

Business Management System Form		Document No: IB-HS-WI-0101-IB-F-03	Page: 1 of 18
BIAF Safe System of Work		Effective Date: 01Jan 2020	Rev. No: 1
Issuing Process: Health Safety & Environment	Process Owner: BIAF HSE Process Owner	Date Last Reviewed: 01Jan 2020	

1.0 Project Details:

Location / Project	Milford Haven: Pembroke PS Marine Ecology Monitoring		
Task	Subtidal benthic sampling surveys		
Project #	B2386200	Date	12/07/2021

2.0 Scope of Work

Jacobs UK Ltd. has been appointed to carry out subtidal benthic monitoring at fourteen sites within the vicinity of the Pembroke Power Station site. Subtidal benthic sampling will be done as part of a monitoring programme of benthic environments and a continuation of baseline survey work undertaken by Jacobs since 2009.

In addition to this method statement and risk assessment, the project team should refer to and sign the project Health, Safety and Environmental Plan (HSE Plan).

The survey will be carried out using the survey vessel 'Sea Leopard' and is due to be completed w/c 19th July 2021. The Milford Haven tide times for July are listed in Appendix A.

3.0 Resources

Labour	<p>The subtidal benthic survey will be completed by three of the Jacobs Pembroke survey team who will have completed an approved 'Safety at Sea Course' (sea survival) within the last five years and have knowledge of maintenance and use of marine lifejackets. The vessel used will be fully coded according to MCA guidelines which ensures that the vessel is equipped with the necessary lifesaving equipment (to include first aid kit, life raft and flares).</p> <p>Each staff member will have attended a boat safety induction in the last six months or be provided with a refresher prior to departure from the marina. During the induction, staff will be made aware of the location of safety equipment.</p> <p>Contact details for the technical manager, whose role is to plan the logistics of the work and be the point of offsite contact for any issues, are listed in Section 7 below.</p>
Materials	Sample preservative – Formaldehyde Solution (formalin) 36%, <10% in the field samples.

Tools/PPE/ equipment	<p>Equipment: 0.5mm sieves, sample pots, squeezey bottles, plastic ladles, ruler GPS or Trimble, camera, pro forma, permanent marker, pencils, and weather writer.</p> <p>Mandatory PPE:</p> <ul style="list-style-type: none">• MCS approved (275N) lifejacket• Hard hat with four point chin strap• Steel toe cap and midsole waterproof footwear (not rigger boots)• Safety glasses• Nitrile gloves for sampling• Ear plugs	<p>As required:</p> <ul style="list-style-type: none">• Spill kit• Dispenser and respirator.• Antiseptic, antibacterial hand gel/wash/wipes.• Gloves (minimum cut level C)• Warm hat/gloves• Waterproof clothing.• Sun cream (Factor 50)• Neck cape (if required by staff member)• Tinted light eye protection.• Face masks and gloves (SSoW Covid Statement) for crew and Jacobs staff.• Sealable plastic bag for used items																																
Programme	<p>The 'Sea leopard' has been booked throughout the year for agreed survey work. Willie Thomas should be contacted to arrange the specific survey details. Attention must be taken to tides, wind speeds and direction (Appendix A and Appendix B). Subtidal grabbing survey work is carried out during daylight hours (i.e. 08:00 – 18:00). The sites to be surveyed are as Table 1 below and within Appendix C:</p> <p>Table 1: Target locations for grab sites at Milford Haven</p> <table><tr><th>Site</th><th>Lat/Long (WSG84)</th><th>Site</th><th>Lat/Long WSG84)</th></tr><tr><td>2</td><td>51.6845°N 04.98244°W</td><td>11</td><td>51.6914°N 04.99947°W</td></tr><tr><td>4</td><td>51.6851°N 04.97760°W</td><td>12</td><td>51.6932°N 05.00001°W</td></tr><tr><td>6</td><td>51.6872°N 04.97838°W</td><td>13</td><td>51.6914°N 04.9962°W</td></tr><tr><td>7</td><td>51.6899°N 04.98997°W</td><td>14</td><td>51.6915°N 04.9938°W</td></tr><tr><td>8</td><td>51.6924°N 04.99108°W</td><td>15 (MH10)</td><td>51.6985°N 04.9694°W</td></tr><tr><td>9</td><td>51.6919°N 04.99597°W</td><td>16 (MH4)</td><td>51.6988°N 05.0141°W</td></tr><tr><td>10</td><td>51.6946°N 04.99664°W</td><td>17 (MH6)</td><td>51.6987°N 05.0546°W</td></tr></table> <p>Staff will ensure to use the welfare facilities at Neyland Marina (SA73 1PY) prior to boarding.</p> <p>It is advised to bring own supplies for hot drinks e.g. cup and coffee/tea bags/milk and a flask of hot water. Staff also to supply own food. No staff are permitted to undertake survey work above a sea state of 'moderate' in the area of the survey (Appendix B).</p> <p>Following the survey, staff will stay in overnight accommodation, ensuring total daily working hours do not exceed 13 hours (as stipulated by the EU Working Directive). No return to Southampton Office to be undertaken following surveys over six hours.</p>		Site	Lat/Long (WSG84)	Site	Lat/Long WSG84)	2	51.6845°N 04.98244°W	11	51.6914°N 04.99947°W	4	51.6851°N 04.97760°W	12	51.6932°N 05.00001°W	6	51.6872°N 04.97838°W	13	51.6914°N 04.9962°W	7	51.6899°N 04.98997°W	14	51.6915°N 04.9938°W	8	51.6924°N 04.99108°W	15 (MH10)	51.6985°N 04.9694°W	9	51.6919°N 04.99597°W	16 (MH4)	51.6988°N 05.0141°W	10	51.6946°N 04.99664°W	17 (MH6)	51.6987°N 05.0546°W
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7	51.6899°N 04.98997°W	14	51.6915°N 04.9938°W																															
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10	51.6946°N 04.99664°W	17 (MH6)	51.6987°N 05.0546°W																															

4.0 Permits/Documents required

Notice to Mariners	X
Marine Licence for grabbing	X
TSPA	X
Jacobs ID	X
MSDS - formalin	X

5.0 Methodology

1	<p>Prior to Survey:</p> <ul style="list-style-type: none"> Ensure that the survey team have had valid personal sea survival training within the last five years. Staff should also be competent to make their personal lifejacket checks (Appendix D) prior to survey. A Notice to Mariners (NtM) request has been sent for all 2021 marine surveys. Prior to each survey and in the event of changes in survey dates an email should be sent to John Warneford at Milford Haven Port Authority (john.warneford@mhpa.co.uk) and also to enquiries@mhpa.co.uk to inform them when the work will go ahead. This should be done at least 2 days prior to the survey date when possible. In the week prior to the survey work, an email to RWE security (Pembroke.security@rwe.com) detailing the survey dates, staff and timings of when Jacobs is expecting to be surveying in the haven and specifically when Jacobs will be in the vicinity of the stations' cooling water intake and outfall. Contact to be made with Sea Leopard skipper to finalise survey details and arrange meeting times. A hire vehicle will be required to transport all necessary sample containers, sampling equipment and instruments. Travel to and from site is covered by a separate travel Safe Plan of Action (TSPA). Ensure suitable accommodation is booked and is assessed against the HSE Covid-19 Accommodation Safety Assessment; this requires sign off by Jacobs HSE and Jacobs PM. Specific activity-related risk assessments and safe operating procedures accompany this SSoW and these must be read by all members of staff before departure. Full safety briefings and tasks will be outlined and discussed prior to works commencing and recorded on the Southampton Server. 	
2	<p>On arrive to site:</p> <ul style="list-style-type: none"> Arrive at Neyland Marina and make contact with Sea Leopard skipper and crew. Mobilisation of grabbing equipment onto the vessel. Safe manual handling methods to be adopted to avoid injuries. Staff will also adhere to the separate Jacobs SSoW Covid-19 Statement at all times. A phone call or text message to be sent to Jacobs buddy at the beginning and end of survey and phone taken aboard the vessel to ensure communication lines remain open. On the day of survey, a call should also be made to RWE security, notifying them of our intentions. Survey laptop and GPS or Trimble to be set up and check it is working prior to departing the marina. The site daily PoWRA (Point of Work Risk Assessment equivalent) will be completed using the JacobsOmni app where possible. The PoWRA will be continued throughout the survey day to ensure that any new hazard is documented. If there are no new hazards, the PoWRA should be documented as such. Staff will follow the StepBack procedure at all times. 	

	<ul style="list-style-type: none"> Staff to ensure all required PPE is donned prior to the survey, ensure buddy checks are carried out. 	
Safety Hold Point <ol style="list-style-type: none"> Staff will also adhere to the separate Jacobs SSoW Covid-19 Statement at all times. Safety induction to be given to any new survey members who have not visited the vessel before or worked aboard the vessel in the last six months. Call to be made to RWE security (01646 422 101) prior to any sampling outside of the cooling water intake and outfall. Port Control will be contacted by the skipper on VHF (Channel 12) to inform them of our survey plan at the beginning and end of each day. Contact must be maintained with Port Control to allow communications regarding boat movements. A phone call or text will sent to Rachel Wilson or Karen Watts at the beginning and end of each day of survey to ensure survey location of the survey team is known. 		
3	During the survey: <ul style="list-style-type: none"> All sample methodologies will follow those outlined by JNCC in the Marine Monitoring Handbook (2001, http://jncc.defra.gov.uk/MarineMonitoringHandbook). Subtidal grabs will be collected from 14 sites using a 0.1m² Day grab. Six replicate subtidal grabs (five for biological analysis and one for physicochemical analyses) will be collected from each of the 14 sites detailed in the programme. The order of which is dictated by tide and following discussion with the skipper. Target sites (Appendix C) will be followed where possible and a GPS (WGS84 datum) is used to ensure accurate location of sites and to fix sample locations. Target sites are indicative only and may be moved during the survey should obstructions or ground conditions require it. Any submerged hazard which has previously caused the sampler to snag has been marked as a waypoint for avoidance. Permission from the skipper must be granted prior to deploying any equipment off the vessel. All equipment deployment and retrieval will be conducted by the boat staff, though survey staff will assist when needed and under supervision with appropriate manual handling procedures adhered to. Assistance will be restricted to positioning of grab prior to, and following deployment, checking grab contents and opening grab onto sieving table. Biological samples will be sieved to 0.5 mm on the boat using hoses, and the samples will then be fixed in 4% buffered formaldehyde solution when back on shore. A COSHH assessment for the use of formaldehyde is attached to this method statement (Appendix E). The Day grab will be recovered and secured to the A-frame at the stern of the boat by the boat crew. The grab will remain in this position during transit between sites and when repositioning. Heavy duty gloves (cut level C) to be worn when deploying/recovering equipment. Grab locations to be logged and recorded using Trimble or GPS software. 	
Safety Hold Point <ol style="list-style-type: none"> Care should be taken on deck due to the presence of winch cables under tension. No equipment or staff will be positioned near to cables under tension. Vessel crew to handle all deploying, recovery and winching operations. All samples and containers to be stored appropriately for transit in-between sites. 		
4	On arrival back at Marina <ul style="list-style-type: none"> Manual handling techniques to be adopted when removing equipment and samples from the vessel. Jacobs are responsible for ensuring all samples and containers are removed whilst HMS crew remove and store the Day grab and sieving tray. 	

	<ul style="list-style-type: none"> Grab samples will be fixed to a 4% Formaldehyde concentration (See COSHH Assessment (Appendix E)). Samples will be labelled appropriately with hazard stickers and the lids will be sealed with electrical tape. The samples are then stored in a sealable crate and loaded safely and securely into the van. Survey laptop and GPS equipment to be packed away and stored safely. All equipment and samples to be stored securely in the vehicle for the return journey. Notify Jacobs buddy of departure. 	
Safety Hold Point 1. Decanting of fixative and preservation of the samples will be carried out in a bunded, well-ventilated area by Jacobs staff who have undertaken the appropriate training (face fitted for a respirator and spill trained).		
5	Post survey: <ul style="list-style-type: none"> Staff will return to Southampton office adhering to the separate TSPA. Following each survey, a debrief email will be sent to the project manager, survey leads and all associated staff providing a summary of the survey to include information on sampling, consumables required for the following survey, welfare issues and any health and safety issues raised in the PoWRA. This is to ensure all survey personnel and management are kept abreast of progress on site, any issues relating to health and safety and welfare. This email is saved to the Southampton Server and any issues or lessons learnt highlighted are followed up with the Project Manager. If necessary, the SSoWRA will be updated to reflect any changes to survey protocols and/or health and safety risks prior to the next survey. Data from the site logs and proforma to be entered and any fish samples brought to the lab to be identified. 	

6.0 Emergency Provisions and Procedures

In the event of an emergency, the Emergency Action Plan should be implemented. The Pembroke Emergency Plan document can be found within the Project Execution Plan and should be read, carried and understood by all staff members prior to survey.

The Jacobs Working On, In or Near Water Safe Working Instruction (SWI; IB-HS-WI-0343-IB) which all staff will follow can be found on <https://jacobsconnect.jacobs.com/docs/DOC-171180> and the Emergency Action Plan is attached to the Project Execution Plan on Compass and within the project folder on MS Teams.

Should an injury arise when immediate medical assistance is required, the coastguard should be contacted by the boat staff, using the boats VHF radio on channel 16. Should the boat staff have been involved in the incident, and no-one is able to use the VHF, a mobile phone can be used to dial 999/112 and ask for the coastguard. They will require as much detail as possible to include the nature of the incident, the name of the vessel and the location of the boat (latitude and longitude). If the coastguard is not needed but medical assistance is required when back at port, the nearest A&E department is at the Withybush Hospital, Haverfordwest details of which are within Appendix F of this SSoW. If an incident is to occur, once safe to do so, Jacobs staff are to follow the verbal reporting chain for incidents to notify Jacobs of the situation located in Appendix G of this SSoW.

At least one member of each survey team is required to hold a 'First aid with work element' or similar qualification. Staff are required to carry a wash and antiseptic cream with them on survey. A first aid kit is available on board the survey vessel.

First-aid: The skipper is a fully qualified first aider and a number of the survey team have the emergency first aid with field element qualification however; first-aid advice from a doctor is also available from the coastguard via channel 16.

Emergency – Healthcare Services/ Hospitals	
Withybush General Hospital Fishguard Road, Haverfordwest, Pembrokeshire, SA61 2PZ	01437 764545 (24 Hr A & E)
St Oswalds Surgery The Parade, Pembroke, SA71 4LD	01646 624198 GP Service by appointment only

7.0 Contact numbers

Site contacts:

Position	Name	Office Number	Mobile Number
Jacobs Project Manager	Rachel Wilson	n/a	07855 410 417
Jacobs Assistant PM	Karen Watts	n/a	07813 763 255
	Anastasia Charalampopoulou	n/a	07789 190 590
Jacobs HSE Manager	Suhky Hogwood	n/a	07811 157 722
Skipper	Willie Thomas	0164 656 2232	07970 873 047
Milford Haven Port Authority	John Warneford	Email: john.warneford@mhpa.co.uk / enquiries@mhpa.co.uk (01646 696 137)	
RWE	Security	Email: pembroke.security@rwe.com 01646 422101	
RWE Representatives	Dafydd Williams	01646 422 123	07974 735 643
	Ben Williams	01646 422 122	07584 703 710
RWE security		Email: Pembroke.security@RWE.com (01646 422101)	




8.0 Declaration

PERSONS IN ATTENDANCE DURING THE WORK

I, the undersigned, have read, discussed and fully understand the above Safe System of Work and Risk Assessment for subtidal grab sampling and will adhere to all its method of working and conditions set down

PRINT NAME	COMPANY	SIGNATURE	DATE

Once approved, the Safe System of Work shall not be deviated from or amended without agreement of the Project Manager or Construction Manager. Following any amendment, the document will be reissued as a revised copy.

Rev 1.0	Prepared by	Reviewed by	Approved by
Name	Oliver McLaren-Roberts	Tim Corbett	Rachel Wilson
Signature			
Date	13/07/2021	14/07/2021	16/07/21

Appendix A: Tide Times – Milford Haven 2021

JULY					JULY - (Continued)				
Date	Time	Height m	Height ft	Range m	Date	Time	Height m	Height ft	Range m
1 Thu	04:58	1.89	6.2	4.33	9 Fri	05:42	6.23	20.5	4.49
	10:59	5.72	18.8	3.83		11:54	1.64	5.4	4.60
	17:15	2.18	7.1	3.54		17:59	6.44	21.1	4.80
	23:26	5.91	19.4	3.74					
2 Fri	05:50	2.16	7.1	3.76	10 Sat	00:18	1.59	5.2	4.84
	11:52	5.47	17.9	3.31		06:20	6.37	20.9	4.77
	18:11	2.40	7.9	3.07		12:31	1.51	5.0	4.85
						18:36	6.57	21.6	5.06
3 Sat	00:22	5.67	18.6	3.27	11 Sun	00:56	1.47	4.8	5.10
	06:47	2.34	7.7	3.33		06:57	6.45	21.2	4.98
	12:54	5.33	17.5	2.99		13:08	1.43	4.7	5.03
	19:15	2.52	8.3	2.81		19:12	6.66	21.9	5.24
4 Sun	01:24	5.54	18.2	3.02	12 Mon	01:33	1.39	4.6	5.27
	07:50	2.40	7.9	3.14		07:34	6.49	21.3	5.10
	14:00	5.34	17.5	2.95		13:45	1.38	4.5	5.11
	20:22	2.49	8.2	2.85		19:50	6.69	22.0	5.31
5 Mon	02:28	5.55	18.2	3.05	13 Tue	02:11	1.35	4.4	5.34
	08:51	2.33	7.6	3.22		08:12	6.48	21.3	5.13
	15:01	5.50	18.0	3.17		14:24	1.39	4.6	5.09
	21:23	2.35	7.7	3.15		20:28	6.67	21.9	5.28
6 Tue	03:26	5.68	18.6	3.32	14 Wed	02:50	1.37	4.5	5.30
	09:46	2.17	7.1	3.51		08:51	6.41	21.0	5.04
	15:54	5.74	18.8	3.57		15:03	1.46	4.8	4.95
	22:14	2.15	7.1	3.59		21:09	6.59	21.6	5.13
7 Wed	04:17	5.87	19.3	3.72	15 Thu	03:30	1.45	4.8	5.14
	10:33	1.98	6.5	3.89		09:33	6.28	20.6	4.83
	16:40	6.01	19.7	4.02		15:45	1.58	5.2	4.70
	23:00	1.94	6.4	4.07		21:53	6.45	21.2	4.87
8 Thu	05:01	6.06	19.9	4.12	16 Fri	04:15	1.58	5.2	4.87
	11:15	1.80	5.9	4.27		10:20	6.11	20.0	4.53
	17:21	6.24	20.5	4.45		16:31	1.75	5.7	4.36
	23:40	1.75	5.7	4.49		22:41	6.27	20.6	4.53
17 Sat	05:03	1.75	5.7	4.52	25 Sun	00:54	0.87	2.9	6.24
	11:12	5.93	19.5	4.18		06:56	6.92	22.7	6.04
	17:24	1.92	6.3	4.01		13:12	0.98	3.2	5.94
	23:37	6.09	20.0	4.17		19:16	7.22	23.7	6.24
18 Sun	06:00	1.92	6.3	4.18	26 Mon	01:39	0.83	2.7	6.39
	12:13	5.79	19.0	3.88		07:40	6.91	22.7	6.08
	18:28	2.06	6.8	3.74		13:56	1.00	3.3	5.91
						20:00	7.18	23.6	6.18
19 Mon	00:42	5.95	19.5	3.90	27 Tue	02:22	0.91	3.0	6.27
	07:09	2.01	6.6	3.94		08:21	6.78	22.2	5.87
	13:22	5.77	18.9	3.76		14:36	1.13	3.7	5.65
	19:42	2.07	6.8	3.70		20:41	7.01	23.0	5.88
20 Tue	01:54	5.94	19.5	3.86	28 Wed	03:02	1.11	3.6	5.90
	08:25	1.98	6.5	3.96		09:00	6.56	21.5	5.45
	14:34	5.92	19.4	3.94		15:14	1.36	4.5	5.20
	20:59	1.92	6.3	4.00		21:20	6.74	22.1	5.38
21 Wed	03:06	6.07	19.9	4.15	29 Thu	03:39	1.40	4.6	5.34
	09:37	1.79	5.9	4.28		09:38	6.27	20.6	4.87
	15:42	6.21	20.4	4.41		15:51	1.66	5.4	4.61
	22:08	1.64	5.4	4.57		21:58	6.40	21.0	4.75
22 Thu	04:14	6.31	20.7	4.68	30 Fri	04:15	1.73	5.7	4.68
	10:39	1.53	5.0	4.78		10:15	5.95	19.5	4.22
	16:44	6.56	21.5	5.03		16:27	1.99	6.5	3.96
	23:09	1.32	4.3	5.24		22:38	6.04	19.8	4.05
23 Fri	05:15	6.58	21.6	5.27	31 Sat	04:53	2.07	6.8	3.97
	11:36	1.27	4.2	5.31		10:56	5.62	18.4	3.56
	17:40	6.88	22.6	5.61		17:09	2.32	7.6	3.30
						23:22	5.68	18.6	3.35
24 Sat	00:03	1.05	3.4	5.84					
	06:08	6.80	22.3	5.76					
	12:26	1.07	3.5	5.73					
	18:30	7.11	23.3	6.04					

AUGUST					Date	Time	Height m	Height ft	Range m
1 Sun	05:39	2.39	7.8	3.29	9 Mon	00:40	1.29	4.2	5.44
	11:45	5.34	17.5	2.95		06:41	6.65	21.8	5.36
	18:03	2.62	8.6	2.72		12:52	1.21	4.0	5.44
						18:57	6.92	22.7	5.71
2 Mon	00:17	5.37	17.6	2.75	10 Tue	01:18	1.09	3.6	5.83
	06:38	2.63	8.6	2.74		07:18	6.80	22.3	5.71
	12:50	5.15	16.9	2.52		13:30	1.07	3.5	5.73
	19:15	2.79	9.2	2.36		19:33	7.05	23.1	5.98
3 Tue	01:29	5.20	17.1	2.41	11 Wed	01:55	0.98	3.2	6.07
	07:53	2.71	8.9	2.49		07:55	6.87	22.5	5.89
	14:10	5.17	17.0	2.46		14:08	1.01	3.3	5.86
	20:37	2.74	9.0	2.43		20:12	7.08	23.2	6.07
4 Wed	02:45	5.27	17.3	2.53	12 Thu	02:33	0.96	3.2	6.11
	09:07	2.58	8.5	2.69		08:33	6.83	22.4	5.87
	15:21	5.42	17.8	2.84		14:46	1.05	3.5	5.77
	21:45	2.49	8.2	2.93		20:51	7.00	23.0	5.94
5 Thu	03:50	5.52	18.1	3.03	13 Fri	03:11	1.07	3.5	5.93
	10:06	2.30	7.6	3.22		09:13	6.68	21.9	5.61
	16:16	5.78	19.0	3.47		15:25	1.22	4.0	5.46
	22:38	2.16	7.1	3.62		21:31	6.80	22.3	5.58
6 Fri	04:41	5.84	19.2	3.69	14 Sat	03:51	1.30	4.3	5.50
	10:54	1.99	6.5	3.86		09:54	6.44	21.1	5.14
	17:01	6.14	20.1	4.15		16:07	1.49	4.9	4.95
	23:22	1.83	6.0	4.31		22:15	6.51	21.3	5.02
7 Sat	05:24	6.16	20.2	4.33	15 Sun	04:34	1.62	5.3	4.89
	11:36	1.69	5.5	4.47		10:42	6.13	20.1	4.51
	17:41	6.46	21.2	4.77		16:55	1.82	6.0	4.31
						23:06	6.14	20.1	4.32
8 Sun	00:02	1.54	5.0	4.93	16 Mon	05:27	1.98	6.5	4.16
	06:03	6.43	21.1	4.90		11:40	5.81	19.1	3.82
	12:14	1.43	4.7	5.00		17:57	2.15	7.1	3.66
	18:19	6.73	22.1	5.30					

Appendix B: Sea State

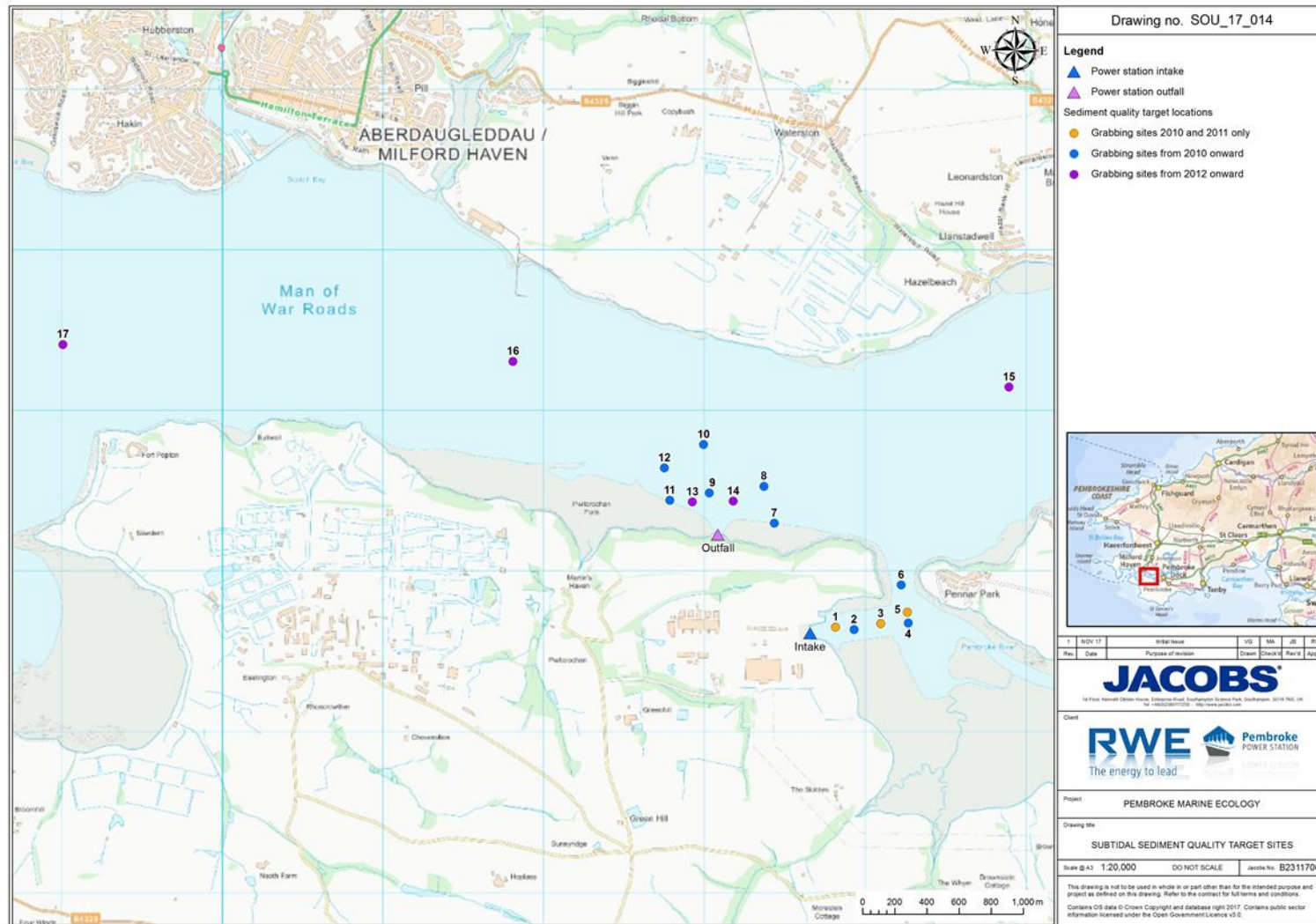
E.1 Beaufort Scale

Beaufort number	Wind speed				Mean wind speed (kt / km/h / mph)	Description	Wave height		Sea conditions
	kt	km/h	mph	m/s			m	ft	
0	0	0	0	0-0.2	0 / 0 / 0	Calm	0	0	Flat.
1	1-3	1-6	1-3	0.3-1.5	2 / 4 / 2	Light air	0.1	0.33	Ripples without crests.
2	4-6	7-11	4-7	1.6-3.3	5 / 9 / 6	Light breeze	0.2	0.66	Small wavelets. Crests of glassy appearance, not breaking
3	7-10	12-19	8-12	3.4-5.4	9 / 17 / 11	Gentle breeze	0.6	2	Large wavelets. Crests begin to break; scattered whitecaps
4	11-15	20-29	13-18	5.5-7.9	13 / 24 / 15	Moderate breeze	1	3.3	Small waves.
5	16-21	30-39	19-24	8.0-10.7	19 / 35 / 22	Fresh breeze	2	6.6	Moderate (1.2 m) longer waves. Some foam and spray.
6	22-27	40-50	25-31	10.8-13.8	24 / 44 / 27	Strong breeze	3	9.9	Large waves with foam crests and some spray.
7	28-33	51-62	32-38	13.9-17.1	30 / 56 / 35	Near gale	4	13.1	Sea heaps up and foam begins to streak.
8	34-40	63-75	39-46	17.2-20.7	37 / 68 / 42	Gale	5.5	18	Moderately high waves with breaking crests forming spindrift. Streaks of foam.
9	41-47	76-87	47-54	20.8-24.4	44 / 81 / 50	Strong gale	7	23	High waves (2.75 m) with dense foam. Wave crests start to roll over. Considerable spray.
10	48-55	88-102	55-63	24.5-28.4	52 / 96 / 60	Storm	9	29.5	Very high waves. The sea surface is white and there is considerable tumbling. Visibility is reduced.
11	56-63	103-119	64-73	28.5-32.6	60 / 112 / 70	Violent storm	11.5	37.7	Exceptionally high waves.
12	64-80	120	74-95	32.7-40.8	73 / 148 / 90	Hurricane	14+	46+	Huge waves. Air filled with foam and spray. Sea completely white with driving spray. Visibility greatly reduced.

E.2

Smooth	Wave height less than 0.5 m
Slight	Wave height of 0.5 to 1.25 m
Moderate	Wave height of 1.25 to 2.5 m
Rough	Wave height of 2.5 to 4.0 m
Very rough	Wave height of 4.0 to 6.0 m
High	Wave height of 6.0 to 9.0 m
Very high	Wave height of 9.0 to 14.0 m
Phenomenal	Wave height more than 14.0 m

Appendix C: Map of Key Locations - Grab Locations



Appendix D: Life Jacket Check List

On Site Pre-use Inspection Check – Quick Check

To be completed periodically if using lifejacket on survey for an extended period. These inspections are in addition to the full checks undertaken in the office before taking lifejacket out.

- If out all week: make these checks twice a week
- If on a boat then made these checks every day

If on site for an extended period consider undertaking a full check at some frequency.

Check the visual aspect of the jacket (welds, stitching, buckle and straps)

Open the lanyard side of the jacket:

- Check that the cylinder is in place and remove. Check that it hasn't been pierced. Check that it is screwed in tightly.
- Check bobbin in firing mechanism
- Check lanyard and green retaining pin
- Replace cylinder
- Check light and whistle are operational / present
- Do up the jacket
- Use memory folds when repacking
- Webbing loop should be inside the jacket and manual lanyard should be outside.

Appendix E: COSHH

COSHH ASSESSMENT FORM: Formaldehyde 36% and <10% (Field)
Version 10

Jacobs

COSHH ASSESSMENT – Formaldehyde Solution 36% and <10% (in the field)

This Assessment must be completed **jointly** by the Supervisor (or any other competent Assessor) and the user.

Name of User(s): Jacobs staff

Location to be used: On survey

Hazardous substance to be used and the amount: Formaldehyde Solution 36% (Formaldehyde and Methanol (at 10%), 2.5 litres and Formaldehyde Solution <10%, <3 litre per sample.

Physical state: Liquid, colourless, pungent odour.

Classifications: Formaldehyde 30-40% CAS No. 50-00-0;
Methanol 10-15% CAS No. 67-56-1




Transportation: 'Formaldehyde solution' - UN No. 2209 – Hazard Class 8 – Packing Group III (LQ diamond required for <10% concentrations)

What process/procedure/preparation requires the use of this substance: Preservation of fish and/or macro-invertebrates in sediment. Transportation of chemical (36%) and preserved samples (<10%).

What are the working conditions: Outside, in a well-ventilated area. Formaldehyde 36% transported in large UN approved Winchester sealed container, or if unopened in the original packaging as supplied by VWR. Formaldehyde 10% (samples) in sealed crates.

Do you have a Data Sheet for this material? Yes

Known or expected risks associated with the use of this substance (Hazard Statements (H) and Precautionary Statements (P)):

HAZARD		
H331 + H311 + H301	Toxic if swallowed, in contact with skin or if inhaled (category 3).	
H314	Causes severe skin burns and eye damage (category 1B).	
H335	May cause respiratory irritation (category 3, vascular).	
H317	May cause an allergic skin reaction (category 1).	
H350	May cause cancer (category 1B).	
H341	Suspected of causing genetic defects (category 2).	
H370	Causes damage to organs (category 1).	
P201	Obtain special instructions before use.	
P280	Wear protective gloves/protective clothing/eye protection/face protection	
P301+P330+P331	IF SWALLOWED: rinse mouth. Do NOT induce vomiting.	
P302+P352	IF ON SKIN: Wash with plenty of water.	
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.	
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing.	
P308+P310	If exposed or concerned: immediately call a poison centre or doctor.	

Harmful effects of substances and Workplace Exposure Limits:



Substance	Effects	Workplace Exposure Limits
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COSHH ASSESSMENT FORM: Formaldehyde 36% and <10% (Field)
Version 10







Jacobs

		Long term exposure limit 8 hours		Short term exposure limit 15 mins	
		ppm	mg.m ³	ppm	mg.m ³
*Formaldehyde solution 30-40%	Toxicity, burns, corrosive, skin sensitisation, evidence of carcinogen.	2	2.5	2	2.5
Methanol 10-15%	Toxic, serious irreversible effects	200	266	250	333

*Justification for the use of formaldehyde solution: Formaldehyde solution <10% will be used as a preservative for fish and marine invertebrate samples as it is the only fixative which allows most identification features to be

retained. Sample pots containing fixed samples at <10% formalin concentration will be labelled with  and .

Control measures and PPE:

Hazard	Control measures	PPE and/or equipment required	Symbol
Contact with eyes	When decanting use chemical dispenser to avoid splashing. Open/close bucket lids away from body.	EN 149 approved respirator and chemical dispenser. Eye wash.	
Skin contact	Use chemical dispenser to avoid splashing. Open/close bucket lids away from body. Dispose and change gloves after preserving samples or before 240 minutes breakthrough time	CE- labelled and approved nitrile gloves (EN 374), protective clothing and chemical dispenser.	  
Inhalation	Use in well-ventilated area (i.e. outside only)	EN 136/140 approved respirator and chemical dispenser.	
Ingestion	Only use clearly labelled original containers and label samples with appropriate suitable hazard labels	Winchester sealed container, CLP-GHS hazard stickers.	
Spill	Use original containers for 36% formalin and use chemical dispenser. Immediately replace lids after use. Dispense over spill kit material/tray. When not in use should be transported in a fully labelled sealed container All fixed samples (in <10 %) to be stored and packed securely in crates during transport, lids taped and labelled correctly.	EN 149 approved respirator, spill kit, bin bags, tray and water supply. Transport: Winchester sealed container for 36%. Sealed buckets with electrical tape around lid and placed in crates for <10% preserved samples	
Fire	Avoid oxidising materials and sources of ignition. Store 36% formalin by doors of vehicle so immediately seen by emergency services	Carbon monoxide and carbon dioxide may be liberated when extinguishing fire.	

COSHH ASSESSMENT FORM: Formaldehyde 36% and <10% (Field)
Version 10

Jacobs

Training Requirements:

- Staff must have been trained in how to correctly put on a full-face respirator before they are permitted to preserve samples or respond to a spill event in the field.
- Staff must read this form and the appropriate Material Safety Data Sheet.
- Staff must be trained in the correct storage, handling and decanting procedures for hazardous liquids.

Emergency action if:

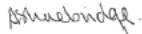
Hazard	Action
Contact with eyes	Rinse immediately with plenty of flowing water and/or eye wash for at least 10-15 minutes holding eyelids apart and seek medical advice. Protect uninjured eye. Remove contact lenses, if present and easy to do using water only.
Skin contact	Rinse immediately with plenty of water and soap. Remove contaminated clothing immediately. Seek medical advice.
Feeling unwell after contact	Seek medical advice immediately (show the chemical label, Material Safety Data sheet and COSHH form).
Inhalation	Immediately seek medical advice. Remove casualty to fresh air and keep warm and at rest. If breathing is irregular or stopped, administer artificial ventilation (if First aid trained).
Ingestion	Immediately seek medical advice. Do NOT induce vomiting. Rinse mouth thoroughly with water. Give nothing to eat or drink.
Spill	Absorb with inert material (e.g. Vermiculite and yellow spill kit material) and place in a sealed container or double bagged. Keep staff upwind of spill. Dispose of material as hazardous waste, when returned to Southampton Office (inform Laboratory Manager of any waste requiring disposal).
Fire	Use fire extinguisher appropriate to surroundings, avoid inhaling fumes. Caution when extinguishing fire in confined spaces, carbon monoxide and carbon dioxide may be liberated.

Special waste disposal requirements: Dispose of (and contaminated gloves after use) as hazardous waste, according to legislation and local regulations. Do not allow substance to enter surface waters or drains.

References (if any): EH40/2005 (2018) 3rd Edition. Workplace Exposure Limits (HSE).

VWR Safety Data Sheet Formaldehyde Solution 36%. Version 7.1 24.07.20

Signature of the Assessor: Alice Shoebridge



Signature of the Checker: Harry Cooper



Date of assessment: 2nd January 2021

Date for assessment review: 2nd January 2022

Appendix F: Hospital Location

Neyland Marina Directions to Withybush General Hospital

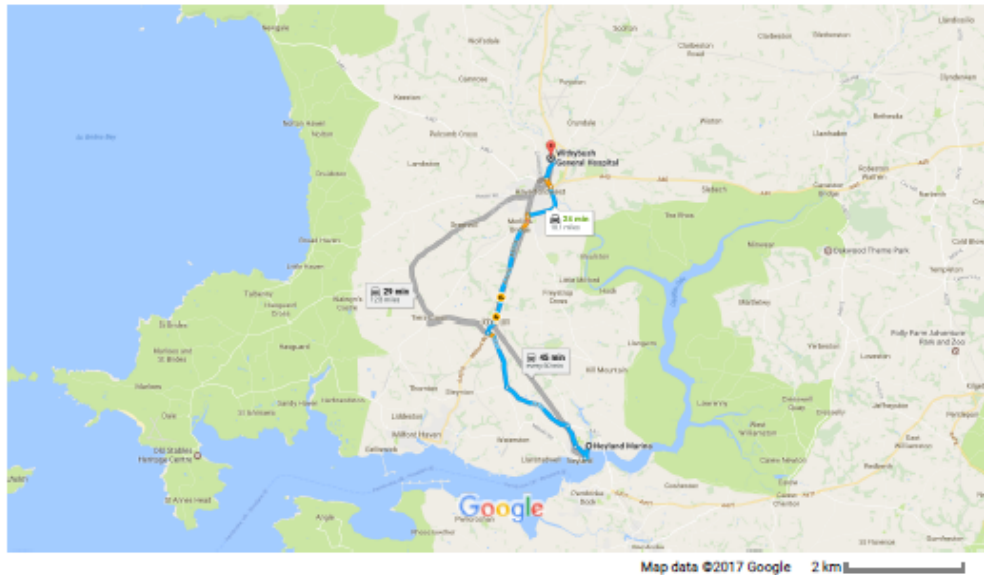
1/13/2017

Neyland Marina, Neyland to Withybush General Hospital - Google Maps

Google Maps

Neyland Marina, Neyland to Withybush General Hospital

Drive 10.1 miles, 24 min



Neyland Marina

Neyland, Brunel Quay, Milford Haven SA73 1PY

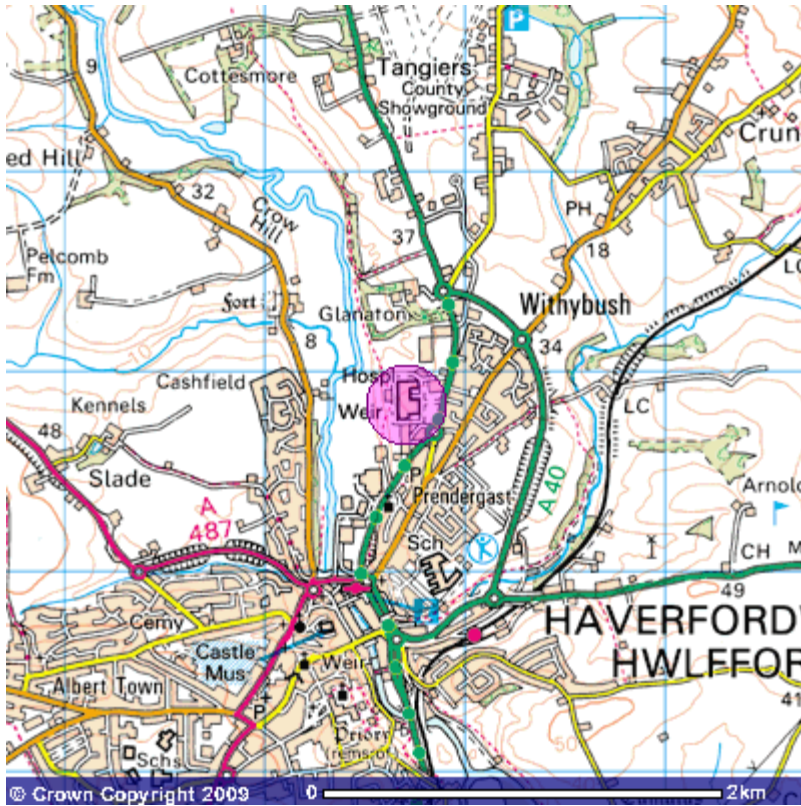
Follow B4325 and A477 to Milford Rd/A4076 in Johnston

1. Head south on Station Rd towards Dolphin Ct
11 min (4.8 mi)
2. Turn right onto High St/B4325
0.4 mi
3. Turn right onto Kensington Rd/B4325
Continue to follow B4325
0.4 mi
4. At the roundabout, take the 1st exit onto A477
0.6 mi
5. At the roundabout, take the 3rd exit and stay on A477
1.8 mi
- 1.5 mi

Continue on A4076 to Haverfordwest

6. At the roundabout, take the 3rd exit onto Milford Rd/A4076
Continue to follow A4076
11 min (5.1 mi)
- 3.1 mi
7. At the roundabout, take the 3rd exit onto Caradog's Well Rd/Freemens Way/A4076
Continue to follow Freemans Way/A4076
1.3 mi

<https://www.google.co.uk/maps/dir/Neyland+Marina,+Neyland+Withybush+General+Hospital,+Fishguard+Rd,+Haverfordwest+SA61+2PZ/@51.7682225,...> 1/2

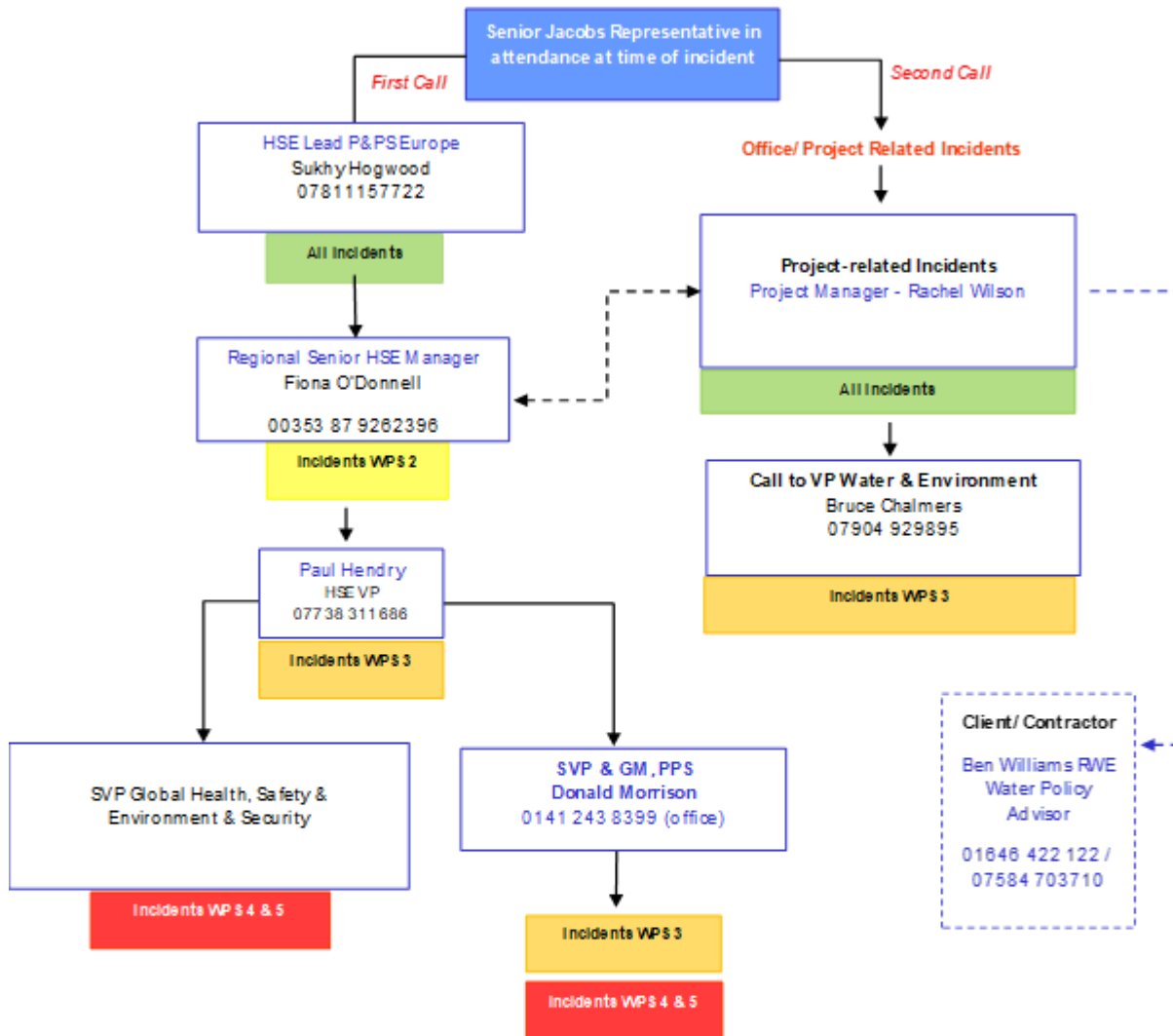


Hospital location: Witherbush general hospital, Fishgaurd Road, Haverfordwest, Pembrokeshire, SA61 2PZ. Phone: 01437 763545.

Appendix G: Verbal Reporting Chain for Incidents

Verbal Reporting Chain - Water & Environment

November 2020



Notes:

- Each Project/ Region and LOB shall provide their own Verbal Reporting Chain customized as required.
- Actual 4 and 5 must be communicated to Legal and Communications by the HSEVP or GVP
- All incidents involving Jacobs employees or a sub-consultant or subcontractor under Jacobs control (including motor vehicle accidents, injuries, environmental incidents and near-misses) shall be reported as soon as possible in person or by telephone.
- If your Project Manager is not your Line Manager, it is essential that a call is made to both.
- Calls must be made to both the relevant Corporate HSE Representative and the Establishment Manager/ Office Leader or Project Manager/ Construction Managers and/or Line Manager (as appropriate). These are not alternatives
- Security and Sustainability Directors/ VPs will be notified where appropriate by HSSEQ VP/ HSE VP
- Where required by legislation, a Jacobs HSES&SManger will make the necessary report to the enforcing authorities.