INTRODUCTION

Purpose and Scope

This management plan defines the requirements associated with the process of minimising the impact of dust emissions that could potentially be generated from activities at CBH Konnongorring Grain Storage facilities.

CBH is committed to improving the overall environmental impacts of its business, and in achieving the environmental objectives outlined in the CBH Group Health, Safety and Environmental Policy.

All activities undertaken at Konnongorring Grain Storage facilities must comply with this Dust Management Plan.

The plan will be subject to ongoing review and therefore will be subject to change to ensure that it remains relevant and effective considering site performance, past results, and technological advances throughout the life of the site.

Definitions

Term	Definition
Dust	Dust is considered to be any particle suspended within the atmosphere. Particles can range in size from as small as a few nanometres to 100 microns (um) and can become airborne through the action of wind turbulence, by mechanic disturbance of fine materials or through the release of particulate rich gaseous emissions. Dust is measured using a variety of methods, the most common being Total Suspended Particulates (TSP), which normally measure up to 50um, and PM_{10} or $PM_{2.5}$ (particulate matter less than 10um or 2.5um in size, respectively). Deposited matter measures the mass of any particulate falling out of suspension expressed in mass per area per time and is the least commonly used in determining dust concentrations (Environment Australia, 1998).
Fugitive Dust	Refers to dust derived from a mixture of sources, or a source not easily defined and includes dust generated from vehicular traffic on unpaved roads, materials transport, and handling and unvegetated soils and surfaces.
Nuisance Dust	Describes dust particles ranging in size from 1mm to 50um, which reduce environmental amenity without necessarily resulting in material environmental harm.
PM_{10}	A criteria air pollutant consisting of small particles with an aerodynamic diameter less than or equal to a nominal 10 microns. Their small size allows them to make their way to the air sacs deep within the lungs where they may be deposited and result in adverse health effects.
TWA	Time Weighted Average
$PM_{2.5}$	Includes tiny particles with an aerodynamic diameter less than or equal to a nominal 2.5 microns. This fraction of particulate matter penetrates most deeply into the lungs.
NEPM	*National Environmental Protection (Ambient Air Quality) Measure*
CBH	Co-operative Bulk Handling Limited
KGS	CBH Konnongorring Grain Storage facilities
SHARE	CBH incident and hazard reporting system

BACKGROUND

Location

The CBH Konnongorring Grain Storage facilities (KGS) forms part of CBH's grain storage network across the Wheatbelt Region of Western Australia. The KGS is located within the Shire of Goomalling and is located on Northam-Pithara Road between Wongan Hills and Goomalling.

The KGS first started receiving grain in 1934. The site currently has a total storage capacity of 252,000 tonnes across 10 open bulkheads. Storage facilities and associated grain receival, handling and outloading infrastructure are utilised for both road and rail transport.

Figure 1: Konnongorring Grain Storage Location

Extract From MNG

Operations Description

The KGS receives grain from surrounding district via road transport. Received grain is sampled, segregated, and stored on site until it is sent via train to Kwinana Grain Terminal for export.

Other activities conducted at the premises to enable the continued safe and efficient handling of grain include but are not limited to ongoing maintenance on infrastructure, civil and ground improvement works, pavement works, track repair and maintenance and other associated improvement, refurbishment and construction works as required from time to time.

The Area Manager is responsible for dust control on site. Contact details are as follows:

Barry Pearson
Area Manager – Area 5
barry.pearson@cbh.com.au
M 0427 779 273

The site layout plan for the site is illustrated in Figure 2 & 3.

Sensitive Receptors

The KGS is surrounded by land zoned for general farming. Sensitive receptors that may be impacted by dust emissions generated from CBH activities include residential properties, church and institutional areas, town environs and civic & cultural areas. Locations of sensitive receptors and their proximity to CBH operations are outlined in Figure 3.

Figure 2: CBH Konnongorring Grain Storage Traffic Map

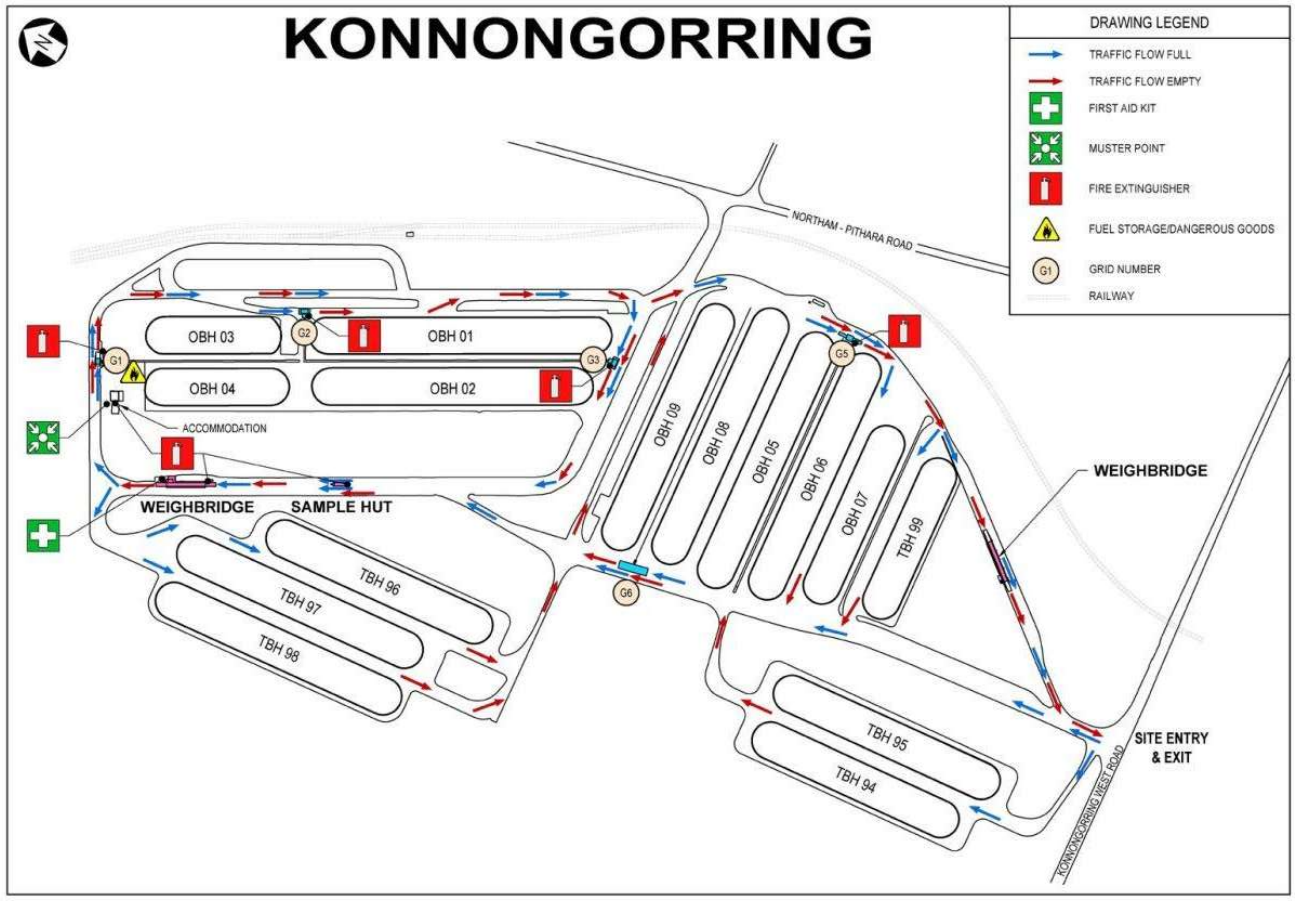

Figure 3: Sensitive Receptor Locations in Proximity to CBH Konnongorring Grain Storage

Extract From Landgate with green, yellow, blue and pink areas identifying church and institutional areas, town environs, residential and civic and cultural areas respectfully. The remaining surrounding paddocks are considered general farming.

COMPLIANCE OBLIGATIONS

Environmental Protection Act 1986

The principal statute relevant to environmental protection in WA. It provides for the establishment of the EPA, preparation, and implementation of EPPs, environmental impact assessment and approvals for new developments, licensing and permitting, and waste management.

Environmental Protection (Unauthorised Discharges) Regulations 2004

Under the Environmental Protection (Unauthorised Discharges) Regulations 2004, it is an offense to cause or allow certain materials to enter the environment in connection with a commercial or business activity.

Under regulation 3(1) a person who, in the course of or in connection with a business or a commercial activity, causes or allows dust (or other schedule 1 material) to be discharged into the environment commits an offence.

Regulatory Criteria for Dust

The National Environmental Protection Council Act 1994 (Cth) has established national objectives in the form of the National Environment Protection Measures (NEPMs) designed to manage ambient air quality concentrations. Fugitive dust emissions as PM10 should not exceed NEPM (Ambient Air Quality) criteria of 50 µm/m^3 (24-hour average) beyond the site boundary.

Table 2: Regulatory Criteria for Dust

Parameter	Monitoring Point	Criteria Target	Averaging Period	Source
Particulates as PM_{10}	Between source and sensitive receptor	50 µg/m^3	24-hour average	NEPC 2016

POTENTIAL IMPACTS

Product Characteristic Summary

Table 3: Product Characteristics

Product Type	Product	Description (particle size – diameter)	Moisture Content	Transport Mode	Storage
Unprocessed Grain	Wheat, Barley, Canola, Lupins	<2.8mm	<13%	Truck and Rail	Open bulkheads

Sources of Dust

Particulate emissions from a wide range of sources can impact upon air quality in proximity to CBH operations including:

- Unloading of bulk grain products at train and truck unloaders
- Loading of bulk products via conveyors and elevators
- Operation of conveyor and grain storage facilities
- Localised maintenance, construction, and excavation activities
- Heavy vehicle movements
- Offsite agricultural, road maintenance and construction activities
- Dust from unsealed surfaces and disturbed ground.

Elevated ambient background dust levels (regional and local scale) can also contribute to particulate levels in proximity to the site along with offsite sources, such as suspended aerosol components in windblown dust from hot and dry environments.

Characteristics of Grain Dust

Grain dust is a type of inhalable dust with its own designated Time Weighted Average (TWA) exposure standard of 1.5 mg/m^3 (Safework Australia). The recommended TWA is for exposure to the total dust produced during harvesting and handling activities of whole grain of oat, wheat and barley prior to the milling operation to minimise the potential for acute irritation of the upper respiratory tract, eyes and skin, bronchitis and decreased pulmonary function (Safework Australia). It is a respiratory sensitiser and can induce allergic reactions in the respiratory system, with symptoms being immediate or delayed and can occur some hours after exposure when symptoms are not often associated with the trigger. Grain dust is not classified as a carcinogen according to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Grain dust consists of 60 to 75 per cent organic material and 25 to 40 per cent inorganic material and can be contaminated by other materials during its growth, transport, and processing. These can include (but are not limited to).

- Bacteria
- Fungal spores
- Insect and insect body parts
- Storage mites and excreta
- Animal hair
- Pollen
- Fungicides, pesticides & fertiliser residues.

Risk Assessment

A risk assessment has been completed to identify potential pathways and receptors that may be impacted from various sources of dust emissions at KGS. Risk ratings have been established based on the CBH Hazard, Risk and Change Management Procedure.

Management actions to mitigate risks identified are outlined in the following sections.

Table 4: Pathways and Receptors Analysis Risk Rating

Potential Emissions	Activity / Sources	Potential Receptors	Potential Pathways	Potential Adverse Impacts	Consequence	Likelihood	Risk Rating
Dust emissions	Truck and rail in-loading or out-loading. Stockpiling of bulk materials (including within storage sheds). Transfer points within the Facility, and other supporting equipment. Exposed areas / unsealed roadways	Residential Public open spaces Commercial premises	Air / wind dispersion. Dust settling on infrastructure Resuspension of particulates in high wind conditions and severe weather.	Impacts to human health through inhalation of particulates.	Minor	Unlikely	Low
				Impacts to amenity at nearby sensitive receptors resulting in nuisance dust (visual dust emissions). Dust deposition on private property. Impacts to public road users. Complaints. Adverse media attention.	Minor	Possible	Moderate

OBJECTIVES AND TARGETS

As outlined in CBH's Environmental Management Standard the key objective for protection of air quality is to ensure "adverse impacts on local or regional air quality from CBH generated air emissions (such as dust, odour, or combustion emissions) are minimised". The following objectives, targets and performance indicators have been established to enable the protection of air quality to be achieved.

Table 5: Objectives, Targets and Performance Indicators

Objective	Target	Performance Indicator
Dust emissions do not adversely impact public health beyond the CBH operational boundary.	Dust emissions related to CBH operations remain below target levels for PM_{10} as defined in NEPM.	Visual monitoring or Continuous PM_{10} monitoring (where deemed necessary).
Dust emissions do not adversely impact public amenity beyond the CBH operational boundary.	No public complaints attributed to dust emissions from CBH operations.	Public Complaints.
Dust emissions do not adversely impact environmental values beyond the CBH operational boundary.	No reportable incidents relating to dust emissions which cause pollution to natural or built environment.	Reportable Incidents in SHARE.

IMPLEMENTATION STRATEGY

A range of management actions are implemented at CBH to ensure that objectives and targets for protecting air quality can be met. The management actions in the table below shall be implemented by CBH, Contractors, and customers to enable dust management objectives to be achieved.

Aspect	Dust Management Action	Frequency/Timing	Responsibility
Training	Environmental issues including dust management are and will continue to be included as part of CBH induction programs for all CBH employees and contractors	Prior to new employees starting	Area / Project Manager
Grain dust suppression systems	Product moisture management is not currently in place or possible at grain handling facilities due to quality impacts to the grain. Investigations are ongoing as to where misting may be beneficial but not pose any product quality risk.	n/a	n/a
Conveyors	Wherever practicable dust covers and wind shields shall be maintained on all conveyors to contain dust and spillage. Measures shall be in place to prevent overloading of conveyors and prevent spillages.	Whenever product movement is occurring.	Maintenance Superintendent / Area Manager
Roadways and open areas	Sweeping and housekeeping duties will be completed as required on sealed roadways, and around infrastructure to remove product spillage that has the potential to generate dust. Unsealed open areas and roadways are either sheeted with gravel or appropriate dust suppression or chemical soil stabilisers are applied.	Frequency of sweeping commensurate with build-up. Frequency of dust suppression in line with situational requirements.	Operations Supervisor
Truck Discharge Grids	Regular hygiene activities shall be conducted around truck discharge grids to remove residual product spillage and prevent it becoming windblown. Where product is migrating due to vehicle movement hygiene activities are to be employed. Hygiene of truck wheels and wheel guards shall be undertaken where required to prevent tracking of product outside of discharge grids or storage sheds.	At all times during truck loading and unloading activities.	Area Manager / Maintenance Superintendent
Truck Movement	All grain haulage trucks shall be tarped when transporting product within the facility to ensure dust generation is minimised.	All grain haulage trucks shall be tarped when transporting product within the	Operations Supervisors/ Transporters /Project Manager

Aspect	Dust Management Action	Frequency/Timing	Responsibility
	All site traffic is required to adhere to the site speed limit to minimise dust lift generated by vehicle movement, and this will be communicated at any Growers and Contractor Meetings.	facility to ensure dust generation is minimised.	
Hygiene Program	Hygiene activities will occur daily to maintain a high standard of housekeeping. This reduces the amount of grain and dust build up when more thorough cleaning is required or when maintenance is undertaken. During harvest receivals, efforts are made to sweep dust from the floors of storages on in loading to reduce the amount of dust on outturn. Safety critical grain spills are cleaned up immediately.	At all times during operations.	Operations Supervisor
Inspections	Inspections of facilities shall be undertaken at regular intervals to ensure dust control measures are in place and effective. These include: Environmental Critical Control Verification Inspections Hygiene Inspections Workplace Inspections	As required.	Quality Coordinator / Area Manager / Operations Supervisor
Changes to Operations	Changes to infrastructure, handling methods and throughput volumes shall be thoroughly assessed to ensure environmental, human health and amenity impacts are managed. Project activities outside of operations to have Construction Risk Assessment Workshop (CRAW), and environmental management to be reviewed to include additional controls and monitoring if required.	Prior to change in throughput volume, infrastructure or handling method, or site activities.	Area Manager / Maintenance Superintendent / Project Manager
Boundary dust control	Where deemed necessary shade cloth is to be installed along boundary fence lines at key locations to reduce emissions of fugitive dust from facilities.	As required.	Area Manager/ Maintenance Superintendent / Project Manager

Aspect	Dust Management Action	Frequency/Timing	Responsibility
	Preference for screening trees to be retained and/or planted where landscaping design, Local Government Authority and road safety requirements permit to assist in mitigating nuisance dust.		
Monitoring	Regular visual monitoring of site activities for the generation of excessive dust emissions in order to implement early intervention measures. Daily assessment of weather conditions and potential effect on dust generation from CBH activities. Where required continuous dust monitoring equipment to be installed to assess dust concentrations at CBH boundaries.	As required.	Area Manager / Project Manager / Local Government Authority
Product handling procedures in place to mitigate dust emissions during bulk material handling	Receive Grain SOP Store Grain SOP Outload Grain SOP Outturn Grain SOP Hygiene SOP	At all times during operations.	Area Manager

MONITORING

Dust monitoring data is obtained by from CBH site specific monitoring equipment that is installed where CBH risk assessments identify the measure is necessary or an incident or complaint response requires this as an action.

Monitoring, measurements, equipment siting and reporting will be conducted in accordance with:

- Section 4 of AS 2436-2010 Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites
- AS 3580.1.1-2007 - Methods for sampling and analysis of ambient air Part 1.1;
- National Environmental Protection Council (1998) National Environmental Protection Measure for Ambient Air Quality, June 1998 and variation dated 2015; and
- A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities, Department of Environment and Conservation March 2011.

Real time dust monitoring data, including wind direction information can be collected and access provided to key CBH personnel following approval by the CBH Environmental and Sustainability Manager.

Where real time dust monitoring equipment is deemed necessary, early warning levels and alerts shall be established with the aim to provide early notification to CBH in order to implement effective preventative measures.

TRIGGERS AND CORRECTIVE ACTIONS

In the event of excessive dust emissions being generated from KGS, activities will be reviewed and adjusted until emissions are reduced or controlled.

For trigger events, the process in Figure 4: CBH Guideline for Dust Management shall be followed.

Table 6: Triggers and Corrective Actions

Trigger	Corrective Action	Responsibility
Visual monitoring by CBH staff identifies excessive dust emissions at site boundary.	1. Assess source of dust, wind, weather conditions. 2. Cease dust generating activity until weather conditions change or additional dust control measures are in place.	CBH Operations Supervisors CBH Area Manager CBH Project Manager
Monitoring equipment advise of PM_{10} exceedance of early warning levels.	1. Assess source of dust, wind, weather conditions. 2. Cease dust generating activity until weather conditions change or additional dust control measures are in place.	CBH Operations Supervisors CBH Area Manager
Public complaint received relating to excessive dust emissions.	1. Assess source of dust, wind, weather conditions. 2. Cease dust generating activity until weather conditions change or additional dust control measures are in place.	CBH Operations Supervisors CBH Area Manager
Repeat complaints indicate excessive dust emissions are impacting neighbouring businesses or public.	1. Assess source of dust. 2. Investigate adequacy of control measures. 3. Implement interim dust control measures as necessary until further controls can be put in place.	CBH Operations Supervisors CBH Area Manager CBH General Manager

Figure 4: CBH Guideline for Dust Management

Assess activities and identify source of dust generation	•Confirm dust is from CBH activities and not from external sources. •Identify the specific activities generating the dust.
Are dust control measures in place and working correctly	•Ensure all required dust covers, wind shields, shade cloth and tarps are in place. •Check unsealed areas and earthworks have dust suppression measures as required.
Are hygiene works required to remove excess spilled grain/grain dust.	•Confirm hygiene works being completed frequent enough. •Check if there is an equipment issue resulting in hygiene issues.
Can additional dust control methods be implemented.	•Implement additional dust control measures (additional dust suppression on unsealed areas etc.). •Install additional equipment (shade cloth or covers to create wind breaks etc.).
Do the weather conditions require works to be modified.	•Reschedule activities with high dust generation potential. •Change the location of specific works so dust can be contained to site.
Do activities need to cease until further controls can be implemented or weather conditions become more favourable.	•Cease works generating excessisve dust. •Contain any material that is generating excessive dust.

STAKEHOLDER CONSULTATION

CBH stakeholder consultation and liaison in relation to dust includes the following:

- Regular consultation with growers, local government authority and other stakeholders.

CBH will work closely with all relevant stakeholders in relation to dust generation concerns associated with CBH activities.

REPORTING

This section outlines the reporting responsibilities for all concerned, not only the individual with specified tasks but all employees, contractors, and visitors to CBH sites and receival points.

All CBH employees and contractors will be required to report generation of significant dust plumes, and /or any increase in dust levels to their Supervisor or Area/Project Manager as per the Incident Management Group Procedure. All incidents relating to excessive dust emissions or complaints shall be recorded in SHARE.

In addition, ***any complaints received*** regarding dust is immediately referred to the Area/Project Manager, who would then notify the General Manager of the following information.

- Date of complaint
- Time of Complaint
- Location of Complaint
- Nature of Complaint
- Name of Complainant (if given)
- A summary of any action taken.

All feedback and complaints shall be investigated thoroughly, and an assessment completed to determine appropriate course of action. A response is to be provided to the complainant within three (3) business days, or as otherwise agreed between CBH and the complainant. This response may include investigation findings and remedial action taken.

MONITORING, EVALUATION AND REVIEW

This Dust Management Plan will be reviewed regularly in response to the following:

- Significant changes to infrastructure, operations and/or dust control equipment
- In response to issues raised by regulatory agencies or the community or relevant stakeholders
- In response to additional studies, significant incidents, or monitoring information (such as dust/wind modelling).

The Document Custodian is responsible for conducting the review in accordance with the Document Control and Records Management Group Procedure (STORE-1473931053-253).

ASSOCIATED DOCUMENTS

Reference	STORE ID
Health, Safety and Environment Policy	STORE-1473931053-383
Environmental Management Standard	STORE-1473931053-261
Hazard, Risk and Change Management Procedure	STORE-1473931053-382
Incident Management Group Procedure	STORE-1473931053-24370

REFERENCES

Document	Title
Act or Regulation	Environmental Protection Act 1986 Environmental Protection (Unauthorised Discharges) Regulations 2004 The National Environmental Protection Council Act 1994 (Cth)
Report	Safe Work Australia Evaluation Report - Grain Dust (Oats, Wheat, Barley)

DOCUMENT CONTROL

Authorities

Approved By	Area Manager – Barry Pearson	**Approval Date**	18/10/23
Review Frequency	Annual	**Next Review Date**	18/10/24
Owner	Principal – Environment & Sustainability	**Custodian**	Specialist – Environment & Sustainability
Division	Operations	**Department**	Health, Safety and Environment

Review History

Version	Date	Author	Description of Revision
1	10/07/2023	Specialist – Environment & Sustainability	Document created in new template

CBH RISK CRITERIA AND RISK RATING MATRIX

Table 7: Risk Impact / Consequence Rating

Impact Area	1- Insignificant	2 - Minor	3 – Moderate	4 – Major	5- Catastrophic
Health and Safety – Injury or Illness	No medical treatment required. Negligible or no injury	Minor injuries / occupational illness / psychological injury requiring First Aid or Medical treatment	Serious injury / occupational illness / psychological injury requiring possible hospitalisation or permanent loss / significant effects	Life-threatening or multiple serious injuries or illnesses requiring hospitalisation and permanent effects	Death or multiple life-threatening injuries or illnesses
Environment	No effect on local environment No impact outside of site boundary No environmental breach	Minor environmental effect Minor release contained on site No environmental breach	Moderate environmental effects to localised area Moderate release contained within site boundary Environmental breach that would require reporting to an external body	Major environmental effects to localised area with offsite impacts Major release contained within site boundary Environmental breach that would require reporting to environmental or external body with likely investigation	Serious long-term effects to wide area and/or irreversible damage to environment Major release not contained within site boundary Breach likely to result in loss or impact on site operations and activities
Reputation	Minor local community / shire attention	Adverse attention from local media	Significant adverse local public or media attention	Significant adverse national public or media attention	Significant loss of international public or media attention or loss of grower/customer support.
Legal	Minor internal non-compliance	Minor legal issues and non-compliances	Internally detected breaches, reported to regulators	Serious breach of legislation with remediation notice	Suspension of licenses, prosecution and litigation
Financial	Under $1m	$1m - $10m	$10m-$50m	$50m-$150m	Over $150m
Continuity	1 hour	1 day	2-5 days	1-4 weeks	>4 weeks

Table 8: Likelihood Rating

Rating	Frequency	Description	Frequency example
1	Rare	The event may occur in exceptional circumstances	Occur in more than 100 years
2	Unlikely	The event could occur sometimes	Occur between 10 and 100 years
3	Possible	The event should occur sometimes	Occur between 1 and 10 years
4	Likely	The event will probably occur in most circumstances	Occur once or twice per year
5	Almost certain	The event is expected to occur in most circumstances	Occur more than twice per year

Table 9: CBH Risk Rating Matrix

		Consequence				
		1- Insignificant (No Injuries or health issues)	**2 – Minor** (First Aid treatment)	**3 – Moderate** (Medical treatment, potential LTI)	**4 – Major** (Permanent injury or illness)	**5- Catastrophic** (Fatality)
Likelihood	**1 – Rare** (Occur in more than 100 years)	Low 1	Low 2	Low 3	Low 4	Moderate 5
	2 – Unlikely (Occur between 10 and 100 years)	Low 2	Low 4	Moderate 6	Moderate 8	High 10
	3 – Possible (Occur between 1 and 10 years)	Low 3	Moderate 6	High 9	High 12	Critical 15
	4 – Likely (Occur 1 or 2 times per year)	Low 4	Moderate 8	High 12	Critical 16	Catastrophic 20
	5 – Almost Certain (Occur more than 2 times per year)	Moderate 5	High 10	Critical 15	Catastrophic 20	Catastrophic 25