring.
- ☐ Determine what 'human', 'conditional' and 'task' factors contributed to the incident.
- ☐ Determine what PROCESS (Systems) can be improved to prevent recurrence.
- ☐ Team to devise CORRECTIVE ACTIONS.
- ☐ Initiate CORRECTIVE and PREVENTATIVE ACTIONS into the PIN data base.

**b. Collecting Information Guideline**

Use the prompt boxes below to ensure information is collected from all available sources

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>People</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Review personnel records (work history, training, time sheets, medical etc.) as required. Try to identify all the people who might have information about the event and get statements from them as soon as possible. Interview people individually away from distractions. If possible interview them at the scene of the Event to confirm at the scene information. |                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Ask Interviewees:</b> <ol style="list-style-type: none"> <li>Fully describe work and conditions leading up to the Event.</li> <li>Fully describe the Event sequence – start to finish.</li> <li>Note anything unusual observed prior to Event (sights, sounds).</li> <li>What was your role in the Event sequence?</li> <li>What conditions influenced the Event (weather, time, equip, etc.)</li> <li>How did people influence the Event (actions, emergency response, etc.)?</li> <li>What do you think caused the Event?</li> <li>How do you think the Event could have been prevented?</li> <li>List other possible witnesses.</li> <li>Any additional comments/observations</li> </ol> |                                                                                                                                                                                                                                                                                                                                                                       | <b>Determine:</b> <ol style="list-style-type: none"> <li>Were those involved in the Event experienced in the task?</li> <li>Had they been adequately trained?</li> <li>Are they physically capable of conducting the task?</li> <li>What was the status of their health?</li> <li>Was fatigue a factor?</li> <li>Were they under stress or time pressures (work or personal)?</li> </ol> |
| <b>Environment</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Examine the scene of the Event for information and to help understand the nature of the task being conducted and the local environmental conditions. The physical environments, especially sudden changes to that environment, are factors that need to be identified. The situation at the time of the Event is important, not the "usual" conditions.               |                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Determine:</b> <ol style="list-style-type: none"> <li>What were the weather conditions?</li> <li>Was housekeeping a problem?</li> <li>Was it too hot or too cold?</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                       | <ol style="list-style-type: none"> <li>Was noise a problem?</li> <li>Was there adequate light?</li> <li>Were toxic or hazardous gases, dusts, or fumes present?</li> </ol>                                                                                                                                                                                                               |
| <b>Equipment</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Examine equipment involved in the Event looking at the condition of equipment, anything that may have changed or be out of the ordinary e.g. abnormal stress, modifications, substitutions, distortions, fractures etc. Identify any design flaws, mismatched components or confusing labelling or marking. Ensure that the equipment was appropriate for the task.   |                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Determine:</b> <ol style="list-style-type: none"> <li>Was there an equipment failure?</li> <li>What caused it to fail?</li> <li>Was the machinery poorly designed?</li> <li>Were hazardous substances involved?</li> <li>Were they clearly identified?</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                       | <ol style="list-style-type: none"> <li>Was a less hazardous substance possible and available?</li> <li>Was the raw material substandard in some way?</li> <li>Should personal protective equipment (PPE) have been used?</li> <li>Was the PPE used?</li> </ol>                                                                                                                           |
| <b>Procedures</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Review the task that was being conducted. Examine work procedures, scheduling of the work to see whether they contributed to the Event. Examine the availability, suitability, use and supervisory requirements of procedures.                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Determine:</b> <ol style="list-style-type: none"> <li>Was a safe work procedure used?</li> <li>Were written procedures available?</li> <li>Was a JSA conducted as part of the planning prior to the task?</li> <li>Had conditions changed to make the normal procedure unsafe?</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                       | <ol style="list-style-type: none"> <li>Were the appropriate tools and materials available?</li> <li>Were they used?</li> <li>Was lockout used when necessary?</li> <li>Were safety devices working properly?</li> </ol>                                                                                                                                                                  |

|                                                                 |                                                                                                                                                                                          |  |
|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <b>Organisation</b>                                             | Management holds the legal responsibility for the safety of the workplace and the workforce. The role of supervisors and management must always be considered in an Event investigation. |  |
| <b>Determine:</b>                                               |                                                                                                                                                                                          |  |
| a. Were safety rules communicated /understood by all employees? | f. Had procedures been developed to overcome them?                                                                                                                                       |  |
| b. Were they being enforced?                                    | g. Were unsafe conditions corrected?                                                                                                                                                     |  |
| c. Was there adequate supervision?                              | h. Was regular maintenance of equipment carried out?                                                                                                                                     |  |
| d. Were workers trained to do the work? When? Still valid       | i. Were regular safety inspections carried out?                                                                                                                                          |  |
| e. Had hazards been previously identified?                      | j. Any changes to equipment, environment, people or procedures.                                                                                                                          |  |

**c. Investigation Categories Guideline: Section 3 - Part B**

- Check off conditions below that were related to this event.
- Copy each condition into Section 3 - Part B of this report.

**ABSENT OR FAILED DEFENCES**

Identify the defence factors that allowed the outcome. Defences are those factors that are designed to detect and protect the overall system from the results of human or technical failures, that is, they are the "last minute" protection measures designed to avoid or mitigate and outcome.

**Check question:** *Does the item describe the equipment, work process, control measure, detection system, and procedure or attribute which normally prevents this Event or limits the consequences?*

| Questions: |                     | Event Facts: (Tick One)                           |                                                    | Questions: |                    | Event Facts: (Tick One)                |                                                    |
|------------|---------------------|---------------------------------------------------|----------------------------------------------------|------------|--------------------|----------------------------------------|----------------------------------------------------|
| DF01       | Protection systems? | <input type="checkbox"/> Absent/Failed            | <input checked="" type="checkbox"/> Not Applicable | DF05       | PPE?               | <input type="checkbox"/> Absent/Failed | <input checked="" type="checkbox"/> Not Applicable |
| DF02       | Warning systems?    | <input checked="" type="checkbox"/> Absent/Failed | <input type="checkbox"/> Not Applicable            | DF06       | Safety Device Ops? | <input type="checkbox"/> Absent/Failed | <input checked="" type="checkbox"/> Not Applicable |
| DF03       | Guards or barriers? | <input type="checkbox"/> Absent/Failed            | <input checked="" type="checkbox"/> Not Applicable | DF07       | ADF Other?         | <input type="checkbox"/> Absent/Failed | <input checked="" type="checkbox"/> Not Applicable |
| DF04       | Escape systems?     | <input type="checkbox"/> Absent/Failed            | <input checked="" type="checkbox"/> Not Applicable |            |                    |                                        |                                                    |

**INDIVIDUAL / TEAM ACTIONS**

Identify the individual/team actions that contributed to or caused the Event. These are the errors or violations that led directly to the Event. They are typically associated with personnel having direct contact with the equipment, such as operators or maintenance personnel. They are always committed 'actively' (someone did or didn't do something) and have a direct relation with the Event.

**Check question:** *Does the item tell you about an error or violation of a standard or procedure made in the presence of a hazard?*

| Questions: |                        | Event Facts: (Tick One)                             |                                         | Questions: |                           | Event Facts: (Tick One)                             |                                         |
|------------|------------------------|-----------------------------------------------------|-----------------------------------------|------------|---------------------------|-----------------------------------------------------|-----------------------------------------|
| IT01       | Supervision?           | <input type="checkbox"/> Error/Violation            | <input checked="" type="checkbox"/> N/A | IT07       | Horseplay?                | <input type="checkbox"/> Error/Violation            | <input checked="" type="checkbox"/> N/A |
| IT02       | Operating Authority?   | <input type="checkbox"/> Error/Violation            | <input checked="" type="checkbox"/> N/A | IT08       | Materials Handling?       | <input type="checkbox"/> Error/Violation            | <input checked="" type="checkbox"/> N/A |
| IT03       | Operating speed?       | <input type="checkbox"/> Error/Violation            | <input checked="" type="checkbox"/> N/A | IT09       | Hazard Recog. Perception? | <input checked="" type="checkbox"/> Error/Violation | <input type="checkbox"/> N/A            |
| IT04       | Equipment use?         | <input checked="" type="checkbox"/> Error/Violation | <input type="checkbox"/> N/A            | IT10       | Risk Mgmt.                | <input type="checkbox"/> Error/Violation            | <input checked="" type="checkbox"/> N/A |
| IT05       | PPE Use?               | <input type="checkbox"/> Error/Violation            | <input checked="" type="checkbox"/> N/A | IT11       | Other                     | <input type="checkbox"/> Error/Violation            | <input checked="" type="checkbox"/> N/A |
| IT06       | Procedural Compliance? | <input checked="" type="checkbox"/> Error/Violation | <input type="checkbox"/> N/A            |            |                           |                                                     |                                         |

## TASK/ENVIRONMENTAL CONDITIONS

Identify the Task/Environmental conditions that contributed to the Event. These are the conditions in existence immediately prior or at the time of the Event. These are the conditions that directly influence human and equipment performance in the workplace. These are the circumstances under which the errors and violations took place and can be embedded in task demands, the work environment, individual capabilities and human factors.

**Check question:** *Does this item describe something about the task demands, work environment, individual capabilities or human factors that promoted errors / violations or undermined the effectiveness of system's defences?*

| Questions: |                                 | Event Facts:<br>(Tick One)                                                   | Questions: |                              | Event Facts:<br>(Tick One)                                                   |
|------------|---------------------------------|------------------------------------------------------------------------------|------------|------------------------------|------------------------------------------------------------------------------|
| HF01       | Complacency/Attitude Motivation | <input type="checkbox"/> Contributor <input checked="" type="checkbox"/> N/A | TW01       | Task Analysis/Take Two       | <input type="checkbox"/> Contributor <input checked="" type="checkbox"/> N/A |
| HF02       | Drugs/Alcohol Influence         | <input type="checkbox"/> Contributor <input checked="" type="checkbox"/> N/A | TW02       | Work Procedures              | <input type="checkbox"/> Contributor <input checked="" type="checkbox"/> N/A |
| HF03       | Fatigue                         | <input type="checkbox"/> Contributor <input checked="" type="checkbox"/> N/A | TW03       | Permit to Work (Avail/Suit.) | <input type="checkbox"/> Contributor <input checked="" type="checkbox"/> N/A |
| HF04       | Time/Production Pressures       | <input type="checkbox"/> Contributor <input checked="" type="checkbox"/> N/A | TW04       | Routine/Non-routine Task     | <input type="checkbox"/> Contributor <input checked="" type="checkbox"/> N/A |
| HF05       | Peer Pressure                   | <input type="checkbox"/> Contributor <input checked="" type="checkbox"/> N/A | TW05       | Tools/Equipment/Materials    | <input type="checkbox"/> Contributor <input checked="" type="checkbox"/> N/A |
| HF06       | Physical/Mental Capability      | <input type="checkbox"/> Contributor <input checked="" type="checkbox"/> N/A | TW06       | Training                     | <input type="checkbox"/> Contributor <input checked="" type="checkbox"/> N/A |
| HF07       | Physical/Mental Stress          | <input type="checkbox"/> Contributor <input checked="" type="checkbox"/> N/A | TW07       | Housekeeping                 | <input type="checkbox"/> Contributor <input checked="" type="checkbox"/> N/A |
| HF08       | Distraction/ Pre-occupation     | <input type="checkbox"/> Contributor <input checked="" type="checkbox"/> N/A | TW08       | Weather Conditions           | <input type="checkbox"/> Contributor <input checked="" type="checkbox"/> N/A |
| HF09       | Competency/Experience/Skill     | <input checked="" type="checkbox"/> Contributor <input type="checkbox"/> N/A | TW09       | Congestion, Access           | <input type="checkbox"/> Contributor <input checked="" type="checkbox"/> N/A |
| HF10       | Inadequate communications       | <input type="checkbox"/> Contributor <input checked="" type="checkbox"/> N/A | TW10       | Surface Gradient/Conditions  | <input type="checkbox"/> Contributor <input checked="" type="checkbox"/> N/A |
| HF11       | Tolerance of Violations         | <input type="checkbox"/> Contributor <input checked="" type="checkbox"/> N/A | TW11       | Lighting                     | <input type="checkbox"/> Contributor <input checked="" type="checkbox"/> N/A |
| HF12       | Change of Routine               | <input type="checkbox"/> Contributor <input checked="" type="checkbox"/> N/A | TW12       | Temperature                  | <input type="checkbox"/> Contributor <input checked="" type="checkbox"/> N/A |
| HF13       | Other Human Factor              | <input type="checkbox"/> Contributor <input checked="" type="checkbox"/> N/A | TW13       | Noise                        | <input type="checkbox"/> Contributor <input checked="" type="checkbox"/> N/A |
| HF14       | Task Planning/ Preparation      | <input type="checkbox"/> Contributor <input checked="" type="checkbox"/> N/A | TW14       | Gas, Dust, Chemical or Fumes | <input type="checkbox"/> Contributor <input checked="" type="checkbox"/> N/A |

## ORGANISATIONAL/SYSTEM FACTORS

Identify the Organisational Factors that contributed to the Event. These are the underlying organisational factors which produce the task / environmental conditions that affect performance in the workplace. These may include fallible management decisions, processes and practices.

**Check question:** *Does this item identify a standard Organisational Factor present before the Event and which resulted in the task / environmental conditions or allowed those conditions to go un-addressed?*

| Questions: |                          | Event Facts:<br>(Tick One)                                                    | Questions: |                          | Event Facts:<br>(Tick One)                                                    |
|------------|--------------------------|-------------------------------------------------------------------------------|------------|--------------------------|-------------------------------------------------------------------------------|
| OS01       | Hardware                 | <input type="checkbox"/> Contributing <input checked="" type="checkbox"/> N/A | OS07       | Maintenance Management   | <input type="checkbox"/> Contributing <input checked="" type="checkbox"/> N/A |
| OS02       | Training                 | <input type="checkbox"/> Contributing <input checked="" type="checkbox"/> N/A | OS08       | Design                   | <input type="checkbox"/> Contributing <input checked="" type="checkbox"/> N/A |
| OS03       | Organisational Structure | <input type="checkbox"/> Contributing <input checked="" type="checkbox"/> N/A | OS09       | Risk Management          | <input type="checkbox"/> Contributing <input checked="" type="checkbox"/> N/A |
| OS04       | Communication            | <input type="checkbox"/> Contributing <input checked="" type="checkbox"/> N/A | OS10       | Management of Change     | <input type="checkbox"/> Contributing <input checked="" type="checkbox"/> N/A |
| OS05       | Incompatible Goals       | <input type="checkbox"/> Contributing <input checked="" type="checkbox"/> N/A | OS11       | Contractor Management    | <input type="checkbox"/> Contributing <input checked="" type="checkbox"/> N/A |
| OS06       | Procedures               | <input checked="" type="checkbox"/> Contributing <input type="checkbox"/> N/A | OS12       | Other Org./System Factor | <input type="checkbox"/> Contributing <input checked="" type="checkbox"/> N/A |

### 3.0 Investigation Report

#### Seepage of Drilling Mud to Surface During Installation of Well HSMB1D

|                 |            |
|-----------------|------------|
| Incident Number | CY17-11987 |
|-----------------|------------|

#### PART A: Incident Investigation (Severity Level 1,2 and 3 incidents to complete)

| Incident Severity Rating (Level 1-3)                                                 |             |                  | Actual                                     | 2      | Potential | 2 |
|--------------------------------------------------------------------------------------|-------------|------------------|--------------------------------------------|--------|-----------|---|
| Incident Date                                                                        | 3-Nov-17    | Time of Incident | 20:17 hrs                                  | Region | QLD       |   |
| Business Line                                                                        | Environment |                  | Project (if applicable)                    |        | 60528670  |   |
| Who was involved (employee, contractor, 3rd party?)                                  |             |                  | Contractor                                 |        |           |   |
| Client notified? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |             | Name             | [REDACTED] sch4p4( 6) Personal information |        |           |   |
|                                                                                      |             | Contact No.      | [REDACTED]                                 |        |           |   |

| Description of Incident (Who, what, where, how)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Timeline attached?               | (Attachment 1) <input checked="" type="checkbox"/> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|----------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Original Incident form attached? | (Attachment 2) <input checked="" type="checkbox"/> |
| <p>At approximately 20:17 hrs on 3rd November 2017, during the drilling of HSMB1D, drilling mud was observed at ground surface, approximately 10 m from the well, on the drill pad behind the pipe sloop. The release of drilling mud to surface occurred during the drilling of the surface section of the well, whilst at a depth of 26.8 mGL (m below ground level). Drilling operations were ceased immediately and the Site Safety Manager (Rig Manager) and the Operating Company Representative (OCR) were called to return to the well from their on-site accommodation. Both arrived on site at 20:30 hrs. The mud pump was shut down and the drill string was pulled out of hole, shortly after which the seepage of mud to surface ceased.</p> <p>When the drill string was returned to surface it was evident that a build-up of clay had accumulated around the drill pipe and the drill-string stabiliser, above the drill bit.</p> <p>Immediately prior to the recognition of drill mud on surface, the return of the drill mud to surface via the annulus of the drill pipe had reduced to around 30%. It is noted that the drilling activities just prior to the mud loss to surface included the installation of the rubber in the Washington diverter, which reduces visibility down the hole for the driller and can impeded mud returns to the flow line if clay builds up around the rubber.</p> <p>Based on the reduction in fluid volume back to the mud system it is estimated that some 2,500 to 3,000 L of (non-hazardous) drilling mud had been lost into the geological formation; an estimated 300 L of which was estimated to have discharged to ground surface. The migration of the drilling mud on surface was contained to the well pad using spill absorbent 'sausages' prior to clean-up.</p> <p>Detailed timeline of events is included in Attachment 1</p> |                                  |                                                    |

#### Details of Injuries/Damage/Impact (Nature and extent of injuries/damage)

Approximately 300 L of drilling mud seeped onto ground surface onto the well pad. This did not drain off the pad and did not intersect any sensitive environmental receptors.

Once the mud on the well pad had dried enough to scrape, all mud to surface was scraped off the well pad using the telehandler bucket and disposed in the drilling cuttings skip bins.

#### Immediate Action Taken

A 'Stop for Safety' meeting was held to discuss the events, identify causation, and formulate a safe approach to rectify (and prevent repetition) of the situation. The reason for the leak-off of drilling mud to surface was considered a result of clay build-up on the drill string, which restricted the flow of drill mud back up the well to surface. This restriction, plus the further restriction of clay building up on the rubber of the gas-diverter, increased the likelihood of drill mud migrating from the well into the overburden and up to surface at a lower pumping pressure.

To rectify the situation and continue drilling operations, it was decided to clean the drill string of clay, then run in hole to 26.8 mGL and inject lost circulation material (sawdust, etc.) into the well to seal the thief zone. This strategy was successful; there were no further losses of drilling mud to the thief zone and no further seepage to surface. The hole was then drilled ahead to the terminal depth of the section, 72 mGL without further difficulties.

It was noted that whilst drilling ahead, drilling mud was gained from formation into the wellbore (~1,500 L). This drill mud

"gain" during drilling was a portion of the drilling mud returning to the hole from formation, as pressure in the wellbore reduced and the preferential pathway closed.

Once the mud on the well pad had dried, all mud on surface was scraped off the well pad using the telehandler bucket and disposed in the drilling cuttings skip bins. Later that day the surface section was cased and successfully cemented, with cement returns to surface observed.

**Corrective Actions Recommended (If actions are accepted transfer into Part C)**

The following actions are to be carried out when drilling the surface section of the hole:

- Instructions prepared by the OCR are to be followed, especially in regards to drilling technique and pump rates.
- If heavy clay is encountered in the surface section, drill string is to be pulled out of hole to surface and bottom hole assembly cleaned:
  - o At the first sign of insufficient cuttings not returning to surface;
  - o Once the clay interval has been passed through and drilling enters the sandstone / coal zone; and
  - o Prior to the installation of the Washington diverter rubber
- Personnel to be more attentive to mud returns. Allocate a spotter (e.g. the site geologist / AECOM nightsupervisor) to monitor fluid and cuttings returns during the drilling of the surface section.
- Increase KCl concentration in drilling mud from 4% to 5% to reduce swelling of clays
- Set pit volume totaliser (PVT) alarms to 1-2 bbls high-low for gain/loss.
- Consider making changes to the flow line design, such that cuttings are cleared more readily from the well bore.

Considerations to include:

- Installing a jet in the flowline to help clear excess mud / cuttings buildup
- Include a flex coupling in the flow line, so there is increased 'fall' in the flow line to the trip tank
- Removing the butterfly valve in the flow line for the top hole as it is a restriction to cuttings flow
- Add a 150 mm spacer to the conductor casing riser, to allow for variable well pad construction levels

**Implementation of Change to Eliminate Root Causes and Management of Change:**

This incident report is to be reviewed by all drilling & AECOM personnel on site prior to commencing drilling the next well. The review is to include a group discussion to discuss the events; lessons learned and required corrective actions for future wells.

**Measurement of Success of Changes:**

Success will be not losing drilling mud to formation as a result of drill return build-up behind the drill bit, or drilling mud to surface due to high pumping pressure opening a preferential pathway for fluid migration.

**Was there a risk assessment tool in use at the time of the event?**

Risk Register ☒ | Safety Plan ☒ | SWMS ☒ | Step Back ☐ | No ☐

**Has the risk/hazard register been updated to reflect this incident?**

Yes ☒ No ☐

Is there an existing procedure to control this event? Yes ☒ No ☐

Was this procedure in use at the time of the incident? Yes ☒ No ☐

**List:** A 'Toolpushers Notes' Work Instruction (attached) was prepared by the OCR and provided to the driller.

The work Instruction specifies the maximum pump rate setting below 20 m should be 40-50 strokes per minute (attached), which was not followed by the driller.

**Critical Risk Control Procedure? (Please tick any that were not implemented/failed)**

|                                       |                                              |                                             |                                           |
|---------------------------------------|----------------------------------------------|---------------------------------------------|-------------------------------------------|
| Mobile Plant <input type="checkbox"/> | Confined Space <input type="checkbox"/>      | Working at Heights <input type="checkbox"/> | Vehicles/Traffic <input type="checkbox"/> |
| Electrical <input type="checkbox"/>   | Hazardous Materials <input type="checkbox"/> | Lifting Operations <input type="checkbox"/> | Excavation <input type="checkbox"/>       |

**Photographs (Insert photographs or diagrams below)**



**Part B: Incident Investigation (Must be completed for all Severity Level 3 Incidents) – use Incident Investigation Procedure (S4AN-708-PR1) – Attachment 2 for guidance in classifying the categories below.**

| Absent/Failed Defences                                                                                                                                                                                                                                                                                                                                                                                                                      | Individual or Team Factors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Task/Environmental Conditions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Organisational Factors                                                                              |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| <p>The NOV system pit volume totaliser (PVT) alarms could have been set to alert the loss of fluid to formation. (Causal Factor)</p> <p>The flowline was not functioning adequately due not having enough gradient (i.e. fall) for the mud/cuttings to drain away from the bore into the trip tank. This was because the well pad had been constructed higher, relative to the ground level of the cellar/rig location. (Casual Factor)</p> | <p>Inexperience. The sticky clay present at this particular borehole had not previously been encountered on the previous locations on site. (Causal Factor)</p> <p>The hole section was not controlled i.e. drilling at a slower rate of penetration and at a correct pump rate for the formation being drilled, such that cuttings return to surface can be closely monitored for any signs of partial blockages to mud circulation. (Root Cause)</p> <p>When cuttings return to surface were not observed, driller increased the flow rate of the mud pump in an attempt to clear the blockage, this increased pressure down-hole. A more appropriate response would have been to work the drill string until the hole was clean and pressure had stabilised, if this was unsuccessful, the next response should be to pull out of hole and ensure the drill string was clear of cuttings. (Root Cause)</p> | <p>Geological conditions at the location. The clay was highly "sticky" (swelling clays) and would not readily lift from the borehole to surface. Instead it became entrained around the drill bit, stabiliser and drill pipe, causing a 'mud ring' in the annulus restricting return flow. (Causal Factor)</p> <p>The clay build-up on the rubber installed in the Washington diverter was a partial obstruction of drilling mud and cuttings from the borehole, further impeding the flow of drilling mud and cuttings to surface. (Causal Factor)</p> <p>The formation close to surface at the site was weak (sandy-clay with some coarse sand material overburden as opposed to rock), increasing the risk of opening a preferential pathway / zone of weakness during drilling. (Causal Factor)</p> | <p>"Toolpushers Notes" Work Instruction procedure was not followed by the driller. (Root Cause)</p> |

**Part C: Corrective Actions Implemented (Must be completed for all Corrective Actions)**

Utilise the identified Absent/Failed Defences and Organisational Factors).  
All Recommendations must include a timeframe for implementation and a person responsible.

| Action Reference No. | Recommendations                                                                                                                            | Person Responsible                          | Completion Date |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|-----------------|
| 1                    | Instructions prepared by the OCR are to be followed, especially in regards to drilling technique and pump rates.                           | Drilling Crew (Driller & Assistant Driller) | 19-Nov-17       |
| 2                    | If heavy clay is encountered in the surface section, drill string is to be pulled out of hole to surface and bottom hole assembly cleaned: | Drilling Crew (Driller & Assistant Driller) | 19-Nov-17       |

| Part C: Corrective Actions Implemented (Must be completed for all Corrective Actions) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                    |                                                                        |
|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------------------------------------------------------------|
|                                                                                       | <p>oAt the first sign of insufficient cuttings not returning to surface;</p> <p>oOnce the clay interval has been passed through and drilling enters the sandstone / coal zone; and</p> <p>oPrior to the installation of the Washington diverter rubber</p> <p>Increase KCl concentration in drilling mud from 4% to 5% to reduce swelling of clays</p>                                                                                                                                                                                                                                                                                                                                                                      |                    |                                                                        |
| 3                                                                                     | <p>- Personnel to be more attentive to mud returns. Allocate a spotter (e.g. the site geologist / AECOM nightsupervisor) to monitor fluid and cuttings returns during the drilling of the surface section.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | AECOM Site Manager | 19-Nov-17                                                              |
| 4                                                                                     | <p>Set pit volume totaliser (PVT) alarms to 1-2 bbls high-low for gain/loss.</p> <p>Consider making changes to the flow line design, such that cuttings are cleared more readily from the well bore. Considerations to include:</p> <ul style="list-style-type: none"> <li>- Installing a jet in the flowline to help clear excess mud / cuttings buildup</li> <li>- Include a flex coupling in the flow line, so there is increased 'fall' in the flow line to the trip tank</li> <li>- Removing the butterfly valve in the flow line for the top hole as it is a restriction to cuttings flow</li> <li>- Add a 150 mm spacer to the conductor casing riser, to allow for variable well pad construction levels</li> </ul> | Rig Manager        | 19-Nov-17 for the PVT alarm<br>8-Dec-17 for the flowline modifications |

Add rows as required.

**Part D: Key Learning's (What should the business learn and pass on from this event)**

The shallow lithological profile at the Hopeland site (particularly less than 30 m depth) is very weak (sandy-clay with some coarse sand material overburden as opposed to rock), increasing the risk of opening a preferential pathway / zone of weakness during drilling. These ground conditions are not insurmountable. Successful drilling of the surface section can be achieved by following the Corrective Actions nominated above.

**Ensuring Corrective Actions are Followed**

The corrective actions noted above are to be incorporated into 'Toolpusher Notes' issued by the OCR as instructions to the drill crew for each hole. These actions will be discussed during the Pre Job Safety Meeting conducted prior to commencing the drilling shift and during the Pre Spud Safety Meeting.

Verification that instructions are being followed will be witnessed by the site supervisors and drilling parameters will be noted in the Daily Drilling Report, based on data from the NOV recording system.

**Distribution** This incident report will be distributed to the project teams of NRM, EHP, AECOM, Silver City Drilling to ensure the lessons learned are shared.

**Person Completing this Form (Contact for further information)**

|                                        |                                                                                                                                                                                                                                                                                                                             |                                |                                |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------------------|
| <b>Name</b>                            | ch4p4( 6) Personal information                                                                                                                                                                                                                                                                                              | <b>Position</b>                | Drilling Manager               |
| <b>Date</b>                            | 20-Nov-17                                                                                                                                                                                                                                                                                                                   | <b>Contact No.</b>             | ch4p4( 6) Personal information |
| <b>Email</b>                           | ip4( 6) Personal information@aecom.com                                                                                                                                                                                                                                                                                      | <b>Status of investigation</b> | Final                          |
| <b>List Investigation Team Members</b> | p4( 6) Personal information (AECOM Project Manager), p4( 6) Personal information AECOM Drilling Manager), p4( 6) Personal information (AECOM Operating Company Representative - OCR),<br>p4( 6) Personal information (Silver City Drilling Site Safety Manager), p4( 6) Personal information (AECOM Nightshift Supervisor). |                                |                                |

**Reviewed by (Compulsory only for Level 3 Incidents)**

|                                |                                                                  |                  |             |
|--------------------------------|------------------------------------------------------------------|------------------|-------------|
| ch4p4( 6) Personal information | sch4p4( 6) Personal information                                  |                  | 20-Nov-17   |
| <b>Name</b>                    | <b>Regional SHE Manager</b>                                      | <b>Signature</b> | <b>Date</b> |
|                                |                                                                  |                  |             |
| <b>Name</b>                    | <b>Regional Managing Director (AECOM Serious Incidents only)</b> | <b>Signature</b> | <b>Date</b> |

## ATTACHMENT 1 - Events and Conditions Timeline

Those referenced:

| Person                          | Abbreviation | Role                                   | Office   |
|---------------------------------|--------------|----------------------------------------|----------|
| sch4p4( 6) Personal information |              | AECOM Operating Company Representative | Hopeland |
|                                 |              | AECOM Nightshift Supervisor            | Hopeland |
|                                 |              | Silver City Drilling Rig Manager       | Hopeland |
|                                 |              | AECOM Project Manager                  | Brisbane |
|                                 |              | AECOM Drilling Manager                 | Canberra |
|                                 |              |                                        |          |
|                                 |              |                                        |          |
|                                 |              |                                        |          |
|                                 |              |                                        |          |

## Project Context:

## Project Context

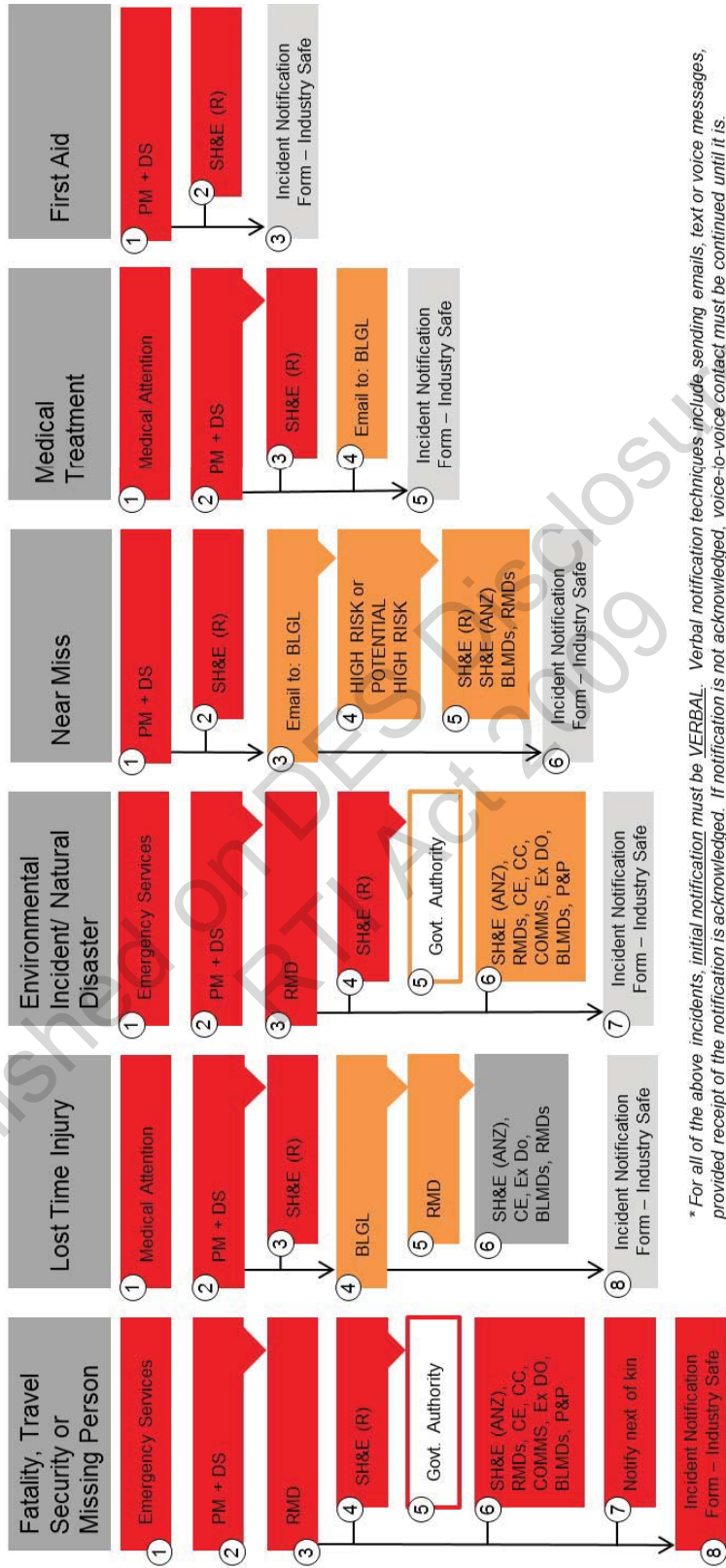
AECOM is installing groundwater monitoring bores around the exterior of the Hopeland site, a former underground coal gasification facility. This incident occurred whilst drilling bore HSMB3D in the north-west corner of the site.

## Project Timeline:

| Date/Time                                       | Event | Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Pre Event</b> (add more rows as required)    |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 18:30                                           |       | Commence drilling surface section from 7.07 mGL; drilling was through a heavy, sticky sandy-clay which was not present at the previous drilling location on site (soil change).                                                                                                                                                                                                                                                                                                                                                                          |
| 19:35                                           |       | Drilling stopped at 17.24 mGL, and a rubber fitted in the Washington diverter (to facilitate gas diversion), given the bottom hole assembly / drill string stabilizers had passed through the Washington diverter (30 minute operation).                                                                                                                                                                                                                                                                                                                 |
| 20:05                                           |       | Resumed drilling. The driller initially sets the mud pump rate to the same rate used previously to drill through the shallower section (~60 stokes per minute), sufficient cuttings were not observed within the drilling mud returning to surface (i.e. hole cleaning was not occurring).                                                                                                                                                                                                                                                               |
|                                                 |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>During Event</b> (add more rows as required) |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 20:07                                           |       | Driller increases the mud pumping rate to (~80 strokes per minute) in effort to improve hole-cleaning (increase cuttings returns to surface), working on the assumption that additional pressure is now required for the cuttings to be lifted from the wellbore (annulus) and past the newly installed Washington diverter rubber. Stand pipe pressure initially increases from ~10 psi to ~75 psi and continues to climb to ~125 psi over several minutes. Losses of mud to formation begin, evidenced by the decreased fluid volume in the trip tank. |

| Date/Time                                            | Event | Comments                                                                                                                                                                                             |
|------------------------------------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 20:13                                                |       | Cuttings return to surface has not resumed at the flow line. Driller increases pump rate again from ~80 stokes per minute to ~110 stokes per minute in an effort regain cuttings returns to surface. |
| 20:17                                                |       | Drilling mud observed at ground surface. Pump rate reduced to 60 strokes per minute.                                                                                                                 |
| 20:20                                                |       | OCR & SSM (Rig Manager) called to well from site accommodation.                                                                                                                                      |
| 20:25                                                |       | NRM Site Safety Manager called on site radio to inform of situation.                                                                                                                                 |
| 20:30                                                |       | OCR & SSM (Rig Manager) on site. The mud pump was shut down, at which point the flow of mud to surface ceased.                                                                                       |
| <b>Post event</b> <i>(add more rows as required)</i> |       |                                                                                                                                                                                                      |
| 20:45-22:00                                          |       | Works ceased for safety meeting, formulation of best approach to remedy the situation.                                                                                                               |
| 22:00                                                |       | Carried out planned response described in Part A.                                                                                                                                                    |
|                                                      |       |                                                                                                                                                                                                      |
|                                                      |       |                                                                                                                                                                                                      |

# Safety for Life: Incident Reporting Notification Flowchart



\* For all of the above incidents, initial notification must be VERBAL. Verbal notification techniques include sending emails, text or voice messages, provided receipt of the notification is acknowledged. If notification is not acknowledged, voice-to-voice contact must be continued until it is.  
\*\* Following internal AECOM notifications, ensure that Clients are notified in accordance with their reporting requirements and after available facts/ information to aid preliminary classification has been obtained.

|                 |
|-----------------|
| Immediately     |
| Within 1 Hour   |
| Within 4 Hours  |
| Within 24 Hours |

## AECOM Hotline

If you require advice then you will be connected with a member of the Safety Team. Together we can eliminate self-diagnosis and improve the management of injuries.

Australia  
1800AUIncident (1800 28 4624 3368)

New Zealand  
0800NZIncident (0800 69 4624 3368)

Safety for Life

## Toolpusher NOTES

### Drill Top Hole

Well: HSMB1D

3 Nov 2017

Be sure all tasks are carried out under SCD SOP/JHA system and don't contradict AECOM HSEP

- All depths will reference GL
- Note: Rig table is **1.5m Above GL** top of 9 5/8" CSG is 1.2m below GL.
- Record tag depth in conductor.
- Drift all BHA and D/P to clear any debris (Make sure drift is accounted for always)
- Spud well with caution, note drilling parameters are a guide only & will need to be varied due to hole conditions, prevent washouts & hole cleaning etc;

#### Drilling Parameters:

- Spud with 2klb WOB, 50-70 RPM, 80GPM 40-50SPM and increase gradually over the first 20m to 2/5klb WOB and 0/5klb after BHA, 70/120 RPM and 200-230GPM 100-115SPM.
- Try and keep MW around 8.8ppg Vis 40sec
- Note: conductor set at approximately 6.2mGL+-
- Watch cellar for wash outs while drilling.
- Work each single minimum once.
- Control drill to clean hole if needed.
- Flow check if any gas recorded & any pit rise or sudden drop.
- There could be losses so keep an eye on returns.
- There is always the risk of encountering shallow gas so be vigilant.
- Keep pipe moving always, don't sit in one spot & Circ for long periods.
- Drill ahead to TD will be **72mBGL**
- 1 x cuttings sample to be taken Cleaned and bagged every 3m
- A TD Circ hole clean, flow check, POOH wiper trip to BHA (Keep hole full)
- RIH circ hole clean, (**Double check pipe tally**)
- POOH to run 7" CSG
- Call Personal information Wellpro 1.5hrs prior to landing CSG sch4p4( 6) Personal information
- Call Personal information 3 joints off Bttm

#### Offline Jobs

- Clean up 7 1/16" 3M well head ready to go.
- Set out 4 1/2" CSG & drift and strap.
- Have all CSG running gear ready & inspected for defects.

***Remember Safety is the #1 Priority and everyone goes home safe.***

**If in doubt, stop the job and ask!**

***Work as team and look out for your work mates & Plan ahead.***

Thanks

sch4p4( 6) Personal information

## Basic Information

|                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Involved Employee Name                                                                                                                                                                                                                                                                                                                                                           | sch4p4( 6) Personal information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Involved Employee Tracking ID                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Involved Employee Title                                                                                                                                                                                                                                                                                                                                                          | Environmental Scientist                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Worker Type                                                                                                                                                                                                                                                                                                                                                                      | AECOM Employee                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Project                                                                                                                                                                                                                                                                                                                                                                          | 60528670 DEHP GW Monitoring Network                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Business Group                                                                                                                                                                                                                                                                                                                                                                   | APAC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Strategic Business Unit (SBU)                                                                                                                                                                                                                                                                                                                                                    | ANZ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Area                                                                                                                                                                                                                                                                                                                                                                             | ANZ NWA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| End Market                                                                                                                                                                                                                                                                                                                                                                       | Environment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Business line                                                                                                                                                                                                                                                                                                                                                                    | Environment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Client                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Sub Client                                                                                                                                                                                                                                                                                                                                                                       | DEPT OF ENVIRONMENT & HERITAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Program                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| District                                                                                                                                                                                                                                                                                                                                                                         | ANZ - QNT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Office or Field                                                                                                                                                                                                                                                                                                                                                                  | Field                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Client                                                                                                                                                                                                                                                                                                                                                                           | Department of Environment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <p>The client field does not save information you type into it. It will search for a valid client, based off what you type into the box and suggest a listing of clients for you to choose from. You must select a value from the the suggested list. If you cannot locate the client you are searching for, enter "NA", then select the value "NA" from the drop down list.</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Potential Severity                                                                                                                                                                                                                                                                                                                                                               | 1 - Minor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Potential Probability                                                                                                                                                                                                                                                                                                                                                            | 3 - Occasional                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Risk Assessment                                                                                                                                                                                                                                                                                                                                                                  | Low Risk                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Date of Incident                                                                                                                                                                                                                                                                                                                                                                 | 11/3/2017                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Time of Incident                                                                                                                                                                                                                                                                                                                                                                 | 08:20 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Incident Type                                                                                                                                                                                                                                                                                                                                                                    | Environmental                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Was a Vehicle Involved?                                                                                                                                                                                                                                                                                                                                                          | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Was an employee or directly supervised contractor injured?                                                                                                                                                                                                                                                                                                                       | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Was a Non-Employee injured?                                                                                                                                                                                                                                                                                                                                                      | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Was Property Damage Involved?                                                                                                                                                                                                                                                                                                                                                    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Was This Incident Work Related?                                                                                                                                                                                                                                                                                                                                                  | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Initial Incident Description                                                                                                                                                                                                                                                                                                                                                     | At approximately 20:20 hrs on 3rd November, drilling mud began seeping out of the ground approximately 10 m from the drilling rig, behind the pipe sloop. The release of drilling mud occurred during the drilling of the surface section of HSMB1D, when the hole was drilled to 26.8 mGL (m below ground level). Drilling was immediately ceased and the Site Safety Manager (Rig Manager) and dayshift OCR were called to return to site from their accommodation on site, both arrived on site at 20:30 hrs. The mud pump was shut down and the drill string was pulled out of hole, shortly after which the seepage of mud to surface ceased. |
| Select Additional Incident Forms                                                                                                                                                                                                                                                                                                                                                 | <p>Incident Investigation (form to provide further details about the incident)</p> <p>Security Form</p> <p>Environmental Form</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Country                                                                                                                                                                                                                                                                                                                                                                          | Australia                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Latitude                                                                                                                                                                                                                                                                                                                                                                         | -26.9251700                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## Initial Incident Form:CY17-11987

Longitude 150.6821100

Submitter Phone # p4( 6) Personal inform

### Additional Features

Corrective Actions

Emails

### Attached Files

### History

|         | User                            | Incident Type |                            |
|---------|---------------------------------|---------------|----------------------------|
| Updated | sch4p4( 6) Personal information | Environmental | 5 Nov 2017, 04:56 PM (EST) |
| Updated |                                 | Environmental | 5 Nov 2017, 04:56 PM (EST) |
| Updated |                                 | Environmental | 5 Nov 2017, 04:48 PM (EST) |
| Created |                                 | Environmental | 5 Nov 2017, 04:46 PM (EST) |