

## Example of a Documented Risk Management Process

### Record of risk management 'process' to be carried out in accordance with the *Workplace Health & Safety Regulation 1997*

Date of assessment: 01/01/2005  
.....

Date/times of work: 01/01/2005  
.....

Work to be undertaken for:

...*Seafood harvesting using surface supply breathing apparatus on air to depths less than 30m*...

Work to be undertaken on:

...*Registered dories from Vessel Catnip III*.....

Site location:

...*Northern Great Barrier Reef*.....

Name of person conducting risk assessment process	Competency determined by
John Begood	ADAS Level II

Names of divers participating in underwater diving work	Competency determined by
1. John Smith	PADI Dive master and AS 2815.2 skills
2. Bill Brown	Certificate III in Seafood Harvesting
3. John Begood	ADAS Level II

Name of all other persons involved in the work	Role
1. Joe Blow	Master
2. Jack Ladd	Dory Master
3. Dan Mann	Dory Master



## Assessment of Consequences

LEVEL	DESCRIPTION	EXAMPLE
1	<i>Major</i>	Extensive or life threatening injuries, emergency protocols enacted, loss of production capability, emergency services required.
2	<i>Moderate</i>	Medical Treatment required, emergency services required, person is not able to continue work.
3	<i>Minor</i>	First aid required, person may / may not be able to continue work.
4	<i>Insignificant</i>	No injuries, person able to continue work.

## Assessment of Likelihood

LEVEL	DESCRIPTION	EXAMPLE
A	<i>Almost Certain</i>	Is expected to occur in most circumstances.
B	<i>Likely</i>	Will probably occur in most circumstances.
C	<i>Possible</i>	Might occur at same time.
D	<i>Unlikely</i>	Could occur at same time.
E	<i>Rare</i>	May occur only in exceptional circumstances.

## Risk Analysis Matrix

LIKELIHOOD	CONSEQUENCE			
	Major 1	Moderate 2	Minor 3	Insignificant 4
A Almost Certain	E	E	H	H
B Likely	E	H	H	M
C Possible	E	H	M	L
D Unlikely	H	M	L	L
E Rare	H	M	L	L

## Risk Score

Symbol	Risk	Pre Dive	During Dive
E	<b>Extreme Risk</b>	Dive must not commence	Urgent action required
H	<b>High Risk</b>	Dive must not commence	Action required at the earliest possible moment
M	<b>Moderate Risk</b>	Dive must not commence	Action required
L	<b>Low Risk</b>	Diving may commence / Manage with routine practices	Continue managing with routine practices
CR	<b>Controlled Risk</b>	Diving may commence with controls in place	Diving may commence with new controls in place

### Important Note:

Diving operations should only commence or continue when the risk score is either L or CR.

Should the risk score change during diving operations then actions above should be taken to reduce the risk to L or CR.



## Risk Assessment and Control Measures

Level of diver competence					
Identified Hazard	Assessed Consequence	Assessed Likelihood	Assessed Risk	Risk Control	Assessed Risk After Control
No proof of competence Inexperience is specific system of work	1	B	Extreme	Ensure copies are held of each diver's appropriate proof of competency. Undertake and record a training program for each diver including: <ul style="list-style-type: none"> <li>• Induction</li> <li>• Site and/or task specific training</li> </ul> Ongoing review and training.	CR

Environmental condition					
Identified Hazard	Assessed Consequence	Assessed Likelihood	Assessed Risk	Risk Control	Assessed Risk After Control
Strength and direction of wind (consider emergency response)	2	B	High	If there is a significant adverse change in the environmental conditions affecting the diving from the work assessed in this document, the risk assessment process must be undertaken again. Daily weather reports checked. Divers briefed and sites selected according to wind	CR
Current and tide	2	A	Extreme	Daily tides checked, divers briefed and sites selected according to current and tide	CR
Underwater Visibility	3	B	High	Daily visibility checks, divers briefed, sites selected according to visibility	CR
Entrapment Hazard	3	B	High	Divers to avoid entrapment situations	CR
Depth of Worksite	2	B	High	Monitor depth, do not exceed planned maximum	CR
Water Temperature	4	B	Moderate	Monitor	CR
Time of Day	4	B	Moderate	Monitor – last dive by 17:00	CR
Underwater Terrain	4	B	Moderate	Monitor – sea depths	CR
Atmospheric Temperature and Humidity	4	B	Moderate	Monitor	CR
Contaminants	2	E	Moderate	Monitor	CR
Isolation of Dive Site	1	A	Extreme	Daily radio checks, regular first aid equipment checks and currency of workers' first aid certificates. See emergency and rescue plans.	CR

**Task related conditions**

Identified Hazard	Assessed Consequence	Assessed Likelihood	Assessed Risk	Risk Control	Assessed Risk After Control
<p>(Consider Complexity, non-routine nature)</p> <p>Diving systems includes:                      Appropriate plant: eg air supply, secondary air supply, emergency air supply, personal protective equipment, air hose and attachments, weight system                      Appropriate personnel: eg numbers, fitness, competence, roles, responsibilities, duties                      Appropriate systems of work: eg decompression management systems, dive planning, communications, logging of dives, equipment inspection and maintenance, record keeping                      Appropriate emergency systems.</p>	<p style="text-align: center;">1</p>	<p style="text-align: center;">A</p>	<p style="text-align: center;">Extreme</p>	<p>Develop an appropriate diving operations manual addressing:</p> <ul style="list-style-type: none"> <li>• Training, supervision, experience and selection of employees, including staffing levels</li> <li>• Organisation and planning before, during and after the dive</li> <li>• Selection of appropriate plant</li> <li>• Selection of the appropriate form and level of communication</li> <li>• Personal protective equipment</li> </ul> <p>In selecting and using appropriate plant, an appropriate standard eg AS/NZS 2299.1 should be followed.</p> <p>Ensure each item of plant is used appropriately with regard to:</p> <ul style="list-style-type: none"> <li>• Design eg manufacturer's specifications</li> <li>• Installation eg manufacturer's instructions</li> <li>• Inspection eg pre-use checklists</li> <li>• Use eg diving operation's manual</li> <li>• Maintenance eg manufacturer's instructions</li> <li>• Repair eg manufacturer's instructions</li> </ul> <p><b>If there is a significant change in the way the work is to be done from the work assessed in this document, the risk assessment process must be undertaken again.</b></p>	<p style="text-align: center;">CR</p>

**Hyberbaric/ physiological hazards**

<b>Identified Hazard</b>	<b>Assessed Consequence</b>	<b>Assessed Likelihood</b>	<b>Assessed Risk</b>	<b>Risk Control</b>	<b>Assessed Risk After Control</b>
Frequency of diving, inc repeat diving, multi day diving.	1	A	Extreme	Ensure all diving is consistently and conservatively carried out in accordance with one appropriate set of dive tables. Ensure appropriate plant is selected and used. Ensure an appropriate system of worked is adopted (see section above) Ensure factors that increase the risk of decompression illness are monitored and minimised eg dehydration, multiple day diving, multiple ascents. Ensure a dive safety log is kept for each dive and signed as required. Monitor logs to ensure one set of dive tables is followed consistently and conservatively. Ensure each diver keeps a personal log of dives.	CR
Depth of Dive	1	A	Extreme	As above	CR
Duration of Dive	1	A	Extreme	As above	CR
Breathing Gas	1	A	Extreme	Ensure breathing gas quality is tested routinely eg every 6 months Ensure gas supply systems, including compressors and filters are appropriate and maintained in accordance with the manufacturer's instructions. Ensure gas intakes are appropriately constructed and inspected daily Where gases other than air are used, ensure each diver has proof of appropriate additional competencies, ensure appropriate equipment is used and ensure appropriate systems of worked are documented and strictly adhered to. Note there are specific risks associated in diving with gases other than air. Specific assessment and control of these risks will be required.	CR
Exertion Required to Reach Dive Site	3	C	Moderate	Ensure each diver has an adequate air supply eg for a demand gas supply device, the minimum pressure shall be 700kPa plus 10kPa for every meter of the diver's working depth	CR
Exertion Required to Conduct Task	3	C	Moderate	See above	CR

Excessive Noise	2	B	High	Hearing protection for dory driver	CR
Immediate Pre Dive Fitness	2	A	Extreme	Ensure copies are held of each diver's certificate of medical fitness to dive. Ensure work is not contrary to any limitations. Ensure divers are fit daily. Monitor hydration, alcohol, drugs.	CR
Altitude Exposure	1	C	Extreme	Follow flying after diving advice	CR

**Associated activities hazards**

Identified Hazard	Assessed Consequence	Assessed Likelihood	Assessed Risk	Risk Control	Assessed Risk After Control
Manual Handling	2	B	High	Minimise lifting by divers, when lifting is necessary use proper lifting technique. Minimise heavy work for divers post dive.	CR
Boat Handling	1	A	Extreme	Ensure each worker associated with the dive work eg dory drivers is competent for the work. Hold proof of competency.  Undertake and record a training program for each associated worker including: <ul style="list-style-type: none"> <li>• Induction</li> <li>• Site and/or task specific training</li> <li>• Ongoing review and training.</li> </ul>	CR
Dive Site Entry*	3	D	Low	Ensure appropriate measures are taken to minimise or prevent damage or injury to the diver or equipment eg propeller guards, ladders	CR
Dive Site Egress*	1	B	Extreme	As above	CR
Crane / Winch Operations	Not applicable				
Rigging	Not applicable				
Topside Plant*	1	A	Extreme	Maintenance, inspection and monitoring of whole surface supply system	CR
Dive Platform	Not applicable				

**Other hazards**

Identified Hazard	Assessed Consequence	Assessed Likelihood	Assessed Risk	Risk Control	Assessed Risk After Control
Dangerous Marine Animals	1	E	High	Ensure divers wear appropriate personal protective equipment. Monitor risks and abort dives if risk cannot be controlled.	CR
Non Associated Boat Traffic (Small Craft)*	1	D	High	Ensure appropriate measures are taken to minimise or prevent damage or injury to the diver or equipment eg Code A flags	CR
Shipping Movements	1	C	Extreme	As above	CR
Water Inlets	Not applicable				
Water Outfalls*	Not applicable				
Water Pressure Differentials*	Not applicable				
Use of Hazardous Substances	Not applicable				
Existing in Water Chemical Pollutants	3	E	Low		Low risk
Existing in Water Biological Pollutants	3	E	Low		Low risk
Explosives	Not applicable				
Hazards Peculiar to Dive Site	3	E	Low		Low risk

**Emergency response factors**

Identified Hazard (Consider what is required for searching, recovery, first aid, evacuation)	Assessed Consequence	Assessed Likelihood	Assessed Risk	Risk Control	Assessed Risk After Control
Location and Availability of Emergency Personnel	1	B	Extreme	Provide appropriate emergency systems including: <ul style="list-style-type: none"> <li>• Documented emergency plans</li> <li>• Rescue plans and equipment</li> <li>• Training of workers</li> <li>• First aid and oxygen equipment and trained personnel.</li> </ul> Effective communications	CR
Location and Availability of Emergency Equipment	1	B	Extreme	As above	CR
Emergency Response Procedures- incl communications	1	B	Extreme	As above	CR
Standby diver/ buddy*	1	B	Extreme	As above	CR
Alternate air supplies*	1	B	Extreme	All divers with bailout and secondary air supply	CR

**Significant Changes – Work must stop immediately if there is a significant change in the method or type of work to be done or in the environmental conditions.**

All workers must read and understand this record.

Names of Workers	Signature: I acknowledge that I have read this record.	Date
John Begood	J Begood	01/01/2005
John Smith	J Smith	01/01/2005
Bill Brown	B Brown	01/01/2005
Jack Ladd	J Ladd	01/01/2005
Dan Mann	D Mann	01/01/2005
Joe Blow	J Blow	01/01/2005

## RISK CONTROL

In deciding on control measures, the hierarchy of control measures mentioned in AS/NZS 2299 part 1, appendix D3.2 must be taken into account:

**1 General** Control of risk is achieved by selecting from the hierarchy of control measures, one or more measures which individually or in combination achieve the required risk reduction.

**2 Control measures** Appropriate control measures should be applied to risks, using the hierarchy of controls in the following order:

- (a) *Elimination* – Where the level of risk cannot be controlled to an acceptable level, no diving should take place.
- (b) *Substitution* – Where the risk can be controlled by performing the task by using alternative methods of diving, consideration should be given to using these alternative methods.
- (c) *Design* – Plant and procedures should be designed to minimize risk.
- (d) *Isolation* – Persons should be isolated from the identified hazards.
- (e) *Administrative* – Every dive plan should seek to minimize the degree and duration of the divers exposure to risk.

NOTE: Almost every aspect of dive planning falls into this administrative category.

Administrative controls include:

- (i) training, supervision, experience and selection of employees, including staffing levels;
  - (ii) provision of an appropriate diving operations manual;
  - (iii) organization and planning before, during and after the dive;
  - (iv) selection of appropriate plant; and
  - (v) selection of the appropriate form and level of communication.
- (f) *Personal Protective Equipment* – Appropriately designed and sized personal protective equipment should be provided, used and maintained. The limitations of all equipment used should be identified as part of the risk assessment process. Information from manufacturers and from records of prior experience should be used to identify limitations.

