

Subcontractor's name **Greencap Pty Ltd**Subcontract No. **0 6037- P- 3365-SC119**Subcontract Package Name: **ENVIRONMENTAL IMPACT MONITORING PROGRAM**DOCUMENT TITLE: **WASTE DISCHARGE LICENCE 192 ANNUAL RETURN 2018 – BLADIN
POINT - ENVIRONMENTAL IMPACT MONITORING PROGRAM**Subcontractor's Doc. No.: **AEC318**

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Darwin, Australia					
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CTR RESULT CODE		☒ A ☐ B ☐ N ☐ F			
NEXT STATUS :		☐ FA ☐ FR ☐ FI ☐ FC ☐ AB ☒ NA			
Subcontractor RESUB / NEXTSUB DATE :					
Approval or review hereunder shall not be construed to relieve Vendor / Subcontractor of his responsibilities and liability under the Contract.					
CTR ORGANIZATION		DEPT. NAME		SIGNATURE	
PJ DEPT.					
RESPONSIBLE DEPT.					
RELATED DEPT.					
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28-SEP-2018

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Attachment Licence

Annex A - 2018

Chthonian Shoreline Activities

Attachment

Prepared for:
Talia Ltd

Date: 26 September 2018

Prepared by:

GREENCAP
Going Further in Managing Risk

GREENCAP PTY LTD

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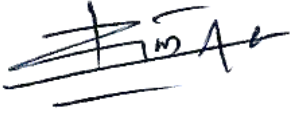
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Waste Discharge Licence 192 Annual Return 2018 – Bladin Point – Environmental Impact Monitoring Program

Contractor Doc. No: V-3365-SC119-8318
Company Doc. No: L290-AH-REP-10896
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1. WASTE DISCHARGE LICENCE 192-3

	WASTE DISCHARGE LICENCE (Pursuant to section 74 of the Water Act)
Licensee	JKC Australia LNG Pty Ltd
Licence Number	WDL 192-3
Registered Business Address:	Level 50, 108 St Georges Terrace PERTH WA 6000
ACN:	154 383 409
ABN:	14 154 383 409
Postal Address:	GPO Box 2079 DARWIN NT 0801
Location of Premises	Ichthys LNG, Bladin Point
Premises Address:	144 Wickham Point Road WICKHAM POINT NT
Anniversary Date:	1 August
Commencement Date:	1 August 2017
Amendment Date:	-
Expiry Date:	31 December 2018
Licensed Activity	Discharge of treated wastewater from the Bladin Point Ichthys LNG temporary wastewater treatment plant to Darwin Harbour subject to this licence.
EN2012/0224-088-0004	
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2. GENERAL

1.	Condition	The Licensee must ensure the licensee and emergency contact details recorded with the administering agency for this licence are correct at all times.
	How	Desktop review.
	Evidence	Verification from Kresho Zic (JKC Project Environment Manager) and Shoanne Labowitch (JKC Government Approvals Advisor) that the Licensee and emergency contact details are correct and current.
	When (Date)	Desktop review completed on 20/08/2018.
	Status	Compliant.
2.	Condition	The Licensee must at all times have a 24 hour emergency contact.
	How	Desktop review.
	Evidence	Refer to Condition 1. The Emergency Contact recorded with the administering agency is Kresho Zic.
	When (Date)	Desktop review completed on 20/08/2018.
	Status	Compliant.
3.	Condition	The Licensee must notify the administering agency within 24 hours if there are changes to the licensee or emergency contact details recorded with the administering agency.
	How	Desktop review.
	Evidence	Verification from Kresho Zic (JKC Project Environment Manager) and Shoanne Labowitch (JKC Government Approvals Advisor) that the Licensee and emergency contact details are correct and current, and there were no changes during the annual reporting period. The Emergency Contact remains as Kresho Zic and the licensee contact remains as Ross McEwen.
	When (Date)	Desktop review completed on 20/08/2018.

	Status	Compliant.
4.	Condition	The Licensee must notify the administering agency within 14 days after ceasing to conduct the activity to which this licence relates.
	How	Desktop review.
	Evidence	The Licenced activity: <i>Discharge of wastewater from the Bladin Point Ichthys LNG Temporary Wastewater Treatment Plant (WwTP) to Darwin Harbour subject to this Licence</i> commenced in March 2015 and remains active and notification was not required during the annual reporting period.
	When (Date)	Desktop review completed on 20/08/2018.
	Status	Compliant.
5.	Condition	The Licensee must notify the administering agency prior to making any operational change that will cause, or is likely to cause, an increase in the potential for environmental harm.
	How	Desktop review.
	Evidence	No operational changes to the WwTP have occurred that caused, or was likely to cause, an increase in the potential for environmental harm.
	When (Date)	Desktop review completed on 20/08/2018.
	Status	Compliant.
6.	Condition	The Licensee must cause a copy of this Licence to be available for inspection by any person, in hard copy form, at the premises.
	How	Site inspection.
	Evidence	A hard copy of the licence is maintained in the Project Environment Manager's office at the Bladin Point Ichthys LNG, 144 Wickham Point Road, Wickham Point NT. A site inspection was conducted and it was verified that a signed hard copy was present.

	When (Date)	A site inspection was conducted and a hard copy of Waste Discharge Licence 192-3 (WDL192-3) was sighted on 20/08/2018.
	Status	Compliant.
7.	Condition	The licensee must provide to the administering agency, within 10 business days of a request, a copy of any document, monitoring data or other information in relation to the activity, in the format requested by the administering agency.
	How	Desktop review.
	Evidence	There were no data requests received from the administering agency during the reporting period.
	When (Date)	Desktop review completed on 20/08/2018.
	Status	Compliant.
8.	Condition	All notices, reports, documents or other correspondence required to be provided as a condition of this licence, unless otherwise specified as a condition of this Licence, must be provided in electronic form by emailing waste@nt.gov.au.
	How	Desktop review.
	Evidence	A desktop review has confirmed that all notices, documents or other correspondence required to be provided pursuant to WDL 192-3 have been provided in legible and electronic form. This includes all relevant records required under the Administrative and Recording and Reporting Conditions of WDL 192-3. The only notices, documents and correspondence required to have been provided to NT EPA under WDL192-3 during the current reporting period was a non-compliance notification issued via email to Waste.NTEPA@nt.gov.au on 20 August 2018 (refer to Conditions 32, 33, 34 for supporting evidence). The Document <i>Waste Discharge Licence 192 Annual Monitoring Report 2018 – Bladin Point – Environmental Impact Monitoring Program</i> (Document Reference: L290-AH-REP-10895 (Greencap Pty Ltd, 2018a) and this Annual Return (Greencap Pty Ltd, 2018b) will be provided in electronic form by 30 September 2018, as specified as a condition of this Licence.
	When (Date)	Desktop review completed on 20/08/2018.

	Status	Compliant.
9.	Condition	The licensee must, for the duration of this licence, implement, maintain and follow a Consultation and Communication Plan which includes a strategy for communicating with persons who are likely to have a real interest in, or be affected by, the activity.
	How	Desktop review.
	Evidence	A Community Relations Plan has been developed by JKC. This is an Ichthys Gas Field Development Project-wide plan and refers to the range of community engagement procedures which are in effect across the Project. The implementation of the Community Relations Plan is via a range of measures including (but is not limited to): • Website and feedback numbers including a 24 hour / 7 days a week (24/7) 1300 community general enquiry number and a 24/7 1300 community feedback number; • Community briefing and consult sessions; • Media releases and television advertising; • Fact sheets; • Community newsletters and bulletins. It is noted that advice re dye testing for the temporary WwTP was included in one of these bulletins; • Specific letter box drops and mail outs when potential construction related impacts may occur; and • Phone surveys. The Ichthys Onshore LNG Facilities Community Relations Plan (L290-AB-PLN-0150) (JKC Australia LNG Pty Ltd, 2013) is given in Appendix A.
	When (Date)	Desktop review completed on 20/08/2018.
	Status	Compliant.
10.	Condition	The Licensee must operate and maintain a community feedback number.
	How	Desktop review.
	Evidence	Refer to Condition 9.
	When (Date)	Desktop review completed on 20/08/2018.

	Status	Compliant.
11.	Condition	The licensee must display the community feedback number: 11.1 Where the licensee has a website, in a prominent location on the licensee's website; 11.2 In the Consultation and Communication Plan; and 11.3 In other publicly available documents relating to the activity.
	How	Desktop review.
	Evidence	The licensee does not operate a Project specific website and therefore Condition 14.1 is not applicable. The community feedback number is however included on the contact page of the Ichthys Project website (http://www.inpex.com.au/contact/). The Community Relations Plan (Appendix A) refers to the 1300 community hotline. The 24 hour community hotline number is displayed on publicly available documents such as the Community Bulletin and Ichthys Project Bulletin. An example of the JKC Community Bulletin (issue #242) and Ichthys Project Bulletin (Issue 33) displaying the 1300 hotline number has been included in Appendix B.
	When (Date)	Desktop review completed on 12/09/2017.
	Status	Compliant.
12.	Condition	This Licence must maintain a Complaint Log for all complaints received by the licensee in relation to the activity.
	How	Desktop review.
	Evidence	The JKC Community Relations department operate a system for complaint monitoring. The complaint monitoring system is an Ichthys Gas Field Development Project wide system called Database Consultation Manager as part of the implementation of the Community Relations Plan. All community complaints associated with the Ichthys Gas Field Development Project received on the 24/7 1300 community general enquiry number and the 24/7 1300 community feedback number are logged. It has been confirmed that no community complaints have been received specific to the WwTP and its operations during the reporting period.
	When (Date)	Desktop review completed on 20/08/2018.

	Status	Compliant.
13.	Condition	The Licensee must ensure that the Complaint Log includes, for each complaint received by the licensee, the following information: 13.1 the person to whom the complaint was made; 13.2 the person responsible for managing the complaint; 13.3 the date and time the complaint was recorded; 13.4 the date and time of the event(s) that led to the complaint; 13.5 the contact details of the complainant if known, or where no details are provided a note to that effect; 13.6 the nature of the complaint; 13.7 the nature of event(s) giving rise to the complaint; 13.8 prevailing weather conditions at the time (where relevant to the complaint); 13.9 the action taken in relation to the complaint, including any follow-up contact with the complainant; and 13.10 if no action was taken, why no action was taken.
	How	Desktop review.
	Evidence	No community complaints have been received specific to the WwTP and its operations during the reporting period.
	When (Date)	Desktop review completed on 20/08/2018.
	Status	Compliant.
14.	Condition	The licensee must implement, maintain and follow an Emergency Response Plan that addresses procedures for responding to emergencies associated with the activity that may cause environmental harm
	How	Desktop review
	Evidence	An Emergency Response Plan (L290-AH-PLN-0055) has been developed by JKC. This is an Ichthys Onshore LNG Facilities Project-wide plan and refers to the range of emergency response procedures in effect across the Project.

		The plan does not directly refer to WDL192 (as amended), however, addresses the procedure for responding to marine water spills and other environmental emergency responses. The Emergency Response Plan has not yet been required to be implemented in association with WDL192 (as amended) and its activities or operations. The Ichthys Onshore LNG Facilities Emergency Response Plan (Document L290-AH-PLN-0055 (JKC Australia LNG Pty Ltd, 2014) is provided as an attachment in Appendix C.
	When (Date)	Desktop review completed on 20/08/2018.
	Status	Compliant.

3. EARLY SURRENDER OF LICENCE

15.	Condition	Any reports, records or other information required or able to be provided by the licensee under this licence must be submitted to the administering agency prior to the licensee surrendering the licence. If the date on which a report, record or other information is required falls after the date the licensee requests to surrender this licence (sic), the licensee must provide the report, record or information as far as possible using data available to the licensee up to and including the date the request to surrender the licence is made.
	How	Desktop review.
	Evidence	A surrender of licence request was not made during the reporting period.
	When (Date)	Desktop review completed on 20/08/2018.
	Status	Compliant.

4. OPERATIONAL

16.	Condition	The licensee must, without limiting any other condition of the licence, in conducting the activity do all things reasonable and practicable to ensure the activity does not adversely affect the Declared Beneficial Uses and Objectives as declared from time to time, including those applying to the Darwin Harbour Region.
	How	Surface Water Monitoring Program, as per Appendix 1 of WDL 192-3.
	Evidence	The outfall pipeline and diffuser were designed and positioned at a deep water location along an eastward alignment to the north-east of the WwTP near the mouth of the Elizabeth River. Regional oceanographic modelling was undertaken to determine the location of the outfall pipeline and diffuser ports to best achieve flushing by ocean currents and dilution through deep water installation and effluent jet velocity. The outfall has been erected 1m above the seabed to avoid siltation interference. The diffuser has been designed with positively buoyant jets to increase the jet path and further disperse treated effluent. A comprehensive study, including hydrodynamic modelling, was completed to determine the optimal outfall location and diffuser design (detailed in document S-0290-1242-C351 (JKC Australia LNG Pty Ltd, 2013a) and supported the WDL192 application. Dilution is achieved by the engineering design of the system (near field), while the overall flushing efficiency (far field) requires sufficient continuous supply of 'fresh' water in the water column. The key diffuser design features provide for 250-fold dilution for 90% of the time and 100-fold dilution for 100% of the time. The design of the WwTP segregates wastewater streams from the sanitary sewage system, reducing the influent of sewage (and effluent) and minimising potential pollutants. Sewerage collection system captures sewage from two main sources; ablution blocks and crib rooms. The sewage is transferred via gravity and pumping stations to the WwTP. It should be noted that there are no industrial effluents entering the plant. The Beneficial Uses currently declared under the Water Act for the Darwin Harbour Region include Aquaculture, Environment and Cultural. The surface water monitoring program undertaken in accordance with Appendix 1 of WDL 192-3 enables the measurement and reporting of the health and condition of the receiving environment against the benchmark that has been developed per the Water Quality Objectives relating to their beneficial uses and environmental values. An environmental risk assessment was undertaken for the proposed discharge from the WwTP and presented within supporting document L290-AH-FRM-10004 (JKC Australia LNG Pty Ltd, 2013b) as part of the WDL 192 application process. The risk assessment process was developed in line with Australian Standard AS/NZS ISO 31000:2009 and risk management principles and guidelines for the purpose of evaluating the potential risk to the beneficial uses identified for Darwin Harbour/Elizabeth River associated with the proposed discharge of treated effluent. Environmental risks (potential impacts) were identified, the likelihood and consequences of those risks were assessed and mitigation measures and controls were developed to reduce those risks identified such that 'Residual Risks' were reduced to as low as reasonably

	practicable. Surface water compliance monitoring is undertaken in accordance with Appendix 1 of WDL 192-3. Results of the monitoring program undertaken during the reporting period, including data interpretation and long-term trend analyses, are detailed in Greencap Pty Ltd, 2018a. Analysis of data for the annual reporting period and for the period between August 2014 and July 2017 (including background monitoring), indicated water quality measured at the edge of the regulatory mixing zone was representative of the upper reaches of the Darwin Harbour estuarine environment. Water quality parameters were relatively consistent across impact sites and upstream/downstream reference sites and were within the ranges recorded during the background monitoring period. Seasonal Mann-Kendall trend analysis (SMK test) was performed on each water quality parameter to determine whether there were any increasing or decreasing trends in the concentrations of each parameter over the long term, since WwTP operations commenced in 2014. Seasonal Mann-Kendall trend analysis indicated that there were no increasing or decreasing trends in water quality parameters over the period that data have been collected. Parameter concentrations at impact sites and the downstream reference site did not show responses to increases or decreases in discharge flow rates or a response to wastewater quality fluctuations over the long term. Further, parameter concentrations in the receiving environment generally remained within the long term seasonal 80th percentile for Darwin Harbour. The results indicated that discharged wastewater was not influencing water quality in the marine receiving environment. Primary production was consistently reported below detection levels both within the wastewater discharged to Darwin Harbour and in the receiving environment. In April and July 2018, exceedances were recorded for biological indicators in the discharged wastewater but biological indicators were consistently reported below reporting limits in the receiving environment. There was no evidence of wastewater discharge causing or generating odours which would adversely affect the use of surrounding waters. There was no evidence of algal blooms, abnormal fish behaviour or mortality and no evidence of adverse impacts on marine and intertidal plant species. Wastewater discharged from the authorised discharge point (outfall diffuser) achieved design criteria and complied with the Reporting limits on the majority of occasions. Wastewater discharge and waters in the receiving environment at the edge of the outfall mixing zone did not: • contain any visible matter, petroleum hydrocarbon sheen or scum, or litter or other objectionable matter; • cause or generate odours which would adversely affect the use of surrounding waters; • cause algal blooms; • cause visible change in the behaviour of fish or other aquatic organisms; • cause mortality of fish or other aquatic organisms; or • cause adverse impacts on plants. The monitoring data, collected during the reporting period from August 2016 to July 2018, confirms that the Declared Beneficial Uses and Objectives of the subject waterways have not been adversely affected by the Licensed Activity.
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	When (Date)	Desktop review completed on 20/08/2018.
	Status	Compliant.
17.	Condition	The licensee must ensure any plant and equipment used by the licensee in conducting the activity: 17.1 is reasonably fit for the purpose and use to which it is put: and 17.2 is maintained.
	How	Desktop review
	Evidence	All plant and equipment used on the Ichthys Onshore LNG Facilities are subject to strict quality control requirements under a Project-wide Quality Control Plan (L290-AQ-PLN-003) and various associated procedures. The general requirements of the plan (and associated procedures) are to assure that the workmanship, equipment and materials conform to the Project requirements and that personnel are competent in their use. Inspections and testing of all plant and equipment are undertaken prior to being authorised for use on the Project. Project personnel are required to undertake training and competency is validated via Verification of Competency (VOC) assessments prior to being approved to operate plant and equipment. The WwTP was subject to rigorous testing procedures and design optimisation works prior to final commissioning in early 2015 to ensure the plant was fit for purpose and was able to demonstrate treatment processes were able to meet effluent compliance values for discharge to Darwin Harbour. The WwTP operators maintain rigorous operation, maintenance and inspection schedules as per the <i>Waste Water Treatment Plant Operating and Maintenance Procedures – Temporary Site Facilities Operation and Maintenance</i> (Document Reference: L290-AP-PRC-1006) (Ventia Pty Ltd, 2018). The maintenance operations comprise daily, weekly, monthly and biannual inspections, repairs and maintenance of all WwTP plant and equipment. The procedure, including examples of daily, weekly, monthly and biannual inspection and maintenance records are provided in Appendix D.
	When (Date)	Desktop review completed on 20/08/2018.
	Status	Compliant.

5. DISCHARGES

18.	Condition	This licence authorises discharge to water from the authorised discharge point(s) as identified in Table 2 and Appendix 1, and as otherwise allowed in accordance with the conditions of this licence.
	How	Desktop review.
	Evidence	Survey documentation given in Appendix E details the location of the waste discharge outfall diffuser and reflects the coordinates identified in Table 2 and Appendix 1 of WDL 192-3. Discharges from unauthorised locations did not occur during the reporting period.
	When (Date)	Desktop review completed on 20/08/2018.
	Status	Compliant.
19.	Condition	The licensee must ensure that all discharge events at each authorised discharge point consists only of waste from the source(s) as specified in Table 2.
	How	Desktop review.
	Evidence	The WwTP is designed to collect wastewater from Site ablution blocks and crib rooms. Treated wastewater from the holding tank outlet is discharged from the Authorised Discharge Point via a dedicated pipeline ensuring that discharge of other liquid streams to the marine environment is not possible.
	When (Date)	Desktop review completed on 20/08/2018.
	Status	Compliant.
20.	Condition	The Licensee must, for each authorised discharge point, install, operate and maintain a device to measure and record, for each 24 hour period: 20.1 the average flow rate of discharge; and 20.2 the discharge volume.
	How	Desktop review.

	Evidence	The WwTP was commissioned with numerous inline flowmeters (Magflow, manufactured by Endress & Hauser). Daily average flow and total discharge data is captured at the plant inlet, aeration tank 1 inlet, aeration tank 2 inlet and at the Tank outlet discharge point. The WwTP has been installed with a SCADA system which controls and automates the plant's operations. The SCADA system receives data from the flowmeters via telemetry, where data is viewable at any time and daily reports are generated. All flow meters are calibrated and maintained in accordance with manufacturer recommendations (refer to Condition 17 for supporting evidence). An example of a SCADA daily flow report is provided as Appendix F.
	When (Date)	Desktop review completed on 20/08/2018.
	Status	Compliant.
21.	Condition	The licensee must ensure that the discharge from all discharge events at the authorised discharge point does not exceed the reporting limits specified for STPM-T1 in Appendix 2.
	How	Surface Water Monitoring Program, as per Appendix 1 of WDL 192-3.
	Evidence	The surface water monitoring program as per Appendix 1 of WDL 192-3 requires monthly monitoring of wastewater at the WwTP Tank outlet, as measured at STPM-T1. Results of the monitoring program undertaken during the reporting period, incorporating results as measured at STPM-T1 and data interpretation and long-term trend analyses of water quality as measured within the receiving environment, is detailed in Greencap Pty Ltd, 2018a. Exceedances of the Reporting Limits, as specified in Appendix 2 of WDL 192-3, were reported for total suspended solids (TSS), biochemical oxygen demand (BOD_{5 day}) and <i>Enterococci</i> spp. in July 2018. A review of receiving environment water quality results for July 2018 is presented as follows: 1. All <i>Enterococci</i> spp. results at the edge of the mixing zone and at both upstream and downstream reference sites were recorded below detection (<1 colony forming units (cfu)/mL). The results indicate that the elevated <i>Enterococci</i> spp. within the discharged wastewater was not influencing <i>Enterococci</i> spp. concentrations in the marine receiving environment; 2. Median Total Suspended Solids at the edge of the mixing zone (26 mg/L) exceeded the receiving environment trigger value. An exceedance was also reported at the upstream reference location (STPM-R1, based on an incoming tide at the time of sampling) confirming ambient TSS concentrations were elevated at the time of sampling. Further, with an outfall diffuser installed and designed to achieve a nearfield dilution of 250 fold, the TSS

		concentration of 38 mg/L within the discharged wastewater was considered not sufficiently elevated to have caused an exceedance at the edge of the mixing zone; and 3. The measurement of BOD_{5 day} in receiving waters is not a requirement of WDL192-3 and thus no comparison between concentrations within discharge water and concentrations in the receiving waters can be made. Thus, there were no reportable median exceedances of receiving environment trigger values for the mixing zone sites, which demonstrated that the discharge did not have any negative impact on the water quality in Darwin Harbour and the risk of potential impacts in the receiving environment was Low. A review of the operational monitoring undertaken at the plant did not record any departure from turbidity targets (surrogate for TSS) for this same period and all nutrient parameters remained within the design criteria, indicating that the variance in water quality was for a very short duration. The contributing factors associated with the non-compliance have been attributed to a short term departure from the operational discharge targets. Analysis of data for the annual reporting period and long term trend analysis indicates water quality measured at the edge of the regulatory mixing zone was representative of the upper reaches of the Darwin Harbour estuarine environment. Water quality parameters were relatively consistent across impact sites and upstream/downstream reference sites and were within the ranges recorded during the background monitoring period. Seasonal Mann-Kendall trend analysis indicated that there were no increasing or decreasing trends in water quality parameters over the period that data have been collected. Parameter concentrations at impact sites and the downstream reference site did not show responses to increases or decreases in discharge volume and flow rates, or a response to wastewater quality fluctuations over the long term. Further, parameter concentrations in the receiving environment generally remained within the long term seasonal 80th percentile for Darwin Harbour. Conclusions, as detailed in the 2018 WDL192 Annual Monitoring Report (Greencap Pty Ltd, 2018a), were that despite the isolated exceedances of the Reporting Limits, discharged wastewater from the WwTP did not influence water quality in the marine receiving environment both during the annual reporting period and over the long term.
	When (Date)	Surface water compliance monitoring undertaken per Appendix 1 of WDL 192-3 during the reporting period.
	Status	Compliant.

22.	Condition	The licensee must ensure that the discharge from all discharge events at each authorised discharge point does not: 22.1 contain any floating debris, oil, grease, petroleum hydrocarbon sheen, scum, litter or other objectionable matter; 22.2 cause or generate odours which would adversely affect the use of surrounding waters; 22.3 cause algal blooms in the receiving water; 22.4 cause visible change in the behaviour of fish or other aquatic organisms in the receiving water; 22.5 cause mortality of fish or other aquatic organisms; or 22.6 cause adverse impacts on plants.
	How	Surface Water Monitoring Program, as per Appendix 1 of WDL 192-3.
	Evidence	Surface water compliance monitoring was conducted during the reporting period in accordance with Appendix 1 of WDL 192-3. Field observations were recorded during each monthly compliance monitoring event both at the point of discharge from the tank outlet and in the receiving environment. There were no records of discharge resulting in floating debris, petroleum hydrocarbon sheen or scum, litter or other objectionable matter. There was no evidence of wastewater discharge causing or generating odours which would adversely affect the use of surrounding waters. There was no evidence of algal blooms, abnormal fish behaviour or mortality and no evidence of adverse impacts on marine and intertidal plant species. Field observations recorded during monitoring are detailed in Greencap Pty Ltd, 2018a with all field records given in Appendix B of the report.
	When (Date)	Surface water compliance monitoring undertaken per Appendix 1 of WDL 192-3 during the reporting period.
	Status	Compliant.

23.	Condition	The licensee must ensure that discharge from the authorised discharge point does not cause the median value of the water quality parameters measured at the mixing zone monitoring sites specified in Appendix 1 to exceed the water quality trigger for any of the water quality parameters specified in Appendix 2: 23.1 on three consecutive occasions, and the exceedance is also not present at the upstream site determined from the tide phase at the time of sampling, on the same three consecutive occasions; or 23.2 a single occasion where the measured value exceeds the trigger value greater than or equal to two times the trigger value and the exceedance is not also present at the upstream site, determined from the tide phase at the time of sampling.
	How	Surface Water Monitoring Program, as per Appendix 1 of WDL 192-3.
	Evidence	Surface water compliance monitoring was conducted during the reporting period in accordance with Appendix 1 of WDL 192-3. Water quality parameters at the mixing zone sites complied with the above conditions on all occasion during the reporting period. Results of the monitoring program undertaken during the reporting period, including data interpretation, trend analyses and risk assessment, are detailed in Greencap Pty Ltd, 2018a. Monitoring results summary tables are given in Appendix A of the report whilst copies of the chain of custodies and laboratory reports, including laboratory QAQC reports are given in Appendix D of the report.
	When (Date)	Surface water compliance monitoring undertaken per Appendix 1 of WDL 192-3 during the reporting period.
	Status	Compliant.

6. MONITORING

24.	Condition	The Licensee must conduct surface water monitoring in accordance with Appendix 1.
	How	Surface Water Monitoring Program, as per Appendix 1 of WDL 192-3.
	Evidence	Results of the monitoring program undertaken during the reporting period are detailed in Greencap Pty Ltd, 2018a which confirms that surface water monitoring was undertaken in accordance with Appendix 1 of WDL 192-3 during the reporting period.
	When (Date)	Surface water compliance monitoring undertaken per Appendix 1 of WDL 192-3 during the reporting period.
	Status	Compliant.
25.	Condition	The licensee must ensure that all samples and field environmental data are representative of the conditions at the time of sampling.
	How	Surface Water Monitoring Program, as per Appendix 1 of WDL 192-3.
	Evidence	Sample and in-situ data collection under WDL 192-3 during the reporting period was undertaken as per the methodology prescribed for offshore surface water monitoring within the EIMP (as amended), which was developed in accordance with recognised Australian Standards and guidelines, ensuring representative data. Refer to Condition 26 for a detailed description of monitoring methodology. Results of the monitoring program undertaken during the reporting period are detailed in Greencap Pty Ltd, 2018a. A review of the monitoring methodology and data, including a review of QAQC measures, is presented in Section 5.5 of the report and confirms that samples and field environmental data were collected in accordance with recognised Australian Standards and guidelines, representative of the conditions at the time of sampling and were considered to be of acceptable quality for the purposes of the monitoring program.
	When (Date)	Surface water compliance monitoring undertaken per Appendix 1 of WDL 192-3 during the reporting period.
	Status	Compliant.

26.	Condition	The Licensee must ensure that all samples and field environmental data are collected in accordance with recognised Australian Standards and guidelines (such as AS/NZS 5667, ANZECC/ARMCANZ).
	How	Surface Water Monitoring Program, as per Appendix 1 of WDL 192-3.
	Evidence	Sample and in-situ data collection under WDL 192-3 during the reporting period was undertaken as per the methodology prescribed for offshore surface water monitoring within the EIMP (as amended), which was developed in accordance with recognised Australian Standards and guidelines, including: • AS/NZS 5667.1:1998 <i>Water quality – Sampling ‘Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples’</i>; • AS/NZS 5667.4:1998 <i>Water quality – Sampling ‘Part 4: Guidance on sampling from lakes, natural and man-made’</i>; • AS/NZS 5667.6:1998 <i>Water quality – Sampling ‘Part 6: Guidance on sampling of rivers and streams’</i>; • AS/NZS 5667.9:1998 <i>Water quality – Sampling ‘Part 9: Guidance on sampling from marine waters’</i>. The key procedures undertaken in the field are described below: • Visual inspection of surface water collection points to determine the presence or absence of oil, grease, iron floc and floating matter; • In situ quality measurements (pH, total dissolved solids [TDS], electrical conductivity [EC], dissolved oxygen [DO], temperature, turbidity and oxidation reduction potential [ORP]) are undertaken prior to sample collection using a multi-parameter instrument. All field equipment are calibrated in accordance with the manufacturer’s instructions; • Collection of surface water samples and field QAQC samples for laboratory analysis after field quality parameter measurement; • Decontamination of all non-dedicated sampling equipment between sample locations; and • Proper disposal of used disposable sampling equipment. At each surface water sampling location, the field records include the following minimum information: • Exact location (sample point number/name and/or GPS coordinates), sampling time, date and the name of the sampler(s); • Sample type, number of containers, sample preservatives and sample collection order; • Weather conditions; • Sample collection equipment and method; • Purging records, for example, water quality meter calibration records; • Sample equipment decontamination procedures, where non-disposable sampling equipment is utilised; and • Any comments on exceptions or issues regarding the sample collected.

	Each sample label includes the following information: • Subcontractor and sampler's name; • Sample point identification and unique sample number; • Date and time sample was taken; and • Whether the sample was field filtered. Field instruments, including the pH probe, EC probe, turbidity meter and DO meter, are calibrated as per the manufacturer's instructions and Australian Standards prior to each sampling day and in the event of unusual sampling results. Equivalent calibrated backups units are available on the same day for all field equipment so that equipment failures do not result in data gaps. A chain of custody (CoC) form is completed to accompany the samples to the laboratory for submission for analysis. In each instance, the following are undertaken: • The CoC form is completed in pen; • All information requirements are completed on the form; • All eskies are dispatched under seal of custody to the nominated laboratories; • The CoC form conveys instructions to the laboratory, such as analyses to be performed, field preparation (filtered or not filtered, as applicable, etc.) and sample analysis turnaround times required to be achieved; • On delivery to the laboratory, the receiving person inspects the eskies, notes the presence or otherwise of ice or freezer bricks if specified on the CoC form, measure the temperature and record each entry on the relevant CoC form; • The completed CoC form is transmitted to Subcontractor within 24 hours of the delivery of samples to the laboratory; and • CoC forms are presented with the original laboratory certificates in monitoring reports. The selection of the appropriate sample containers, preservation procedures, sample storage requirements and holding times are undertaken in accordance with those recommended by AS/NZS 5667.1:1998 <i>Water Quality Sampling – Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples</i>. All primary samples and associated QAQC samples are shipped to the laboratory to ensure holding times are achieved. The laboratory is notified of the shipment of samples and their expected arrival. All samples are refrigerated during the course of the working day and in transit to the laboratory in cooler boxes packed with ice or cooling blocks. Nominated laboratories are instructed to retain all the sampling extracts obtained for the analysis of organic parameters to be kept under refrigeration for at least 30 days after the issue of the laboratory report. This allows time for the laboratory report to be reviewed and repeat tests or additional tests, to be conducted within the extract holding time. Laboratory reports are issued in accordance with the requirements of National Association of Testing Authority (NATA)
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		endorsement and, as a minimum, include the following information appended within the monitoring report: • The test results for the samples; • The test results for the laboratory's in-house duplicates; • The test results for the laboratory's in-house surrogate and matrix spike recovery determinations; and • The extraction (where applicable) and analysis dates which would be used to determine compliance with the permitted holding times. Surface water quality control samples are collected at the following frequencies: • Field duplicate (intra laboratory duplicates) samples at least one per 20 water samples per monitoring event; • Field triplicate (inter laboratory replicates) samples at least one per 20 water samples per monitoring event; • Field blank samples at one per day and field rinsate samples at one per day; and • Trip blanks one per cooler box containing samples scheduled for benzene, toluene, ethylbenzene and xylene (BTEXN) analysis. The laboratory selected to conduct the analysis of surface water samples are accredited by NATA and able to demonstrate that it can achieve the required analytical LOR and quality. Furthermore the following QAQC procedures are used: • Analyses are reviewed by NATA and meet NATA accreditation parameters, which meet ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025) and ISO 9001:2008 Quality management systems – requirements (ISO 9001). In addition, the laboratory's QAQC procedures are reviewed by external consultants on an annual basis; • Method blanks are processed and analysed to detect any contamination resulting from sample preparation, extraction or analysis. After each batch of samples is analysed, a blank sample is run to see if this returns a value below or near the detection limit of the analytical technique; • The samples are split into sub-samples to check the precision of the analyses at a duplication of 10%; • Surrogate spikes are undertaken, with one sample in every batch spiked. As a known quantity of a surrogate is added to each sample prior to extraction, the quantity of surrogate recovered after the analytical process provides a measure of analytical performance; • Matrix spikes are analysed with at least one sample in every sample batch spiked. As a known quantity of the analyte is added to each sample prior to extraction, the quantity of analyte recovered after the analytical process provides a measure of analytical performance; • Laboratory instruments are calibrated daily at the beginning of each process batch of analyses on a specific analyser. A continuing calibration verification is run at a minimum frequency of one in every 20 samples or at least one per each process batch of analyses on a specific analyser. Control figures are produced weekly to identify outliers or possible trends for particular tests or instruments; and • The laboratory is certified by NATA to conduct the specific tests required, unless NATA does not certify a particular analysis or method specified in this plan. In the instances where NATA accreditation is not available, standard industry practice is applied.
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		Results of the monitoring program undertaken during the reporting period are detailed in Greencap Pty Ltd, 2018a. A review of the monitoring methodology and data, including a review of QAQC measures, is presented in Section 5.5 of the report and confirms that samples and field environmental data were collected in accordance with recognised Australian Standards and guidelines, representative of the conditions at the time of sampling and were considered to be of acceptable quality for the purposes of the monitoring program.
	When (Date)	Surface water compliance monitoring undertaken per Appendix 1 of WDL 192-3 during the reporting period.
	Status	Compliant.
27.	Condition	The Licensee must ensure that all monitoring samples are analysed at a laboratory with current NATA accreditation or equivalent, for the parameters to be measured.
	How	Surface Water Monitoring Program, as per Appendix 1 of WDL 192-3.
	Evidence	The primary laboratory used for sample analyses during the reporting period was Eurofins MGT Pty Ltd (MGT), while the secondary laboratory was ALS Global Pty Ltd (ALS). Both laboratories are accredited by NATA for all water quality parameters required under WDL 192-3 and were able to demonstrate that they achieved the quality assurance and quality control requirements under the accreditation. Furthermore, the following QAQC procedures were adopted in accordance with their NATA accreditation: - Analyses are reviewed by NATA and meet NATA accreditation parameters, which meet ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025) and ISO 9001:2008 Quality management systems – requirements (ISO 9001). In addition, the laboratory's QAQC procedures are reviewed by external consultants on an annual basis; - Method blanks are processed and analysed to detect any contamination resulting from sample preparation, extraction or analysis. After each batch of samples is analysed, a blank sample is run to see if this returns a value below or near the detection limit of the analytical technique; - The samples are split into sub-samples to check the precision of the analyses at a duplication of 10%; - Surrogate spikes are undertaken, with one sample in every batch spiked. As a known quantity of a surrogate is added to each sample prior to extraction, the quantity of surrogate recovered after the analytical process provides a measure of analytical performance; - Matrix spikes are analysed with at least one sample in every sample batch spiked. As a known quantity of the analyte is added to each sample prior to extraction, the quantity of analyte recovered after the analytical process provides a measure of analytical performance; - Laboratory instruments are calibrated daily at the beginning of each process batch of analyses on a specific analyser. A continuing calibration verification is run at a minimum frequency of one in every 20 samples or at least

		one per each process batch of analyses on a specific analyser. Control figures are produced weekly to identify outliers or possible trends for particular tests or instruments; and The laboratory is certified by NATA to conduct the specific tests required, unless NATA does not certify a particular analysis or method specified in this plan. In the instances where NATA accreditation is not available, standard industry practice is applied. Results of the monitoring program undertaken during the reporting period are detailed in Greencap Pty Ltd, 2018a. The NATA accredited laboratory test reports, inclusive of sample receipt notices and QAQC reports, are provided in Appendix D of the report. The NATA accreditation for Eurofins MGT Pty Ltd (MGT) (accreditation No. 1261) and ALS Global Pty Ltd (ALS) (accreditation No. 825) are available to view on the NATA website via https://www.nata.com.au/nata/
	When (Date)	Surface water compliance monitoring undertaken per Appendix 1 of WDL 192-3 during the reporting period.
	Status	Compliant.
28.	Condition	The licensee must implement, maintain and follow the monitoring program included in Appendix 1 from the commencement date of this licence. For the purpose of this condition, the word “land” does not include water [or air] on or above land.
	How	Surface Water Monitoring Program, as per Appendix 1 of WDL 192-3.
	Evidence	Results of the monitoring program undertaken during the reporting period (August 2017 to July 2018) are detailed in Greencap Pty Ltd, 2018a which demonstrates that surface water monitoring was undertaken in accordance with Appendix 1 of WDL 192-3 from the commencement date of this licence, being 1 August 2017.
	When (Date)	Surface water compliance monitoring undertaken per Appendix 1 of WDL 192-3 during the reporting period.
	Status	Compliant.
29.	Condition	The Licensee must for all land based monitoring points specified in Appendix 1: 29.1 install and maintain appropriate identification signage so that they are reasonably identifiable at all times; and 29.2 maintain safe access and egress, as is reasonably practicable.

	How	Desktop review and Site visit.
	Evidence	The only terrestrial sampling location applicable to WDL 192-2 is STPM-T1 at the WwTP tank outlet. The sampling location is a dedicated sample tap installed on the tank outlet pipe within the restricted access WwTP boundary. The sample location is identified on plant layout and design plans, is known by plant operators and its location has been communicated and shown to the personnel tasked with conducting the compliance monitoring per Appendix 1 of WDL 192-3. Signage has been installed and maintained on the dedicated sample tap STPM-T1. Safe access and egress to the terrestrial sampling location STPM-T1 at the WwTP tank is maintained as part of standard plant operational procedures. Safe access and egress has been confirmed via the successful completion of compliance monitoring at this sampling location during the reporting period. A photograph of signage installed at the STPM-T1 sample tap is provided as an attachment in Appendix G.
	When (Date)	Desktop review and Site visit completed on 20/08/2018.
	Status	Compliant.
30.	Condition	The licensee must ensure any samples collected in accordance with Appendix 1 or in connection with the activity or this licence, are obtained by, or under the supervision of a qualified sampler.
	How	Desktop review.
	Evidence	The WDL 192-3 compliance monitoring program is undertaken by independent, trained, qualified and experienced environmental scientists in accordance with standard monitoring procedures that are aligned with industry best practice and standards, including: • <i>Australian and New Zealand Guidelines for Fresh and Marine Water Quality (Australian and New Zealand Environment and Conservation Council [ANZECC] and the Agriculture and Resource Management Council of Australia and New Zealand [ARMCANZ], 2000a) (ANZECC/ARMCANZ 2000a);</i> • <i>Australian Guidelines for Water Quality and Reporting (ANZECC/ARMCANZ, 2000b);</i> • <i>AS/NZS 5667.1:1998 Water Quality Sampling – Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples (AS/NZS 5667.1);</i> • <i>AS/NZS 5667.4:1998 Water Quality Sampling – Guidance on sampling from lakes, natural and man-made (AS/NZS 5667.4);</i> • <i>AS/NZS 5667.6:1998 Water Quality Sampling – Guidance on sampling of rivers and streams (AS/NZS 5667.6);</i> • <i>AS/NZS 5667.9:1998 Water Quality Sampling – Guidance on sampling from marine waters (AS/NZS 5667.9);</i>

		Results of the monitoring program undertaken during the reporting period are detailed in Greencap Pty Ltd, 2018a. A review of the monitoring methodology and data, including a review of QAQC measures, is presented in Section 5.5 of the report and confirms that samples and field environmental data were collected in accordance with recognised Australian Standards and guidelines, representative of the conditions at the time of sampling and were considered to be of acceptable quality for the purposes of the monitoring program. Curriculum Vitae's (CVs) of sampling personnel can be provided upon request.
	When (Date)	Desktop review completed on 20/08/2018.
	Status	Compliant.
31.	Condition	The licensee must ensure that, for each sample required to be collected in accordance with the Appendix 1 or the activity the following information must be recorded and retained: 31.1 the date on which the sample was collected; 31.2 the time at which the sample was collected; 31.3 the location at which the sample was collected; 31.4 the name of the person who collected the sample; 31.5 the chain of custody forms relating to the sample; 31.6 the field measurements relating to the sample including, tide stage (rising, falling maximum, minimum), tide range and time since the maximum tide was reached. 31.7 analytical results (if any) relating to the sample; and 31.8 laboratory quality assurance and quality control documentation.
	How	Desktop review.
	Evidence	Field records are collected at each monitoring location during each monitoring event. Information recorded includes, but is not limited to: - the date(s) on which the sample was taken; - the time(s) at which the sample was collected; - the point(s) at which the sample was taken; - the name of the person who collected the sample; and - the field measurements for the sample. A CoC form is completed to accompany the samples to the laboratory for submission for analysis. In each instance, the following procedures are undertaken:

		• The CoC form is completed in pen; • All information requirements are completed on the form; • All eskies are dispatched under seal of custody to the nominated laboratories; • The CoC form conveys instructions to the laboratory, such as analyses to be performed, field preparation (filtered or not filtered, as applicable, etc.) and sample analysis turnaround times required to be achieved; • On delivery to the laboratory, the receiving person inspects the eskies, note the presence or otherwise of ice or freezer bricks if specified on the CoC form, measure the temperature and record each entry on the relevant CoC form; • The completed CoC form is transmitted to Subcontractor within 24 hours of the delivery of samples to the laboratory; and • CoC forms are presented with the original laboratory certificates in monitoring reports. Results of the monitoring program undertaken during the reporting period are detailed in Greencap Pty Ltd, 2018a. Tabulated analytical results, including tide information at the time of sampling, are given in Appendix A of the report, field records collected for each monitoring event are given in Appendix B of the report, CoC forms and laboratory test certificates, inclusive of the laboratories internal QAQC documentation are given in Appendix D of the report.
	When (Date)	Desktop review completed on 20/08/2018.
	Status	Compliant.

7. RECORDING AND REPORTING

32. 33. 34.	Condition(s)	32. The licensee must keep records of all non-compliances with this licence. These records must be adequate to enable the licensee to comply with the non-compliance notification conditions of this licence. 33. The licensee must notify the administering agency of any non-compliance with this licence by emailing waste@nt.gov.au, as soon as practicable after (and in any case within 24 hours after) first becoming aware of the non-compliance. 34. The licensee must include in the notification of non-compliance the following information: 34.1 when the non-compliance was detected and by whom; 34.2 the date and time of the non-compliance; 34.3 the actual and potential causes and contributing factors to the non-compliance; 34.4 the risk of environmental harm arising from the non-compliance; 34.5 the action(s) that have or will be taken to mitigate any environmental harm arising from the non-compliance; 34.6 corrective actions that have or will be undertaken to ensure the non-compliance does not reoccur; 34.7 if no action was taken, why no action was taken; 34.8 a date when an incident investigation report will be submitted to the administering agency.
	How	Surface water compliance monitoring undertaken per Appendix 1 of WDL 192-3 during the reporting period and desktop review.
	Evidence	A desktop review has confirmed that all records of non-compliances with WDL 192-3 have been kept and filed. There was a single non-compliance during the reporting period pertaining to Condition 21 where exceedances of the Reporting Limits, as specified in Appendix 2 of WDL 192-3, were reported in discharge wastewater at the STP Tank Outlet (STPM-T1) for TSS, BOD_{5 day} and <i>Enterococci</i> spp. during July 2018, as follows: 1. Biochemical oxygen demand (BOD_{5 day}) at 28 mg/L (WDL 192-3 Reporting Limit of 20 mg/L); 2. Total suspended solids at 37 mg/L (WDL 192-3 Reporting Limit of 30 mg/L); and 3. <i>Enterococci</i> spp. at 200 cfu/100mL (WDL 192-3 Reporting Limit of 100 cfu/100mL). As described under Condition 21 of this Annual Return, there were no reportable median exceedances of receiving environment trigger values for the mixing zone sites, which demonstrated that the discharge did not have any negative impact on the water quality in Darwin Harbour and therefore the risk of potential impacts in the receiving environment was

		Low. A review of the operational monitoring undertaken at the plant did not record any departure from turbidity targets (surrogate for TSS) for this same period and all nutrient parameters remained within the design criteria, indicating that the variance in water quality was for a very short duration and no corrective actions or further investigations were necessary. Notification of the non-compliance was provided to NT EPA with the issue of an email to Waste.NTEPA@nt.gov.au within 24 hours of becoming aware. The NT EPA notification is given in Appendix H.
	When (Date)	Desktop review completed on 20/08/2018.
	Status	Compliant.
35.	Condition	The licensee must keep records of all exceedances of trigger values specified in Appendix 2. These records must be adequate to enable the licensee to comply with the exceedances notification conditions of this licence.
	How	Surface water compliance monitoring undertaken per Appendix 1 of WDL 192-3 during the reporting period and desktop review.
	Evidence	Refer to Conditions 32, 33 and 34.
	When (Date)	Desktop review completed on 20/08/2018.
	Status	Compliant.
36	Condition	The licensee must submit a completed Annual Return which relates to the preceding 12 month period by 30 September, or as otherwise agreed by the administering agency, for each year of this licence.
	How	Refer to this report: <i>Waste Discharge Licence 192 Annual Return 2018 – Bladin Point – Environmental Impact Monitoring Program</i> (Document Reference: L290-AH-REP-10896 (Greencap Pty Ltd, 2018b), which will be submitted to the NT EPA by 30/09/2018.
	Evidence	This report fulfils Condition 36 of WDL 192-3.
	When (Date)	The Annual Return to be submitted by 30/09/2018
	Status	Compliant.

37. 38.	Condition(s)	37. The licensee must complete and provide to the administering agency a Monitoring Report, as prescribed by this licence, by 30 September, or as otherwise agreed by the administering agency, for each year of this licence. 38. The licensee must ensure that each Monitoring Report: 38.1 is prepared in accordance with the requirements of the NT EPA 'Guideline for Reporting on Environmental Monitoring'; 38.2 includes a tabulation of all monitoring data required as a condition of this licence; 38.3 includes long term trend analysis of monitoring data to demonstrate any environmental impact associated with the activity over a minimum period of three years (where the data is available); 38.4 includes an assessment of environmental impact from the activity; and 38.5 present the following parameters associated with wastewater discharge: • total discharge (ML/year); • total biochemical oxygen demand (tonnes/year); • total phosphorus (tonnes/year); • total nitrogen (tonnes/year); and • total suspended solids (tonnes/year).
	How	Desktop review.
	Evidence	Results of the monitoring program undertaken during the reporting period are detailed in Greencap Pty Ltd, 2018a, and will be submitted to the NT EPA by 30/09/2018. Tabulation of field results and analytical parameters are given in Appendix A of the report. Long term trend analysis of monitoring data, to assess water quality trends since the commencement of monitoring associated with discharge under WDL192 (as amended) in August 2014 is presented in Section 6.2 and Appendix E of the report. The trend analysis has comprised assessment of seasonal variation, inter-annual oscillations, monotonic (significant increasing/decreasing) trends and association between conditions within the receiving environment and wastewater discharge flows and concentrations. A summary of the investigation, causes of an exceedance of the trigger values, and assessment of likely environmental impact are detailed in Sections 6.1 and 6.2 of the report. Final assessment of environmental impact from the activity is presented in Section 7.0 of the report. Total discharge (ML/year) is presented in Section 5.1 of the report. Total BOD_{5 day} (tonnes/year), total phosphorus (tonnes/year), total nitrogen (tonnes/year) and total TSS (tonnes/year) contributions to Darwin Harbour from the WwTP are

		presented in Section 5.4 of the report.
	When (Date)	The Annual Monitoring Report to be submitted by 30/09/2018
	Status	Compliant.
39	Condition	The administering agency may require the licensee to revise or amend and resubmit any report required as a condition of this licence. Where the administering agency requires a report to be resubmitted, the licensee must submit it to the administering agency by the date specified by the administering agency.
	How	Desktop review.
	Evidence	The 2017 monitoring report for this Licence will be submitted to the NT EPA by 30/09/2018. If the Monitoring Reports is required to be resubmitted, it will be resubmitted to the NT EPA by the date specified.
	When (Date)	Desktop review completed on 20/08/2018.
	Status	Compliant.

8. REFERENCES

- Asia-Pacific Applied Science Associates. (2009), Ichthys Gas Field Development Project; Wastewater Discharge Modelling (C036-AH-REP-0002).
- Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand. (2000a). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. Canberra, ACT: Author.
- Australian and New Zealand Standard 5667:4:1998 *Water Quality Sampling – Guidance on sampling from lakes, natural and man-made*.
- Australian and New Zealand Standard 5667:6:1998 *Water Quality Sampling – Guidance on sampling of rivers and streams*.
- Australian and New Zealand Standard 5667:9:1998 *Water Quality Sampling – Guidance on sampling from marine waters*.
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- INPEX Browse, Ltd. (2010). *Ichthys Gas Field Development Project: Draft Environment Impact Statement and the Supplement to the Draft Environmental Impact Statement*. Perth, WA: Author.
- INPEX Operations Australia Pty Ltd. (2013), *Ichthys Onshore LNG Facilities, Waste Discharge Licence; Supporting Documentation – Temporary Sewage Treatment Plant, Table 7, Summary of Environmental Risk Assessment (L290-AH-FRM-10004)*.
- INPEX Operations Australia Pty Ltd (2017). *Ichthys Onshore LNG Facilities - Construction Environmental Management Plan (L092-AH-PLN-10001)*. Darwin, NT.
- JKC Australia LNG Pty Ltd. (2013a). *Temporary Wastewater Outfall Study Report. Revision C*. Darwin, NT (L-0290-1242-C351).
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- JKC Australia LNG Pty Ltd. (2015). *Construction Environmental Management Plan*. Revision 17. Darwin, NT.
- Waste Management and Pollution Control Act (NT)*.
- Water Act (NT)*.
- Water Act 2007 (Cth)*.

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28-SEP-2018

UNCONTROLLED WHEN PRINTED



INPEX Operations Australia Pty Ltd

ICHTHYS ONSHORE LNG FACILITIES

COMMUNITY RELATIONS PLAN

REV.	DATE	ISSUE PURPOSE	PREPARED	CHECKED	APPROVED
A	05-Jul-11	IFA	L. Parsons	I. McAteer	I. McAteer
B	18-Nov-11	IFA	B. Franklin	I. McAteer	I. McAteer
0	28-Mar-12	IFC	A. Kelly	B. Franklin	B. Franklin
1	25-Jul-13	IFC	A. Kelly	B. Franklin	B. Franklin

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1. INTRODUCTION

1.1 Scope

This Community Relations Plan describes the management controls and processes Contractor will have in place to manage Community Relations during the execution/construction and commissioning phase of the Ichthys Gas Field Development Project. Contractor will work closely with Company to ensure community and stakeholder communications protocols are followed and the community engagement approach is consistent across Company, Contractor and Subcontractor personnel. As a consequence, this Plan is aligned to, and builds upon, the Company Plan in those areas under the direct control of Contractor.

The construction phase will represent the height of activity for the Project and will be the phase most likely to have a direct impact on the community, through issues such as:

- housing and rental market pressure
- local infrastructure (roads, services)
- labour market pressure
- Australian content and jobs
- environmental impacts
- public safety.

Effective community engagement during this critical period is essential to enhance Company and Contractor reputation. Engagement also helps achieve mutually beneficial outcomes for specific aspects of the Project.

Implementation of this Plan will assist in achieving both the regulatory and social licences to operate, while delivering on the Project schedule and protecting and enhancing the reputation of Company and Contractor.

This plan outlines:

- The management framework which will govern the Project's community engagement program during construction
- The range of community stakeholders requiring engagement
- The processes for identifying and managing issues of potential interest or concern to the community
- communication methods for engaging with community
- methods Company will use for measuring the effectiveness of Contractor's community engagement program
- how Contractor will coordinate activities to ensure consistency and clear lines of responsibility in community relations.

This Plan is informed by other existing management plans and will be supported by detailed existing and proposed detailed construction communication action plans which will be developed for specific activities in line with Project timelines.

The timeframe of this plan includes pre-mobilisation, construction, and commissioning under the direct control of Contractor.

1.2 Definitions

Company

INPEX Operations Australia Pty Ltd acting as agent for
Ichthys LNG Pty Ltd

Contractor	JKC Australia LNG Pty Ltd—the Joint Venture between JGC Corporation, KBR (Kellogg Brown & Root Pty Ltd) and Chiyoda Corporation
Ichthys Project	Ichthys Gas Field Development Project
Site	Location where the plant is to be constructed and the vicinity thereof
Subcontractor	Any company to whom Contractor has subcontracted any part of the works
Worksite	Any location where work for the site is carried out

1.3 Applicable documents

1.3.1 Contractor documents

S-0290-11N0-0001: The Aboriginal and Torres Strait Islander Affairs Plan
 S-0290-1190-0002: Howard Springs Accommodation Village – Communications Action Plan
 S-0290-1190-0003: Road Transport – Communications Action Plan
 S-0290-11Z0-3001: Howard Springs Accommodation Village Simultaneous Operations Phase – Communications Action Plan

1.3.2 Company documents

C025-AG-PLN-0026: External Stakeholder Engagement Plan
 C025-AG-POL-0002: Community Grievance Management Procedure
 C025-AG-POL-0002: Transport Management Communications Plan—Roads
 C025-AG-POL-0002: Transport Management Communications Plan—Marine

1.4 Abbreviations

ALARP	as low as reasonably practicable
ATSI	Aboriginal and Torres Strait Islander
CLO	Community Liaison Officer
CRC	Community Relations Coordinator
MCO	Media & Communications Officer
CRM	Community Relations Manager
CRWG	Community Relations Working Group
EAM	External Affairs Manager
EIS	Environmental Impact Statement
EPC	Engineering, Procurement and Construction
HSES	health, safety, environment and security
KBR	Kellogg Brown & Root Pty Ltd
MHF	Major Hazard Facility

NGO	Non Government Organisation
PPE	Personal Protective Equipment
RTMP	Road Transport Management Plan
SRM	Stakeholder Relationship Management

2. OBJECTIVES

The key objectives of this Plan are to:

- provide an outline of the management framework and guidelines which will govern the Contractor community engagement program during construction
- assist with the identification and management of issues of interest to community
- support the achievement of government approvals to meet the Project schedule
- plan and implement communication plans
- identify the range of materials for release to external stakeholders in a timely manner, consistent with Company and Contractor requirements
- ensure regular and consistent messaging to the community.

Achievement of these objectives will help protect and enhance the reputation of Company, Contractor and Subcontractor during construction.

3. ORGANISATION AND STAKEHOLDERS

3.1 Key Stakeholders

External stakeholders in the project include:

- elected government representatives
- government staff
- non-government organisations (NGOs)
- media organisations
- general community.

Company has developed a External Stakeholder Engagement Plan (C025-AG-PLN-0026), along with other associated management plans detailing the protocols for communicating with stakeholders for a wide range of issues. Contractor will comply with the requirements of these plans. Subcontractors must also comply through input into Subcontractor Community Relations Plans. Contractor has provided documented advice to Subcontractors in relation to community engagement, communications protocols and branding policies.

In conjunction with Company and Subcontractors, Contractor will manage and implement community and stakeholder plans with a team of professional Community Relations personnel which includes:

- Community Relations Manager
- Media & Communications Officer
- Two Community Relations Coordinators.

3.2 Contractor Community Relations Team

The Contractor Community Relations team is made up of a Community Relations Manager (CRM), a Media & Communications Officer and two Community Relations Coordinators. This team will facilitate all communications with support and guidance from the Contractor External Affairs Manager (EAM).

The CRM reports directly to the EAM. The CRM and MCO will be located in the Darwin Contractor office, while the CRC's during the construction phase.

The CRM will guide the Subcontractor community relations personnel, and will be responsible for the day-to-day community relations and communications functions for all activities associated with the Contractor construction impacts across the community. This will include the two significant locations: Howard Springs Accommodation Village and the Blaydin Point Ichthys LNG Facility.

The CRM is Contractor's single point of contact for all community relations and is responsible for the following:

- provision of Contractor project information to Company External Affairs and Public Affairs personnel
- participation in regular meetings with Company to discuss community feedback and other community relations issues, in particular the coordinating body—the Community Relations Working Group (CRWG)
- assisting Company with the resolution of community complaints and public protests in conjunction with the Company Grievance Management Procedure and with oversight from the Community Relations Working Group (CRWG)
- directing public feedback to relevant Company and Subcontractor personnel

- scheduling, attending and assisting with site tours, as required by Company, Contractor and Subcontractor
- identifying, coordinating and managing community events on behalf of Contractor
- identifying, coordinating and managing community sponsorship opportunities on behalf of Company and Contractor
- communicating Project activities in regular newspaper advertisements and in other forums, as requested by Company and Contractor
- other community engagement tasks, as requested by Company and Contractor
- formal and informal monitoring and recording of site work, scheduling, logistics, milestones and other project activities for community information purposes
- generating and maintaining periodic photographic records of construction progress and key milestones for internal and external use, and in accordance with agreed protocols
- liaising with the HSES Manager for the development, implementation and evaluation of community management procedures during crisis situations.

Reporting to the CRM are two Community Relations Coordinators who will be located in the Darwin Contractor office during the construction phase. Their role is to:

- provide assistance to the CRM to implement the Community Relations Plan and supplementary plans
- to provide advice to the CRM and other Project personnel regarding community relations issues
- research, design and generate communications materials for target audiences as directed by the CRM
- organise and facilitate community events and Contractor milestone functions
- manage the 1300 724 795 community feedback freecall number on a rostered basis to ensure the timely and accurate answering, logging, response, and/or potential escalation of community enquiries and complaints in accordance with the Company Community Grievance Management Procedure
- support other Contractor function areas where required.

The Contractor external affairs organisation chart is provided in

Figure 3.1

Figure 3.1: Contractor external affairs organisation chart

3.3 Roles and responsibilities

3.3.1 Construction Site Manager

The Construction Site Manager may be required to attend and/or lead site tours for dignitaries and Company representatives, as requested by Company. Site visits for Contractor representatives may also be conducted by the Construction Site Manager, in the event that the Project Director is unavailable.

The Construction Site Manager will assist and support the CRM in monitoring the works and providing advice on proposed project activities, or issues of community interest or concern.

3.3.2 Project officers

Project officers in all locations are required to adhere to the community relations principles and communications protocols outlined in this Plan. No Contractor personnel are authorised to have any contact with stakeholders unless specifically granted by Company in writing.

Contractor may request Company permission to publish Project information (i.e. for newsletters with distribution outside the Project team) through the Contractor Community Relations Coordinator in accordance with the Contractor's Advice for Subcontractors Part 3 (Protocols).

3.3.3 Package Manager

Package Managers will assist and support the CRM and CRCs in provision of timely and accurate information, monitoring of the works and advising of other project activities.

3.3.4 Contractor and Subcontractor personnel

No Contractor and Subcontractor personnel are authorised to have any contact with stakeholders unless otherwise specifically granted by Company in writing, in accordance to the Contractor's Advice for Subcontractors Part 1 (Engagement).

3.3.5 Communications

The CRM and EAM work together with Company Public Affairs and External Affairs teams in Perth and Darwin to manage stakeholder relations during the construction execution phase. All Contractor and Subcontractor communications to stakeholders are guided by the management plans listed in Section 1.3. The majority of pro-active stakeholder engagement activity as well as reactive escalated grievances will be managed through the CRWG, while daily management of routine enquiries will be managed at the point of contact by the Contractor community relations team.

4. ENGAGEMENT MODEL

Since the announcement in 2008 that Darwin would be the location for the Ichthys LNG plant and associated onshore facilities, Company has undertaken extensive consultation with community (and other) stakeholders in Darwin and in the wider Australian context. The overarching objectives of this engagement have been to:

- protect and enhance the reputation of Company, and of the Ichthys Project
- provide a framework of positive engagement to facilitate government approvals associated with the Project.

The top-down engagement model typically adopted by Company, as Operator of the Project, for major disclosures of information to government and the community has resulted in positive outcomes for Company and the Project across all functional areas. This model is shown in Figure 4.1.

The engagement model is summarised as “top-down”, by which it is meant that significant public announcements are typically advised to the Head of Government first. Under this model, the information is then communicated down to key elected representatives (relevant ministers, Members of Parliament, local government representatives) and then to the broader community.

Messages are communicated to these stakeholder groups using various communication channels.

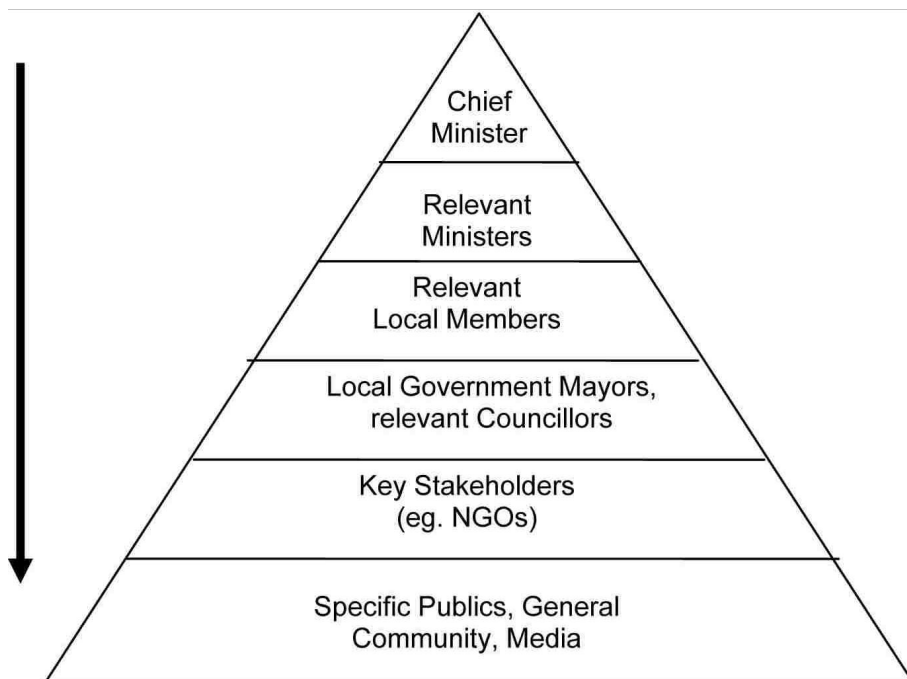


Figure 4.1: Top-Down stakeholder engagement model (Northern Territory)

Note: Certain Project disclosures will not follow this model; for example, disclosures that relate strictly to approvals processes which will originate at the working level of government.

Company personnel across the key functional areas of Darwin Office, Government Affairs, Public Affairs, Environment, Government Approvals and Contracts have regular contact with departmental counterparts on an ongoing basis. This occurs both in formal meetings, such as the regular High Level Group meetings of NT Government departmental heads with the Director Corporate Co-ordination and GM Darwin, and in meetings at the working level to maintain relationships and generate bilateral understanding pending approvals requirements.

Departmental personnel are, therefore, likely to be communicating upwards to their ministers in some cases.

This Plan follows the top-down model that has been developed and is considered to have functioned successfully to date.

4.1 Top-down engagement model during construction

While major announcements are likely to continue to be delivered to key stakeholders and the community using the top-down model described above, much of the day-to-day information required to be communicated to the community during the construction phase will be undertaken by Contractor direct to the community.

Information of this nature particularly relates to issues of public safety associated with construction activities that have the potential to highly impact the community, such as activities within the Howard Springs Accommodation Village site and rock transport to Blaydin Point and East Arm Wharf from the quarries

During the construction phase, Contractor will work in conjunction with Company in coordinating community communication activities to ensure communications are consistent with the expectations of Company.

4.2 Regular, open and personal contact

While Contractor will manage and document day-to-day community interaction associated with construction activities, regular, open and personal contact with key stakeholders will be managed by the Company according to the top-down engagement model. Contractor will build on the level of trust and two-way communication process during a transitional phase into the construction period where Company will monitor, but not continue to lead, the broader community engagement activities.

5. OVERVIEW OF COMMUNITIES AND KEY STAKEHOLDERS

5.1 Key stakeholder groups by external affairs function

5.1.1 Community

The Project's key community stakeholders include the following:

- local government authorities
- businesses and business associations
- non-government organisations
- media
- local residents in our areas of operation (listed below)
- sponsorship partners.

Contractor will be provided with access to, and will refer to the Company Stakeholder Database for full details of all stakeholders.

5.1.2 Government

Company will continue to instigate and manage engagement with Federal, Territory and State government stakeholders, with support from Contractor where requested. Contractor engagement will not include Federal communications unless necessary.

5.1.3 Aboriginal and Torres Strait Islander peoples

Targeted engagement with ATSI stakeholders is referred to separately in the following plans:

- Ichthys Project Aboriginal and Torres Strait Islander Business Engagement Plan (C015-AG-PLN-0003)

- JKC Aboriginal and Torres Strait Islander Affairs Plan (S-0290-11NO-0001).

5.2 Communities in areas of construction and operation

Contractor will concentrate its community engagement in the following key areas during construction.

5.2.1 Darwin

The proposed onshore gas processing facilities for the Project will be located 13 km from Darwin's central business district (CBD). The Project's impact on Darwin CBD is expected to be largely economic, in terms of upward pressure on rents and decreased availability of apartments and commercial premises. Small businesses and the entertainment precinct along Mitchell Street will benefit from increased custom. This may also lead to upward pressure on prices.

5.2.2 Palmerston

The proposed onshore gas processing facilities will be located 8 km from the centre of Palmerston. Palmerston is also close to the location of the construction workforce accommodation facility—the Howard Springs Accommodation Village. It is proposed to use suburban roads within Palmerston for the workforce bus route to and from Blaydin Point and for materials transport to the Village and Blaydin Point.

5.2.3 Howard Springs

Howard Springs is on the fringe of Darwin's expanding residential areas south along Stuart Highway. It is the location of the construction workforce accommodation village—Howard Springs Accommodation Village. Howard Springs is characterised by large "rural" blocks (1–2 hectares) in contrast to the high-density village design.

6. COMMUNITY RELATIONS PROCEDURES

6.1 General

The CRM and/or EAM will participate in public forums, government meetings and other official events as Contractor representative, at the request of Company. The CRCs and other Contractor representatives will also be involved in community events and stakeholder liaison, as required.

Where community issues are not able to be resolved in the first instance by Contractor via the community feedback mechanisms, Company and Contractor will discuss and resolve community issues through the Community Relations Working Group. Contractor will document all community interaction in a customised community consultation database that is similar to the Company system.

Contractor, with the approval of Company, will organise community events throughout the execution phase of the project. The CRM will submit event proposal(s) to Company for consideration, as required. Contractor and Company will evaluate, discuss and agree resources required for community events and stakeholder liaison on a case-by-case basis.

Contractor will engage the services of a local professional photographer to take images of regular construction progress and milestones for Contractor and Company purposes.

6.2 Aboriginal and Torres Strait Islander (ATSI) relations

The Aboriginal and Torres Strait Islander Affairs Plan (S-0290-11N0-0001) details the stakeholder engagement and business engagement strategies for these specific stakeholder group(s). Contractor ATSI community relations is managed by the Cultural Affairs Supervisor with support from the Community Relations team. The CRM will work together with the Supervisor to ensure information communicated to all stakeholders is consistent with Contractor and Company expectations.

6.3 Media protocols

Only Company-authorised personnel are permitted to make public statements on Project issues, unless otherwise agreed by Company External Affairs and Darwin General Manager. Contractor and Subcontractors are not permitted to comment about the Project to the media and will refer all enquiries to Company representatives.

Company will arrange media training for Contractor personnel where required.

Contractor Advice to Subcontractors Part 3 (Protocols) outlines the Company and Contractor agreed method of publicly releasing all types of communication.

Contractor will advertise project activities in the local *NT News* newspaper each Saturday, as well as the respective community newspapers where appropriate. The advertisement will appear in the Contractor standard template and will include information about the following project impacts on the community:

- major traffic movements and disruptions
- major vessel movements and disruptions
- other project activities likely to impact stakeholders
- Project milestones and achievements
- community events
- community feedback opportunities
- where to find additional information about the Project.

This information will also be provided to Company for inclusion in other Project communications.

6.4 Government relations

All Contractor and Subcontractor communications with elected Government Representatives is to be carried out through the Contractor Community Relations Managers, or delegate, to Company representatives, unless otherwise approved by Company in writing, or by direction through the Community Relations Working Group.

Likewise, all Contractor and Subcontractor communications to government personnel will be made through the Community Relations Manager to Company representatives, unless otherwise directed by Company.

Contractor and Subcontractor regulatory compliance personnel will be required to liaise directly with government personnel to organise approvals and licences to undertake portions of work. Contractor will seek formal approval from Company to directly contact the relevant government agencies upon commencement of the execution phase, and will document all instances of interaction with these stakeholders.

6.5 Complaints management

All community feedback will be managed on a case-by-case basis.

The majority of feedback will be managed as close to the point of contact as possible and will be documented in the stakeholder consultation management database.

Where feedback cannot be resolved in the first instance, it will be managed in accordance with the Company Community Grievance Procedure (doc number) aligned with the Community Relations Working Group's (CRWG's) Terms of Reference.

The CRWG will regularly meet to discuss issues raised by stakeholders. Contractor will assist with the resolution of complaints, as required, and will agree on the appropriate actions required to communicate the resolution to the community member.

6.6 Crisis management

Contractor will assist Company with the management of stakeholder crises, as required.

The CRM will work together with the HSES Manager to develop specific community crisis management procedures for the site, including:

- civil unrest at site boundaries, Contractor office(s) and Accommodation Village
- protestor management.

6.7 Howard Springs Accommodation Village

The Howard Springs Accommodation Village Subcontractor will appoint a Community Relations Coordinator who will be guided by the CRM and will be responsible for the resolution and communications of community relations issues regarding the construction of the Accommodation Village.

When occupation commences the Howard Springs Accommodation Village Operator will have a Village Liaison Officer to manage internal village community relations issues and report to the CRM for issues relating to interface management between the Village and the broader community.

The Coordinator and Officer will attend regular meetings between Contractor and Company to discuss community relations matters, resolve complaints and facilitate project information to the relevant stakeholders.

6.8 Identifying key community issues

6.8.1 Identified issues

Extensive community engagement and formal consultation has identified the following key issues as areas of concern for the wider Darwin community:

- housing and rental market pressure
- local infrastructure (roads, services) pressure
- increased harbour traffic
- labour market pressure
- local content, jobs and training opportunities
- environmental impacts
- public safety
- social impacts such as workforce integration and impact on health services
- recreational fishing impacts, including creek access adjacent to Blaydin Point.

Issues of concern to the community are captured in an Issues Register managed by Company External Affairs.

Issues relating specifically to ATSI peoples will be detailed in the Contractor Aboriginal and Torres Strait Islander Affairs Plan (S-0290-11N0-0001).

6.8.2 Prioritising issues

Issues of interest to community stakeholders generally have two broad impacts:

- reputation
- project schedule/cost.

Reputation issues may or may not have a direct impact on the Project schedule. Community issues that do have the potential to impact both the Project schedule and the reputation of Company and Contractor are considered a priority. The level of priority and associated impacts are outlined in Table 6.1

Table 6.1: Issues priority matrix

Priority Level	Impact on External Reputation		Impact on Project Schedule/Costs	
	Yes	No	Likely	Unlikely
No Action (low)		x		x
Level 1	x			x
Level 2		x	x	
Level 3 (high)	x		x	

Issues register

An issues register will be maintained within the broader stakeholder consultation management system by the EAM and CRM to document key areas of community and media interest to Project stakeholders. The register is maintained and updated after milestone community engagement events and includes the issues raised by stakeholders, the Company response, and details of briefings with stakeholders.

Stakeholder database

Contractor maintains a comprehensive database of community stakeholders across all jurisdictions. The stakeholder database is reviewed regularly to ensure the data is valid, particularly ahead of key milestone events. The database includes the Issues Register where all areas of concern and interest can be tracked over time, evaluated and fed back into planning future activities and mitigation measures.

Community grievance management procedure

The Company Community Grievance Management Procedure provides a standard process for responding to and resolving grievances raised by the community, which assists with the identification and management of issues. The procedure includes how Company will work with Contractor to identify and resolve issues as early as possible to reduce the potential for community concerns to escalate to the media or to the political level.

6.9 Communication channels

The key methods and tools of communication used to engage with the community are set out below:

6.9.1 Communication plans and Q&As

Communication plans are prepared for specific Project milestones and activities. Q&As and key messages are prepared for a wide range of activities and issues. A general Project Q&A is maintained by Company and Contractor and used to guide all communications with community stakeholders. This is aligned to similar Company documents.

6.9.2 Briefings (formal and informal)

Both formal (minuted) and informal briefings (in person or by phone) are used as regular forms of engagement with community stakeholders. Details of formal stakeholder briefings are recorded in minutes of the meeting and distributed to relevant staff. These are also entered into the database. Issues of community concern may also be detailed within the issues register.

6.9.3 Website and feedback numbers

Company will oversee an Ichthys Project web site which will be populated by Company and Contractor. Company will continue to manage an 1800 community general enquiry phone number. During the construction phase Contractor will also manage a community feedback number (1300 724 795), specifically for issues regarding construction impacts.

6.9.4 Media

Will be managed in liaison between the Contractor Media & Communications Officer and the Company Communications Manager. Media releases are prepared for Project milestones and other events or issues. These are distributed to key media contacts and uploaded to the Company and Ichthys Project web sites as appropriate. Media interviews may be considered for Company and Contractor personnel who have received media training, as required. The releases must be generated, approved and issued following the agreed public communications protocols.

6.9.5 Fact sheets

Fact sheets are developed for particular Project issues and activities. These can be distributed at community forums and events, uploaded to the Company and/or Ichthys Project web sites, or distributed in person at briefings. All fact sheets must be generated, approved and distributed as per the agreed public communications protocols.

6.9.6 Electronic newsletter

Contractor, in conjunction with Company, will produce an electronic newsletter in html format. This will be distributed to subscribers registered through the Ichthys Project web site. The newsletter will provide periodic Project updates and will communicate information regarding particular Project activities. All content must be generated, approved and included as per the agreed communications protocols.

Advertising

Advertising can help communicate key messages to the community, particularly during key Project milestones such as the completion of large packages of work. The majority of advertising will be centred around regular Contractor Community Bulletins and recruitment. Articles will be generated for specific interest publications where content has been approved as per the agreed communications protocols to support community awareness activities for targeted audiences and reputation management.

6.9.8 Community forums

Contractor community forums will take place at the direction of Company as a means of direct consultation with the community during key construction activities to determine the understanding of issues of importance to the community.

6.9.9 Public displays

Public displays will be used to engage directly with the community to help identify and communicate issues of importance to specific audiences; for example, shopping centre displays in Howard Springs will be set up to engage with the community about the Howard Springs Accommodation Village.

6.9.10 Phone surveys

Where directed by Company, Contractor will undertake phone surveys in line with key milestones to gauge the level of general community support or to gather feedback on a particular issue.

6.9.11 Sponsorship

Where Contractor determines a community need, or where directed by Company, some sponsorship opportunities may provide Contractor with the ability to make a contribution above the usual scope of construction activity. This may support Company and Contractor to fulfil corporate social responsibility obligations and help to achieve broader business goals.

Where deemed appropriate and timely, Contractor may participate in sponsorship of community events to further engage with the community at a grassroots level and provide direct consultation opportunities.

6.9.12 Industry events

Some Industry events and conferences may be considered as further opportunities to engage with particular interest groups such as industry colleagues, government representatives and some community members, in particular from the business community.

6.9.13 Site visits

Visits to Project construction sites and facilities may be arranged for key community stakeholders, although health and safety concerns must always remain the top priority when determining whether these activities are appropriate. Contractor will support Company with construction site visits which may be popular with Australian and Japanese Government, business and community representatives. This may require high levels of resourcing and liaison during the construction period. Safety issues, such as site inductions and PPE will need to be identified and protocols defined to ensure minimal impact to the construction schedule.

6.9.14 Media

Media commentary about the Ichthys Project can significantly influence public opinion. For this reason media is a key Project stakeholder, particularly in regional communities such as Darwin where the Project has a very high profile.

While Company engages media as an important tool to manage Project issues and favourably influence community perceptions, Contractor will not actively engage the media without the direction and support of Company, as per the agreed communications protocols.

Contractor CRM will advise Company in a timely and accurate manner where potential media interaction is anticipated.

The CRWG will meet on a weekly basis to identify and manage any community issues. Media risks and opportunities will be discussed and communicated upward if required. This group will help identify issues that could potentially attract media attention.

In conjunction with Company, Contractor will generate communications plans on which Company may base media engagement plans. Contractor will provide briefing notes to Company for significant events and Project milestones, as required.

6.9.15 Advertising

Advertising is an effective means of communicating key messages to the community, in a controlled manner.. Advertising can be used to correct misinformation, educate and reinforce messages, or communicate important information to the community such as roadworks, traffic haulage routes, or community events.

Advertising across a diverse range of channels can support the promotion of the Ichthys Project and assist with recruitment. Contractor will advertise for recruitment and general information in the key local media outlets, to support Company advertising efforts throughout the construction phase.

6.9.16 Construction card—letterbox drops

Letterbox drops of professionally designed construction cards will take place as required. The content will change as construction activities change. The cards will be placed into letterboxes or tied to fences where appropriate to provide specific information to communities in discreet locations who are most highly impacted. The content will include the same advice provided to the broader community but with more detail. The content will be provided by Contractor and Subcontractor construction personnel and a copy will be provided to Company.

6.10 Promoting the joint venture

JKC Australia LNG is a joint venture between JGC Corporation, KBR (Kellogg Brown & Root Pty Ltd), and Chiyoda Corporation.

Each joint venture partner provides a high level of technical and strategic input in their participation in the Ichthys Project onshore LNG facilities construction phase.

All construction phase public communications generated by Contractor should include the logo in Figure 6.1:



Figure 6.1: JKC Australia LNG Logo

6.11 Community grievance management procedure

The Company Community Grievance Management Procedure provides the guiding standard process for Contractor to respond to and resolve grievances raised by the community that cannot be resolved by Contractor in the first instance, or by the CRWG. The procedure covers grievances linked to the direct or indirect consequences of activities carried out by Contractor and will also be used to record positive feedback and acknowledgements by the community and stakeholders.

The procedure provides the community with a mechanism to give feedback and raise grievances related to the impact of the construction of the Project. It enables Company and Contractor to respond to and to manage grievances in an efficient and timely manner.

Providing the community with an opportunity and process to communicate directly with Contractor and Company will help protect and potentially enhance reputations and reduce the potential risk of issues being elevated to a media or political level.

The Contractor stakeholder management database system will enable community relations to log complaints and responses; will allow the issues to be tracked, evaluated and reported, and will provide a tool for integration with the Company Stakeholder Relationship Management System within the SAP system. The database system will incorporate:

- Community Grievance Register
- Stakeholder Issues Register
- Stakeholder Database
- SRM+ data and analysis reports
- media analysis reports
- phone polling results.

Note: The Community Grievance Management Procedure is an internal term only and is consistent with the terminology within the International Finance Council guidelines. In external communications the procedure will be known as "community feedback" and will include the feedback options of info@ichthysproject.com and the community feedback line (1300 724 795).

6.12 Public risk and incident communications

Activities such as increased traffic volumes for materials and equipment transport and increased marine traffic in Darwin Harbour may pose risks to the community.

Company and Contractor will work together to alert the community to any potential risks that may be present during this period.

The CRWG will meet regularly to identify and manage public communications around potential risks to the community during the construction phase.

In the case of specific incidents, Contractor will be responsible for communication with the community and will do so in close liaison with Company.

The EAM and CRM will support and/or participate in activities associated with Contractor crisis management where appropriate.

6.13 Lessons Learned

Contractor will establish a register to capture opportunities for improvement for Community Relations activities during the course of the construction phase, to be known as Lessons Learned.

7. THIS WILL INCLUDE IDEAS THAT MINIMISE COST AND IMPACTS TO CONSTRUCTION SCHEDULE, INCREASE PRODUCTIVITY, STREAMLINE MANAGEMENT OF ISSUES, STAKEHOLDERS AND EVENTS, AND GENERALLY HEIGHTEN THE AWARENESS OF THE IMPORTANCE OF GOOD COMMUNITY RELATIONS ACROSS THE PROJECT.CONTRACTOR ENGAGEMENT

7.1 Community Relations Working Group

The Community Relations Working Group (CRWG) will meet regularly to identify, discuss, resolve and monitor community issues and communications for the day-to-day construction activities.

Permanent members of the working group will include:

- Company External Relations Manager
- Company community relations coordinator (Darwin)
- Company key communications and externalaffairs personnel (Perth)Contractor key community relations/external affairs personnel (Darwin).

Other Company and Contractor personnel may be asked to attend meetings as required.

The CRWG will review planned public communications for upcoming activities to determine appropriate channels and volume.

Company External Affairs Manager (and/or delegate) is a member of the Transport and Ports and Harbour subcommittees to ensure construction activities likely to impact on the community are captured and appropriate communication actions planned.

A Contractor community relations representative will also have membership of these committees during construction.

Company External Affairs personnel will also be in regular communication with the Director of Communications at the Department of the Chief Minister to ensure project–government communications are aligned and that existing departmental communication channels are utilised in support of this Plan. This information will be communicated to Contractor.

7.2 Public communication protocols

Company and Contractor have agreed to a set of overarching principles which guide communication protocols surrounding public engagement with media, government departmental staff, politicians, NGOs, and the wider community. These protocols are still being defined for various anticipated communication activities, setting out roles and responsibilities and identifying which actions are delegated to Contractor community relations personnel during the construction phase and which require approval from Company.

In summary, these protocols are brought together in a comprehensive matrix provided in the Contractor Advice to Subcontractor Part 3 and include the communication protocols and objectives for Company, Contractor and Subcontractor.

These protocols include the following:

- Contractor may engage directly with external key stakeholders only with the prior approval of Company and in accordance with agreed communication plans and protocols.
- Only Company-authorised personnel are able to make public statements on Project issues, unless otherwise agreed by Company External Affairs in conjunction with appropriate Contractor personnel.
- All public complaints received by Project personnel shall be managed in accordance with the guiding principles in this Plan, the Company Community Grievance Management Procedure, and the Community Relations Working Group and its terms of reference.

SUBCONTRACTOR ENGAGEMENT

Contractor engagement with Subcontractors during the construction phase will include close management and guidance of key Subcontractor personnel to ensure timely and accurate delivery of information about construction activities and associated impacts. This will also the adequate provision of guidance to ensure risk to reputation of all organisations is minimised wherever possible.

Contractor has three key areas for guidance that are included in Subcontractor contractual documents and required to be taken into account before mobilisation to all construction sites across the Project. These are included in Appendices A, B and C.

APPENDIX A JKC JV ADVICE TO SUBCONTRACTORS: PART 1

COMMUNITY AND STAKEHOLDER ENGAGEMENT GUIDELINES

Media

If approached by the media:

- Do not consent to an interview or make a comment (remember that journalists believe that everything is on the record, and you are not an authority to speak on behalf of the project).
- Refer media to the 1300 community hotline immediately (use provided business cards where possible).
- If media trespass or interfere with work, stop work immediately and contact:
 - your supervisor who will then contact the Site Construction Manager
 - the community hotline.
- Be polite and courteous at all times.
- If media are present but are not trespassing nor interfering, then continue to work normally.
- Be aware of listening devices and radios being monitored.
- Be aware of the use of long-lensed cameras.
- Ensure compliance at all times with all PPE and other HSE work requirements.
- Do not do anything that may be used against your employer, Contractor, Company, or the Ichthys Project.
- Do not react to being filmed if the media are on public land.
- Do not react to media persistence or harassment off site.

Protestors

If you encounter protestors in the field:

- Ignore them and continue to work normally.
- Do not respond to taunts, criticism or abuse.
- Do not comment or engage in conversation.
- Be polite and courteous at all times.
- If protestors trespass onto the site, immediately contact:
 - your supervisor
 - the community hotline
- If protestors interfere with personnel or equipment, contact:
 - security who should then contact police where appropriate
 - your supervisor
 - the community hotline.
- Do not try to prevent damage being done to equipment or the worksite; simply contact security.
- Engage in passive resistance if touched; stop work and leave the site, if necessary.
- If the protestors become aggressive, leave the area immediately, if possible, and contact security.
- Do not abandon a vehicle or equipment unless remaining with it could result in personal injury.

- Ensure that equipment is secured overnight.
- Be aware that your UHF or VHF radios may be monitored.
- Do not engage with protestors off site.

If a road is blocked, or access to site is denied by protestors:

- Stop the vehicle.
- Do not proceed through blockade, even slowly.
- Ask politely to be let through.
- Do not engage in an argument or become aggressive or abusive.
- Ignore taunts, criticism or abuse.
- Contact site security, who will attend the site.
- If the protestors become aggressive, leave the area immediately, if possible.
- Do not abandon a vehicle or equipment unless remaining with it could result in personal injury.
- Do not do anything that may provoke the protestors (e.g. taking pictures).

Landholders/Neighbours

Personnel must make every effort to maintain good relations with the community, particularly those who are directly or highly impacted by our work. The following protocols must also be followed:

- The most senior construction officer on site must be sure that appropriate notifications have been made to potentially the most directly impacted members of the community—this should be a line item in the pre-start activity.

Note: This notification must have included, in some detail, what work is proposed, when it will start, when it is most likely to finish (always be conservative where estimating), what will be seen, any other impacts, remedial works, subsequent timeframes for other notifications.

- Contact the community hotline if there is notable pushback from any community members which may impact the construction schedule and incur costs, or provide potential for damage to reputation of Company, Contractor or Subcontractor.
- Show respect to the landholder and any family, neighbours or associated property which may be highly impacted.
- Be polite and courteous at all times.
- Be aware of any lifestyle, business or community activities that may conflict with the scheduled work, and plan work accordingly. Negotiate arrangements where appropriate. Where there is potential for conflict, escalate concerns to the Community Relations Working Group in a timely manner, providing options for mitigation at the location.
- Do not block any access to properties in proximity of the construction activity at any time, day or night, without appropriate and timely notification processes in place.
- Ensure that all workers on the site understand that improper behaviour will have serious consequences.
- Always keep members of the public well clear of worksites, particularly children.
- Ensure that all HSES requirements are met, particularly public safety, noise, dust and vehicle use.
- Keep vehicle movements near neighbouring properties to a minimum, whenever possible.
- Understand the traffic routes for access to and from worksites as detailed in the site Traffic Management Plans and always use existing roads and tracks where possible.

- Take care to close gates, repair fences, repair roads or driveways and take all precautions to protect community interests.
- Ensure that remedial work is done properly and in an agreed schedule with impacted community members.
- Ensure that equipment and the work area are secure and safe before any construction site is left unattended.
- Take the time to thank community members for their cooperation and advise them of any future work which may be required in the same location.
-

**WHEN APPROACHED BY MEDIA, PROTESTORS AND/OR COMMUNITY MEMBERS
ALWAYS CALL THE COMMUNITY FEEDBACK LINE: 1300 724 795**

APPENDIX B JKC JV ADVICE TO SUBCONTRACTORS: PART 2

PUBLIC IMAGE AND BRANDING OF ICHTHYS PROJECT DURING CONSTRUCTION PHASE

External Branding

All external branding for the Ichthys Project during the construction phase, for construction related activities, will carry the JKC Australia LNG (JKC) logo (Fig 1) and implemented in conjunction with this document. This construction phase for JKC in Australia shall be referred to as the “Ichthys Project onshore LNG facilities”.

All the information contained herewith applies only to JKC Australia LNG branding that occurs on Australian soil.

The JKC branding structure and use of logo must be approved first by the JKC External Affairs Manager and then by the JKC Project Director, prior to any external use by the Subcontractor, lower tier subcontractors and all suppliers to the Ichthys Project onshore LNG facilities.

The branding structure and logo (Fig 2) associated with the preparatory stage of the Ichthys Project is the property of INPEX and Total and should not be used in an external (public) environment without the written permission of the Company External Affairs Department (Communications Manager). Without permission the logo should not be used on contractor or sub-contractor:

- PPE
- Vehicles
- Equipment
- Websites
- Media releases
- Publications

It is important to INPEX and Total that the brand value of the “fish” logo be protected during the high-risk construction phase as it will play an important ongoing role during operations at a later stage, from a gas marketing perspective. Likewise the words “Ichthys Project” and Ichthys LNG Project” – these are production brands, not to be confused with the construction phase.

The use of the “fish” logo will be reserved only for INPEX signage, PPE, and other INPEX approved requirements.



Figure 1: JKC Australia LNG Pty Ltd logo



Figure 2: INPEX Ichthys Project logo

All requests from third parties to use either the INPEX name or logo must be reviewed and approved by External Affairs, and items that could be included are:

- List of customers for marketing purposes
- Articles about their work for INPEX in internal publications
- Case studies for marketing purposes (generally would require INPEX to be referred to in a generic manner)
- Media releases that mirror INPEX generated releases

However, generally INPEX does not allow its name or logo to be used externally by other companies, nor does it endorse any equipment, product or service. This supports the belief that such endorsement may give the supplier an advantage, thus contrary to the corporation's philosophy of fair and equal opportunity for all.

Construction Signage

In special circumstances and with appropriate INPEX approvals in place, the INPEX “fish” logo (Fig 2) may be used on Ichthys Project signage, for example, at Blaydin Point and the Accommodation Village entrance statement signs, in accordance with the INPEX style guide.

For temporary signage during construction, for example, at Blaydin Point and the Accommodation Village, the term “Ichthys Project onshore LNG facilities” in text only, should be used, along with the JKC logo and any other logos as approved by the JKC External Affairs Manager, then Project Director.

Permanent entrance statement signage at the Accommodation Village and Blaydin Point will be determined by INPEX.

PPE

JKC PPE can include **Ichthys Project onshore LNG facilities** text only, in the appropriate ‘mangrove’ green, which represents the colour of the tail of the fish in the INPEX “fish” logo.

The green colour codes are: PMS 348 C, CMYK C100M0Y85K24, RG B R 0G136B82.

The correct font can also appear in black if colour use on some items does not meet objectives.

Ideally the PPE logo structure would be applied to JKC, Subcontractors, and also lower tier subcontractors who have specific personnel working on the Ichthys Project onshore LNG facilities who require PPE over a lengthy period of time.

The Ichthys Project PPE logo structure would look similar to these two examples:

JKC Australia LNG

**Ichthys Project
onshore LNG facilities**

LAING O'ROURKE

**Ichthys Project
onshore LNG facilities**

The **Ichthys Project onshore LNG facilities** should always include both upper and lower case letters and should never appear in capitals only. Subcontractors and suppliers can determine for themselves if this rule applies to their text sitting above the **Ichthys Project onshore LNG facilities**, however, it is preferred that symbols or larger graphics are not included on the PPE. All PPE logos must be approved by JKC External Affairs Manager, then JKC Project Director.

It is expected that all Subcontractors and appropriate suppliers, conform to this guideline for PPE for consistency across the Project construction phase.

JKC JV ADVICE TO SUBCONTRACTORS: PART 3

COMMUNICATION MATERIAL APPROVALS PROTOCOL

Criteria

- **Group 1 (Ichthys Joint Venture):** Must have Ichthys Joint Venture approval
- **Group 2 (JKC JV partners: JGC, KBR & Chiyoda):** Must have JKC JV partners' approval and cc to INPEX
- **Group 3 (Operational – Community Relations Working Group):** Requires Ichthys Project Community Relations Working Group approval only, but cc INPEX

Note: The protocols for communication material approvals for the JKC Ichthys LNG Joint Venture for offshore activities must always be distinguished by its name and separate logo/branding, and then be managed in the same way as for Group 2. Therefore, the applicable protocols must cascade down to all subcontractors and suppliers associated with these activities.

Protocol

All **Group 3** materials prepared by Contractor and/or Subcontractor (with input as required from INPEX):

- Regardless of author, forward draft materials to JKC External Affairs Manager for checking.
- Forward to JKC Project Director for approval:
 - Each JV partner is responsible for seeking internal approvals – JGC, KBR, Chiyoda
- Forward to JKC External Affairs Manager for returning to author for distribution to the appropriate channels, copying Community Relations Coordinator responsible for managing public materials.
- Provide Company with a copy of the approved materials and plan for distribution and timing.
- Coordinator to ensure materials appropriately filed in JKC system.
- Approval time by Project Directors is a maximum of 24 hours.

All **Group 2** materials prepared by JKC JV and/or Subcontractor:

- Forward to JKC JV Community Relations Manager for QA check.
- Forward to JKC JV External Affairs Manager for progressing to JKC Project Director.
- JKC Project Director to seek internal approvals from JGC and Chiyoda. JKC External Affairs Manager to seek internal approvals from KBR and integrate all JV responses
- External Affairs Manager forwards to Company for further approval.
- Company returns approved document along with Total's approval to JKC External Affairs Manager in the agreed timeframe.
- External Affairs Manager forwards to Community Relations Coordinator with responsibility for managing and distributing all approved JKC JV public communications materials.
- Materials are filed appropriately in JKC JV system.
- The approval time for JKC JV Partners to JKC JV personnel is 24 hours.
- The approval time for Company back to JKC JV is 24 hours.

If materials are not returned in the agreed timeframe, the JKC JV personnel will liaise with Company and/or JKC JV Partners to determine the reason for delay and to revise the date.

The Approvals Register is updated by JKC JV Community Relations Coordinator.

All **Group 1** materials generated by JKC JV Partners, JKC JV, the Ichthys Project Community

Relations Working Group, Subcontractor, or any lower tier subcontractors and suppliers will be forwarded to Company as Operator for the Ichthys Project. All materials must be filed appropriately in the JKC JV system and distributed as for Group 2 materials.

Approval times for Company are as per Ichthys Joint Venture approval protocols.

Any items for publication will be discussed at the weekly Community Relations Working Group meeting.

It is understood that sensitive, complex and lengthy documents will require additional time to review. As these are normally long-lead items, they will be flagged well in advance and reasonable approval times will be agreed well ahead.

COMMUNICATION MATERIALS PROTOCOL—TABLE OF DETAIL

The following table lists the types of communication materials anticipated on the Ichthys Project during the construction phase, along with the required levels of approval and input as outlined in the criteria and protocols above.

Group 1	Communication	Ichthys Joint Venture	JKC JV & JV Partners	Community Relations WG	Subcontractor / Supplier	INPEX FYI
	Media releases about INPEX matters (not Project-related)	✓	✓			✓
	Briefings and briefing notes for elected representatives	✓	✓	✓	✓	
	Letters to residents/stakeholders about actions being taken on behalf of the Ichthys Joint Venture where work is not yet contracted to JKC JV or Subcontractor	✓	✓	✓	✓	
	Newsletters for general public distribution regarding project/progress	✓	✓	✓	✓	
	Project display materials, e.g. posters for public information sessions	✓	✓	✓	✓	
	Invitations to public events	✓	✓	✓	✓	
	Project fact sheets	✓	✓	✓	✓	
	Advertisements; advertorials and general articles about the project	✓	✓	✓	✓	
	Logos/branding	✓	✓	✓	✓	
	Key messages	✓	✓	✓	✓	
	Media opportunities/milestones/media releases	✓	✓	✓	✓	
Group 2	Communication/Activity	Ichthys Joint Venture	JKC JV & JV Partners	Community Relations WG	Subcontractor / Supplier	INPEX FYI
	Invitations to events, including those initiated by JKC JV, Community Relations Working Group or Subcontractors/Suppliers		✓	✓	✓	✓
Group 3	Communication/Activity	Ichthys Joint Venture	JKC JV & JV Partners	Community Relations WG	Subcontractor / Supplier	INPEX FYI
	Letters to residents about work being undertaken in relation to construction activity in their area			✓	✓	
	E-mail updates for stakeholders			✓	✓	
	Contributions to school newsletters			✓	✓	

	Flyers regarding information sessions			✓	✓	
	Advertisements in local/regional papers relating to traffic changes or specific construction activity, e.g. road closures			✓	✓	
	Fact sheets, for specific activities/concerns such as construction, blasting, environment			✓	✓	
	Q&A sheet, e.g. for construction in a sensitive area			✓	✓	
	Construction cards			✓	✓	
	Ichthys Project web site	✓	✓	✓	✓	
	Response to 1300 "hotline" or web site inquiries			✓	✓	
	PowerPoint presentations			✓	✓	
	Reports and templates reporting requested by the Ichthys Joint Venture			✓	✓	

MEDIA AND ADVERTISING

Group 1	INPEX logos and branding	Ichthys Joint Venture	JKC JV & JV Partners	Community Relations WG	Subcontractor / Supplier	INPEX FYI
	Any media requests for information or comment about the Project	✓	✓	✓	✓	
	Inquiries about project activities, e.g. work updates, stats	✓	✓	✓	✓	
	Media opportunities and photo opportunities for Chief Minister or other elected representatives	✓	✓	✓	✓	
	Advertisements for activities, e.g. EIS activities	✓	✓	✓	✓	
	Advertorials or features to mark milestone events	✓	✓	✓	✓	
Group 2	JKC JV logo and branding	Ichthys Joint Venture	JKC JV & JV Partners	Community Relations WG	Subcontractor / Supplier	INPEX FYI
	Interview or comment from JKC JV Partners regarding work of Company or JKC JV that does not fall into Group 1		✓		✓	✓
	Advertising for JKC JV staff		✓		✓	✓
	Advertising JKC JV Partner and JKC JV achievements		✓		✓	✓

Group 3	JKC JV logo and branding	Ichthys Joint Venture	JKC JV & JV Partners	Community Relations WG	Subcon- tractor / Supplier	INPEX FYI
	Provision of facts in response to a specific media inquiry on operational detail, e.g. traffic control, road closure, machinery movements			✓	✓	✓
	Copy and photos for industry publications in response to a direct request; a request to assist writers and photographers from technical/construction publications			✓	✓	✓
	Establish a working relationship with local/regional media to open communication channels for issues raised at community level needing clarification or informed comment to balance story source.			✓		
	Advertisements for operational activities, e.g. road closure, resident meeting			✓		✓

Note:

- Members of the Ichthys Project Community Relations Working Group are all communication professionals experienced in dealing with the media. It must be assumed that the assessment of whether a media inquiry/response is a Group 1, 2 or 3 responsibility will be properly made and that necessary consultation will occur to ensure there is an appropriate and timely response.
- All organisations included in this Plan are regularly required to provide an updated list of names and contact details of appropriate media-trained expert personnel as potential "talent" for media opportunities where media engagement has been formally approved through the processes detailed above.

Following is an example of the Media Release process:

- A Subcontractor is awarded more work with the joint venture and wishes to announce this publicly. The following procedure would take place:
 - Contractor receives draft from Subcontractor, reviews to ensure information and messaging is accurate for Contractor requirements, and then forwards to Company.
 - Company Package Manager reviews to ensure information and messaging is accurate for INPEX/Total requirements and forwards, copying in appropriate internal personnel, to External Affairs (Bill Townsend, Tim Larcombe, Ilka Burnham-King) who review and arrange relevant approvals in Perth and Tokyo and with Total as required.
 - Company External Affairs advise changes to Company Package Manager who then advises Contractor.
 - Contractor advises Subcontractor, records timing and distribution of media release, and provides this information to Company Package Manager.
 - Company Package Manager advises timing and distribution details to Perth External Affairs.
 - External Affairs submits to KBR media group in Adelaide who submit to Houston KBR for approval. This can only occur after Company Package Manager has Total and INPEX approvals.

KBR media approves and External Affairs provides full approval to Subcontractor.

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Welcome to the August 2018 Ichthys Project bulletin. In this edition, we celebrate a number of Territorians who have expanded their careers and businesses working with the INPEX-operated Ichthys LNG Project. Read about locals taking up an apprenticeship, a Winnellie business that has doubled the size of its workforce and two organisations lending a hand in the community.

Ichthys Project Bulletin



INPEX's Bill Townsend with Darwin businessmen Jason Elsegood, Robert Wilson and Greg Haigh.

Local businesses share their Ichthys LNG story

Three well-known Territory businessmen have taken their Ichthys LNG stories to the nation's capital to promote the capabilities available in the Top End.

Robert Wilson from Territoria Civil, Cross Cultural Consultants' Jason Elsegood and Greg Haigh from Regional Asset Maintenance Services joined a small business delegation to discuss the economic and social impact of the Ichthys LNG Project.

The delegation met with Federal politicians and public servants to share the story of their individual business's interactions with Ichthys and the opportunity major oil and gas projects present to Northern Australia.

INPEX General Manager External Affairs and Joint Venture, Bill Townsend said the event provided business representatives with the chance to speak directly to national decision makers.

"At INPEX we are committed to contributing to the economic development of host countries and communities," Mr Townsend said.

"We have already invested billions of dollars in the Territory and Ichthys will continue to underpin the economy for decades to come – because we know that behind those billions are real businesses, and behind those businesses are real people."

INDRA
28-SEP-2018

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Showcasing Ichthys LNG to the world

A dry season morning cruise on Darwin Harbour in July was the stage to showcase the global scale of the INPEX-operated Ichthys LNG Project.

INPEX President Director Australia, Seiya Ito, hosted the Minister for Foreign Affairs, the Hon Julie Bishop MP along with 70 Canberra-based ambassadors and high commissioners on a harbour-view tour of the Ichthys LNG onshore processing facilities at Bladin Point.

Many of the countries represented in the delegation have been involved in the development of Ichthys LNG.

"Financing the Project involved 24 commercial banks and eight export credit agencies from Japan, the Republic of Korea, the Netherlands, Germany, France and Australia," Ito-san said.

"At peak, there were more than 30,000 people working on the Project across four continents."



INPEX President Director Australia Seiya Ito with the Minister for Foreign Affairs the Hon. Julie Bishop MP.



Eddie Clarke and Zabedah Baharuddin are continuing their careers with Ichthys LNG.

Careers continue with Ichthys LNG

Three local apprentices have seized opportunities to continue their careers supporting INPEX on Ichthys LNG.

Eddie Clarke, Zabedah Baharuddin and Krystal Noakes had gained experience as part of the Ichthys LNG Project's construction workforce, before taking up apprenticeships with INPEX's lead onshore maintenance contractor TRACE.

Father-of-two Eddie was one of the first 10 employees hired by TRACE, initially as a General Service Technician.

"I jumped on the opportunity to undertake an apprenticeship as a mechanical fitter and progress my career in the oil and gas industry," Eddie said.

For former lifeguard Zabedah, her electrical apprenticeship offered the opportunity to combine two of her passions.

"I love maths and science and this is the chance to put those passions together," Zabedah said.

"Working on one of the biggest projects in the world has definitely given me a head start toward a potential future as an engineer."

Local business doubles in size



Max Nicholson has transformed his family-owned business.

A family-owned business has doubled in size after successfully remodelling to target service and supply opportunities in the oil and gas sector.

Established by Richard Nicholson in 1983, Winnellie Hydraulics is now run by his son Max.

"When construction of the Ichthys LNG Project started in 2012, we saw the opportunity to grow our business by targeting the resources industry," Max said.

"From that beginning we are now supplying Ichthys onshore and offshore facilities."

Max said supporting the construction phase of Ichthys LNG had built his business's understanding of how mega projects operate and where long term opportunities might lie.

As demand for their service has grown, Winnellie Hydraulics has doubled its workforce to 10.

"We have invested locally in employees and equipment but we are also globally connected with specialist manufacturers worldwide who we deal with on a daily basis," said Max.

Hundreds turn out for industry forum

More than 200 business people attended an industry forum in May to hear about contracting opportunities to support the operations of the Ichthys LNG onshore processing facilities in Darwin.

INPEX Maintenance Manager Mark Wilson provided an overview of INPEX's business values and the contracts awarded to support INPEX during operations in Darwin.

A number of INPEX's contractors and subcontractors also attended the event.

"It was a good opportunity to update the local business community, but more importantly it gave attendees the chance to talk to our primary contractors and promote their capabilities directly," Mr Wilson said.

Superintendent Stuart Miles, from INPEX's lead onshore maintenance contractor TRACE, updated the audience on the status of their subcontract packages and commitment to building a local workforce.

"I was really impressed at the strong level of interest in working with INPEX and TRACE and welcomed the opportunity to talk to business representatives from across the service and supply sector," Mr Miles said.



INPEX Maintenance Manager Mark Wilson and TRACE Superintendent Stuart Miles at the forum.

Foodbank NT gets a lift



Peter Chandler (L) and Paul Avery (R) from Foodbank NT with INPEX's Steve Greene.

Foodbank NT has lifted its capacity since the donation of a forklift by the Ichthys Project workforce.

"Foodbank staff and volunteers use the new forklift up to 50 times a day to unload freight, manage stock and move produce as pallets of donations come in," Foodbank NT CEO Paul Avery said.

"Our old forklift had reached the point where it became unserviceable and this donation from the Ichthys workforce has made a huge difference in the day to day running of our business,"

Foodbank was established in the NT eight years ago to redistribute food and groceries to Territorians needing support and minimise food waste.

The not-for-profit agency receives donations from food companies which are then distributed to 84 local agencies including The Salvation Army, Australian Red Cross and school breakfast programs.

The donations equate to more than 32,000 meals a month.

Staying safe on the water

The INPEX-operated Ichthys LNG Project has strengthened its relationship with the Australian Volunteer Coast Guard Darwin by donating 16 high-quality personal flotation devices (PFDs).

The Project has supported Coast Guard Darwin since 2011 and the new PFDs were warmly welcomed.

"These vests have their own personal location beacons, so they will be a great help to our crews in recovery situations," Flotilla Commander Fiona Villaflor said.

"The donation will also help our volunteers, who currently bear the cost of buying their own PFD."

Coast Guard Darwin patrols seaward to North Gutter, West to the Peron Islands and East to Cape Hotham, assists NT Police in marine search and rescues as well as providing support to community events.

"Like INPEX and Ichthys LNG, Coast Guard Darwin has safety at the focus of all its activities," INPEX General Manager Operations Onshore Dave Dann said.

"We are proud to support this important community organisation."



INPEX General Manager Onshore Operations Dave Dann (centre) with Dean Breward and Fiona Villaflor from Coast Guard Darwin.

Supporting our community

Contact us

General community feedback
1800 705 010

INPEX.com.au

Under the program, up to A\$5,000 may be available for initiatives that support education and training, health and well-being, local businesses and our community.

Sponsorship guidelines and application forms can be found at INPEX.com.au

JKC Community Bulletin

Ichthys Project Onshore LNG Facilities Update

Delivering a Legacy Asset



Construction of the Ichthys Project Onshore LNG Facilities is almost complete. Inset: Bladin Point in September 2012.

The first half of 2018 has seen the achievement of some significant milestones on the Ichthys Project Onshore LNG Facilities.

Most notably, last month JKC handed over the first LNG train to INPEX. This was the culmination of a huge effort and collaboration by construction, commissioning and operations teams from INPEX, JKC and our subcontractors.

With the construction phase of the Project nearing completion, this is the last edition of the JKC Community Bulletin.

The Bulletin started in March 2012 as a newspaper advertisement to provide information regarding construction activity and help minimise community impacts. Over the last six years it has evolved to celebrate not only important Project milestones, but also the people behind the Project.

My first trip to Darwin was in January 2012 and I have been based in Darwin since January 2013. It has been a privilege to live and work in your community in such a special and unique part of the world.

We opened our Construction Employment and Mobilisation Centre in May 2012, just before the ground breaking ceremony with the Prime Minister and Chief Minister. From those early beginnings we have worked very hard on local

employment and local business participation outcomes, and are very proud of our record in both areas. Above all, we have been focused on building a strong incident and injury free culture at all Project locations.

It has been exciting to see the plant site change throughout the construction phase to reveal the state-of-the-art facility in place today.

I would like to thank the people of Darwin, Palmerston and the rural area for your support during this time. It has enabled us to deliver a legacy asset that will benefit the Territory economy and community for generations to come.

I hope our Bulletin has kept you informed of Project activity and helped minimise inconvenience. For more news and information about the Project, please visit the [INPEX website](http://www.inpex.com.au).

Regards,

John Bramley
Project Director
JKC Australia LNG

A Few Fond Memories from the Project

Runaway Pet Dingo Collared Onsite and Reunited With His Family



Top: Bianca Argoon and Nicole Davenport safely capture Nicky onsite. Right: Candice Tucker, Nicky, and Tiaki Taiawa.



Berry Springs residents Candice Tucker and Tiaki Taiawa were reunited with their pet Nicky in 2015 after the dingo was found onsite.

Nicky had been missing for more than a month before Leighton Contractors Environmental Advisor John Ross recognised the dingo and its blue collar from a flyer advertising the pet as missing. Nicky was safely trapped onsite and returned to her grateful owners who said up to that point they'd all but lost hope in finding him. "The odds of getting him back is like winning the lottery," Candice said. "We are so thankful."

White Bellied Sea Eagle Safely Rehomed After Nesting in Dish



In 2013, one of the highest points onsite was the Temporary Office Facilities' communications dish. The perfect home for a new nest, or so thought one white bellied sea eagle, who promptly set up house. Special permissions had to be sought and the nest was carefully moved to a tall tree nearby offsite where the eagle soon laid its eggs.

Photo credit: Jim Bendon, Wikicommons.



Djuki Mala danced at NAIDOC in 2015.

Buslink VIVO's BMX Bandit



Buslink VIVO Assistant Duty Manager Jacqueline Taheny delighted her colleagues when she competed in the 2017 UCI BMX World Championships in the US. The mother of three started riding after watching her son "have all the fun".

Jiu-Jitsu Master Queenie Reigns Supreme



Corinne 'Queenie' Warhurst is an Emergency Response Contact Coordinator with Fire and Safety Australia onsite and a world champion Jiu-Jitsu athlete. In 2015 the mother of three defended her World Master title after competing in the US. At this year's International Women's Day event, held onsite, Queenie joined a panel of senior female leaders and encouraged women to be confident and courageous.

The Caring Side of Construction



Kentz electrician Johnny Andrikopoulos, seen here jumping out of a plane over Darwin to raise funds for CanTeen, is just one of countless Project workers who have generously given to help others.

JKC estimates that, during the construction phase of the Project, workers have helped raise more than \$1 million in cash and in-kind donations.

Project worker Johnny Andrikopoulos, who jumped out of a plane last year to raise money for young Territorians affected by cancer, summed it up best when he said Project workers were a naturally generous group.

“Construction workers always dig deep when it comes to helping other people,” he said.

Companies and individuals onsite have championed local causes and banded together to help those in need.

One of the biggest fundraisers which brought together workers from all scopes of work on the Project has been the annual Christmas Charity Drive.

For the past three years workers packed donated food, toys and other essential or fun items into truck after truck. The goods were delivered to charities for distribution to Territorians in need across the Top End.

Companies who work on the Project have sponsored local

sports teams, events and helped raise funds for medical equipment and sick kids. Workers have also found ways to practically recycle items onsite. Personal protective equipment such as pants and boots are donated to people who are homeless and to job seekers.

One of the highlights on the Project calendar for five years running was the Employee Fun Day. In 2017 More than 3,500 people flocked to Freds Pass Reserve to enjoy a day of free activities and entertainment including face painting, rock climbing, a petting zoo, pony rides and a custom built scaffolding structure with two flying foxes. Site tours were again a huge hit, with almost 1,700 people taking the rare opportunity to have a look at the world-class project their loved ones worked on.

JKC Project Director John Bramley thanked Project workers, who collectively have inspired such goodwill throughout Darwin, Palmerston and the wider community.

“Many of these initiatives are driven by individual Project workers or subcontractors onsite. Their generosity is heartening and adds to the positive legacy we aim to leave in this community,” he said.

Project Transport

The following information aims to inform the community of vehicle movements associated with the Project.

Transporting the Project workforce is a complex and highly organised logistical operation. The majority of our construction workforce are transported by JKC's bussing subcontractor, Buslink VIVO. Some workers also commute in site specification light vehicles.

In undertaking bus transportation, as with everything we do, the safety of the community and our workers is our highest value. We all need to safely share our roads and highways. We travel along routes approved by the Northern Territory Government, as shown below.



Project Transport

JKC forecasts transport to and from our sites for the period of 22 June to 19 July 2018.

Bussing

Please note each bus may be used more than once from different locations

- 22 buses daily carrying workers from Darwin and Palmerston to Bladin Point
- 55 buses daily from Manigurr-ma Village to Bladin Point
- One bus daily from Bladin Village to Bladin Point
- One bus every hour from Manigurr-ma Village and Bladin Village to Darwin International Airport
- 16 buses daily from Darwin International Airport park'n'ride to Bladin Point
- Five buses daily from Yarrawonga park'n'rides to Bladin Point
- Four buses daily from the Coolalinga park'n'ride to Bladin Point
- One social run from Manigurr-ma Village to Darwin and Palmerston from Monday to Friday with up to eight runs on weekends
- One daily social run from Bladin Village to Darwin and Palmerston

Bladin Point

- Four semi trailers daily carrying material from East Arm Port via Berrimah and Wishart roads, Elrundie Avenue, Channel Island and Wickham Point roads to site
- Two road trains daily carrying crushed rock from Mt Bundey quarry via the Arnhem and Stuart highways, Jenkins, Channel Island and Wickham Point roads to site
- Five road trains / semi trailers daily carrying material from Winnellie via Berrimah and Wishart roads, Elrundie Avenue, Channel Island and Wickham Point roads to site
- Two road trains / semi trailers daily from interstate via Stuart Highway, Jenkins, Channel Island and Wickham Point roads to site

Marine Activity – Advice to Harbour Users

Marine Safety Zone

- A marine safety zone, declared by the Regional Harbourmaster, is in effect in the waters near the Ichthys Project Onshore LNG Facilities
- Please observe the zone so we can all share the harbour safely
- The Regional Harbourmaster's Notice to Mariners can be found at www.nt.gov.au/marine

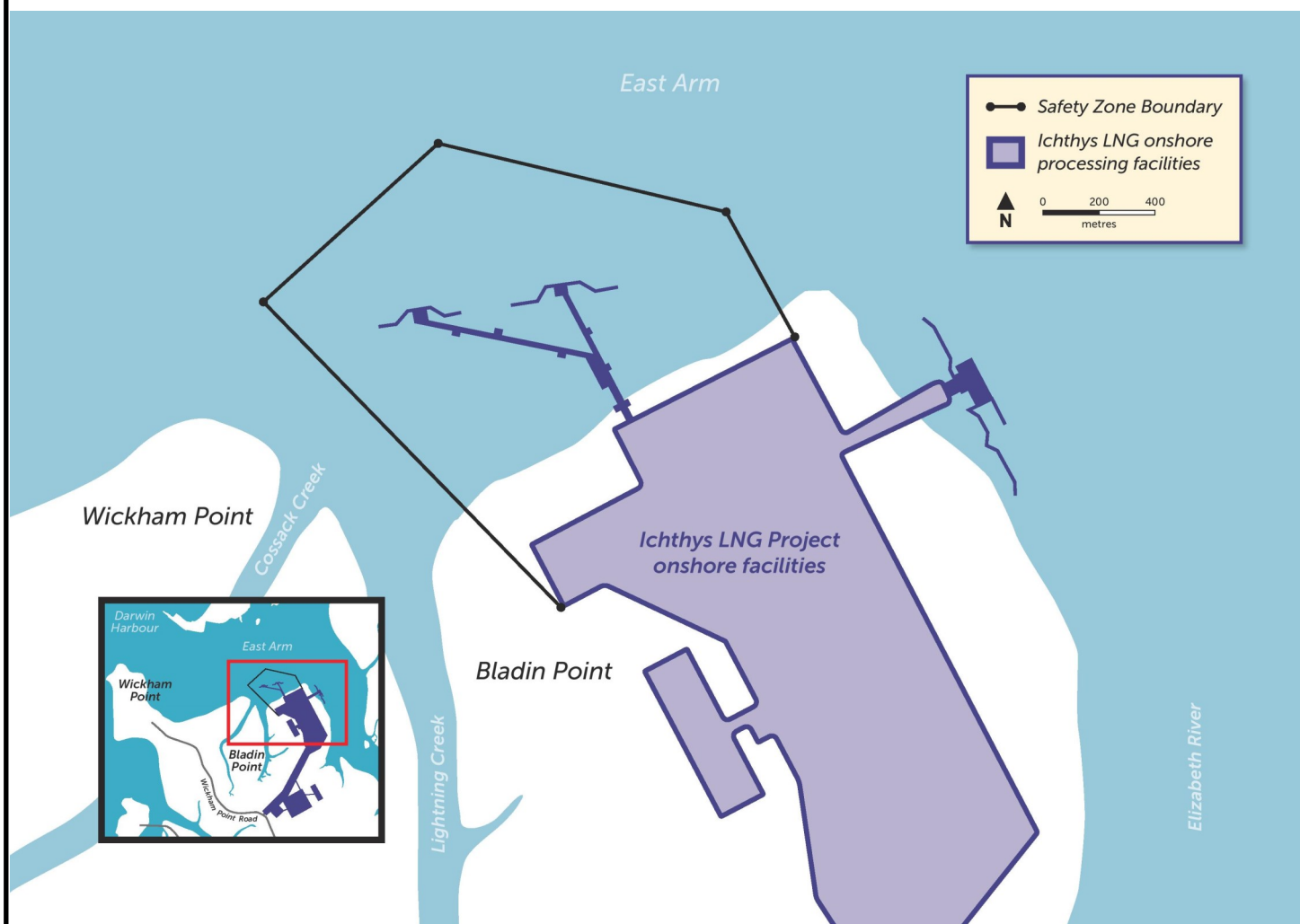


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INPEX Operations Australia Pty Ltd

ICHTHYS ONSHORE LNG FACILITIES

EMERGENCY RESPONSE PLAN

REV.	DATE	ISSUE PURPOSE	PREPARED	CHECKED	APPROVED
A	21-Feb-12	IFR	S. Cockerell	C. Turco	D.Scott
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PURPOSE

This Emergency Response Plan (ERP) specifies the procedures for managing and responding to incidents, emergencies or identified hazards associated with JKC Australia LNG Pty Ltd. This ERP documents the responsibilities for the management, control, response and resolution to an emergency.

This ERP shall identify and include Prevention, Preparedness, Response and Recovery (PPRR) activities which form the foundations of Emergency Management (EM)

This ERP is for **Bladin Point**.

OBJECTIVES

CONTRACTOR prioritises response and management efforts based on the philosophy of *People, Environment, Assets and Reputation* (PEAR). PEAR is considered concurrently and not in isolation and is defined as:

People: minimise the impact on responders, personnel and the community;

Environment: minimise the impact of the emergency and response activities on the environment;

Asset: minimise the impact of the emergency on Company and public assets; facilitate the restoration of normal business operations and protection of the operational integrity of the asset base; and

Reputation: implement core values in response to events, to mitigate adverse publicity and protect the reputation of JKC Australia Pty Ltd, sub-contractors and our industry with key stakeholders.

REFERENCES

This ERP should be read in conjunction with the following documents:

Company Documents

- (1) CO75-AH-SPC-0004 - Health, Safety, Environment and Security Requirements for Major Contracts Onshore.
- (2) CO75-AH-MAN-0003 - Emergency Response Plan
- (3) CO75-AH-FRM-0007 - Incident Report Form
- (4) CO75-AH-POL-0002 - Environmental Policy

Australian & International Acts and Regulations

- (1) Environment Protection and Biodiversity Conservation Act 1999
- (2) Northern Territories of Australia Work Health and Safety (National Uniform Legislation) Act 2011 and the Model Work Health and Safety (WHS) Regulations
- (3) Safe Work Australia Code of Practice First Aid in the Workplace

HAZARDS/RISKS

The Emergency Management risk assessment for **Bladin Point** identifies the hazards/risks that require mitigation.

Appendix **3.1 to 3.15** is a list of procedures associated with the hazard/risks and contains flowcharts and/or statements which aim to assist key emergency personnel to efficiently execute their duties in these situations.

The appendixes are intended to provide personnel with sufficient information and direction to enable 'straightforward' and reliable actions in the event of a given scenario during an emergency. The information may include, but is not limited to:

- First strike actions to reduce the potential of an incident to escalate;
- Inclusion of incident notification and confirmation activity sheets;
- Escalation processes – including external notifications to regulators/statutory bodies;

Pre Incident Response plans shall outline the physical response to these hazards / risks.

OVERVIEW OF RESPONSE LEVELS

CONTRACTOR has adopted an incident command structure that compliments the Australasian Inter-service Incident Management System (AIIMS) framework that expands and contracts according to the level of incident. Levels of response are defined in the following table:

Table 1: Levels of response

Level	Situation
Level 1 e.g. ERS / ERT	A Level 1 emergency is characterised by being able to be resolved through the use of local or initial response resources only. A Level 1 emergency can be controlled and resolved with sub-contractor first response capability and the site Emergency Response Service (ERS) and Emergency Response Team (ERT)
Level 2 e.g. IMT	Level 2 events require operational management level support. Support is provided to the site via the activation of part or all of the appropriate IMT. The objectives are similar to Level 1 emergencies and may involve the coordination of additional resources to support the site, and the notification to stakeholders. Under some circumstances, Level 2 events can be controlled by a sub-contractor ERS and project ERT with the CONTRACTOR IMT providing assistance as required. The CONTRACTOR Project Directors will be advised of any Level 2 event.
Level 3 e.g. IMT	Level 3 events, given their complexity, require CONTRACTOR strategic direction due to the impact on reputation, liabilities, business continuity and stakeholders, via activation of part or all of the CONTRACTOR Project Directors. Level 3 incident activation can also occur where there is a developing threat or issue.

Levels of Incident Management

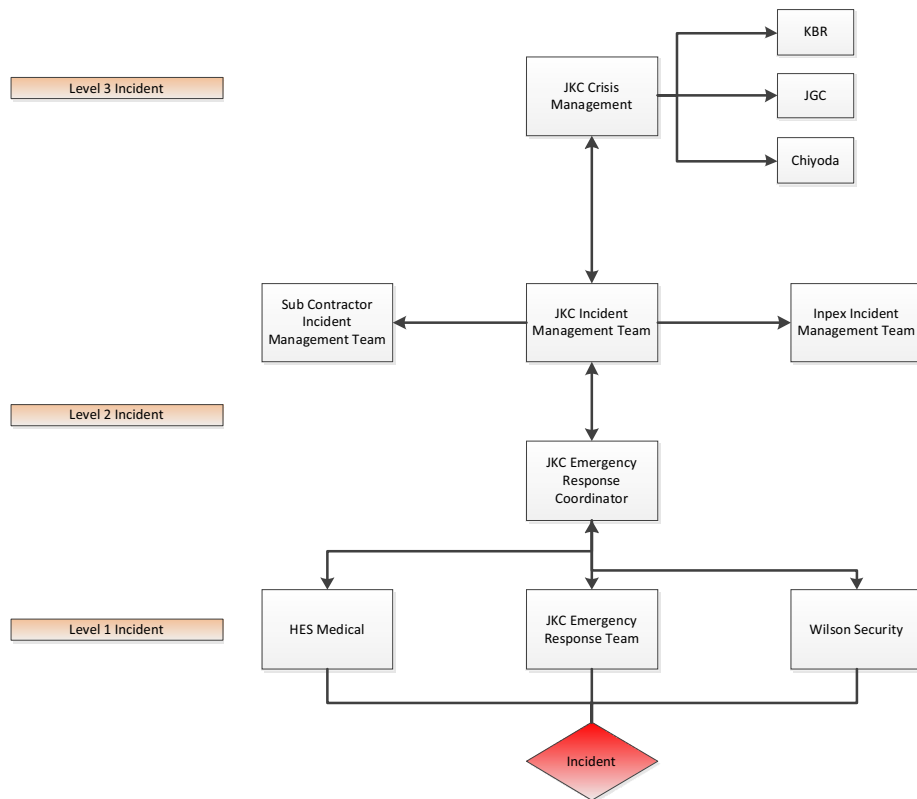


Table 2. Levels of Incident Management

ROLES AND RESPONSIBILITIES

Emergency Response Coordinator

The Emergency Response Coordinator (ERC) for CONTRACTOR or nominated delegate is accountable for Emergency preparedness and response activities for the Ichthys project. The duties of the ERC are, but not limited to:

- Ensure understanding of the CONTRACTOR ERP among CONTRACTOR and sub-contractor personnel;
- Ensure that an On-Scene Commander and an Incident Controller has been appointed to onsite emergencies
- Ensure that this plan and any associated plans are maintained and appropriate;
- Ensure that periodic exercises and training under this plan are conducted and appropriate interface activities are undertaken with sub-contractors; and
- Ensure that appropriate liaison with key stakeholders (government, emergency services etc.) is undertaken.

Incident Controller

An Incident Controller (IC) is appointed for all incidents or emergencies on site. Typically, the ERS / ERT will utilise resources available on site (Level 1). However, where the incident escalates beyond a Level 1 incident, the Incident Controller shall inform the Site Construction Manager or Delegate. At this point an Incident Management Team (IMT) may be stood up and once formed will be led by the new Incident Controller. The initial Incident Controller will pass control to the new Incident Controller in a clear hand over of command, to be communicated to all involved personnel.

The Incident Controller has overall command and will provide the coordination of the support to site for the incident or emergency. The Incident Controller must provide clear and strong leadership to the response team.

The Incident Controllers primary responsibility is the management of the IMT's incident response. The IC must supervise the activities of the IMT, develop objectives, approve plans and ensure that the site response is carried out in a safe and legally sound manner. The IC may delegate authority to other IMT members to act on their behalf, but retains the final responsibility for IMT Response actions and decisions.

The Incident Controller is responsible for

- Providing sufficient resources, trained personnel and facilities to prepare for and address emergency requirements, should they arise
- Directing and coordinating personnel/operations from the Emergency Operations Centre (EOC) as Required
- Providing permissions for use of project equipment and resources
- Initiating a site wide evacuation if required.
- Reporting to and liaising with Client on status of emergency and related information
- Consider Impacts on Darwin Office, Bladin Point, Howard Springs Village and other remote operations directly under the control of CONTRACTOR.

Operations Officer

The Operations Officer is responsible for communicating with the affected site, and for the coordination of all activities in support of the incident or emergency. The operations function will also activate, organise and direct all resources and activities to the incident or emergency for tasking by the OSC. The Operations Officer will implement all operational related plans as well as providing regular updates to the Incident Controller.

- Directing and coordinating personnel/operations from the Emergency Operations Centre (EOC) as Required
- Implementing the emergency procedures and response to threats
- Providing Coordination for the Project in the event of an emergency
- Provide a link between the Incident Management Team and the On Scene Commander; and
- Determine the status of Company employees, contractors and visitors on site during an incident or emergency.

On Scene Commander

The On Scene Commander (OSC) is responsible for managing the tactical response of the site ERS and ERT, the resolution and recovery to an incident or emergency.

The OSC shall communicate regular situation reports (SITREPs) to the Operations Officer.

An OSC shall be appointed for incidents involving the Bladin Point site when an IMT has been stood up or as required for Level 1 events.

An OSC shall be appointed for emergency events at the Howard Springs Accommodation Village. The OSC shall act as a liaison between tactical response government agencies and the Operations Officer.

The OSC shall:

- Activate the appropriate emergency response agencies as necessary;
- Provide guidance and Leadership to the ERS & ERT.
- Provide relevant information to the Operations Officer regarding the status of personnel and facilities in an emergency, and future plans (objectives);
- Initiate follow-up of any personnel affected by a medical or other incident;
- In consultation with the Operations Officer, assess the impact of any emergency on people, the environment, assets and reputation.

Planning Officer

The IMT Planning Officer's primary responsibility is to look ahead, identify issues / potential outcomes, consider worst case scenarios and develop contingency plans to ensure continuity of the response and minimise impacts.

They are responsible for:

- Anticipating potential Outcomes
- Identify Short & Long term recovery goals
- Recommend priorities and strategies to the IMT
- Oversee timely resumption of disrupted operations.

The Planning Officer may delegate authority to other personnel to act on their behalf, but retain the final responsibility for the Planning Officers actions and decisions.

Logistics Officer

The IMT Logistics Officer is responsible for managing all incident and Emergency Response related support including procurement and provision of equipment and other necessities for response personnel who are located in the field or in the Emergency Operations Centre (EOC).

They are Responsible for:

- Facilities and materials.
- Provision of food & shelter
- Transportation,
- Security,
- Communications

The Logistics Officer may delegate authority to other personnel to act on their behalf, but retain the final responsibility for the Logistics Officers actions and decisions.

External Affairs

The IMT External Affairs Officer's primary responsibilities are to serve as the principal advisor to the IC and the nominated spokesperson. They ensure the development of the external affairs communications strategy for the response, and the protection of reputation.

They are also responsible for:

- Managing Media requests for information
- Development of Media Releases
- Dealing with Arriving Media
- Developing information releases for sub-contractors and employees

The External Affairs Officer may delegate authority to other personnel to act on their behalf, but retain the final responsibility for the External Affairs Officers actions and decisions.

Industrial Relations / Employee Relations

The IMT IR / ER Officer's primary responsibility is to identify and track all site personnel involved in the incident as well as monitoring and managing industrial relations issues at the site level. They also coordinate and provide feedback to local employees, ensure consistent messages are conveyed to all concerned, advice on local union issues and provide counselling services as required.

The IR / ER Officer may delegate authority to other personnel to act on their behalf, but retain the final responsibility for the IR / ER Officers actions and decisions.

All JKC Australia LNG Pty Ltd & Sub-contractor Personnel

All JKC Australia LNG Pty Ltd and Sub-contractor personnel shall:

- Familiarise themselves with the emergency risks and response plans;
- Follow the directions of the OSC / ERS and ERT and local authorities;
- In the event of an emergency, notify their supervisor that they are in a safe location;
- Ensure they maintain current contact details with CONTRACTOR HR;
- Respond immediately to any notifications of an emergency that directly impact them;
- Participate in emergency drills and exercises as directed; and
- Sub-contractors shall ensure that they have approved Emergency Response Plans for their area of work.

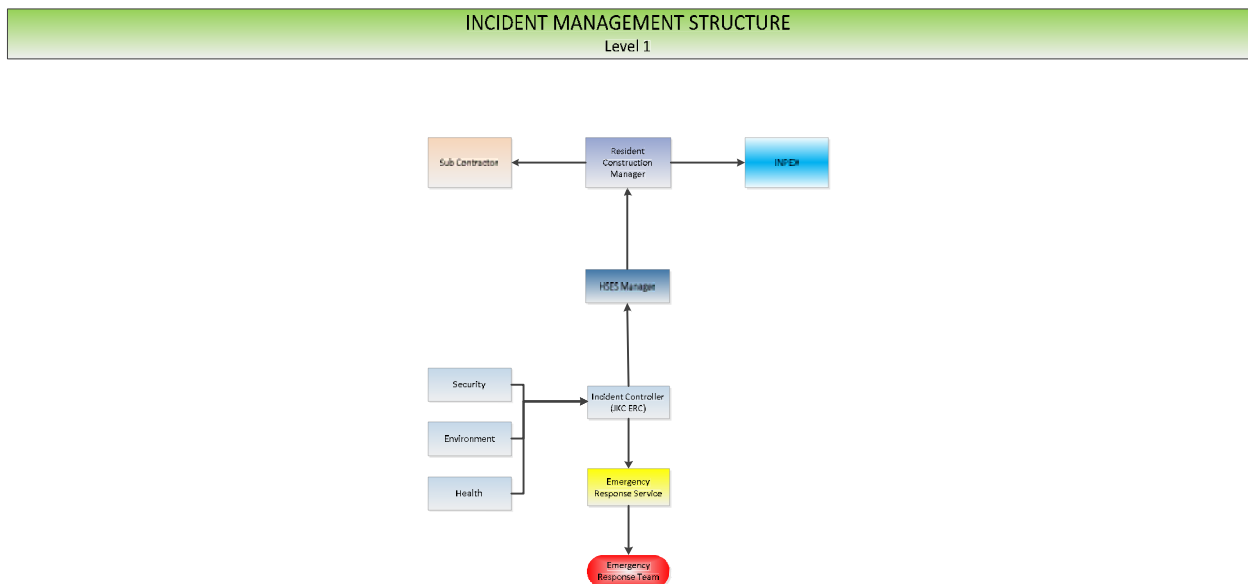


Table 3. Incident Management Team (IMT) Structure

INCIDENT MANAGEMENT STRUCTURE
 Level 2 & 3

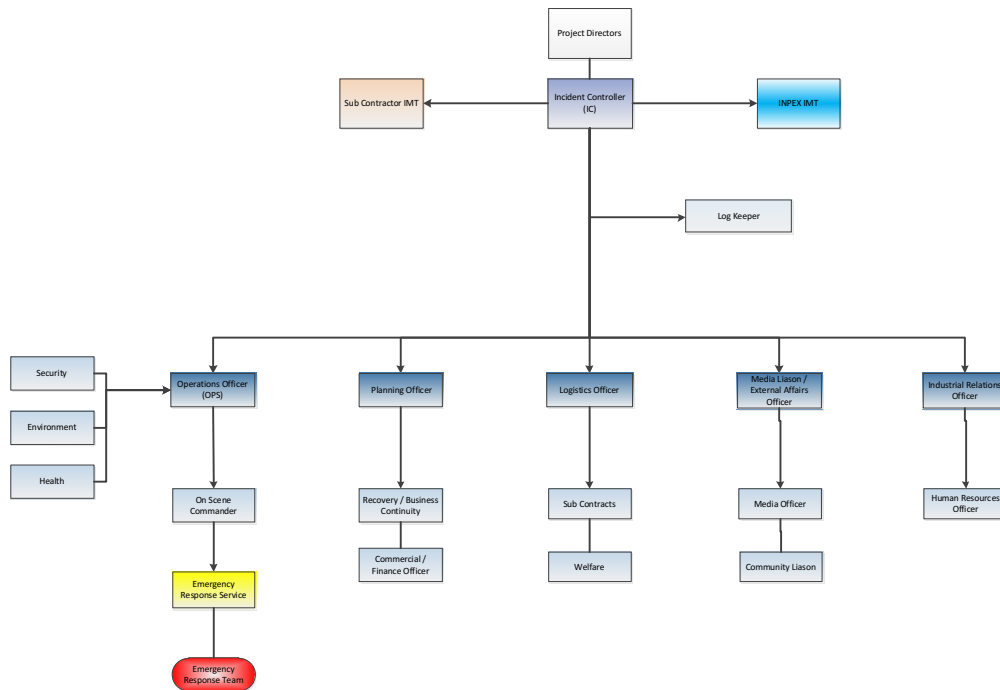


Table 4. Incident Management Team (IMT) Structure

EMERGENCY COMMUNICATIONS

Emergency Communications Principles

Regardless of the medium of communication, it is essential that during an emergency:

- Communications occur quickly in accordance with approved notification processes.
- Communications are kept succinct, concise and accurate;
- Speculation is not engaged in and rumours are not circulated; and
- External Affairs is reinforced as the node for all communications distributed outside of CONTRACTOR.

Key Contacts

Key contact details are located in Appendix **1**

Communications

During an emergency, some communications systems may prove to be more available than others; a hierarchy of communications methods shall be employed.

The primary means of notifying the Emergency Services of an Emergency shall be by activating the Emergency Button on the Tetra Digital Radio. This is done by holding down the red button for 3 Seconds and waiting for a response from Emergency Services Personnel and providing the required information over the Digital radio network.

Other means of communication include;

- Direct verbal contact (muster, etc.);
- Mobile & Land line phone – voice;
- Intranet (EMQnet); and
- Satellite phone.

Post Exercise Report

Post Exercise Report (PER) shall be conducted for each Emergency exercise completed. The report shall be completed by the ERS Supervisor and sent to the CONTRACTOR ERC.

Post Incident Report

Post Incident Report (PIR) shall be conducted for each Emergency call where action is taken by responding crews to normalise an event. The report shall be completed by the ERS Supervisor and sent to the CONTRACTOR ERC.

Incident Reporting

Incident reporting, including injuries to personnel, shall be in accordance with Contractor policy.

TRAINING, EXERCISES AND INDUCTIONS

Emergency Response Drills

Emergency response drills and exercises shall be undertaken in accordance with Table 1 below. Training and exercises ensure that all personnel are familiar with the operation of this plan, the expectations of them, and to ensure that communications mechanisms within Bladin Point and with Contractor are adequate and effective.

The CONTRACTOR ERC, or nominated delegate, shall prepare an emergency drill schedule that sufficiently tests the capacity of this plan and interface mechanisms with the Incident Management Team (IMT).

In addition to self-directed drill and exercises, the Bladin Point ERS / ERT will participate periodically in drills and exercises run by site/building owners and local authorities.

Table 1: Exercise Frequency

Team	Minimum Frequency	
ERT	Bladin Point	1 x Level 3 exercise annually (In conjunction with IMT)
		1 x ERT Training weekly
		1 x ERT Exercise Monthly
IMT	1 x Level 2 desktop exercise per quarter	
	1 x Level 3 Exercise Annually (In conjunction with the site ERT)	
Oil Spill Response exercises	Oil Spill Response exercises - conducted in accordance with designated Oil Spill Contingency Plan (OSCP)	

Inductions

On commencing work at Bladin Point new personnel, subcontractors and visitors shall receive as part of an induction, information that familiarises them with general instruction on:

- Floor/Area Wardens – particular to their designated work place and introduction to their appropriate warden;
- Evacuation procedure, including tones and alarms and primary and secondary muster points;
- Relevant contact, emergency phone numbers and emergency procedures;
- The induction program will additionally discuss the procedures to be followed in the case of an impending adverse weather events; and
- First aid procedures and introduction to the nominated first aider in their work area.

BLADIN POINT SPECIFIC EMERGENCIES

Evacuations

Many circumstances may require an area to be evacuated. Evacuation routes and Muster points should be readily displayed and available to all personnel.

Should a site wide evacuation be called by the Incident Controller, All personnel shall at first, muster at their building muster points prior to being directed to the site muster point at the Bladin Point main gate.

Evacuation of site for a critical weather event will be managed so as to ensure that all areas are prepared for the eventuality of the forecasted weather event.

Fire

Fires can be caused by a variety of means, and the safety of all personnel must be managed effectively and efficiently.

Immediate actions to be taken in the event of fire are listed at Appendix **3.7**

Marine Spill Response

All marine spills shall be reported to Darwin Port Corporation (DPC) Control Tower.

Spills of hydrocarbons and other hazardous chemicals, regardless of size, into the marine environment can have a negative impact on People, environment and reputation of the project. It is important to have a plan in place to manage spills, should they occur.

CONTRACTOR shall have a capability to manage containment and clean-up commensurate with the foreseeable risk of spills into the Marine environment.

The DPC may be called upon to assist with clean-up of spills where specialist assistance is required, or, if the spill is beyond the resource capability of CONTRACTOR.

Immediate response actions should be initiated by the Responsible Party. Where spills exceed the capability of the Responsible party, the Responsible party is expected to participate in the DPC OSCP IMT and provide resources where available.

A rapid response can restrict the spread of oil and facilitate recovery of oil and protection of the Environment. In the event of an Oil or Noxious Substance spill the incident should be immediately reported to the DPC Control Tower.

The priorities of any marine oil pollution response are, in decreasing order of importance, the protection of:

1. Human health and safety.
2. Habitat and cultural resources.
3. Rare and/or endangered flora and fauna.
4. Commercial resources.
5. Recreational and amenity areas.

A number of options exist for the treatment of oil that has been released into the marine environment. All may be effective to a degree according to the conditions prevailing and the sensitivity of the environment under threat. The response options to be considered as part of this ERP include:

- Surveillance
- Control and recovery
- Shoreline clean-up
- Bioremediation.

Bioremediation is undertaken in limited circumstances in consultation with the relevant State Spill Controller, Combat/Statutory Agency and other stakeholders. The Project Emergency Response Service will develop and maintain a Pre Incident response plan (Spill Response Procedure) for all groups of chemicals held on site.

At all times it is important to remember the limitations and safe operating procedures for all equipment used throughout the phases of the clean-up operation. This should, where necessary, include a risk assessment and development of a formal task-specific management plan, including details for induction and briefing procedures at the time of the spill.

Immediate actions to be taken in the event of a marine spill are listed at Appendix **3.13**

Security Emergency

Security emergencies can arise with no notice, or may be foreseen and notified well in advance. The Security Lead or delegate shall monitor warnings from law enforcement agencies to ensure that any periods of heightened alert are advertised to personnel and that appropriate steps are taken.

Actions to be taken in a security emergency are detailed in the site Security Management Plan.

Time critical incidents involving security related events shall be advised to the HSES Security Lead or delegate immediately. All other incidents shall be reported in the approved incident and reporting system.

Facilities and Resources

In Field Command

The ERC and Security Lead shall maintain a kit of items essential for the management of most emergencies. The items in the kit shall include as a minimum:

- A satellite phone (with external antenna/spare battery/charger);
- A mobile phone and charger;
- Camera
- GPS
- Weather meter
- Flashlight
- Additional Battery and solar charger
- Range Finding Binoculars

- Measuring instruments (Tape measure)
- Marking Paint
- Pens and Note Pad
- Spare batteries

Spill Response Equipment

The Emergency Response Service shall maintain and control the following equipment as a minimum for response to spills.

- Vessel
- Marine spill response booms
- Spill response trailer
- Equipment to assist with the control of leaking packaging

Incident management

Contractor shall appoint a Sub-contractor to provide an Emergency Response Service (ERS) for Bladin Point.

Emergency Response Service (ERS) Sub-contractor shall ensure that personnel and equipment is readily available to manage response to emergencies within DOC without reliance on the Territory based services. *(Note: Northern Territory Fire & Rescue Service are not trained in Industrial Emergency Response and Rescue.)* It is therefore important that the site based Emergency Response Service is adequately equipped and prepared to manage a range of potential incidents and emergencies that could occur on site and may impact on life, environment, property or reputation of Company, Contractor or sub-contractors.

The ERS will be assisted by an Emergency Response Team (ERT) that will comprise of members of Contractor and sub-contractor who will be trained to assist in the event of an Emergency or Incident. ERT members will be trained to be able to competently assist the ERS where additional personnel are required to combat an Incident or emergency.

Sub-contractors shall provide a first response capability to manage the initial response to incidents or emergencies that may occur in their respective area of operation. These personnel will provide first response to fire, rescue and first aid to their

Contractor will establish and maintain an Incident Management team to provide high level assistance with management of incidents that may occur within the DOC.

The IMT will use the Australian Inter-service Incident Management the nationally recognised system of incident management.

IMT personnel and contact details are located in Appendix **2**

APPENDIX

Abbreviations/Acronyms/Definitions

Acronym	Definition
AIIMS	Australasian Inter-services Incident Management System
CMT	Crisis Management Team
Company	INPEX Australia
Contractor	JKC Australia LNG Pty Ltd
Emergency	An event, actual or imminent which endangers or threatens to endanger life, property or the environment and which require a significant and coordinated response.
Emergency Operations Centre (EOC)	The primary EOC is conference room A1.0X. Alternate location is the Boardroom at DSO –(6/66 Smith Street)
ERP	Emergency Response Plan – a plan which provides procedural guidance to control, coordinate and respond to an emergency/incident
ERT	Emergency Response Team (Auxiliary) A Team of personnel who accept additional responsibility to assist in the event of an Emergency.
ERS	Emergency Response Service (Full Time) Responsible for provision of the site Emergency Response capability for Fire & Rescue.
Facility	Any offshore installation, as defined in the Offshore Petroleum Act, or subordinate Regulations & Greenhouse Gas Storage Act (OPGGSA 2009)
IMT	Incident Management Team – personnel comprised of the Incident Controller, and those appointed to be responsible for the functions of Operations, Planning, Logistics, External Affairs and Industrial / Employee Relations and Log Keeper.
Incident	Events, accidentally or deliberately caused which require a response.
INPEX	INPEX (Company)
On Scene Commander	An individual who has responsibility for the coordination of activities before, during and after an emergency.
Incident Controller (IC)	The individual responsible for the management of all incident operations. The Incident Controller is allocated for the tactical response, resolution and recovery to an incident or emergency.
	People, Environment, Asset, Reputation

Table 4: Abbreviations/Acronyms/Definitions

APPENDIX 1

Key Contacts

Position	Desk Phone	Mobile Phone	Sat Phone
Resident Construction Manager	08 8931 8004	0422 621 909	TBA
CONTRACTOR Night Shift Superintendent	08 8931 8225	0407 778 739	NA
HSS Manager	8931 8020	0407 985 845	TBA
Environment Manager	8931 8026	0418 413 382	NA
CONTRACTOR Security Lead	8931 8447	0499 990 028	TBA
CONTRACTOR Emergency Response Coordinator	8931 8229	0439 270 221	TBA
CONTRACTOR Duty Emergency Response Officer	8931 8889	NA	NA
BLADIN POINT SECURITY & EMERGENCY RESPONSE			
Emergency Response Service Supervisor	08 8931 8351	0428 455 521	NA
Emergency Response Service Emergency Response Officers	08 8931 8419	0428 455 521	NA
Site Medical HES Front Desk	08 8931 8501	NA	NA
Site Medical HES - Paramedic	NA	0448 003 351	NA
Site Medical – Nurse (Non-Emergency)	08 8931 8505	NA	NA
Wilson Security Supervisor – Bladin Point	NA	0477 364 286	NA
Wilson Security Main Gate – Bladin Point	NA	0477 364 285	NA
Chief Warden Contractor & Company Buildings	08 8931 8234	0409 179 604	NA

Deputy Chief Warden Contractor & Company Buildings	08 8931 8138	0428 401 110	NA
HOWARD SPRINGS ACCOMMODATION VILLAGE			
Wilson Security Supervisor – HSAV	08 8995 4332	0429 983 361	NA
Wilson Security Main Gate – HSAV	08 8995 4332	0429 983 361	NA
HSAV Duty Manager	NA	0455 852 700	NA
HSAV Medical HES Paramedic	08 8995 4550	0411 251 679	NA
HSAV Medical HES Nurse	08 8995 4351	NA	NA
DARWIN PORT CORPORATION			
Darwin Port Corporation (Control Tower)	08 8981 0710	0401 117 090	NA
Darwin Port Corporation Duty Maritime Security Guard	08 8947 4205	0401 110 320	NA
Darwin Port Corporation Harbour Master	08 8999 3867	0428 181 480	NA
NT EMERGENCY SERVICES			
	Business Hours	After Hours	
NT Emergency Services	08 8922 3630	131 444	NA
NT Police (General Business)	08 8999 5511	08 8922 1560	NA
NT Fire & Rescue Service	08 8946 4107	08 8922 1555	NA

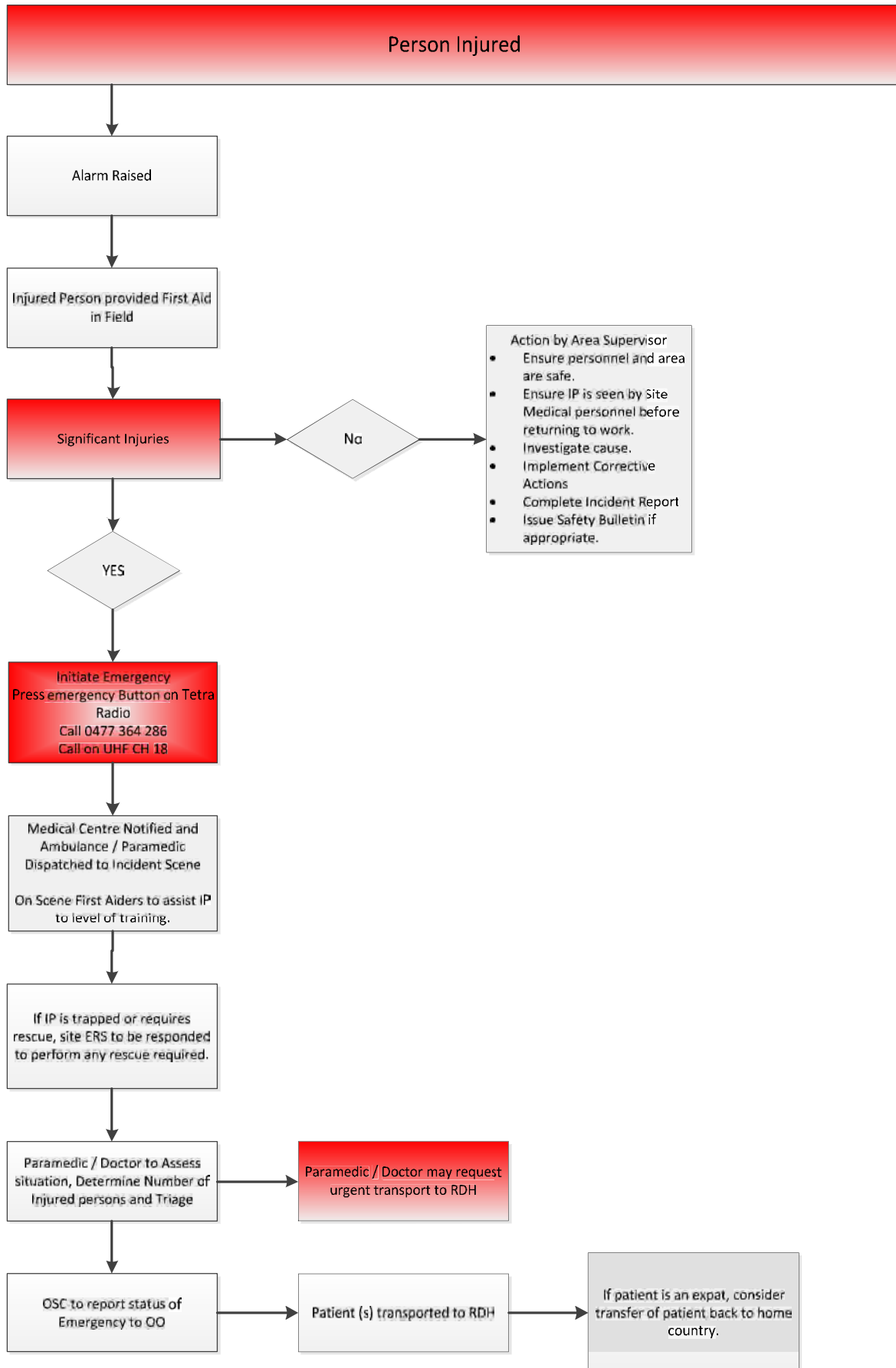
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IMT Contacts

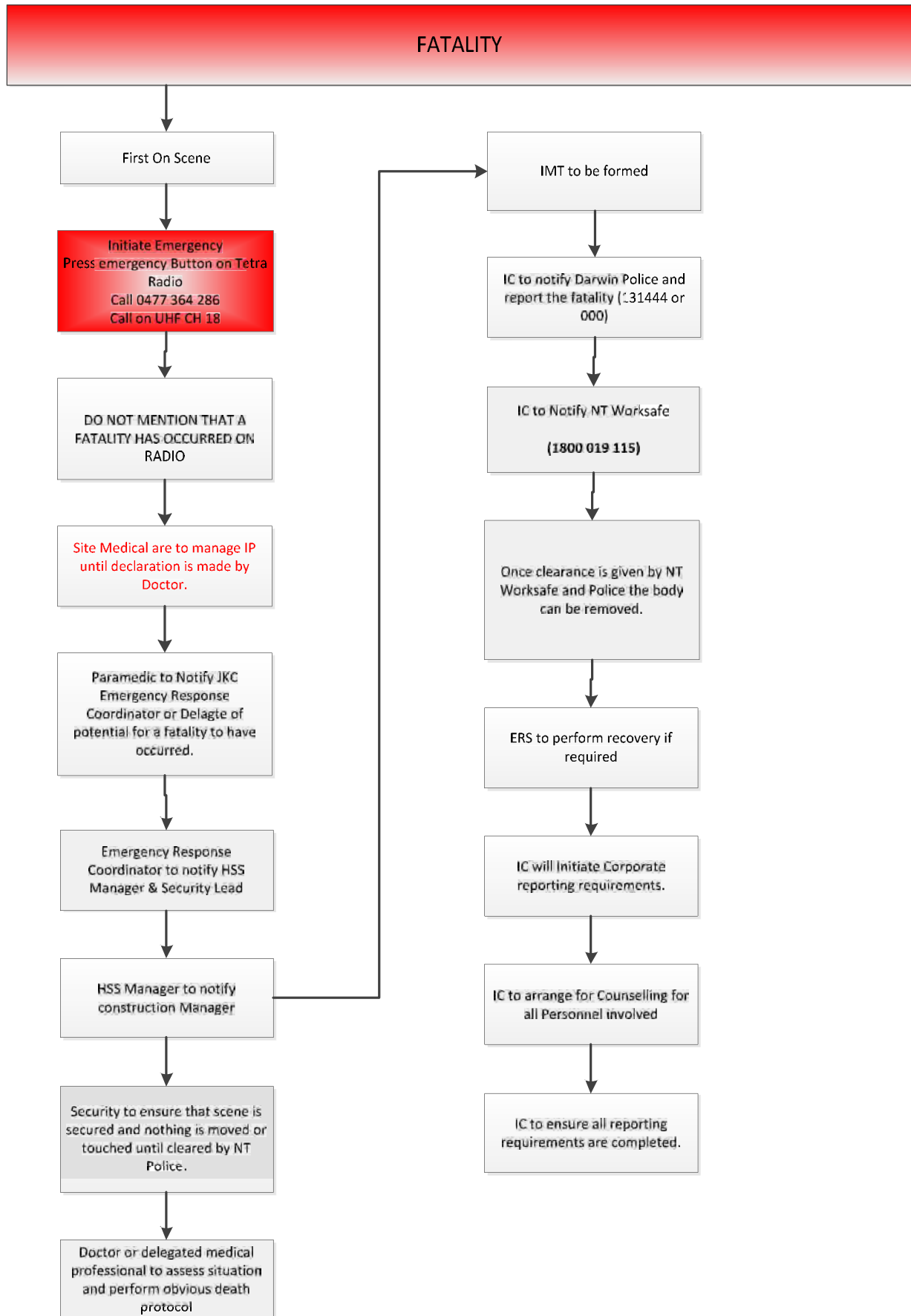
Incident Controller			
Ross McEwen	08 8931 8022	0422 621 909	NA
Akira Konodo	08 8931 8005	0499 779 533	NA
Operations Officer			
Philip Taulelei	08 8931 8447	0499 990 028	NA
Andy Holmes	08 8931 8020	0407 985 845	NA
Jeff Perks	08 8931 8023	0417 543 039	NA
Hideki DeLucia	08 8931 8021	0499 841 721	NA
Planning Officer			
Alex Hernandez	08 8931 8199	0409 566 276	NA
Hisashi Yoshida	08 8931 8012	0499 775 316	NA
Ken Adams	08 8931 8013	0459 754 410	NA
Logistics Officer			
David Gallery	08 8997 2289	0427 153 014	NA
Mary-Ellen Fitzpatrick	08 8931 8398	0447 548 662	NA
Robert Green	08 8931 8459	0427 693 699	NA
Media Liaison / External Affairs			

Sten Jacobsson	08 8931 8007	0499 775 307	NA
Andrea Underwood	08 8995 4316	0427 308 861	NA
Stephanie Urlacher	08 8931 8010	0438 519 824	NA
Stephanie Irvine	08 8980 9925		NA
Allison Kelly	08 8980 9817	0408 949 633	NA
Gina Wilson	08 8980 9818	0409 346 341	NA
Industrial Relations			
Brad Hooper	08 8931 8213	0419 229 560	NA
Rob Cochrane	08 8931 8009	0488 064 786	NA
Scribes			
Belinda Stewart	08 8931 8112	0417 747 149	NA
Gillian Kennedy	08 8980 9838	0499 146 980	NA
Senitta Arnall		0419 004 459	NA

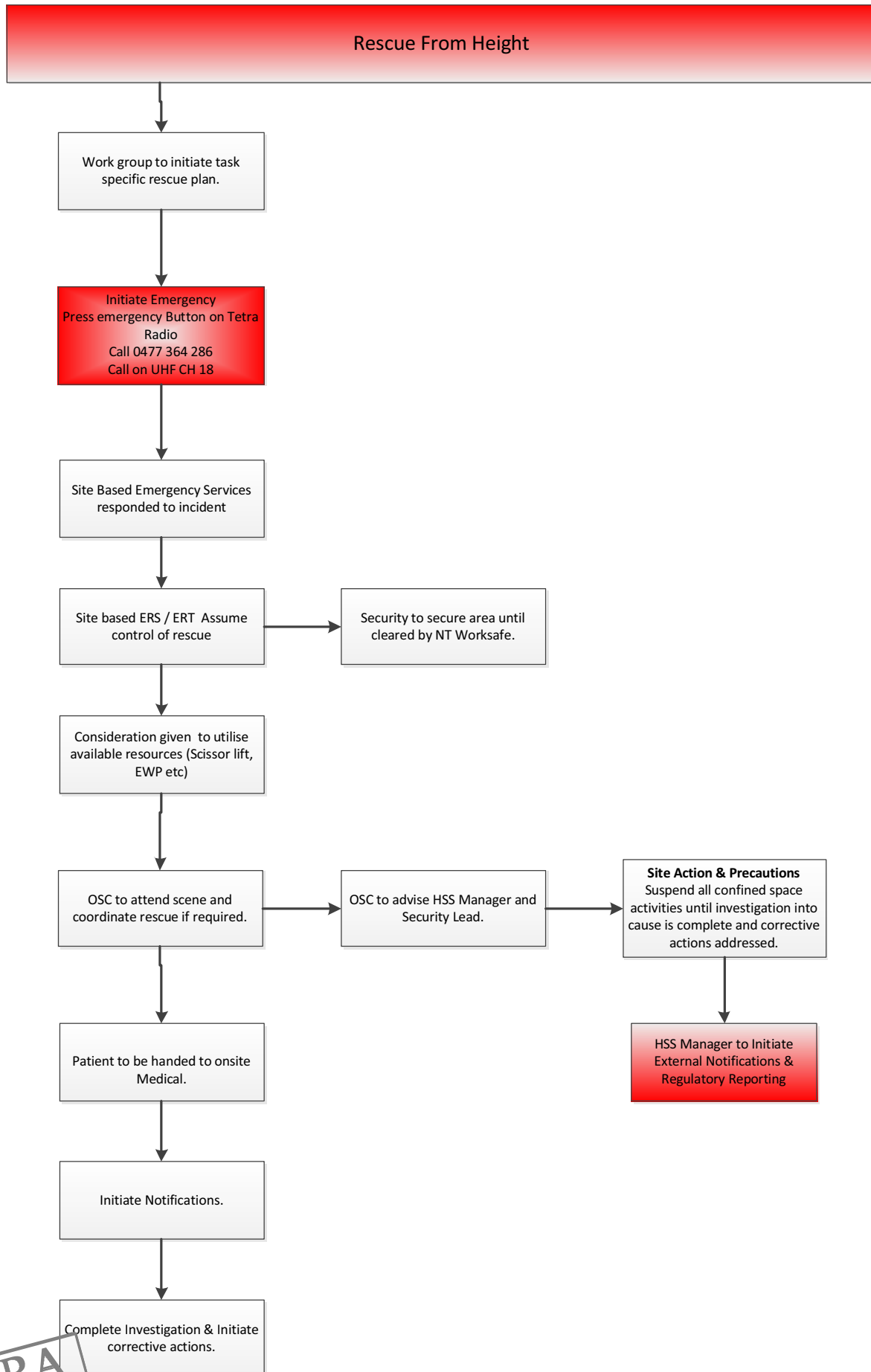
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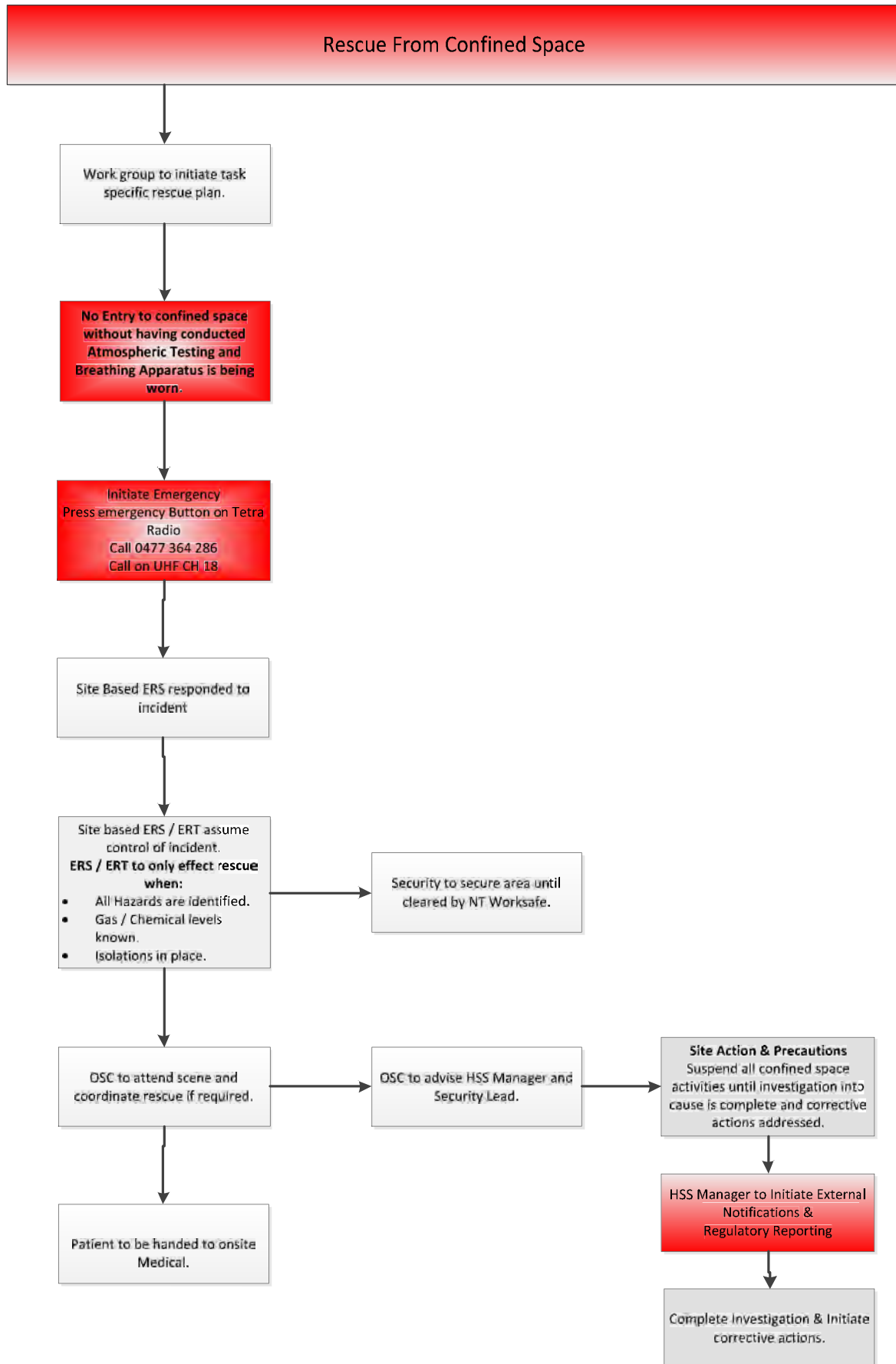
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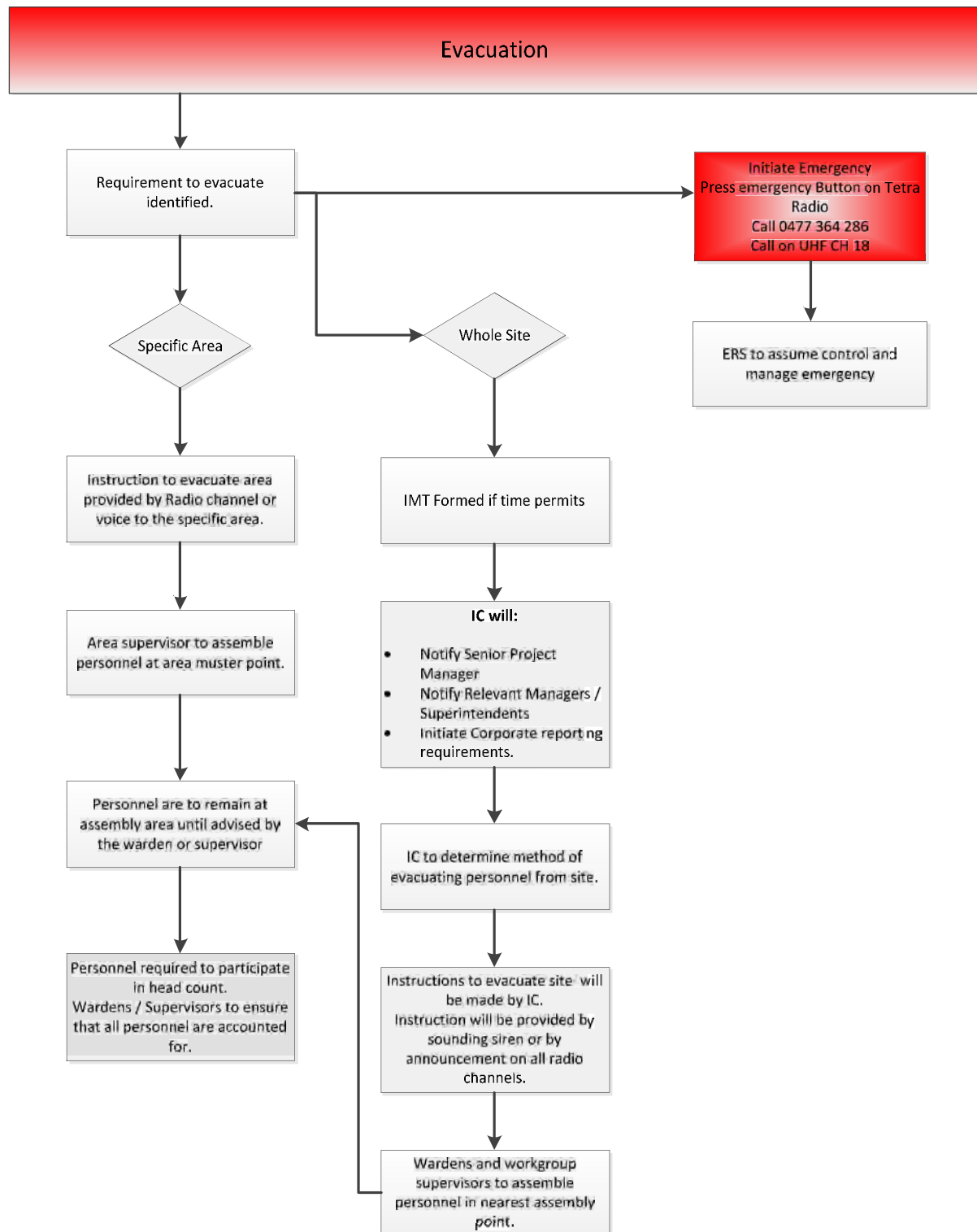
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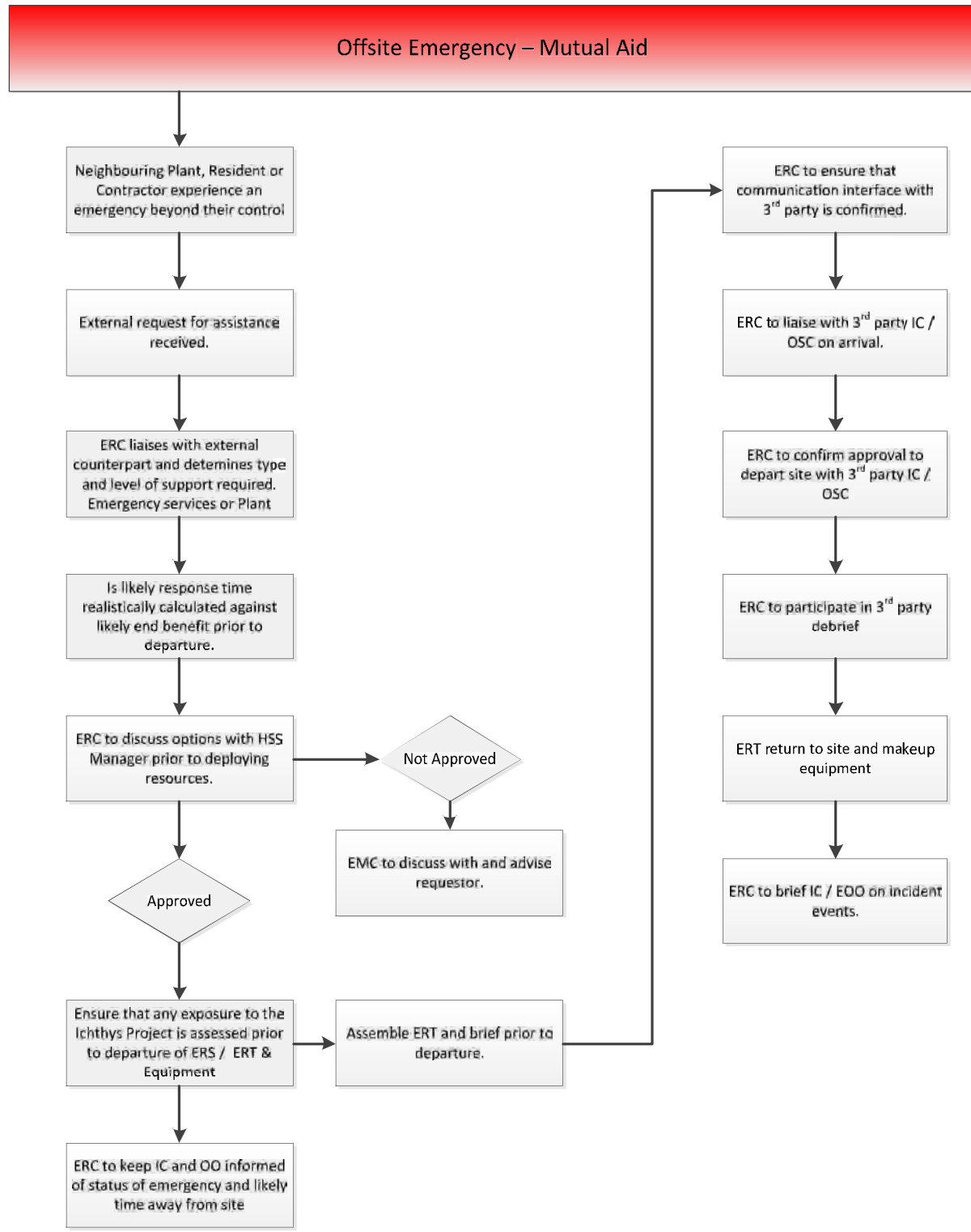
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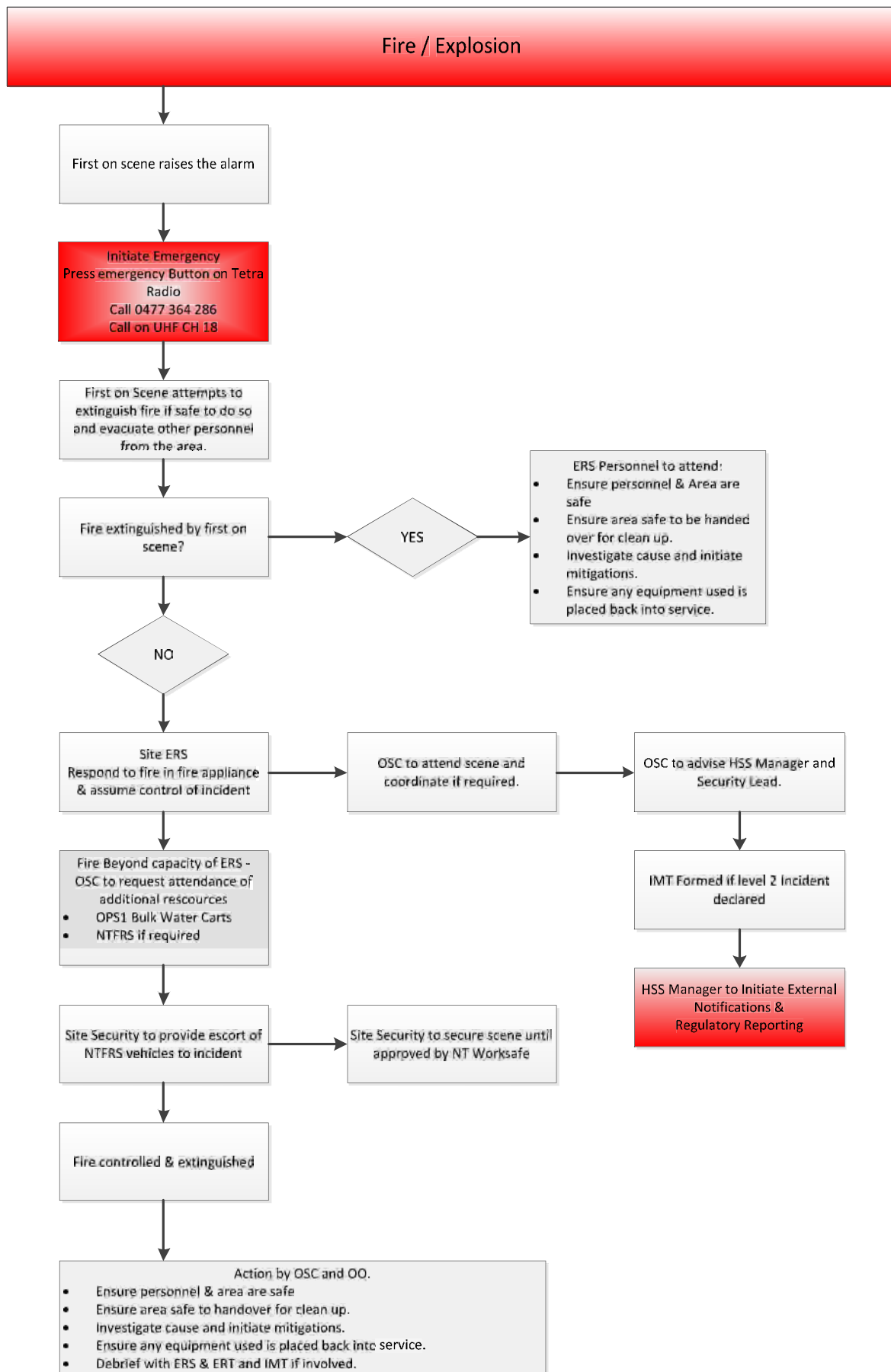
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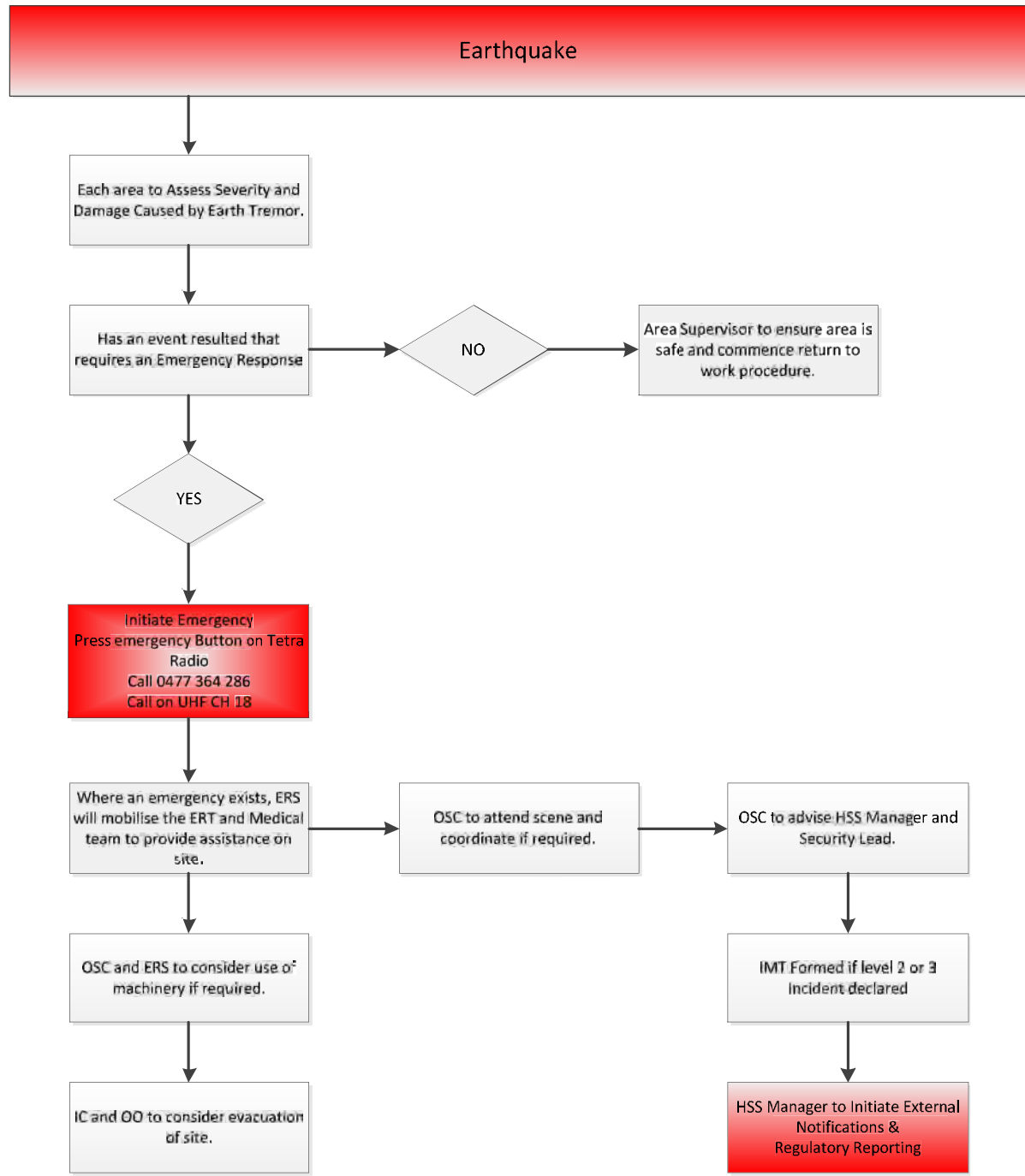
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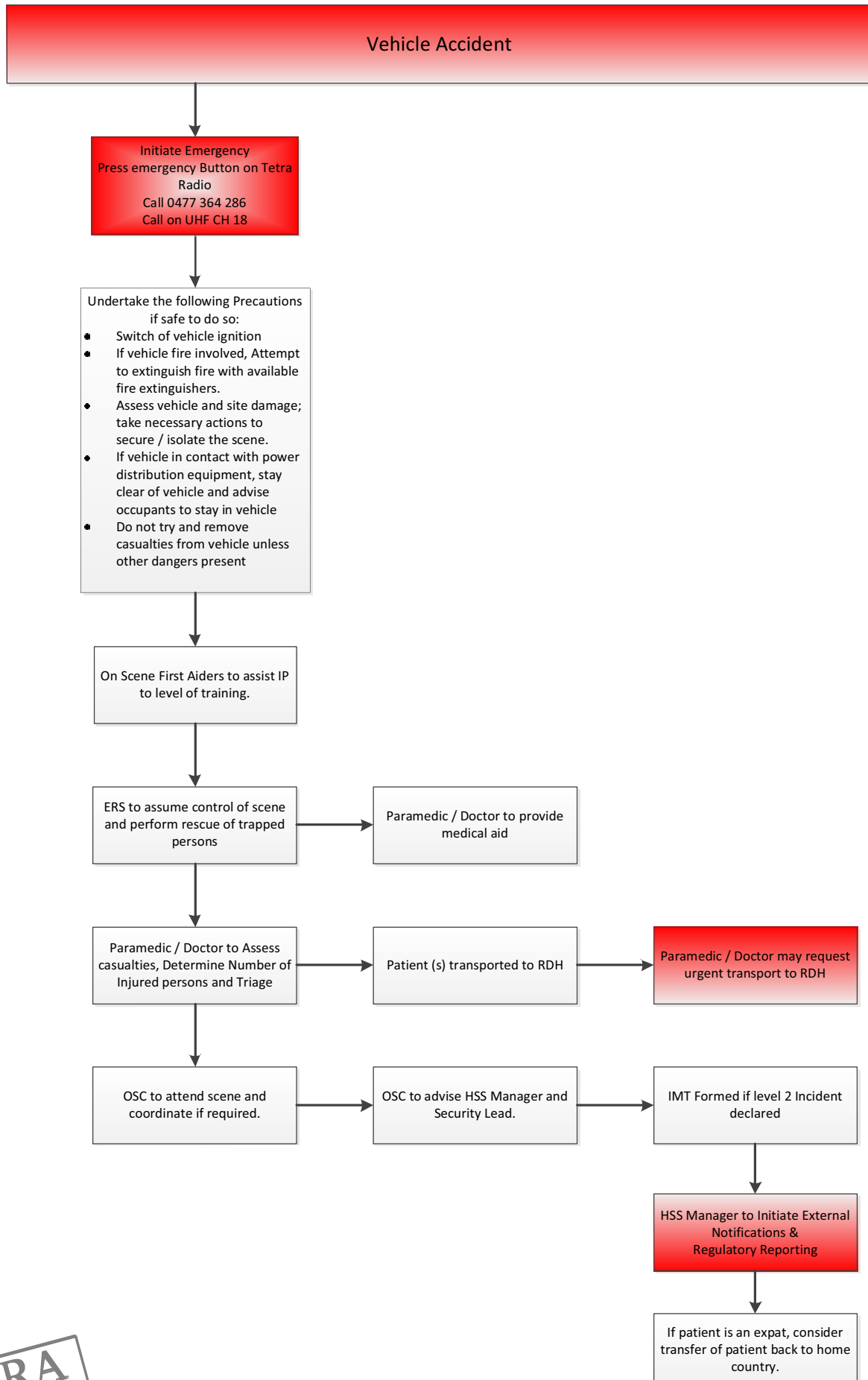
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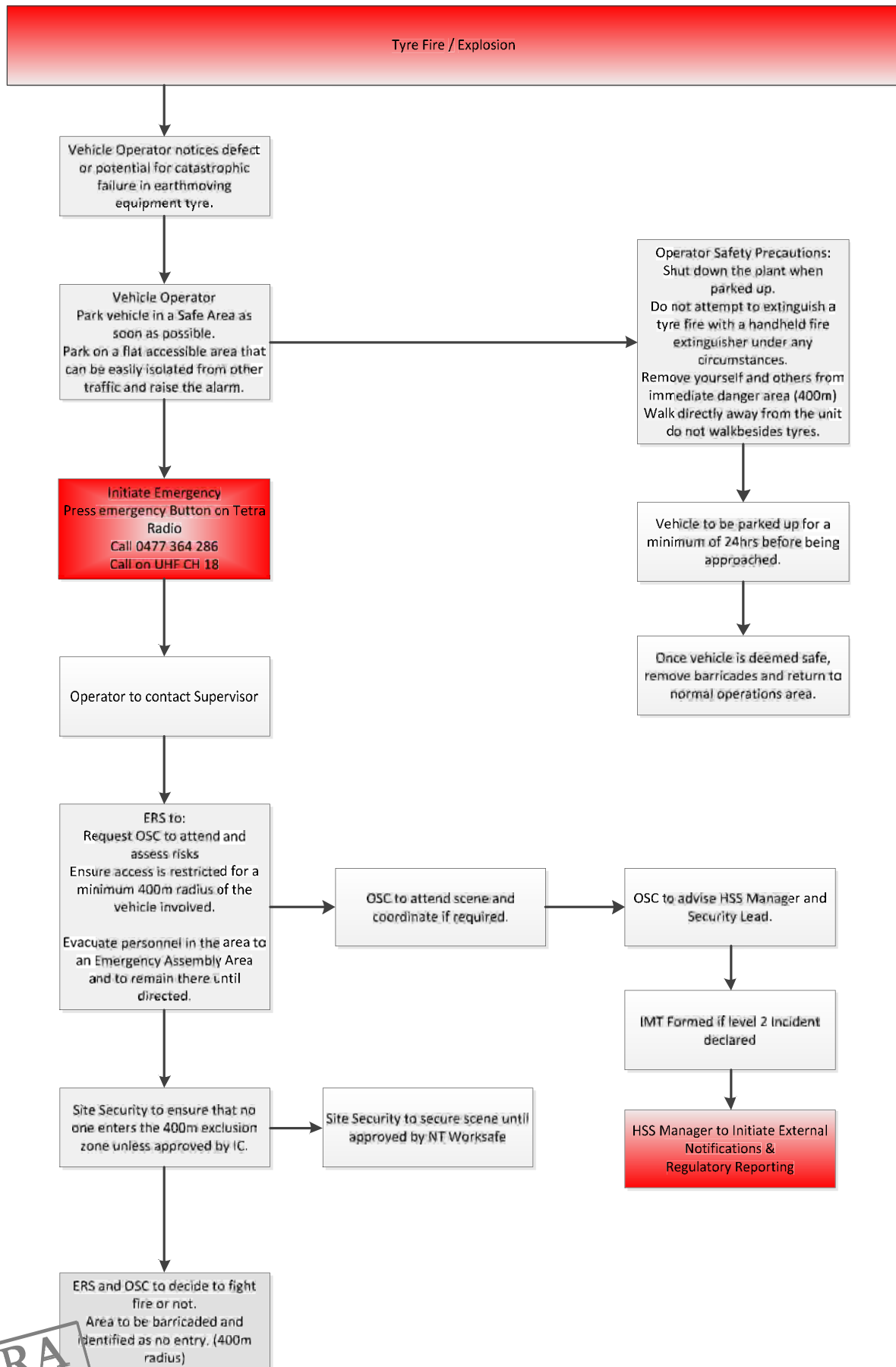
APPENDIX 3.8



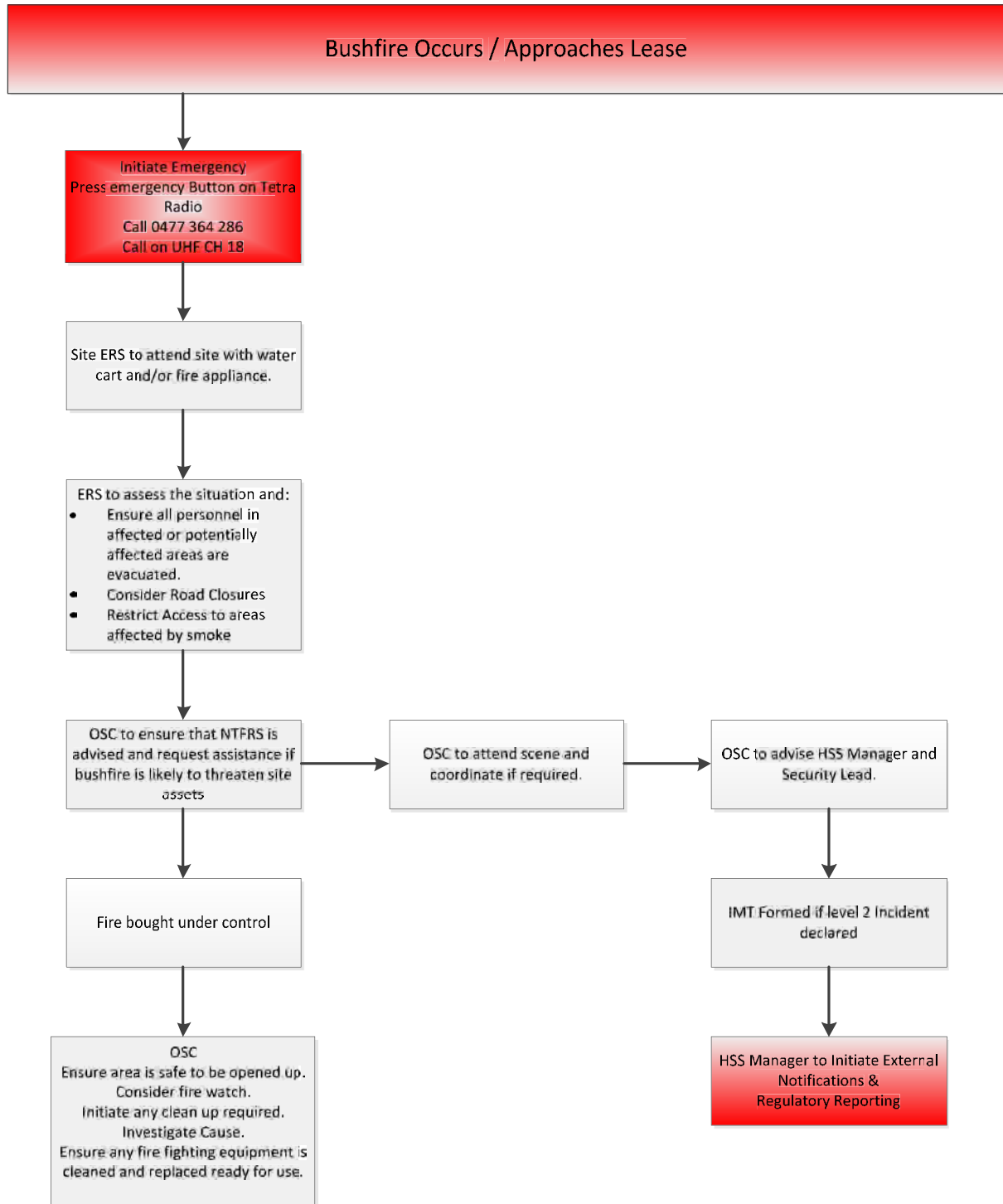
APPENDIX 3.9



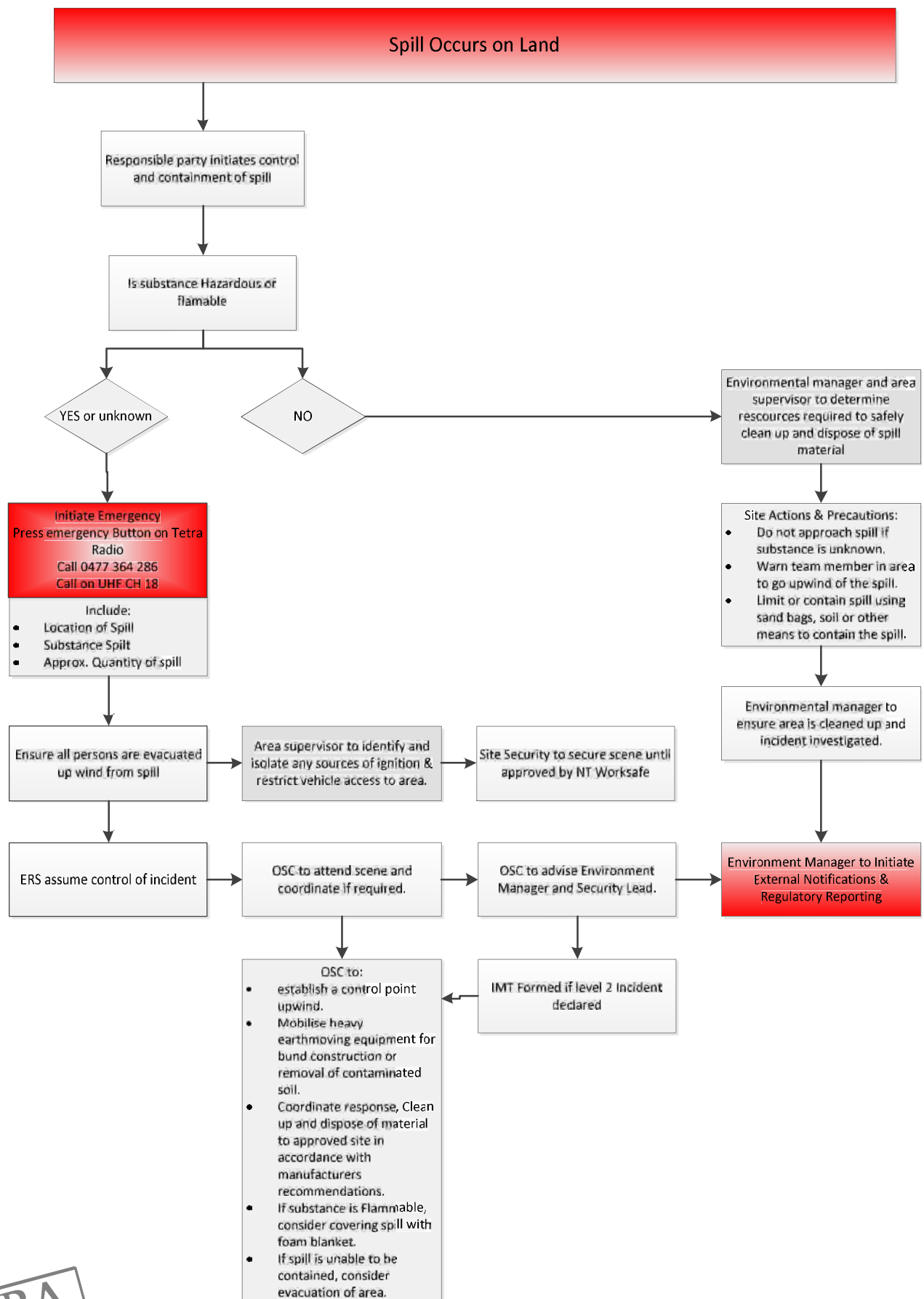
APPENDIX 3.10



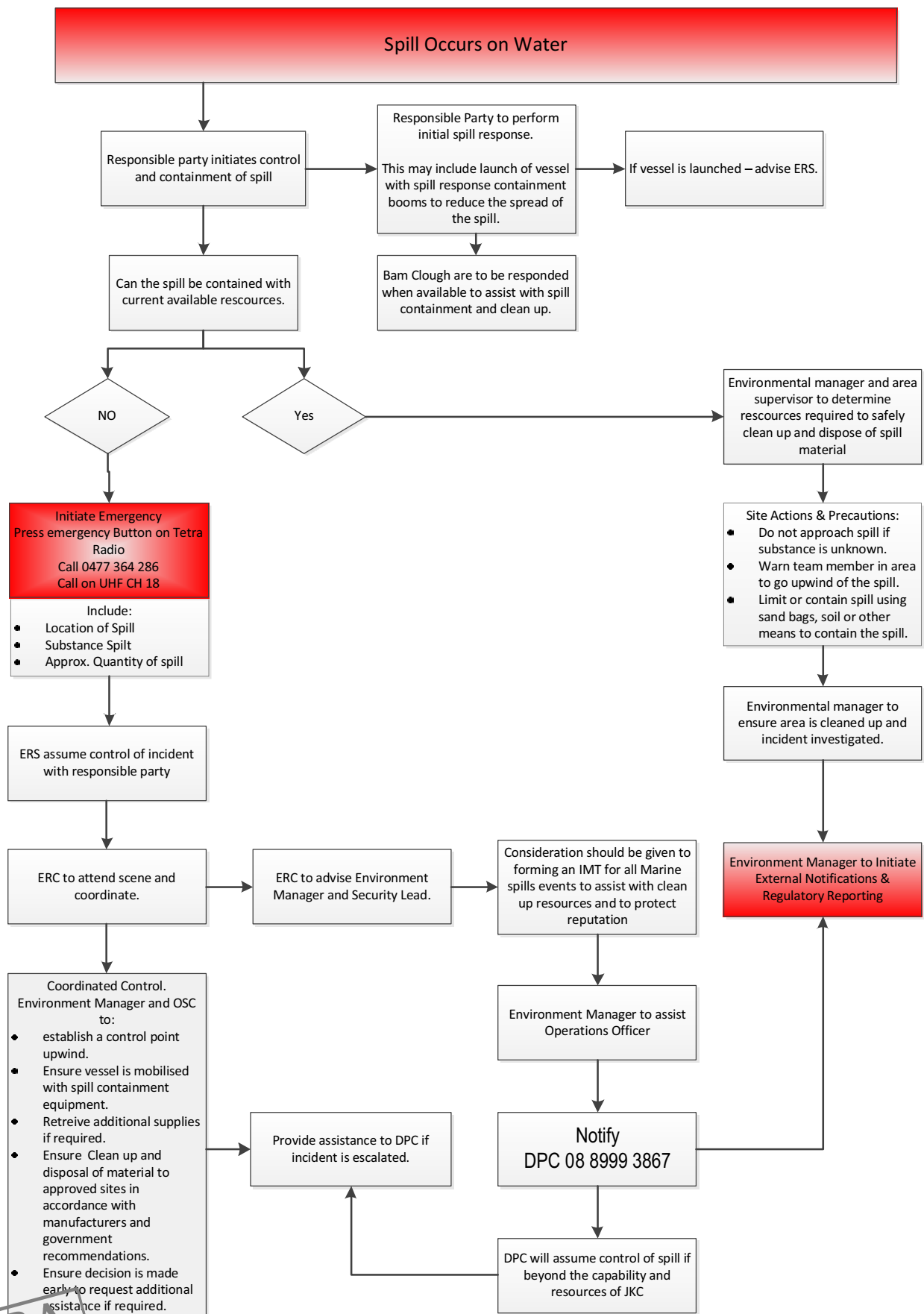
APPENDIX 3.11



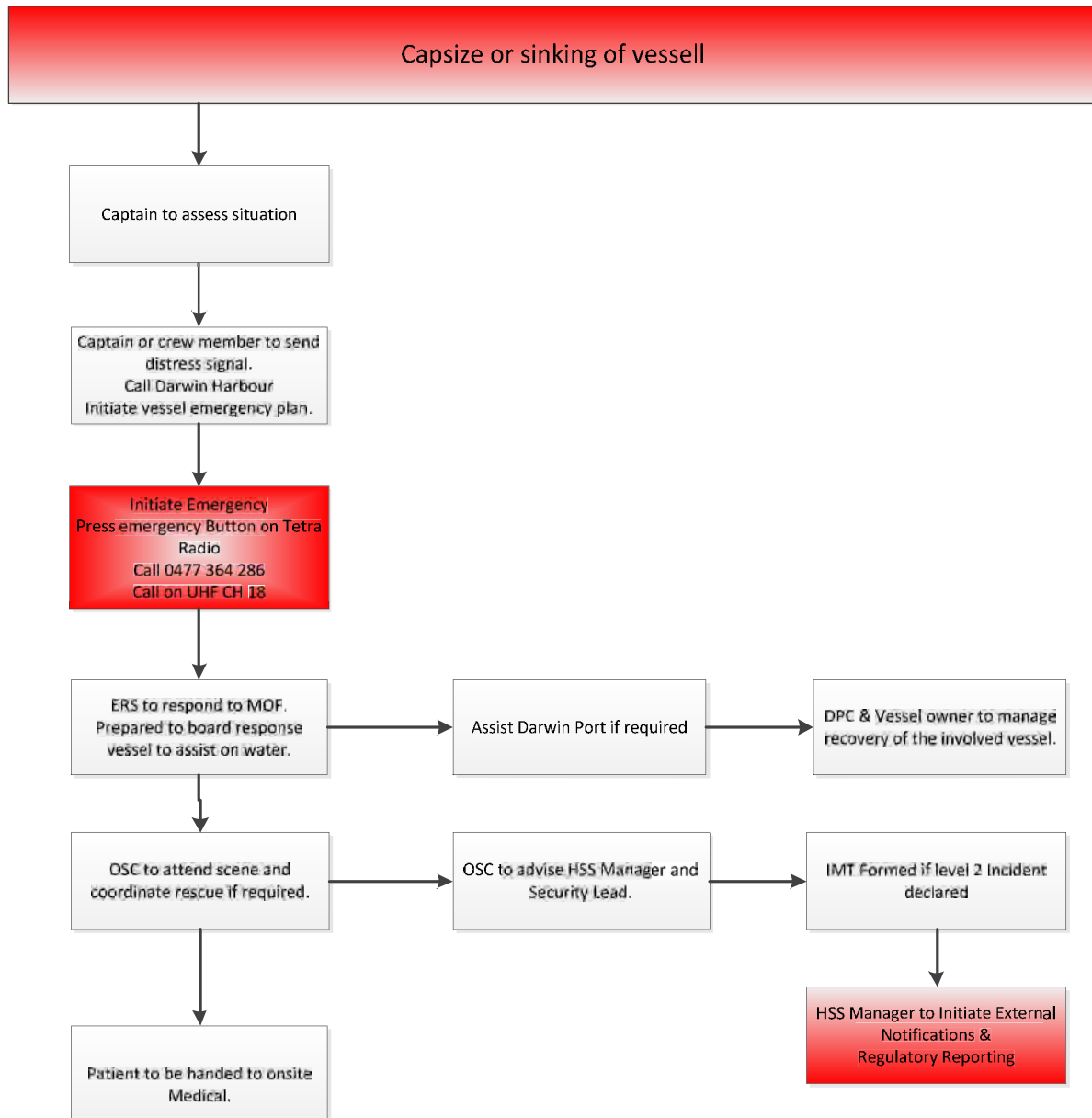
APPENDIX 3.12



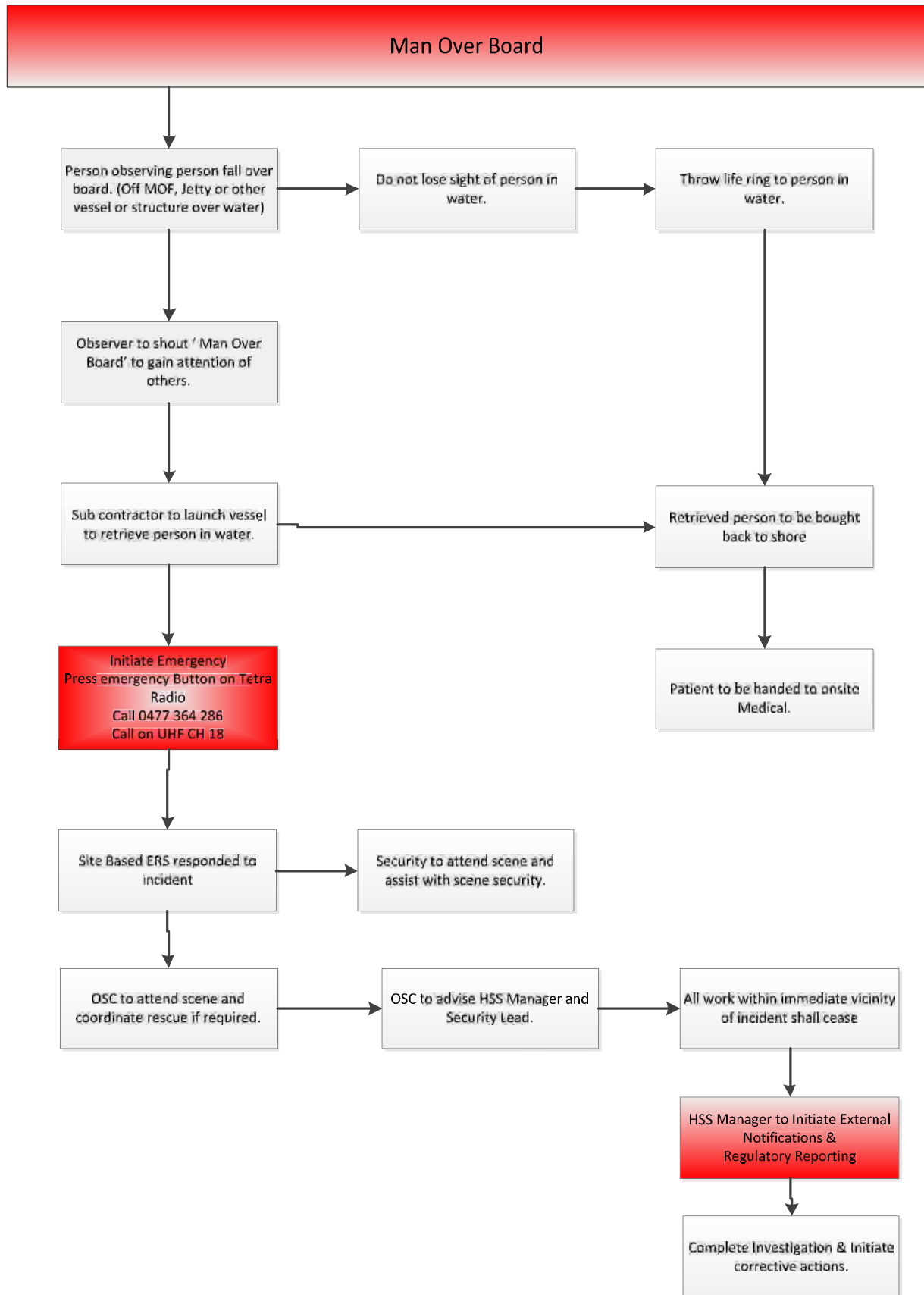
APPENDIX 3.13



APPENDIX 3.14



APPENDIX 3.15



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Subcontractor's name	entia t Lt
Subcontract No.	S
Subcontract Package Name:	S L S
DOCUMENT TITLE:	S L S L S
Subcontractor's Doc. No.:	S

S S L L S		
 		
Darwin, Australia		
Subcontractor ISSUE PURPOSE	☐ ☐ ☐ ☒ ☐ ☐	
CTR RESULT CODE	☒ ☐ ☐ ☐	
NEXT STATUS :	☐ ☐ ☐ ☐ ☐ ☒	
Subcontractor RESUB / NEXTSUB DATE : as required		
Approval or review hereunder shall not be construed to relieve Vendor / Subcontractor of his responsibilities and liability under the Contract.		
CTR ORGANIZATION	DEPT. NAME	SIGNATURE
PJ DEPT.		
RESPONSIBLE DEPT.	DOC-OPS	A MITCHELL
RELATED DEPT.		M MANGINI
CTR REVIEW DATE : 22-JUN-2018		
JOB. NO.	0-6037-2	REVIEW CLASS 2
CPY DOC.no.	SYSTEM no. - CLASS/DISC. - TYPE - SERIAL no.	REV
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Plan approved by:

Name	Title	Approved
John McManus	Project Director	JM

Details of revisions:

Revision	Details	Date	Initial
A	Initial draft for submission	12/12/2014	LC
B	Amended to incorporate JKC comments	25/02/2015	LC
C	Amended to incorporate JKC comments	18/09/2015	LC
0	Revision C approved by JKC – refer Transmittal 060372-1362-JKC-LET0124-RTN dated 05/03/2016 and document updated to incorporate Subcontractor's company name change	18/03/2016	LC
1	Reviewed and updated for Subcontractor's change of scope	23/01/2017	LC
2	Updated to incorporate self-isolation procedure	7/06/2018	LC

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This procedure has been prepared by Ventia Pty Ltd (Subcontractor) for the OPS-1 Temporary Site Facilities Operations and Maintenance contract for the Ichthys Onshore LNG project.

The purpose of this procedure is to give OPS-1 and Lower Tier Sub Contractor (LTSC) staff concise direction to enable them to effectively provide timely planned and emergency maintenance for the site's Waste Water Treatment Plant (WWTP). It also describes the operation of the WWTP.

The procedure will identify the scope of work, repair type and the authority to proceed for each location.

Strict observance of this procedure is necessary for:

- The safety of employees
- Protection of the environment
- Safeguarding of the WWTP's equipment and associated infrastructure
- Compliance with the Department of Health (DoH) Approval to Operate a Tertiary Wastewater Treatment Plant (Approval Number RWS2014_01)
- Compliance with Waste Discharge Licence WDL192

S te e c i tion

The Bladin Point WWTP has been designed to treat sewage from the site's lunch rooms and ablution blocks during the construction phase of the Ichthys Onshore LNG project. Effluent that enters the WWTP will be biologically treated and UV disinfected to meet the standards described in Section 10.1 of the DoH Approval to Operate a Tertiary Wastewater Treatment Plant. When the DoH and Northern Territory Environment Protection Authority (NTEPA) wastewater criteria have been met, effluent will be discharged into the Darwin Harbour.

The WWTP uses an above ground balance/anoxic tank and a series of containerised tanks and associated equipment that, combined, form a biological nutrient removal wastewater treatment process.

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Wastewater from the site's lunch rooms and ablution blocks is pumped through a rising main to an inlet screening container. Here it passes through a flow meter into an inclined screen that mechanically separates large solids (>3mm). Screenings are removed by a screw and are washed using internal spray nozzles as they are conveyed up the inclined screw before being discharged for disposal into a bin under the end of the screw. Screened waste water gravity flows into an in-ground de-aeration tank.

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The de-aeration tank receives flow from the inlet screen, membrane bioreactor (MBR) returned activated sludge (RAS), filtrate from the centrifuge, some activated sludge (AS) from the aeration tanks and all "out of spec" flow (see Section 9.2, Out of Spec for more detail). The tank acts as a buffer to reduce dissolved oxygen (DO) in the recycle streams before it enters the balance/anoxic tank.

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All flow from the de-aeration tank is pumped into the balance/anoxic tank by 4 submersible pumps. Chemicals for process control are injected into the feed line from the submersible pumps to the balance/anoxic tank.

The balance/anoxic tank has two functions:

- Regulation of the daily inflow fluctuation
- De-nitrification of nitrogen

The tank is mixed by a combination of returned recycle flow from the de-aeration tank and flow from a recirculation pump. The pump mixes the flow at a rate that will turn the overall tank volume over at least once every hour. Effluent is discharged from the balance/anoxic tank to 3 aeration tanks through a gravity flow drain line.

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The aeration tanks provide oxygen to the biomass for the biological breakdown of chemical oxygen demand/biochemical oxygen demand (COD/BOD) and nitrification of ammonia. Aeration tanks 1 and 2 provide approximately 45% of the biological treatment oxygen requirements. Tank 3 provides the remaining 55%. Aeration is provided by a blower arrangement housed in an adjacent blower/pump container. The majority of the process flow will pass from the aeration tanks to a post anoxic tank through gravity flow pipework. However, during times of high flow rates, an additional flow will be returned directly to the de-aeration tank as AS recycle. The AS recycle lines from the aeration tanks are fitted with actuated valves to isolate the return when not required.

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The post anoxic tank provides a zone of zero DO to remove the remaining nitrate. The tank is fitted with 2 variable speed drive (VSD) submersible mixers to keep the solids in suspension for improved de-nitrification. The post anoxic tank discharges to the MBR tanks.

The limiting factor in the post anoxic zone is the available COD/BOD for the de-nitrification reactions. An external carbon source is necessary to overcome this issue. The carbon source that will be used is sucrose (sugar) which will be injected into the mixed liquor pipeline just before it enters the post anoxic tanks.

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Two MBR tanks provide for further reduction of organic matter and nitrifying ammonia after the post anoxic tank. The membrane modules filter out the permeate, removing all the suspended solids (SS) and the majority of pathogens from the final permeate. Class A quality permeate is achieved by membrane filtration. Fine bubble aeration is used for air scouring the membrane modules to prevent fouling on the membrane surface. This aeration also keeps the MBR tank well mixed to ensure that the mixed liquor that overflows into the RAS tank-well has a consistent mixed liquor suspended solids (MLSS) concentration. The RAS from the RAS tank-well is returned to the de-aeration tank by gravity flow.

The concentration of MLSS in the system is controlled by wasting effluent known as waste activated sludge (WAS) from the MBR tank. WAS is removed from the bottom of the MBR chamber by mono pumps and discharged to a centrifuge.

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Polymer is added to the WAS as it is pumped to the centrifuge to coagulate the sludge which increases the efficiency of the press. The centrifuge forces excess water out and retains solid sludge so it can be disposed of offsite. The filtrate that is removed from the thickened sludge is gravity discharged to the de-aeration tank.

Filtered permeate from the MBR is removed through a combination of positive pressure from the water head within the tank and suction from the rotary lobe permeate pumps. The filtered permeate is pumped to 2 permeate holding tanks.

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As the permeate is being pumped from the MBR tanks to the permeate holding tanks, a side stream of permeate passes through a turbidity and pH monitoring system. If either of these systems detects that the permeate has moved outside its operating parameters, the permeate will be returned to the de-aeration tank through the "out of spec" valve. The permeate will not be discharged into the permeate holding tanks. If the permeate is within specifications, it will pass

through the “in spec” valve and through a flow meter to the permeate holding tanks. The flow meter will record the amount of permeate leaving the MBR system.

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When the final permeate is pumped from the permeate holding tank to the harbour discharge pipe, the permeate will run through a UV disinfection system. In operation, the system will go through a warm up period before the pumps start to guarantee that the UV dose is at full strength before permeate passes through. To prevent permeate passing through untreated the UV system is isolated with actuated valves.

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Two nitrate removal filters have also been installed to remove nitrate, if necessary, from the final permeate before it is discharged to the harbour. Regeneration of the nitrate removal filters will be done by transferring a salt solution through the filters. The regenerated brine will then be discharged to the regenerated brine storage tank where it will be held until it is transported offsite.

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The chemicals necessary for the continuous operation of the WWTP will be stored inside intermediate bulk containers (IBCs) inside storage bunds. The process chemicals will be dosed into the system through chemical dosing pumps.

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Where works must be completed under a self-isolation, the work group must ensure that the appropriate permits are in place and that the isolator and the verifier are both competent authorised isolators (CAI).

When conducting self-isolation under the Permit to Work system, the isolator and the verifier must ensure that the Self Isolation Form 520600-ELE-FRM-0029 (Appendix E) is completed and retained with the permit.

All isolations must be proved prior to the commencement of any work on the system.

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During normal day-to-day operation of the WWTP, the operators will carry out maintenance tasks as required. Daily samples will also be taken and analysed onsite in the WWTP laboratory.

A log book will be used to record all alarms, activities and general notes from operator to operator on a shift basis. This log book will be kept in the WWTP control room along with a copy of this procedure and the O & M manual for the system.

As the WWTP has been designed and constructed to continue operating in the event of a failure, each critical system (pumps, blowers and UV units) will have a standby unit available.

The WWTP has been installed with a PLC and SCADA system which controls and automates the plant's operation. If there is a fault or issue within the plant, the PLC and/or the SCADA system will detect it and display a list of alarms on the SCADA system.

Due to the number of different alarms that can be raised the SCADA system has two levels of alarms:

- Level 1 – Critical Failure: Urgent attention is required within 1 hour
- Level 2 – Minor Failure: Attention required within 12 hours (includes minor level/flow alarms and failure of a drive unit where a standby is available)

A WWTP operator must therefore be within an hour of the WWTP at all times. During dayshift, an operator will be stationed at the WWTP to address any issues that arise, as this is when peak flow will occur compared to during nightshift when flows will be significantly reduced.

Waste, other than effluent, from the WWTP is categorised as:

- Screening waste
- Bio-solid waste

This waste will be disposed of using the following procedure:

- OPS-1 will collect and store in the WWTP, up to 8 x 205 litre drums of screening or bio-solid waste
- When the drums are ready for disposal, OPS-1 will complete the appropriate Waste Request Form and send it to the waste management subcontractor
- The waste management subcontractor will confirm acceptance of the waste request and supply labels for the drums for each type of waste
- OPS-1 will remove the drums from the WWTP and put them on the Hazardous Waste Slab (once the drums are on the Hazardous Waste Slab, OPS-1 transfers custody of the drums to the waste management subcontractor who will be responsible for waste removal tracking)

Planned preventive maintenance tasks

Planned preventive maintenance tasks for the WWTP are summarised below:

Function	Task	Frequency	Notes
Primary Screening	Inspect, empty and clean screenings container	Replace or empty	Daily
	Inspect and clean level control air injection pipes	Clean with hose	Weekly
	Inspect and hose down primary screening sedimentation and chloride build-up and apply grease	Hose down with high pressure cleaning device Apply grease	Monthly
	Inspect level switch LS1201 for UV damage, water ingress, cable and damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	Repair or replace	Monthly
	Inspect pressure switch PS201 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	Repair or replace	Monthly
	Inspect level switch LS1201 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	Repair or replace and recalibrate	6 Monthly
	Inspect pressure switch PS201 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	Repair or replace and recalibrate	Annually

Function	Area	Object of Maintenance	Frequency
De-aeration tank	Inspect valves and pipe work for leaks	Repair or replace	Daily
	Inspect and hose tank and internal pipe work	Remove solids build-up with hose	Weekly
	Inspect and clean equalisation tank level sensor	Clean with hose	Monthly
Balance/Anoxic tank	Inspect recirculation pump for noise, vibration or leaks	Repair or replace	Daily
	Inspect pH probe pHIT201 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for probe	Repair or replace and recalibrate	Monthly
	Inspect and clean/calibrate pH probe and apply grease	Clean with damp cloth and recalibrate if necessary Apply grease	Monthly
	Inspect level switches LT201, 203, LS202, 204 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	Repair or replace	Monthly
	Inspect magflow meter FIT201 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	Repair or replace	6 Monthly
	Inspect level switches LS202, 204 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	Repair or replace and recalibrate	6 Monthly

Function	Area	Objectives / Maintenance	Frequency / Notes
	Inspect level switches LT201, 203 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	Repair or replace and recalibrate	Annually
	Inspect magflow meter FIT201 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	Repair or replace and recalibrate	Annually
Aeration Tank	Check air disbursement pattern Check inlet and outlet pressure levels Check ventilation fan is active	Adjust valves as necessary	Daily
	Check and hose foam from around tank and air valves	Hose accumulated foam from around tank and air valves	Daily
	Inspect DO probes AIT301(01), 301(02) and AIT1101(DO), 1101(TE) for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for probe	Repair or replace and recalibrate	Monthly
	Clean DO and pH probes	Clean and re-calibrate if necessary	Monthly

Function	Area	Object of Maintenance	Frequency
	Inspect level switches LIT301, LS302, LS1101 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	Repair or replace	Monthly
	Inspect pressure switches PS301, 302, 1101(01,02), 1102 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	Repair or replace	Monthly
	Inspect level switches LS302 and 1101 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	Repair or replace and recalibrate	6 Monthly
	Inspect magflow meters FIT301, 302, 303, 304, FIT 1101 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for meters	Repair or replace	6 Monthly
	Inspect level switch LIT301 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	Repair or replace and recalibrate	Annually

Function	Area	Object Maintenance Frequency	Frequency
	Inspect pressure switches PS301, 302, 1101(01,02), 1102 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	Repair or replace and recalibrate	Annually
	Inspect magflow meters FIT301, 302, 303, 304, FIT1101 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for meters	Repair or replace and recalibrate	Annually
Post Anoxic System	Inspect post anoxic tank mixers for noise, vibration and correct operation and confirm mixers rotate freely Make sure the cable entry gland is not broken	Repair or replace	Daily
	Inspect and clean post anoxic tank	Clean the tank walls with a hose	Daily
	Inspect level switch LS1202 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	Repair or replace	Monthly
	Inspect level switch LS1202 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	Repair or replace and recalibrate	6 Monthly

Function	Action	Object of Maintenance	Frequency
MBR System	Inspect tank overflow weir for sludge and clean Check air disbursement through the membrane cassettes	Hose to remove sludge, adjust valves as necessary	Daily
	Inspect and record trans membrane pressure on permeate line and record flow rate	Record pressure and flow rate	Daily
	Inspect outlet and inlet pressure and noise levels and confirm ventilation fan is operating	Report if not normal.	Daily
	Inspect aeration blower filter vacuum pressure	Report if below 35 mbar	Daily
	Inspect tank and hose down sludge build-up on inside walls and trough	Hose down sludge	Daily
	Check membrane purge cycle	Confirm purge valve is opening and any air is released into CIP header tank	Daily
	Inspect permeate pump buffer fluid for contamination	Change if necessary	Daily
	Inspect permeate pump buffer pressure	Adjust if necessary	Daily
	Check and clean permeate trans membrane	CIP clean if necessary	Daily
	Inspect permeate pumps for noise or vibration	Repair or replace if necessary	Daily
	Inspect MBR blowers for correct operation and clean	Make sure both blowers operate correctly and efficiently and clean	Daily
	Inspect pressure switches PT401, 402, 504, 505, PS501, 502, 503 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	Repair or replace and recalibrate	Monthly

Function	Area	Object of Maintenance	Frequency
	Inspect level switch LS401 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	Repair or replace	Monthly
	Inspect and clean membrane cassettes	CIP clean if necessary	3 Monthly
	Simulate MBR blower high and low pressure fault conditions	Adjust necessary valves and observe interlocks	
	Inspect level switch LS401 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	Repair or replace and recalibrate	6 Monthly
	Lift, inspect and clean membrane cassettes	Clean	Annually
	Inspect membrane cassettes for permeate tube degradation	Repair or replace	
	Inspect pressure switches PT401, 402, 504, 505, PS501, 502, 503 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	Repair or replace and recalibrate	Annually
Nitrate Removal System	Inspect pumps and fittings for leaks, alarms	Repair or replace	Weekly
	Inspect brine tank solution levels	Add salt if necessary	Weekly
	Inspect brine tank for foreign materials (best when tank is at minimum level)	Clear foreign material from tank	Weekly
	Check regeneration cycle for correct operation	Repair or replace	Weekly

Function	Area	Object Maintenance Frequency	Frequency
	Inspect filter feed pump and backwash pump pressure gauges readings	Repair or replace	Weekly
	Inspect and clean filter feed pump and backwash pump for dirt/dust	Clean with a damp cloth	Monthly
	Inspect filter feed pump and backwash pump programmed duration	Reset if necessary	Monthly
	Inspect filter feed pump and backwash pump for noise or vibration	Repair or replace	Monthly
	Inspect level switches LS1301, 1302, 1303 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	Repair or replace and recalibrate	Monthly
	Inspect level switches LS1301, 1302, 1303 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	Repair or replace and recalibrate	6 Monthly
UV and Disposal System	Inspect discharge pH probes pHIT601, 602 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for probe	Repair or replace and recalibrate	Monthly

Section	Area	Objectives / Maintenance	Frequency
	Inspect discharge turbidity sensor AIT601 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for sensor	Repair or replace and recalibrate	Monthly
	Inspect pumps and fittings for leaks	Repair or replace if necessary	Monthly
	Inspect UV system for faulty lamps and leaks	Repair or replace if necessary	Monthly
	Inspect and clean turbidity system	Clean as per supplier manual	Monthly
	Inspect and clean pH probe	Clean with damp cloth, recalibrate if necessary	Monthly
	Inspect and clean discharge pump motor for dirt	Clean with damp cloth	Monthly
	Inspect discharge pump motor for noise	Repair or replace if necessary	Monthly
	Inspect float switches for wear or entanglement	Repair or replace if necessary, remove any entanglement	Monthly
	Inspect level switches LS601, 602, 603 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	Repair or replace	Monthly
	Inspect level switches LS601, 602, 603 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	Repair or replace and recalibrate	6 Monthly

Function	Action	Object Maintenance Frequency	Frequency
	Inspect magflow meters FIT601, 602 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for meters	Repair or replace	6 Monthly
	Test turbidity and pH probe out of spec alarms	Test and confirm out of spec valves operate correctly	Annually
	Inspect magflow meters FIT601, 602 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for meters	Repair or replace and recalibrate	Annually
Centrifuge	Inspect disposal bin and confirm filtrate is clean and free of flocculated sludge	Change if necessary.	Daily
	Inspect screen basket and filtrate chamber for cleanliness, debris	Clean if necessary	Weekly
	Inspect and clean ratchets, cleaning nozzles and drain pressure cone system	Clean if necessary	Weekly
	Inspect electrical cables and connections for damage	Repair or replace	Weekly
	Inspect oil seals for leaks	Repair or replace	Weekly
	Inspect and grease discharge end screw bearing and feed end oil seal bearing	Grease both bearings	Monthly
	Inspect pressure switches PS701, 702, 1001, 1002 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	Repair or replace	Monthly

Function	Area	Objectives / Maintenance	Frequency
	Inspect pressure switches PS701, 702, 1001, 1002 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	Repair or replace and recalibrate	Annually
Chemical Dosing	Inspect for chemical spills	Report and refer to MSDS for appropriate disposal	Daily
	Inspect safety shower for correct operation	Repair or replace defective parts	Daily
	Inspect chemical sump level	Empty if necessary	Daily
	Inspect chemical tank levels	Top up and reorder if necessary	Daily
	Inspect chemical dosing lines for leaks or wear	Repair or replace defective parts	Daily
	Inspect level switches LS801, 802 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	Repair or replace	Monthly
	Inspect level switches LS801, 802 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	Repair or replace and recalibrate	6 Monthly
Effluent	Take effluent samples, test, analyse and report results	As required	Daily
	Recalibrate laboratory equipment	Recalibrate	Weekly

Function	Area	Object of Maintenance	Frequency
Valves	Inspect valves AV301, 302, 304 and 1101 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for valves	Repair or replace	Monthly
	Inspect valves AV301, 302, 304 and 1101 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for valves	Repair or replace and recalibrate	Annually
Solenoids	Inspect solenoids SV201, 301, 303, 501, 502, 601-605, 701, 901, 902, 1101, 1201, and 1301-1306 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for solenoids	Repair or replace and recalibrate	6 Monthly

Reactive Maintenance

Reactive maintenance activities will require the generation of a work order before work commences.

Areas requiring reactive maintenance will be identified by a request for maintenance from JKC or as a result of scheduled inspections.

JKC approvals will be sought as determined in the reactive maintenance procedure flow chart. Refer to Appendix A-2: Bladin Point Waste Water Treatment Plant Reactive Maintenance Procedure Flow Chart.

Emergency Maintenance

If a major failure occurs within the WWTP, an immediate response is required.

As the WWTP system is contained within a bund, it is essential to verify that the valve to release water from the bund is closed. This will contain any spill within the bund while actions are taken to rectify and clean-up the situation.

Refer to Appendix A-3: Bladin Point Waste Water Treatment Plant Emergency Maintenance Procedure Flow Chart and to Appendix C: OPS-1 Emergency Contact Procedure and Appendix D: Out of Hours Critical Site Service Disruption Response Procedure.

JKC has an Emergency Response Team onsite 24/7. Members of the team have been involved in the commissioning of the plant and have a basic knowledge of it. If a major incident were to occur, the team would be deployed to assist the WWTP operators take whatever action is necessary to rectify the situation.

Where, in cases of emergency, a PTW cannot be prepared, particular care should be exercised when carrying out the work. Work done in emergency conditions will be to make the asset safe so that it poses no risk to stakeholders or the system.

Power Failure

The system has a back-up generator, therefore the plant should always be operational. If there is no power, raw sewage can be diverted to the tanks.

If there is a power failure and the power supply switches to the generator, the SCADA system must be checked. It must be checked again when the power switches from the generator back to the normal supply.

Water

There is a water truck available on site 24 hours, Monday to Saturday.

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The site's maintenance personnel including electricians, plumbers, fitters, crane operators and vacuum truck operators will also be available to help the WWTP Operators with any necessary maintenance requirements.

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Inspect, empty and clean primary screenings container	2 x Waste Water Operators	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	0.5 hour	Daily
Inspect and clean primary screening level control air injection pipes	1 x Waste Water Operator	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	0.5 hour	Weekly
Inspect and hose down primary screening sedimentation and chloride build-up and apply grease	1 x Waste Water Operator	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	0.5 hour	Monthly
Inspect inlet level switch LS1201 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	0.5 hours each	Monthly
Inspect inlet pressure switch PS201 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	0.5 hours each	Monthly

a	Personnel	Competence	Duration	Frequency
Inspect inlet level switch LS1201 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	2 hours each	6 Monthly
Inspect inlet pressure switch PS201 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	4 hours each	Annually
Inspect de-aeration tank valves and pipe work for leaks	2 x Waste Water Operators Dayshift	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	0.5 hour each	Daily
	1 x Waste Water Operator Nightshift	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	0.25 hour	
Inspect and hose de-aeration tank and internal pipe work	1 x Waste Water Operator	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	0.5 hour	Weekly
Inspect and clean de-aeration tank equalisation tank level sensor	2 x Waste Water Operators	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	1 hour each	Monthly

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Inspect balance/anoxic tank recirculation pump for noise, vibration or leaks	1 x Waste Water Operator Dayshift	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	0.5 hour	Daily
	1 x Waste Water Operator Nightshift	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	0.25 hour	
Inspect balance/anoxic tank pH probe pHIT201 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for probe	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	2 hours each	Monthly
Inspect and clean/calibrate balance/anoxic tank pH probe and apply grease	2 x Waste Water Operators	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	1 hour each	Monthly
Inspect balance/anoxic tank level switches LT201, 203, LS202, 204 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	2 hours each	Monthly

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Inspect balance/anoxic tank magflow meter FIT201 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for meter	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	0.5 hours each	6 Monthly
Inspect balance/anoxic tank level switches LS202, 204 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	4 hours each	6 Monthly
Inspect balance/anoxic tank level switches LT201, 203 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	4 hours each	Annually
Inspect balance/anoxic tank magflow meter FIT201 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for meter	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	2 hours each	Annually

Task	Personnel	Competency	Duration	Frequency
Check aeration tank air disbursement pattern Check inlet and outlet pressure levels Check ventilation fan is active	2 x Waste Water Operators Dayshift	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	1 hour each	Daily
	1 x Waste Water Operator Nightshift	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	0.5 hour	
Check and hose foam from around aeration tank and air valves	1 x Waste Water Operator Dayshift	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	1 hour	Daily
	1 x Waste Water Operator Nightshift	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	1 hour	
Inspect aeration tank DO probes AIT301(01), 301(02) and AIT1101(DO), 1101(TE) for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for probes	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	16 hours each	Monthly
Clean aeration tank DO and pH probes	1 x Waste Water Operator	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	0.5 hour	Monthly

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Inspect aeration tank level switches LIT301, LS302, LS1101 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	1.5 hours each	Monthly
Inspect aeration tank pressure switches PS301, 302, 1101(01, 02), 1102 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	3 hours each	Monthly
Inspect aeration tank level switches LS 302 and 1101 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	4 hours each	6 Monthly
Inspect aeration tank magflow meters FIT301, 302, 303, 304, FIT1101 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for meters	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	2.5 hours each	6 Monthly

Task	Personnel	Competency	Duration	Frequency
Inspect aeration tank level switch LIT 301 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	2 hours each	Annually
Inspect aeration tank pressure switches PS301, 302, 1101(01,02), 1102 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	20 hours each	Annually
Inspect aeration tank magflow meters FIT301, 302, 303, 304, FIT1101 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for meters	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	10 hours each	Annually
Inspect post anoxic tank mixers for noise, vibration and correct operation and confirm mixers rotate freely Make sure the cable entry gland is not broken	1 x Waste Water Operator	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	0.5 hour	Daily
Inspect and clean post anoxic tank	1 x Waste Water Operator	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	1 hour	Daily

Task	Personnel	Competency	Duration	Frequency
Inspect post anoxic tank level switch LS1202 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	0.5 hours each	Monthly
Inspect post anoxic tank level switch LS1202 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	2 hours each	6 Monthly
Inspect MBR tank overflow weir for sludge and clean Check air disbursement through the membrane cassettes Inspect and record trans membrane pressure on permeate line and record flow rate Inspect outlet and inlet pressure and noise levels and confirm ventilation fan is operating Inspect aeration blower filter vacuum pressure	1 x Waste Water Operator Dayshift	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	1 hour	Daily
	1 x Waste Water Operator Nightshift	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	1 hour	
Inspect MBR tank and hose down sludge build-up on inside walls and trough Check membrane purge cycle Inspect permeate pump buffer fluid for contamination Inspect permeate pump buffer pressure	2 x Waste Water Operators	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	1 hour each	Daily

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Check and clean MBR tank permeate trans membrane Inspect permeate pumps for noise or vibration Inspect MBR blowers for correct operation	2 x Waste Water Operators	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	0.5 hour each	Daily
Inspect MBR pressure switches PT401, 402, 504, 505, PS501, 502, 503 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	4 hours each	Monthly
Inspect MBR level switch LS401 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	0.5 hours each	Monthly
Inspect MBR level switch LS401 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	2 hours each	6 Monthly
Inspect MBR pressure switches PT401, 402, 504, 505, PS501, 502, 503 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	28 hours each	Annually

Task	Personnel	Competency	Duration	Frequency
Inspect and clean MBR membrane cassettes Simulate MBR blower high and low pressure fault conditions	2 x Waste Water Operators	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	10 hours each	3 Monthly
Lift, inspect and clean MBR membrane cassettes Inspect MBR tank membrane cassettes for permeate tube degradation	2 x Waste Water Operators	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	10 hours each	Annually
	1 x Franna Crane Operator	JKC PTW High Risk Work Licence CN Non-Slewing Crane		
	1 x Dogman	JKC PTW High Risk Work Licence		
	1 x Spotter	JKC PTW		
Inspect nitrate removal system pumps and fittings for leaks, alarms Inspect brine tank solution levels	1 x Waste Water Operator	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	1 hour	Weekly
Inspect nitrate removal system brine tank for foreign materials Check regeneration cycle for correct operation Inspect filter feed pump and backwash pump pressure gauges readings	1 x Waste Water Operator	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	1 hour	Weekly
Inspect and clean nitrate removal system filter feed pump and backwash pump for dirt/dust Inspect filter feed pump and backwash pump programmed duration Inspect filter feed pump and backwash pump for noise or vibration	1 x Waste Water Operator	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	1 hour	Monthly

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Inspect nitrate removal system level switches LS1301, 1302, 1303 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	1.5 hours each	Monthly
Inspect nitrate removal system level switches LS1301, 1302, 1303 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	6 hours each	6 Monthly
Inspect discharge pH probes pHIT601, 602 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for probe	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	4 hours each	Monthly
Inspect discharge turbidity sensor AIT601 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for sensor	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	4 hours each	Monthly
Inspect UV and disposal system pumps and fittings for leaks Inspect UV system for faulty lamps and leaks	1 x Waste Water Operator	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	0.5 hour	Monthly

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Inspect and clean UV and disposal system turbidity system Inspect and clean pH probe	1 x Waste Water Operator	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	0.5 hour	Monthly
Inspect and clean UV and disposal system discharge pump motor for dirt Inspect discharge pump motor for noise Inspect float switches for wear or entanglement	1 x Waste Water Operator	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	0.5 hour	Monthly
Inspect disposal system level switches LS601, 602, 603 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	1.5 hours each	Monthly
Inspect disposal system level switches LS601, 602, 603 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	6 hours each	6 Monthly
Inspect disposal system magflow meters FIT601, 602 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for meters	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	1 hour each	6 Monthly

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Test UV and disposal system turbidity and pH probe out of spec alarms	1 x Waste Water Operator	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	0.5 hour	Annually
Inspect disposal system magflow meters FIT601, 602 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for meters	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	4 hours each	Annually
Inspect centrifuge disposal bin and confirm filtrate is clean and free of flocculated sludge	1 x Waste Water Operator	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	0.5 hour	Daily
Inspect centrifuge screen basket and filtrate chamber for cleanliness, debris Inspect and clean ratchets, cleaning nozzles and drain pressure cone system Inspect electrical cables and connections for damage Inspect oil seals for leaks	1 x Waste Water Operator	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	1 hour	Weekly
Inspect and grease discharge end screw bearing and feed end oil seal bearing	1 x Waste Water Operator	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	0.5 hour	Monthly

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Inspect centrifuge pressure switches PS701, 702, 1001, 1002 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	2 hours each	Monthly
Inspect centrifuge pressure switches PS701, 702, 1001, 1002 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	16 hours each	Annually
Inspect chemical dosing system for chemical spills	1 x Waste Water Operator	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	0.5 hour	Daily
Inspect chemical dosing system safety shower for correct operation Inspect chemical sump level Inspect chemical tank levels Inspect chemical dosing lines for leaks or wear	2 x Waste Water Operators	JKC PTW JKC Lockout/Tagout CN714 Plant Operator Sewerage & Waste Water Control CNC28 WWTP Operation	1 hour each	Daily
Inspect chemical dosing system level switches LS801, 802 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	1 hour each	Monthly

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Inspect chemical dosing system level switches LS801, 802 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	4 hours each	6 Monthly
Take effluent samples, test, analyse and report results	1 x Laboratory Technician	JKC PTW Certificate III in Laboratory Skills	5 hours	Daily
Recalibrate laboratory equipment	1 x Laboratory Technician	JKC PTW Certificate III in Laboratory Skills	2 hours	Weekly
Inspect valves AV301, 302, 304 and 1101 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for valves	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	2 hours each	Monthly
Inspect valves AV301, 302, 304 and 1101 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for valves	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	16 hours each	Annually
Inspect solenoids SV201, 301,303, 501, 502, 601-605, 701, 901, 902, 1101, 1201, and 1301-1306 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for solenoids	2 x Electricians	JKC PTW JKC Lockout/Tagout Electrical Workers Licence	42 hours each	6 Monthly

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While working in and around the WWTP standard PPE including safety glasses and helmet must be worn.

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Inspect, empty and clean primary screening container	Hose	1
Inspect and clean primary screening level control air injection pipes	Hose	1
Inspect and hose down primary screening sedimentation and chloride build-up and apply grease	Hose	1
	Grease	As required
Inspect inlet level switch for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	Electricians toolkit	1
Inspect inlet pressure switch for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	Electricians toolkit	1
Inspect inlet level switch for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	Electricians toolkit	1
	Process meter	1
Inspect inlet pressure switch for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	Electricians toolkit	1
	Hand pump	1
	Process meter	1
	Shifter	1
Inspect and hose de-aeration tank and internal pipework	Hose	1
Inspect and clean equalisation tank level sensor	Hose	1
Inspect balance/anoxic tank pH probe for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for probe	Electricians toolkit	1
	Beakers	2
	Paper towels	As required

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Inspect and clean/calibrate balance/anoxic tank pH probe and apply grease	Clean cloth	As required
	Grease	As required
Inspect balance/anoxic tank level switches for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	Electricians toolkit	1
Inspect balance/anoxic tank magflow meter for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for meter	Electricians toolkit	1
Inspect balance/anoxic tank level switches for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	Electricians toolkit	1
	Process meter	1
Inspect balance/anoxic tank magflow meter for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for meter	Electricians toolkit	1
	Process meter	1
Check and hose foam from around aeration tank and air valves	Hose	1
Inspect aeration tank DO probes for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for probes	Electricians toolkit	1
	Process meter	1
Clean aeration tank DO and pH probes	Clean cloth	As required
Inspect aeration tank level switches for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	Electricians toolkit	1

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Inspect aeration tank pressure switches for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	Electricians toolkit	1
Inspect magflow meters for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for meters	Electricians toolkit	1
Inspect aeration tank level switches for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	Electricians toolkit	1
	Process meter	1
Inspect aeration tank pressure switches for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	Electricians toolkit	1
	Process meter	1
Inspect magflow meters for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for meters	Electricians toolkit	1
	Process meter	1
Inspect and clean post anoxic tank	Hose	1
Inspect post anoxic tank level switch for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	Electricians toolkit	1
Inspect post anoxic tank level switch for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	Electricians toolkit	1
	Process meter	1

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Inspect MBR tank overflow weir for sludge and clean	Hose	1
Inspect and record MBR trans membrane pressure on permeate line and record flow rate	Record sheet	As required
Inspect MBR tank and hose down sludge	Hose	1
Check and clean MBR tank permeate trans membrane	Hose	1
Inspect MBR pressure switches for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	Electricians toolkit	1
Inspect MBR level switch for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	Electricians toolkit	1
Inspect and clean MBR membrane cassettes	Hose	1
Inspect MBR level switch for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	Electricians toolkit	1
	Process meter	1
Lift, inspect and clean MBR membrane cassettes	Franna crane	1
	Barricades, signs and flagging	As required
	Toolkit	As required
Inspect MBR pressure switches for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	Electricians toolkit	1
	Process meter	1
Inspect and clean nitrate removal system filter feed pump and backwash pump for dirt/dust	Clean cloth	As required
Inspect nitrate removal system level switches for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	Electricians toolkit	1

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Inspect nitrate removal system level switches for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	Electricians toolkit	1
	Process meter	1
Inspect discharge pH probe for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for probe	Electricians toolkit	1
	Process meter	1
Inspect discharge turbidity sensor for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for sensor	Electricians toolkit	1
	Process meter	1
Inspect and clean UV and disposal system turbidity system Inspect and clean pH probe	Clean cloth	As required
Inspect and clean UV and disposal system discharge pump motor for dirt	Clean cloth	As required
Inspect disposal system level switches for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	Electricians toolkit	1
Inspect disposal system level switches for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switch	Electricians toolkit	1
	Process meter	1
Inspect magflow meters for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for meters	Electricians toolkit	1
Inspect disposal bin and confirm filtrate is clean and free of flocculated sludge	Hose	1
Inspect and clean ratchets, cleaning nozzles and drain pressure cone system	Hose	1
	Shifter	1

a	i ent	be
Inspect centrifuge and grease discharge end screw bearing and feed end oil seal bearing	Grease gun	1
	Grease	As required
Inspect centrifuge pressure switches for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	Electricians toolkit	1
Inspect centrifuge pressure switches for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	Electricians toolkit	1
	Process meter	1
Inspect chemical sump level Inspect chemical tank levels Inspect chemical dosing lines for leaks or wear	Face shield	1
	PVC apron	1
	PVC long sleeve gloves	1 pair
	PVC gumboots	1 pair
Inspect chemical dosing system level switches for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	Electricians toolkit	1
Inspect chemical dosing system level switches for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for switches	Electricians toolkit	1
	Process meter	1
Take effluent samples and test	Glass beakers	As required
	Glass beaker carry case	1
	Sample scoop	1
	Mixed liquor suspended solids machine	1
	pH meter	1
	DO meter	1
Inspect valves AV 301,302, 304 and 1101 for UV damage, water ingress and cable damage. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for valves	Electricians toolkit	1

a	i ent	be
Inspect valves AV 301,302, 304 and 1101 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for valves	Electricians toolkit	1
	Process meter	1
Inspect solenoids SV 201, 301,303, 501, 502, 601-605, 701, 901, 902, 1101, 1201, and 1301-1306 for UV damage, water ingress, cable damage and recalibrate. Check glands are tight, seals are complete, mounting is secure, all bolts are in place and SCADA operates correctly for solenoids	Electricians toolkit	1
	Process meter	1

a t e i e

No spare parts are required for the above planned preventive maintenance activities.

Faults found during planned preventive maintenance activities will become reactive maintenance tasks that will require the generation of a work order before work commences.

et e i te

Please refer to Section 9 – Equipment Description of the Waste Water Treatment Plant Installation, Operation and Maintenance Manual L290-AR-IOM-10004 for further information.

n et Sc eenin

i ent	an act e o e	be
Magnetic inlet flow meter	Endress & Hauser 10W80-S50A1AA0A5AA	1
Rotamat micro strainer inlet screen	Huber Ro9	1
Geared screen drive motor	Danfoss/Bauer BF40-74W	1
Pneumatic 2-point pressure switch	Endress & Hauser PTP31-A4B13HTAD1A	1
Air injection blower pump	Schego 850	1
IRGA washing solenoid valve	Burkert 5281	1

e ae ation an

i ent	an act e o e	be
Concrete tank	Allcast NT	1
Submersible pumps	Grundfos SEV100.100.75.4.50B (DN100 Table D flange)	3
Submersible pump	Grundfos SE1.100.100.75.4.50B (DN100 Table E flange)	1
Submersible pressure transducer	Endress & Hauser Waterpilot FMX21-AA221FGC10A-PO-PS	1
High level float switch	Midstream	1

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i ent	an act e o e	be
Glass fused panel balance/anoxic tank	Permastore PT3125	1
End suction centrifugal pump	Grundfos NBG2000150-250/243	1
Tank level pressure transmitter	Endress & Hauser PTP31-A4C13H2AF1A	1
High level float switch	Midstream	1
Membrane glass pH probe	Endress & Hauser CPS11D-7BA21	1
pH transmitter	Endress & Hauser CM42-MA000EAE00	1

e ation S te

i ent	an act e o e	be
Stainless lined shipping container (tanks 1 & 2)	Ovivo	1
TWS fabricated and painted tank (tank 3)	TWS	1
Pneumatically operated butterfly valve with modulator (tanks 1 & 2 flow control valve)	Air Power DN 200	1
Pneumatically operated butterfly valve with digital positioner (tank 3 flow control valve)	Air Power DN300	1
Pneumatically operated butterfly valve with modulator (tanks 1 & 2 RAS flow control valve)	Air Power DN150	1
Pneumatically operated butterfly valve with dual proximity feedback (tank 3 RAS flow control valve)	Air Power DN150	1
DO probe (tanks 1 & 2)	Endress & Hauser COS61D-AAA1A3	1
DO and temperature transmitter (tanks 1 & 2)	Endress & Hauser CM442-AAM2A3F060A	1
DO probe (tank 3)	Endress & Hauser COS61D-1020/0	1
DO and temperature transmitter (tanks 1 & 2)	Endress and Hauser CM442-1CFO/0	1
Level float switch (tanks 1 & 2)	Midstream	1
Level float switch (tank 3)	Midstream MAC3	1
Positive displacement roots type air blower (tanks 1 & 2)	Robuschi ES55/2P	2
Positive displacement roots type air blower (tank 3)	Robuschi ES65/2P	2
High pressure switches (tanks 1,2 &3)	CAPS-Tecsis S4250	2
Pressure release solenoid valve (tank 3)	Burkert 6281 Water Mark	1

o t n o i c a n

i e n t	a n a c t e o e	b e
TWS fabricated and painted tank	TWS	1
Tank mixers	Grundfos AMD.15.45B.710.OV.A	2
Level float switch	Midstream MAC3	1

S t e

i e n t	a n a c t e o e	b e
Stainless lined shipping container	Ovivo	2
Level pressure transmitter	Endress & Hauser PTP31-A4C13H2AF1A	2
High level float switch	Midstream	1
Rotary lobe positive displacement permeate pumps	Vogelsang VX100-90Q	3
Positive displacement roots type air blower	Robuschi ES46/2P	2
Blower high pressure switches	CAPS-Tecsis S4250	2
Air scour 2-point low/high pressure switch	Endress & Hauser PTP31-A4B13H2AF1A	1
Permeate pressure transmitter	Endress & Hauser PTP31-A4C13H2AF1A	2
Pneumatically operated butterfly valve (duty change valve)	Air Power	2
MBR units	Toray TMR90	10
Membrane sheets		1000

i c h a e S t e

i e n t	a n a c t e o e	b e
Turbidity analyser	Endress & Hauser Turbimax CUE21	1
Membrane glass pH probe	Endress & Hauser CPS11D-7BA21	1
pH transmitter	Endress & Hauser CM42-MAA000EAE00	1
Pneumatically operated butterfly valve (in spec discharge valve)	Air Power DN80	1
Pneumatically operated butterfly valve (out of spec discharge valve)	Air Power DN80	1
End suction centrifugal discharge pumps	Grundfos CR120-03 A-FGJ-IE-HQQE	2
Pneumatically operated ball valve (UV system duty change valve)	Air Power DN80	3
Discharge pump 2-point low/high pressure switch	Endress & Hauser PTP31-A4B13H2AF1A	1
Flow through UV system	Orica UV.380.8MU	3 units
Discharge flow meter	Endress & Hauser 10W1H-UC0A1AA0A5AA	1
Permeate buffer tank float switches	Midstream MAC3	3

i ent	an act e o e	be
Variable speed pump controller	Schneider	1
Pump control panel	Schneider	1

S e S te

i ent	an act e o e	be
Positive displacement – rotary cavity waste pumps	Mono C2XAC11RMA	2
Weighted swing check valve	Huber DN50	1
Screw thickener	Huber RoS3 Q	1
Geared drive motor	Nord SK5382	1

it ate e o a S te

i ent	an act e o e	be
Centrifugal filter feed pump	Grundfos CR32-2-A-F-A-E-HQQE3X400D	1
Centrifugal filter backwash pump	Grundfos CR15-03-A-F-A-E-HQQE3X400D	1
Nitrate removal system solenoid control valves	Aquamatic K524-X200-14000	6

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i ent	an act e o e	be
Alum digital dosing pumps	Grundfos DDA7.5-16AR-PVC/T/C-F-31U2U21G	2
Alum tank low level dosing wand float switch	Grundfos	1
Caustic digital dosing pumps	Grundfos DME60-10AR-PV/V/C-F-31A1A1	2
Caustic tank low level dosing wand float switch	Grundfos	1
Polymer dilution and dosing system	Prominent Polymore	1
Sucrose storage tank		1
Sucrose digital dosing pumps	Grundfos DDA17-7-AR-PV/T/C-F-31U-2U2UG	2
Sucrose tank low level float switch	Midstream MAC3	1
Sucrose dosing solenoid valve	Burkert 6281 watermark	1

i o e o S te

i ent	an act e o e	be
Reciprocating type air compressors	PilotAir K17SBDS2445	2
Air discharge pressure switches	Mignon NE-MA	2

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i ent	an act e o e	be
Ultrasonic contactless level sensor/transmitter	Endress & Hauser FMU40-ARB2A2	2
Level float switch	Midstream MAC3	1

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i ent	an act e o e	be
Aerobic tank 3 feed electromagnetic flow meter	Endress & Hauser Promag 10W3H-UC0A1AA0A5AA	1
Aerobic tanks 1 & 2 to de-aeration tank electromagnetic flow meter	Endress & Hauser Promag 10W1F-UC0A1AA0A5AA	1
Aerobic tank 3 to de-aeration tank electromagnetic flow meter	Endress & Hauser Promag 10W1F-UC0A1AA0A5AA	1

i ent

i ent	an act e o e	be
500 litre water tank		1
Pump	Grundfos	1
Header tank		1

aintenance o ow

anne e enti e aintenance oce e

A work order will be generated by Pinnacle for all planned preventive maintenance.

To complete the work, follow the steps in Appendix A-1: Bladin Point Waste Water Treatment Plant Planned Preventive Maintenance Procedure.

Refer also to the Project Execution Plan L290-AB-PLN-10229 and the Project Controls Plan L290-AB-PLN-10230.

eacti e aintenance oce e

A request for work will be logged in Pinnacle by JKC.

The OPS-1 administrator will download the work request and create a work order that will be issued to the appropriate person.

Follow the steps in Appendix A-2: Bladin Point Waste Water Treatment Plant Reactive Maintenance Procedure Flow Chart.

e enc aintenance oce e

JKC will request emergency work to be done by telephone or TETRA through the supervisor.

JKC will lodge a work order request in Pinnacle.

Follow the steps in Appendix A-3: Bladin Point Waste Water Treatment Plant Emergency Maintenance Procedure Flow Chart and also refer to Appendix C: OPS-1 Emergency Contact Procedure and Appendix D: Out of Hours Critical Site Service Disruption Response Procedure.

S t e n o a t i o n

oc ent

Construction Environmental Management Plan L290-AH-PLN-0059
Operational Environmental Management Plan L290-AH-PLN-10102
Spill Response Procedure L290-AH-PRC-10296

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System 05 Waste Water Treatment Plant Installation and Maintenance Manual
L290-AR-IOM-10004
System 06 Waste Water Treatment Plant Installation, Operation and Maintenance Manual
L290-AR-IOM-10005

awin

Site Part J Drainage Service-Sewage Outfall-Waste Water Treatment Plant
L290-DB-DTL-10016.001
Waste Water Treatment Plant-Panel Tank-Concrete Footing and Slab-Layout and Section
L290-DC-DTL-10306.001
Tristar Waste Water Treatment Plant-Membrane Bio Reactor Electrical Single Line Diagrams
L290-DE-SCM-10017.001
Tristar Waste Water Treatment Plant-Membrane Bio Reactor Electrical Single Line Diagrams
L290-DE-SCM-10017.002
Tristar Waste Water Treatment Plant-Membrane Bio Reactor Electrical Single Line Diagrams
L290-DE-SCM-10017.003
Tristar Waste Water Treatment Plant-Membrane Bio Reactor Electrical Single Line Diagrams
L290-DE-SCM-10018.001
Tristar Waste Water Treatment Plant-Membrane Bio Reactor Electrical Single Line Diagrams
L290-DE-SCM-10018.002
Tristar Waste Water Treatment Plant-Membrane Bio Reactor Electrical Schematics and Wiring
Diagrams L290-DE-SCM-10019.001
Tristar Waste Water Treatment Plant-Membrane Bio Reactor Electrical Schematics and Wiring
Diagrams L290-DE-SCM-10019.002
Tristar Waste Water Treatment Plant-Membrane Bio Reactor Electrical Schematics and Wiring
Diagrams L290-DE-SCM-10019.003
Tristar Waste Water Treatment Plant-Membrane Bio Reactor Electrical Schematics and Wiring
Diagrams L290-DE-SCM-10019.004
Tristar Waste Water Treatment Plant-Membrane Bio Reactor Electrical Schematics and Wiring
Diagrams L290-DE-SCM-10019.006
Tristar Waste Water Treatment Plant-Membrane Bio Reactor Electrical Schematics and Wiring
Diagrams L290-DE-SCM-10019.007
Tristar Waste Water Treatment Plant-Membrane Bio Reactor Electrical Schematics and Wiring
Diagrams L290-DE-SCM-10019.008
Tristar Waste Water Treatment Plant-Membrane Bio Reactor Electrical Schematics and Wiring
Diagrams L290-DE-SCM-10019.009
Tristar Waste Water Treatment Plant-Aerobic Tank Weld Traceability Drawing
L290-DQ-DTL-10001.001
Tristar Waste Water Treatment Plant-Aerobic Tank Weld Traceability Drawing
L290-DQ-DTL-10001.002
Tristar Waste Water Treatment Plant-Aerobic Tank Weld Traceability Drawing
L290-DQ-DTL-10001.003
Tristar Waste Water Treatment Plant-Aerobic Tank Weld Traceability Drawing
L290-DQ-DTL-10001.004
Tristar Waste Water Treatment Plant-Anoxic Tank Weld Traceability Drawing
L290-DQ-DTL-10002.001

Tristar Waste Water Treatment Plant-Anoxic Tank Weld Traceability Drawing
L290-DQ-DTL-10002.002

Tristar Waste Water Treatment Plant-Anoxic Tank Weld Traceability Drawing
L290-DQ-DTL-10002.003

Tristar Waste Water Treatment Plant-Anoxic Tank Weld Traceability Drawing
L290-DQ-DTL-10002.004

Waste Water Treatment Plant-Panel Tank-Tank Plan Layout and Elevation
L290-DS-DTL-10181.001

Waste Water Treatment Plant E000 OVIVO Electrical Drawing Schematic Title Page
L290-DS-SCM-10000.001

Waste Water Treatment Plant E100 OVIVO Electrical Drawing Distribution Schematic
L290-DS-SCM-10001.001

Waste Water Treatment Plant E101 OVIVO Electrical Drawing Distribution Schematic
L290-DS-SCM-10001.002

Waste Water Treatment Plant E102 OVIVO Electrical Drawing Distribution Schematic
L290-DS-SCM-10001.003

Waste Water Treatment Plant E103 OVIVO Electrical Drawing Distribution Schematic
L290-DS-SCM-10001.004

Waste Water Treatment Plant E104 OVIVO Electrical Drawing Distribution Schematic
L290-DS-SCM-10001.005

Waste Water Treatment Plant E105 OVIVO Electrical Drawing Distribution Schematic
L290-DS-SCM-10001.006

Waste Water Treatment Plant E111 OVIVO Electrical Drawing Variable Speed Drive Single Line
Schematic L290-DS-SCM-10003.001

Waste Water Treatment Plant E112 OVIVO Electrical Drawing Variable Speed Drive Single Line
Schematic L290-DS-SCM-10003.002

Waste Water Treatment Plant E113 OVIVO Electrical Drawing Variable Speed Drive Single Line
Schematic L290-DS-SCM-10003.003

Waste Water Treatment Plant E150 OVIVO Electrical Drawing Turbidity Monitor Schematic
L290-DS-SCM-10004.001

Waste Water Treatment Plant E200 OVIVO Electrical Drawing 24V DC Supplies 1 Schematic
L290-DS-SCM-10005.001

Waste Water Treatment Plant E201 OVIVO Electrical Drawing 24V DC Supplies 2 Schematic
L290-DS-SCM-10006.001

Waste Water Treatment Plant E253 OVIVO Electrical Drawing Flow Meters Schematic
L290-DS-SCM-10008.002

Waste Water Treatment Plant E254 OVIVO Electrical Drawing Alarm Signals Schematic
L290-DS-SCM-10009.001

Waste Water Treatment Plant E300 OVIVO Electrical Drawing E Stop Circuit Schematic
L290-DS-SCM-10010.001

Waste Water Treatment Plant E301 OVIVO Electrical Drawing E Stop Circuit Schematic
L290-DS-SCM-10010.002

Waste Water Treatment Plant E401 OVIVO Electrical Drawing Direct On-Line Control Schematic
L290-DS-SCM-10011.001

Waste Water Treatment Plant E402 OVIVO Electrical Drawing Direct On-Line Control Schematic
L290-DS-SCM-10011.002

Waste Water Treatment Plant E403 OVIVO Electrical Drawing Direct On-Line Control Schematic
L290-DS-SCM-10011.003

Waste Water Treatment Plant E404 OVIVO Electrical Drawing Direct On-Line Control Schematic
L290-DS-SCM-10011.004

Waste Water Treatment Plant E405 OVIVO Electrical Drawing Direct On-Line Control Schematic
L290-DS-SCM-10011.005

Waste Water Treatment Plant E406 OVIVO Electrical Drawing Direct On-Line Control Schematic
L290-DS-SCM-10011.006

Waste Water Treatment Plant E407 OVIVO Electrical Drawing Direct On-Line Control Schematic
L290-DS-SCM-10011.007

Waste Water Treatment Plant E408 OVIVO Electrical Drawing Direct On-Line Control Schematic
L290-DS-SCM-10011.008

Waste Water Treatment Plant E451 OVIVO Electrical Drawing Variable Speed Drive Control
Schematic L290-DS-SCM-10012.001

Waste Water Treatment Plant E452 OVIVO Electrical Drawing Variable Speed Drive Control
Schematic L290-DS-SCM-10012.002

Waste Water Treatment Plant E460 OVIVO Electrical Drawing Variable Speed Drive Control
Schematic L290-DS-SCM-10012.003

Waste Water Treatment Plant E461 OVIVO Electrical Drawing Variable Speed Drive Control
Schematic L290-DS-SCM-10012.004

Waste Water Treatment Plant E462 OVIVO Electrical Drawing Variable Speed Drive Control
Schematic L290-DS-SCM-10012.005

Waste Water Treatment Plant E463 OVIVO Electrical Drawing Variable Speed Drive Control
Schematic L290-DS-SCM-10012.006

Waste Water Treatment Plant E464 OVIVO Electrical Drawing Variable Speed Drive Control
Schematic L290-DS-SCM-10012.007

Waste Water Treatment Plant E465 OVIVO Electrical Drawing Variable Speed Drive Control
Schematic L290-DS-SCM-10012.008

Waste Water Treatment Plant E466 OVIVO Electrical Drawing Variable Speed Drive Control
Schematic L290-DS-SCM-10012.009

Waste Water Treatment Plant E467 OVIVO Electrical Drawing Variable Speed Drive Control
Schematic L290-DS-SCM-10012.010

Waste Water Treatment Plant E468 OVIVO Electrical Drawing Variable Speed Drive Control
Schematic L290-DS-SCM-10012.011

Waste Water Treatment Plant E469 OVIVO Electrical Drawing Variable Speed Drive Control
Schematic L290-DS-SCM-10012.012

Waste Water Treatment Plant E470 OVIVO Electrical Drawing Variable Speed Drive Control
Schematic L290-DS-SCM-10012.013

Waste Water Treatment Plant E471 OVIVO Electrical Drawing Variable Speed Drive Control
Schematic L290-DS-SCM-10012.014

Waste Water Treatment Plant E501 OVIVO Electrical Drawing 240V AC Equipment Schematic
L290-DS-SCM-10013.001

Waste Water Treatment Plant E502 OVIVO Electrical Drawing 240V AC Equipment Schematic
L290-DS-SCM-10013.002

Waste Water Treatment Plant E601 OVIVO Electrical Drawing 240V AC Pumps Schematic
L290-DS-SCM-10014.001

Waste Water Treatment Plant E602 OVIVO Electrical Drawing 240V AC Pumps Schematic
L290-DS-SCM-10014.002

Waste Water Treatment Plant E610 OVIVO Electrical Drawing Solenoid Valves Schematic
L290-DS-SCM-10015.001

Waste Water Treatment Plant E611 OVIVO Electrical Drawing Solenoid Valves Schematic
L290-DS-SCM-10015.002

Waste Water Treatment Plant E612 OVIVO Electrical Drawing Solenoid Valves Schematic
L290-DS-SCM-10015.003

Waste Water Treatment Plant E613 OVIVO Electrical Drawing Solenoid Valves Schematic
L290-DS-SCM-10015.004

Waste Water Treatment Plant E614 OVIVO Electrical Drawing Solenoid Valves Schematic
L290-DS-SCM-10015.005

Waste Water Treatment Plant E615 OVIVO Electrical Drawing Solenoid Valves Schematic
L290-DS-SCM-10015.006

Waste Water Treatment Plant E701 OVIVO Electrical Drawing Digital Input/Output Schematic
L290-DS-SCM-10016.001

Waste Water Treatment Plant E702 OVIVO Electrical Drawing Digital Input/Output Schematic
L290-DS-SCM-10016.002

Waste Water Treatment Plant E703 OVIVO Electrical Drawing Digital Input/Output Schematic
L290-DS-SCM-10016.003

Waste Water Treatment Plant E704 OVIVO Electrical Drawing Digital Input/Output Schematic
L290-DS-SCM-10016.004

Waste Water Treatment Plant E705 OVIVO Electrical Drawing Digital Input/Output Schematic
L290-DS-SCM-10016.005

Waste Water Treatment Plant E706 OVIVO Electrical Drawing Digital Input/Output Schematic
L290-DS-SCM-10016.006

Waste Water Treatment Plant E707 OVIVO Electrical Drawing Digital Input/Output Schematic
L290-DS-SCM-10016.007

Waste Water Treatment Plant E708 OVIVO Electrical Drawing Digital Input/Output Schematic
L290-DS-SCM-10016.008

Waste Water Treatment Plant E709 OVIVO Electrical Drawing Digital Input/Output Schematic
L290-DS-SCM-10016.009

Waste Water Treatment Plant E710 OVIVO Electrical Drawing Digital Input/Output Schematic
L290-DS-SCM-10016.010

Waste Water Treatment Plant E711 OVIVO Electrical Drawing Digital Input/Output Schematic
L290-DS-SCM-10016.011

Waste Water Treatment Plant E712 OVIVO Electrical Drawing Digital Input/Output Schematic
L290-DS-SCM-10016.012

Waste Water Treatment Plant E900 OVIVO Electrical Drawing Program Logic Control Layout
Schematic L290-DS-SCM-10018.001

S t e e o t i n

As per the Project Execution Plan L290-AB-PLN-10229 and the Project Controls Plan
L290-AB-PLN-10230.

n i o n e n t a

Refer to the Operational Environmental Management Plan L290-AH-PLN-10102 and the
Construction Environmental Management Plan L290-AH-PLN-0059.

S i

All chemicals necessary for the operation of the WWTP will be stored in intermediate bulk
containers (IBCs) which, in turn, will be inside storage bunds. The storage bunds meet the
Australian standard for the storage of dangerous goods and provide an additional 10% storage
volume. Any chemical spills or trapped rainwater should therefore be contained within this bund.

If a biohazard spill should occur, the concrete slab at the plant is sloped towards a central point.
The spill should therefore flow to this point. At this central point, there is a bund and a pipe with a
gate valve and cam lock. In normal operation, this valve will remain closed. If a spill should occur,
a vacuum truck will be used to remove the spill by connecting the vacuum truck to the cam lock.

The bund around the slab is approximately 300mm high and will capture approximately 12,500
litres (refer to the letter from the designer, Appendix D).

If the spill is likely to be greater than 12,500 litres, a vacuum truck will be connected to the cam
lock to remove the spill medium from the bund while the spill is still occurring. The vacuum truck
will be used in this manner until the spill is under control.

There is a vacuum truck permanently on site and the current operators are licenced to operate the vehicle. This will ensure a quick response to any spill.

If a small chemical spill occurs, a chemical spill kit will be available. This would only be activated for very minor spills.

t o S e c

The WWTP runs on a PLC and SCADA system so set-points will determine if the effluent is in or out of spec. If the effluent is deemed out of spec, the in-spec valve will automatically close and the out of spec valve will open. This will cause the effluent to reticulate back through the plant.

During normal operation, the balance tank will run at approximately 1/3 full so if the plant cannot handle extra flow, screened sewage will be held in this tank until it can be slowly fed into the system.

There are also 6 x 36,000 litre tanks on site adjacent to the WWTP. By changing the valve arrangement, raw sewage can be diverted to these tanks for storage if necessary. A vacuum truck can be used to extract the raw sewage from the tanks and pump it back into the WWTP inlet when appropriate.

If it is not possible to put the sewage back into the WWTP, Transpacific will be used to transport the sewage offsite for appropriate disposal.

As per the Project Execution Plan L290-AB-PLN-10229.

S S

All personnel entering the WWTP, for whatever reason, must be approved to be in the area as per the Waste Water Treatment Plant Visitor Access Procedure L290-AB-PRC-10247 and will be required to undertake a WWTP induction.

The induction will be conducted by the plant operator and will identify the potential hazards and risks associated with the WWTP. This will ensure all personnel entering the area understand these hazards and risks.

Personnel entering the WWTP must sign-on to the daily prestart. The prestart identifies activities and hazards in the area that day.

All WWTP maintenance works will be done in accordance with the OPS-1 Operational Environmental Management Plan L290-AH-PLN-10102 and the Construction Environmental Management Plan L290-AH-PLN-0059.

All work performed on WWTP system assets will be undertaken by competent personnel under the supervision of a person competent to direct the work. Every employee required to undertake WWTP maintenance activities must be appropriately trained and must have appropriate licences and qualifications in accordance with Permit to Work (PTW) and verification of competency (VOC) procedures.

The WWTP maintenance activity must be undertaken with the appropriate Area Work Clearance (AWC) or applicable PTW and all necessary certificates in accordance with site HSES and PTW procedures. The PTW or AWC will ensure conditions are safe before work commences and at the completion of tasks. Prestart meetings, safe work method statements, job safety environment assessments and take 5s will be undertaken for each activity.

Where, in cases of emergency maintenance, time does not allow for the preparation of a PTW before the work is started, JKC direction will be sought before carrying out the operations.

For this procedure, the following will need to be considered:

- PPE suitable for dealing with a biological hazard (sewage)

In addition to standard PPE the following may be required when working in the WWTP:

- Disposable gloves
- Disposable overalls
- Goggles
- Appropriate face mask

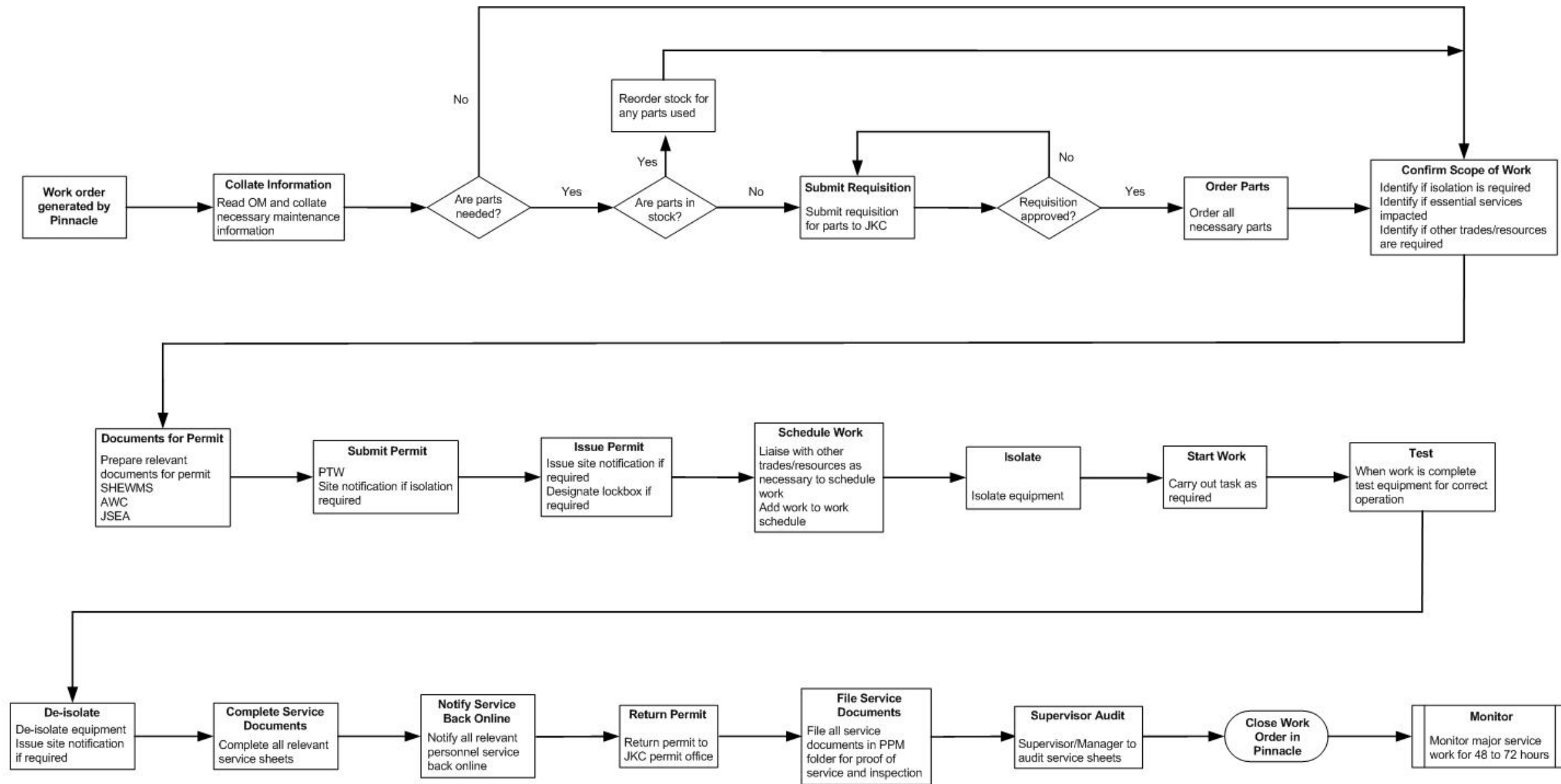
- Vaccines

Personnel working in the WWTP must be vaccinated for the following:

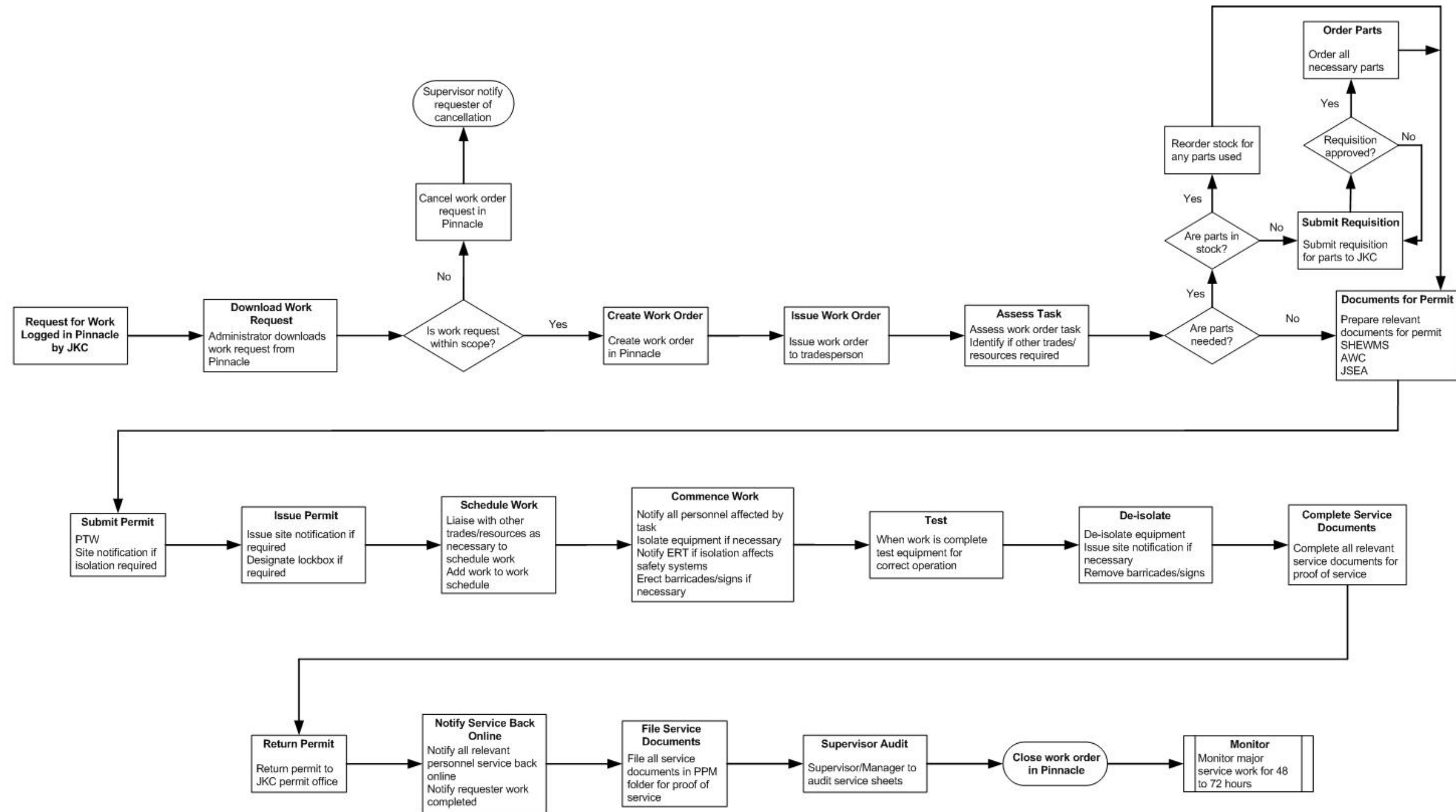
- Hepatitis A
- Hepatitis B
- Tetanus

Refer also to the Project Execution Plan L290-AB-PLN-10229.

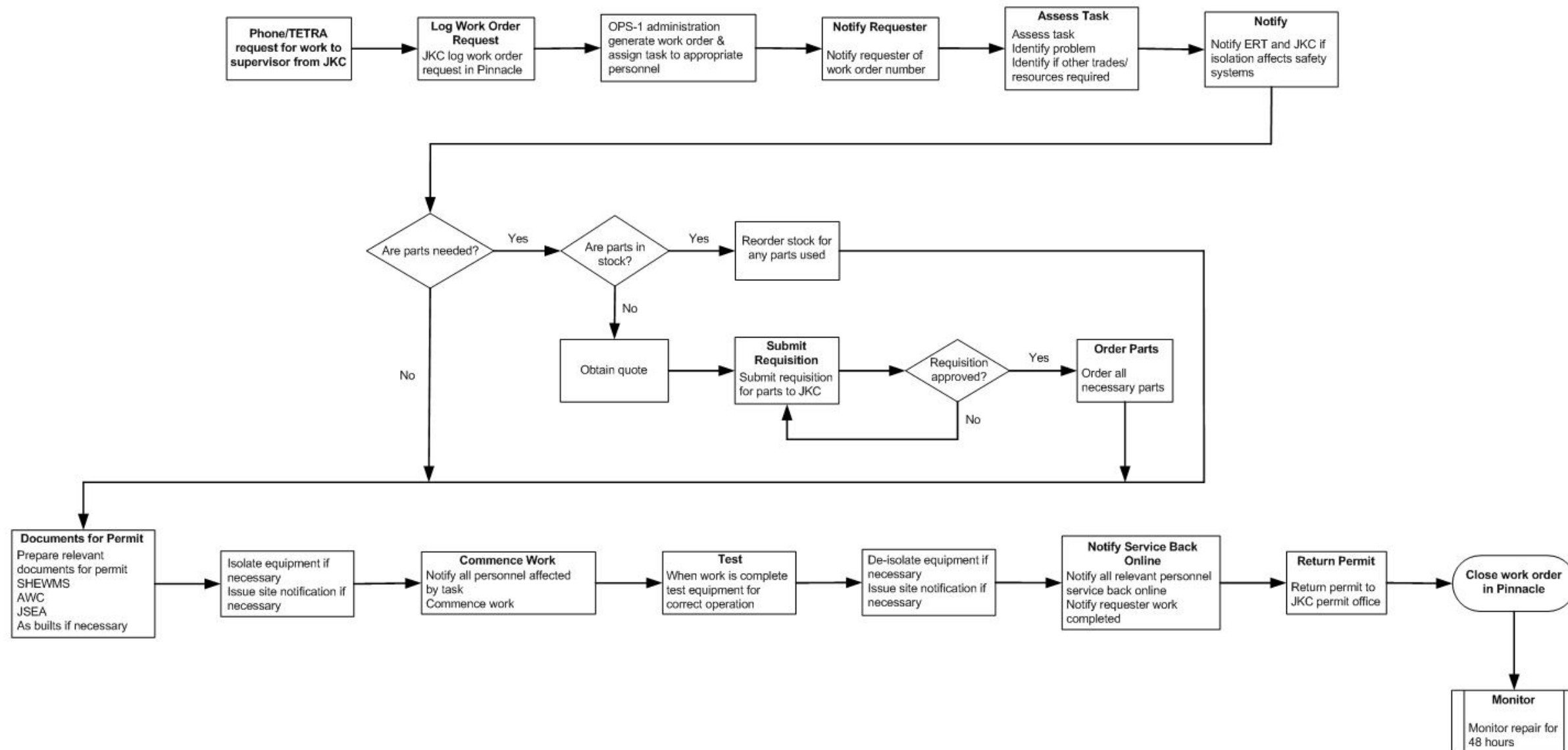
BLADIN POINT WASTE WATER TREATMENT PLANT PLANNED PREVENTIVE MAINTENANCE PROCEDURE FLOW CHART

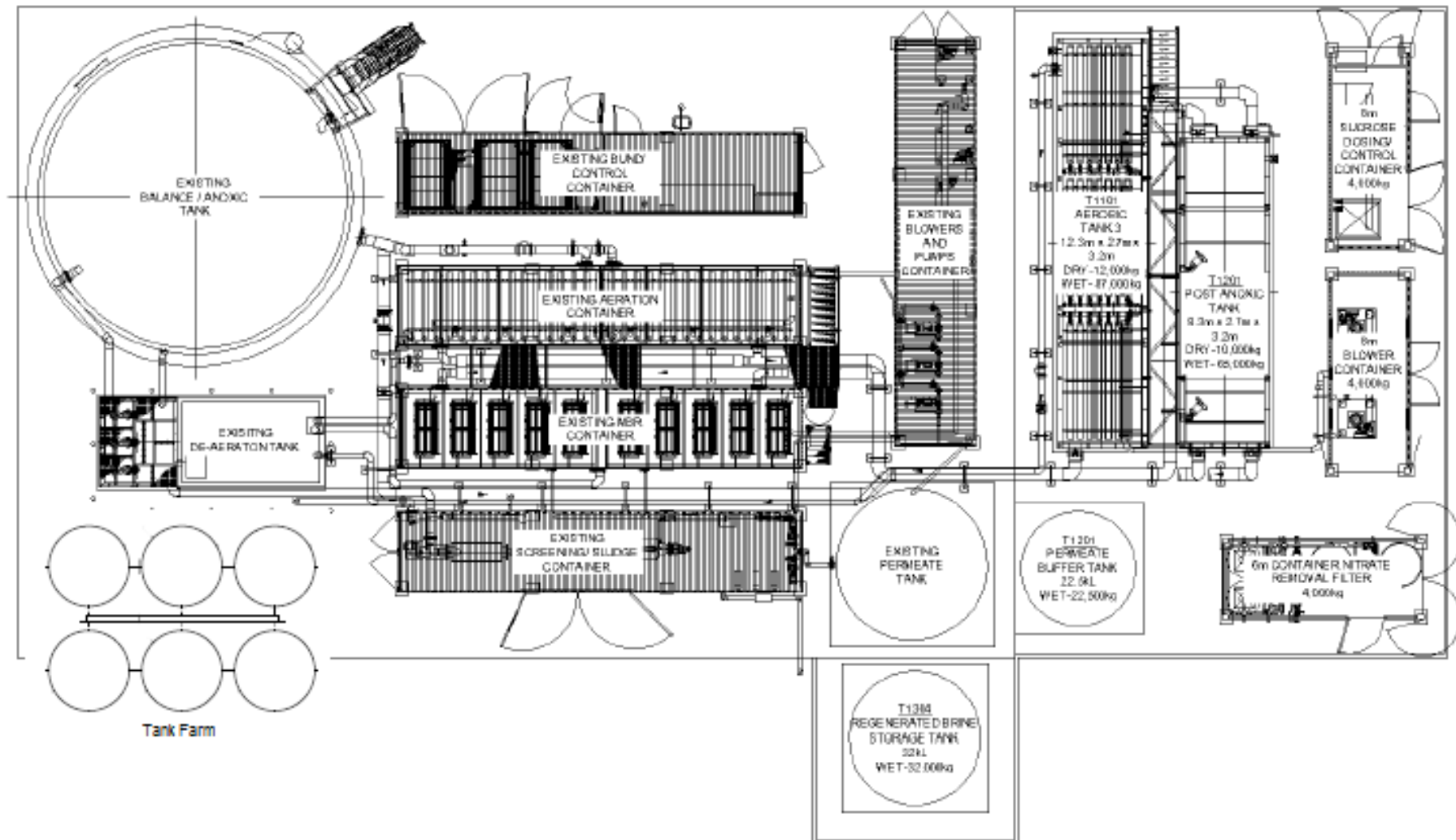


BLADIN POINT WASTE WATER TREATMENT PLANT REACTIVE MAINTENANCE PROCEDURE FLOW CHART



BLADIN POINT WASTE WATER TREATMENT PLANT EMERGENCY MAINTENANCE PROCEDURE FLOW CHART





OPS-1 Emergency Contact Procedure

520600-MGT-PRC-0001



Step 1: Site subcontractor contacts JKC

JKC Contact Name	Landline Number	Mobile Number
Dayshift - Mark Mangini	08 8931 8394	0428 505 670
Nightshift - Tony Sjogren	08 8931 8255	0407 778 739

Step 2: JKC contacts OPS-1

OPS-1 Contact Name	Landline Number	Mobile Number
OPS-1 Reception - Dayshift	08 8912 2057	N/A
Nightshift	N/A	0448 985 627

Step 3: JKC advise the site subcontractor that they have contacted OPS-1

Step 4: OPS-1 contact person contacts OPS-1 Project Director/Deputy Project Manager

Manager	Landline Number	Mobile Number	TETRA Channel	TETRA Direct
Project Director - John McManus	08 8912 2055	0408 512 362	9	5774
Deputy Project Manager - Rhys Hitchcock	08 8912 2045	0407 363 971	8	5938

Step 5: OPS-1 Project Director/Deputy Project Manager contacts the appropriate OPS-1 Manager/Section Supervisor

Manager/Section Supervisor		Landline Number	Mobile Number	TETRA Channel	TETRA Direct
Buildings	Brad Pearce	08 8912 2061	0419 653 411	9	5943
	Rhys Hitchcock	08 8912 2045	0407 363 971	8	5938
Electrical/Communications	Alex Chiu	08 8912 2029	0439 797 660	9	5716
	Rhys Hitchcock	08 8912 2045	0407 363 971	8	5938
WWTP	Brad Pearce	08 8912 2061	0419 653 411	9	5943
	Rhys Hitchcock	08 8912 2045	0407 363 971	8	5938
Civil and Site Services	Rhys Hitchcock	08 8912 2045	0407 363 971	8	5938
HSEQ	Darryl Dyson	08 8912 2052	0439 249 766	4	5715
Warehouse/Laydown	Adrian Long	08 8912 2049	0400 914 102	6	4839
	Steve Harris	08 8931 8583	0431 723 111	6	6141
Preservation	Rhys Hitchcock	08 8912 2045	0407 363 971	8	5938
Nightshift	Angela Breen	08 8912 2022	0407 236 382	9	5520
	Rhys Hitchcock	N/A	0407 363 971	8	5938

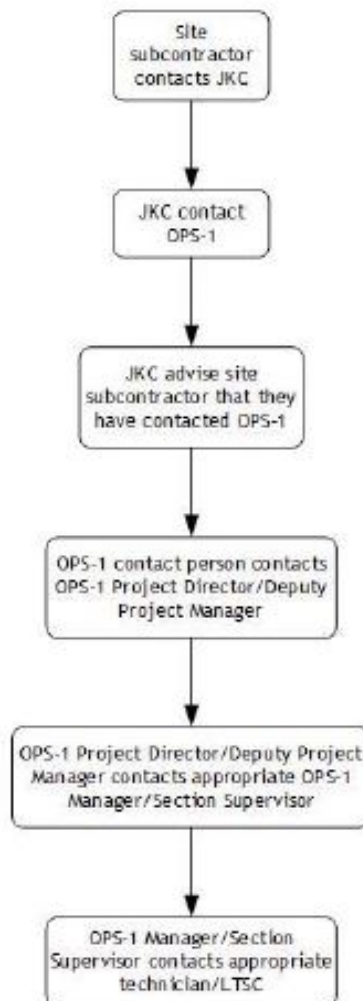
Step 6: OPS-1 Manager/Section Supervisor contacts the appropriate technician/LTSC

NOTE:

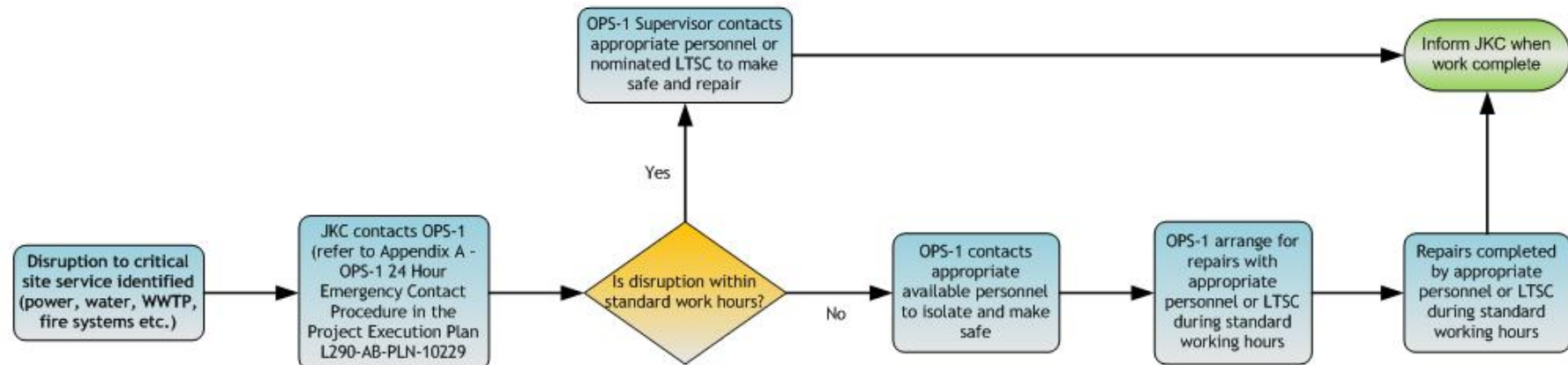
OPS-1 site coverage is currently 20 hours per day Monday to Friday, 16 hours Saturday and 8 hours Sunday.

The site is unattended by OPS-1 as follows:

- 1615 to 1800 (4.15pm to 6.00pm) Monday to Friday
- 0400 to 0600 (4.00am to 6.00 am) Tuesday to Saturday
- 1400 to 1800 (2.00pm to 6.00pm) Saturday
- 0130 to 0600 (1.30am to 6.00am) Sunday
- 1345 (1.45pm) Sunday to 0600 (6.00am) Monday



OPS-1 OUT OF HOURS CRITICAL SITE SERVICE DISRUPTION RESPONSE PROCEDURE



OPS-1 Site Hours

Subcontractor's standard hours of operation are determined by Contractor and are currently:

Dayshift -

0600 to 1615 (6.00am to 4.15pm) Monday to Friday

0600 to 1345 (6.00am to 1.45pm) Saturday

0600 to 1345 (6.00am to 1.45pm) Sunday (and Public Holidays if required)

Nightshift -

1800 to 0400 (6.00pm to 4.00am) Monday to Friday

1800 (6.00pm) Saturday to 0130 (1.30am) Sunday

The site is unattended by OPS-1 as follows:

1615 to 1800 (4.15pm to 6.00pm) Monday to Friday

0400 to 0600 (4.00am to 6.00 am) Tuesday to Saturday

1345 to 1800 (1.45pm to 6.00pm) Saturday

0130 to 0600 (1.30am to 6.00am) Sunday

1345 (1.45pm) Sunday to 0600 (6.00am) Monday

Page 60 of 71

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E darwin@aurecongroup.com
W aurecongroup.com



25 August 2014

Gareth Cullen
Project Engineer
Leighton Contractors Pty Limited
54 Graffin Crescent, Darwin, NT 0800

Dear Gareth

Ichthys Onshore LNG Facility TMP-1 WWTP Expansion Bund Design Criteria

In reference to the query P-3210-TMP-1-RFI-0762 regarding the design basis of the WWTP Slab extension bund capacity the following was utilised to determine the bund height;

- The bund height was limited to 30mm below the container plinth heights to prevent potential damage to the containers and their sensitive internals during an event where the bund area is filled.
- The bund height chosen allowed the container doors to swing open given their close proximity.

It should be noted that the bund capacity was not designed for a specific volume of waste or event and rather Aurecon utilised the methods above to determine the height of the bund.

The bund will provide approximately 12,500 litres of catchment capacity (refer attached calculations) which offers the WWTP operator some security to stop the flow of waste in the event of a minor waste leak. It is assumed that the WWTP operator will man and monitor the plant during operation and will have the appropriate procedures in place in the event that there is a waste spill.

It is the designs intention that the gate valve and cam lock located above the sump remains closed during the plants operation and is only opened to allow the WWTP operator to appropriately remove the waste spill (the remainder of the spill left in the sump shall also be removed via pump) or to release trapped water after a rain event. The WWTP Operator should have appropriate procedures in place to inspect the WWTP regularly to remove any trapped rain water. The frequency of inspections should be increased during the local "wet season" (October until May) when significant rainfall occurs.

It is recommended that this letter be provided to the WWTP operator within the Operation Manual so appropriate procedures can be developed for the various events mentioned above.

Regards,

Alex Hatzi
Structural Engineer

Project 229020 File Letter regarding bund capacity.docx 25 August 2014 Revision 0 Page 1

Ventia Work Order



Please contact the Ventia representative in the Request Description section in the event that work is unable to be undertaken safely. ALL PERSONNEL ATTENDING SITE MUST BE INDUCTED TO THE SITE.

WO No: 17/125117

125117

Address: Ichthys OPS-1
Bladin Point
Wickham Point Road,
Bladin Point, Darwin, NT 0800

Contractor: 520600.OPS-1 Building Maintenance**Budget Code:** 520600 605 003

Location: 520600.3A.TFS.WWTP
Waste Water Treatment Plant

Priority: Preventive Maintenance**Make Safe Due:** 28/07/2018 17:30:00**Maintenance Type:** Preventive**Date Due:** 28/07/2018 17:30:00**Frequency:** 1 Monthly (28th)**Request Description:**

WWTP - Daily Inspection Tasks. Refer to attached Daily Maintenance Guide. - Day Shift Only
WWTP Daily Maintenance Inspection Sheet-Day Shift 520600-MNT-CHK-0010
10.2.1, 10.3.1, 10.4.1, 10.5.1, 10.6.1, 10.7.1, 10.8.1, 10.9.1, 10.10.1

Equipment ID:**Call 1800 FMHELP on job completion to close the Work Order****Ventia representative:** OPS-1 Building Maintenance**Requestor Details:**

A Permit must be obtained and authorised by the Ventia representative before any work commences involving: Hot Work; Explosive; Excavation/Penetration where live services may be present; Entry into confined spaces; Working at heights where there is no hand rail or height fixed edge protection; Working in the vicinity of overhead powerlines; Isolation of energy; Entry into HV compounds; Any other activity identified, through a risk assessment, requiring a permit. All authorised permit numbers must be readily available to be quoted if requested. Lift plans are considered permits for heavy lifting.

If required, please undertake a safe work analysis and hazard identification prior to commencing work. A Take 5 must be carried out if the environment or job has changed from SOP.

Job Comments:

Comments:

Name:

R. Halman

Signature:

[Signature]

Date:

31/07/18

WWTP Daily Maintenance Inspection Sheet - Day Shift

520600-MNT-CHK-0010



10.2.1 PRE-SCREENING

Check screenings and sludge bins. Empty or replace if necessary to avoid the back-up of screenings into the discharge unit.

10.3.1 DE-AERATION TANK

Inspect all valves and pipe work for leaks. *(The balance/anoxic tank area contains pressurised pipe work. Leaks not only present a hazard in the workplace by creating slip areas and potential contact with chemicals and biological material, but they can cause the system to discharge untreated water and cause the entire system to shut down)*

10.4.1 BALANCE/ANOXIC TANK

Inspect the recirculation pump for any undue noise, vibration or leaks. *(This may indicate the beginning of a bearing failure, seal failure etc.)*

10.5.1 AERATION SYSTEM

View the aeration tank and visually inspect the air disbursement pattern across the tank. Adjust valves to correct the air dispersion if required.

While the aeration blower is in operation, check that the outlet and inlet pressure levels are normal and that there are no excessive noise levels.

Confirm that the ventilation fan is active.

10.6.1 POST ANOXIC SYSTEM

View the post anoxic tank and visually check that the mixer is working.

Check for any abnormal noise or vibration along the mixer guide rail.

10.7.1 MBR SYSTEM

View the MBR tank and visually inspect the tank including the air disbursement through the membrane cassettes and check that there is no accumulation of sludge on the overflow weir.

Check the trans membrane pressure on the permeate line. Record the current pressure and flow rate in the plant log.

Check the totalised flow from the permeate flow meter and record the value in the plant log. *(The previous 24 hour overall flow should be less than the designed daily flow during normal operation)*

Visually inspect the MLSS concentration in the MBR tank. If the mixed liquor appears to be getting high, test with the MLSS meter. *(If the MLSS reading is over 10,000 mg/l, increase the waste pump run time. The waste pump run time needs to be adjusted routinely to control the MLSS values in the MBR tank to be between 8500 - 9500 mg/l. Sludge age control is done via the balance/anoxic tank level)*

While the MBR blower is in operation, check that the outlet and inlet pressure levels are normal and that there are no excessive noise levels.

Confirm that the ventilation fan is active.

Check that the aeration blower filter vacuum pressure is less than 35 mbar.

10.8.1 NITRATE REMOVAL SYSTEM

Check the pumps and fittings for leaks and any fault alarm.

Check the brine tank solution water levels.

10.9.1 DISINFECTION AND DISPOSAL SYSTEM

Check the pumps and fittings for leaks.

Check the UV system for faulty lamps and leaks.

10.10.1 SLUDGE DISPOSAL

Check the disposal bin and change if necessary.

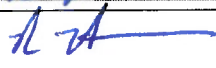
Check the filtrate leaving the sludge press.

Confirm that the filtrate is clean and free of flocculated sludge.

COMMENTS:**DAILY CHECKS COMPLETED (By Date)**

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
02/07/18	03/07/18	04/07/18	05/07/18	06/07/18	07/07/18
09/07/18	10/07/18	11/07/18	12/07/18	13/07/18	14/07/18
16/07/18	17/07/18	18/07/18	19/07/18	20/07/18	21/07/18
23/07/18	24/07/18	25/07/18	26/07/18	P14	28/07/18
30/07/18	31/07/18				

DAILY CHECKS COMPLETED BY:

Name: R. Halman	Signature: 	Date: 02/07/18
Name: Kim AIGERS	Signature: 	Date: 09/07/18
Name: R. Halman	Signature: 	Date: 16/07/18
Name: R. Halman	Signature: 	Date: 23/07/18
R. Halman		30/07/18

Ventia Work Order



Please contact the Ventia representative in the Request Description section in the event that work is unable to be undertaken safely. ALL PERSONNEL ATTENDING SITE MUST BE INDUCTED TO THE SITE.

WO No: 17/125118

125118

Address: Ichthys OPS-1
Bladin Point
Wickham Point Road,
Bladin Point, Darwin, NT 0800

Contractor: 520600.OPS-1 Building Maintenance**Budget Code:** 520600 605 003

Location: 520600.3A.TFS.WWTP
Waste Water Treatment Plant

Priority: Preventive Maintenance**Make Safe Due:** 28/07/2018 17:30:00**Maintenance Type:** Preventive**Date Due:** 28/07/2018 17:30:00**Frequency:** 1 Monthly (28th)**Request Description:**

WWTP - Weekly Inspection Tasks. Refer to attached Weekly Maintenance Guide. - Day Shift Only
WWTP Weekly Maintenance Inspection Sheet-Day Shift 520600-MNT-CHK-0008
10.2.2, 10.3.2, 10.5.2, 10.6.2, 10.7.2, 10.8.2, 10.9.2, 10.10.2, 10.11

Equipment ID:**Call 1800 FMHELP on job completion to close the Work Order****Ventia representative:** OPS-1 Building Maintenance**Requestor Details:**

A Permit must be obtained and authorised by the Ventia representative before any work commences involving: Hot Work; Explosive; Excavation/Penetration where live services may be present; Entry into confined spaces; Working at heights where there is no hand rail or height fixed edge protection; Working in the vicinity of overhead powerlines; Isolation of energy; Entry into HV compounds; Any other activity identified, through a risk assessment, requiring a permit. All authorised permit numbers must be readily available to be quoted if requested. Lift plans are considered permits for heavy lifting.

If required, please undertake a safe work analysis and hazard identification prior to commencing work. A Take 5 must be carried out if the environment or job has changed from SOP.

Job Comments:

Comments:

Name: R. Halpin Signature: R. Halpin Date: 31/07/18



WWTP Weekly Maintenance Inspection Sheet - Day Shift

520600-MNT-CHK-0008



10.2.2 PRE-SCREENING	Complete				
	Tick	Tick	Tick	Tick	Tick
Check the level control air injection pipes. Use a hose to clean the injection pipes and the probes.	☒	☒	☒	☒	☒
Use the site wash down hose to flush the press zone washing area. Continue until clear water runs out through the transparent hose into the channel. <i>(This flushing may be necessary several times per week)</i>	☒	☒	☒	☒	☒
Hose down possible deposits, pressings or screenings on the screen basket.	☒	☒	☒	☒	☒
10.3.2 DE-AERATION TANK	Complete				
	Tick	Tick	Tick	Tick	Tick
Remove an access hatch over one of the discharge pumps and check the tank and internal pipe work for build-up of any solids. Remove any accumulation with a wash down hose.	☒	☒	☒	☒	☒
10.5.2 AERATION SYSTEM	Complete				
	Tick	Tick	Tick	Tick	Tick
Hose off accumulated foam from around the tank, valves and pipe work.	☒	☒	☒	☒	☒
10.6.2 POST ANOXIC SYSTEM	Complete				
	Tick	Tick	Tick	Tick	Tick
Hose off the post anoxic tank walls. Keep the walls clean.	☒	☒	☒	☒	☒
10.7.2 MBR SYSTEM	Complete				
	Tick	Tick	Tick	Tick	Tick
Hose down any areas that become dirty. Remove any "high tide" marks or sludge build-up around the MBR's inside walls and trough.	☒	☒	☒	☒	☒
Check that the system is functioning correctly with membrane On/Off cycles. <i>(9 minutes On, 1 minute Off)</i>	☒	☒	☒	☒	☒
Watch the membrane purge cycle. Confirm that the purge valve is opening and that any air is being released into the CIP header tank.	☒	☒	☒	☒	☒
Check the permeate pump buffer fluid for visible contamination. If strong contamination is visible, change the buffer fluid.	☒	☒	☒	☒	☒
Check the permeate pump buffer pressure. Use the supplied air pump to adjust the pressure if necessary. <i>(Buffer chamber pressure should be approximately 12 kPa)</i>	☒	☒	☒	☒	☒
10.8.2 NITRATE REMOVAL SYSTEM	Complete				
	Tick	Tick	Tick	Tick	Tick
Check the brine tank for any foreign materials. <i>(Best when the tank reaches minimum water level)</i>	☒	☒	☒	☒	☒
Check that the regeneration cycle works correctly.	☒	☒	☒	☒	☒
Check the filter feed pump and backwash pump pressure gauge readings.	☒	☒	☒	☒	☒
10.9.2 DISINFECTION AND DISPOSAL SYSTEM	Complete				
	Tick	Tick	Tick	Tick	Tick
Draw off a sample of permeate water from sample point V613 and visually inspect for abnormal v suspended solids levels. <i>(This task is best performed when the permeate pumps are running)</i>	☒	☒	☒	☒	☒

10.10.2 SLUDGE DISPOSAL	Complete				
	Tick	Tick	Tick	Tick	Tick
Visually inspect the sludge press internals, including the screen basket and filtrate chamber, for debris and cleanliness. Clean if necessary.	☒	☒	☒	☒	☒
Watch the system in operation and confirm function of the ratchets and cleaning nozzles. If the ratchets or nozzles are dirty, remove and clean them. Also, check and drain the pressure cone system. <i>Refer to supplier manual in Appendix B for further information</i>	☒	☒	☒	☒	☒
Check the electrical cables and connections for damage.	☒	☒	☒	☒	☒
Check the oil seals for leaks.	☒	☒	☒	☒	☒
10.11.2 CHEMICAL STORAGE	Complete				
	Tick	Tick	Tick	Tick	Tick
Check that the safety shower operates correctly.	☒	☒	☒	☒	☒
Check the levels in all chemical tanks. Re-order if necessary.	☒	☒	☒	☒	☒
Confirm that filtrate is clean and free of flocculated sludge.	☒	☒	☒	☒	☒
Visually inspect the chemical sump level. Empty as required.	☒	☒	☒	☒	☒
Check for chemical spills and refer to the relevant SDS to ensure appropriate disposal. <i>(When handling chemicals, appropriate PPE should be worn at all times as disclosed in the SDS. Any chemical spills or overflows must be recorded in the plant log and reported to management)</i>	☒	☒	☒	☒	☒
Visually inspect the caustic line fittings and tubing on the pipe work between the sump and the balance tank. Tighten or replace the fittings, if required, in accordance with the SHEWMS. Record comments on defects and action taken.	☒	☒	☒	☒	☒
Check chemical dosing lines for leaks or signs of wear.	☒	☒	☒	☒	☒

COMMENTS:

WEEKLY CHECKS COMPLETED (Week Ending)

Start Date	02/07/18	09/07/18	16/07/18	23/07/18	30/07/18
End Date	07/07/18	15/07/18	21/07/18	28/07/18	31/07/18
Name	R. Halman	Kim AKERS	R. Halman	R. Halman	R. Halman
Signature					

Ventia Work Order



Please contact the Ventia representative in the Request Description section in the event that work is unable to be undertaken safely. ALL PERSONNEL ATTENDING SITE MUST BE INDUCTED TO THE SITE.

WO No: 17/125120

125120

Address: Ichthys OPS-1
Bladin Point
Wickham Point Road,
Bladin Point, Darwin, NT 0800

Contractor: 520600.OPS-1 Building Maintenance**Budget Code:** 520600 605 003

Location: 520600.3A.TFS.WWTP
Waste Water Treatment Plant

Priority: Preventive Maintenance**Make Safe Due:** 28/07/2018 17:30:00**Maintenance Type:** Preventive**Date Due:** 28/07/2018 17:30:00**Frequency:** 1 Monthly (28th)**Request Description:**

WWTP - Monthly Maintenance Tasks. Refer to attached Monthly Maintenance Inspection Sheet. - Day Shift WWTP Monthly Maintenance Inspection Sheet-Day Shift 520600-MNT-CHK-0013
10.2.3, 10.3.3, 10.4.2, 10.5.3, 10.7.3, 10.8.3, 10.9.3, 10.10.3

Equipment ID:**Call 1800 FMHELP on job completion to close the Work Order****Ventia representative:** OPS-1 Building Maintenance**Requestor Details:**

A Permit must be obtained and authorised by the Ventia representative before any work commences involving: Hot Work; Explosive; Excavation/Penetration where live services may be present; Entry into confined spaces; Working at heights where there is no hand rail or height fixed edge protection; Working in the vicinity of overhead powerlines; Isolation of energy; Entry into HV compounds; Any other activity identified, through a risk assessment, requiring a permit. All authorised permit numbers must be readily available to be quoted if requested. Lift plans are considered permits for heavy lifting.

If required, please undertake a safe work analysis and hazard identification prior to commencing work. A Take 5 must be carried out if the environment or job has changed from SOP.

Job Comments:

Comments:

Name: L. HalburSignature: [Signature]Date: 31/07/18

WWTP Monthly Maintenance Inspection Sheet - Day Shift

520600-MNT-CHK-0013



10.2.3 PRE-SCREENING	Tick
Use a high-pressure cleaning device, if possible, to completely hose down the inside of the plant.	☒
If there is a spill within the container, outside the screen, hose down the localised area.	☒
Check the condition of the brush.	☒
Remove any dressings, textiles or fibrous material wrapped around the screw shaft at the discharge end.	☒
10.3.3 DE-AERATION TANK (Work done on monthly Electrical Work Order)	
10.4.3 BALANCE/ANOXIC TANK (Work done on monthly Electrical Work Order)	
10.5.3 AERATION SYSTEM	Tick
Confirm the duty changeover of the blowers and ensure that both blowers are operating equally and efficiently.	☒
Visually check the oil levels.	☒
10.7.3 MBR SYSTEM	Tick
Check the permeate trans membrane pressure against the logs, determine if CIP cleaning is required.	☒
Confirm the duty changeover of the MBR blowers and ensure that both blowers are operating equally and efficiently.	☒
Inspect the permeate pumps for undue noise or vibration.	☒
Visually check the oil levels.	☒
10.8.3 NITRATE REMOVAL SYSTEM	Tick
Check that the filter feed pump and the backwash pump are free of dirt and grime. Clean with a damp cloth as necessary.	☒
Confirm the filter feed pump and backwash pump are operating correctly in programmed durations.	☒
Inspect the filter feed pump and the backwash pump for undue noise or vibration.	☒
10.9.3 DISINFECTION AND DISPOSAL SYSTEM	Tick
Check that the discharge pump motor is free of dirt and grime. Clean with a damp cloth as necessary.	☒
Confirm the duty changeover of the discharge pumps and ensure all pumps are operating correctly.	☒
Confirm the duty changeover of the UV system.	☒
Inspect the discharge pumps for undue noise or vibration.	☒
Open the lid on the effluent storage tank and inspect the float switches for wear or entanglement.	☒
Clean the turbidity system as per the detailed instructions in Appendix B of the supplier manual.	☒
10.10.3 SLUDGE DISPOSAL	Tick
Grease the discharge end screw bearing and the feed end oil seal bearing.	☒
COMMENTS: 18/07/18 GREASED PLANT VALVES & SCREW PRESS Rth 30/07/18 GREASED SCREW PRESS. Rth.	

Completed By:

Name: R. Halpin

Signature: [Signature]

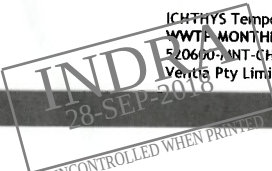
Date: 31/07/18

Inspection Reviewed By Supervisor:

Name: R. Dickson

Signature: [Signature]

Date: 4.8.18



Ventia Work Order



Please contact the Ventia representative in the Request Description section in the event that work is unable to be undertaken safely. ALL PERSONNEL ATTENDING SITE MUST BE INDUCTED TO THE SITE.

WO No: 17/123479

123479

Address: Ichthys OPS-1
Bladin Point
Wickham Point Road,
Bladin Point, Darwin, NT 0800

Contractor: 520600.OPS-1 Building Maintenance**Budget Code:** 520600 605 003

Location: 520600.3A.TFS.WWTP
Waste Water Treatment Plant

Priority: Preventive Maintenance**Make Safe Due:** 28/04/2018 17:30:00**Maintenance Type:** Preventive**Date Due:** 28/04/2018 17:30:00**Frequency:** 6 Monthly (28th)**Request Description:**

WWTP - 6 Monthly Inspection Tasks. Refer to attached 6 Monthly Maintenance Guide Sheet
WWTP 6 Monthly Maintenance Inspection Sheet 520600-MNT-CHK-0015
10.6.4, 10.7.4

Equipment ID:**Call 1800 FMHELP on job completion to close the Work Order****Ventia representative:** OPS-1 Building Maintenance**Requestor Details:**

A Permit must be obtained and authorised by the Ventia representative before any work commences involving: Hot Work; Explosive; Excavation/Penetration where live services may be present; Entry into confined spaces; Working at heights where there is no hand rail or height fixed edge protection; Working in the vicinity of overhead powerlines; Isolation of energy; Entry into HV compounds; Any other activity identified, through a risk assessment, requiring a permit. All authorised permit numbers must be readily available to be quoted if requested. Lift plans are considered permits for heavy lifting.

If required, please undertake a safe work analysis and hazard identification prior to commencing work. A Take 5 must be carried out if the environment or job has changed from SOP.

Job Comments:*Complete**R. Davis**5.4.18*

INDRA
28-SEP-2018

UNCONTROLLED WHEN PRINTED

WWTP 6 Monthly Maintenance Inspection Sheet
520600-MNT-CHK-0015



10.6.4 POST ANOXIC SYSTEM	Tick
Power off the mixers one by one then lift them out of the water and visually inspect the mixer unit for abnormal condition.	☒
Manually rotate the mixer blades to confirm the blades rotate freely with no abnormal noise.	☒
Check that the cable entry gland is not broken.	☒
Clean the mixer blade with fresh water.	☒
Check for foreign material around the propeller or shaft and clean as necessary.	☒
For any rectification of the mixer, motor or cable, refer to the manufacturer manuals.	☒
10.7.4 MBR SYSTEM	Tick
Perform CIP cleaning on the membrane cassettes if they have not been cleaned within the last 6 months.	☒
Simulate MBR blower high and low pressure fault conditions and observe interlocks (high/low pressure blower duty adjustment) by adjusting the required valves.	☒
High Pressure - Partially close the MBR aeration valves (V406, 09, 12, 14, 18, 21, 24, 27, 30, 33)	☒
Low pressure - Partially close the valve after the blower (V501 or V502) reducing the air flow to the MBR cassettes.	☒
COMMENTS: 5/4/2018- REMOVED ANOXIC MIXER M1201. REMOVED RAG FROM CABLE - ELECTRICAL CABLE NO SWELLING. ROTATED PROPELLER - ALL GOOD. NO OIL LEAKING FROM SEAL REMOVED ANOXIC MIXER M1202. REMOVED RAG FROM CABLE ELECTRICAL CABLE - NO SWELLING. ROTATED PROPELLER - ALL GOOD NO OIL LEAKING FROM SEAL. 19-3-18 TO 25-3-18 - CIP CLEANS - COMPLETED ON BOTH MBR TANKS.	

6 MONTHLY CHECKS COMPLETED

Name: <u>J.L. HYDE</u>	Signature: <u>[Signature]</u>	Date: <u>5/4/18</u>
Name: <u>R. G. Halman</u>	Signature: <u>[Signature]</u>	Date: <u>5/4/18</u>

Ventia Work Order



Please contact the Ventia representative in the Request Description section in the event that work is unable to be undertaken safely. ALL PERSONNEL ATTENDING SITE MUST BE INDUCTED TO THE SITE.

WO No: 17/125178

125178

Address: Ichthys OPS-1
Bladin Point
Wickham Point Road,
Bladin Point, Darwin, NT 0800

Contractor: 520600.OPS-1 Electrical**Budget Code:** 520600 20 65

Location: 520600.3A.TFS.WWTP
Waste Water Treatment Plant

Priority: Preventive Maintenance**Make Safe Due:** 28/07/2018 17:30:00**Maintenance Type:** Preventive**Date Due:** 28/07/2018 17:30:00**Frequency:** 1 Monthly (28th)**Request Description:**

WWTP Instrument Calibration - Monthly
Device Type - TURBIDITY
Tags: AIT 601
WWTP Monthly Turbidity Calibration Check Sheet 520600-ELE-CHK-0058

Equipment ID:**Call 1800 FMHELP on job completion to close the Work Order****Ventia representative:** OPS1 Electrical**Requestor Details:**

A Permit must be obtained and authorised by the Ventia representative before any work commences involving: Hot Work; Explosive; Excavation/Penetration where live services may be present; Entry into confined spaces; Working at heights where there is no hand rail or height fixed edge protection; Working in the vicinity of overhead powerlines; Isolation of energy; Entry into HV compounds; Any other activity identified, through a risk assessment, requiring a permit. All authorised permit numbers must be readily available to be quoted if requested. Lift plans are considered permits for heavy lifting.

If required, please undertake a safe work analysis and hazard identification prior to commencing work. A Take 5 must be carried out if the environment or job has changed from SOP.

Job Comments:*complete*

WWTP Monthly Turbidity Calibration Check Sheet

520600-ELE-CHK-0058



Location	Permeate Container Test Rig
Parts/Tools Required	20 NTU Solution (500 mls approx.), Distilled Water, Waste Container

Transmitter Number	AIT 601
Manufacturer	Hach
Controller Model	SC 200
Sensor	1720E Turbidimeter
Calibrated Range	0 - 100 NTU
Span	100 NTU

As Found Reading	0.2 NTU
------------------	---------

	20 NTU	Light Working?	Body and Bubble Trap Cleaned?
As Found Before Calibration		☒ Yes ☐ No	☒ Yes ☐ No
As Found After Calibration			

As Left Reading	0.1 NTU
-----------------	---------

COMMENTS:	* Gain of 0.76 *
	Unit cleaned and calibrated using
	20 NTU stabcal formula.

The technician is to perform a 20 NTU stab calibration as recommended in the manufacturer's instructions.

Completed By:

Name: Vinny Smith

Signature: [Signature]

Date: 13.2.18

Inspection Reviewed By Supervisor:

Name: A. PLAYDON

Signature: [Signature]

Date: 13/7/18

Turbidity Calibration

1. Turn off the three valves to isolate the test rig process piping
2. From the main menu select "Sensor Setup"
3. Select "Confirm"
4. Select the appropriate sensor
5. Select "Calibrate"
6. Select "Confirm"
7. Select "STABLCAL CAL"
8. Select "Confirm"
9. Select the available output mode (ACTIVE, HOLD or TRANSFER). Select "HOLD"
10. Place the waste bucket below the meter then remove the turbidity body and bubble trap
11. Thoroughly clean the turbidity body and bubble trap
12. Enter the standard turbidity value (20 NTU) of the user prepared standard and "Confirm"
13. Replace the turbidity body and bubble trap
14. Pour the 20 NTU solution into the cylinder body
15. Confirm the light is working
16. Replace the head and "Confirm"
17. Wait 5 to 10 minutes for the solution to stabilise
18. When the measured reading has displayed, "Confirm"
19. If the calibration is successful, the display will read:
"GOOD CAL! GAIN: X.XX ENTER TO CONTINUE"
If the calibration is unsuccessful, the display will read:
"BAD CAL!"
Select "Confirm" to redo or "Exit"
20. The display will read "VERIFY CAL?". Do not verify. Exit without verification
21. Enter your initials to complete the calibration
22. Open the turbidity body to release the calibration solution into the waste bucket
23. Clean the inside of the turbidity body with distilled water
24. Close the turbidity body
25. Open the test rig process piping valves
26. Return the sensor to "Measure" mode
27. Select "Confirm"

Ventia Work Order



Please contact the Ventia representative in the Request Description section in the event that work is unable to be undertaken safely. ALL PERSONNEL ATTENDING SITE MUST BE INDUCTED TO THE SITE.

WO No: 17/125177

125177

Address: Ichthys OPS-1
Bladin Point
Wickham Point Road,
Bladin Point, Darwin, NT 0800

Contractor: 520600.OPS-1 Electrical**Budget Code:** 520600 20 65

Location: 520600.3A.TFS.WWTP
Waste Water Treatment Plant

Priority: Preventive Maintenance**Make Safe Due:** 28/07/2018 17:30:00**Maintenance Type:** Preventive**Date Due:** 28/07/2018 17:30:00**Frequency:** 1 Monthly (28th)**Request Description:**

WWTP Instrument Calibration - Monthly

Device Type - D.O. (+TEMP)

Tags: AIT 301; AIT 1101

WWTP Monthly DO Calibration Check Sheet-Aeration Tank 2 520600-ELE-CHK-0050

WWTP Monthly DO Calibration Check Sheet-Aeration Tank 3 520600-ELE-CHK-0051

Equipment ID:**Call 1800 FMHELP on job completion to close the Work Order****Ventia representative:** OPS1 Electrical**Requestor Details:**

A Permit must be obtained and authorised by the Ventia representative before any work commences involving: Hot Work; Explosive; Excavation/Penetration where live services may be present; Entry into confined spaces; Working at heights where there is no hand rail or height fixed edge protection; Working in the vicinity of overhead powerlines; Isolation of energy; Entry into HV compounds; Any other activity identified, through a risk assessment, requiring a permit. All authorised permit numbers must be readily available to be quoted if requested. Lift plans are considered permits for heavy lifting.

If required, please undertake a safe work analysis and hazard identification prior to commencing work. A Take 5 must be carried out if the environment or job has changed from SOP.

Job Comments:*Complete*

WWTP Monthly DO Calibration Check Sheet-Aeration Tank 2

520600-ELE-CHK-0050



Location	Aeration Tank 2
Parts/Tools Required	Sodium sulphite (approx. 5grams/litre), small beaker

Transmitter Number	AIT 301 DO2
Manufacturer	Endress + Hauser
Controller Model	Liquiline
Sensor	Oxymax
Calibrated Range	0 - 20 mg/litre
Span	N/A

As Found Reading	1.78 mg/L
------------------	-----------

The technician must use a sodium sulphite solution mixed from the lab to perform a zero-point calibration. Please see the reverse of this form for the procedure to carry out this calibration.

As Found Before Calibration	57.82 PS	Controller Cleaned?	☒ Yes ☐ No
As Found After Calibration	58.23 PS	Sensor Cleaned?	☒ Yes ☐ No

As Left Reading	1.79 mg/L
-----------------	-----------

COMMENTS: calibrated unit with zero point method. sensor worked as expected.
--

Completed By:

Name: Vinny Smith Signature: [Signature] Date: 12.7.18

Inspection Reviewed By Supervisor:

Name: A. PLAYDON Signature: [Signature] Date: 13/7/18

DO Calibration Procedure

1. Make up a sodium sulphite solution in a beaker
2. Select "CAL"
3. Select "CH1 1:1 Oxygen" (option)
4. Select "OXYGEN"
5. Select "ZERO POINT"
6. Select "1 POINT CAL"
7. Remove the sensor from the tank (when looking at the controller, only the sensor on the left is to be calibrated)
8. Use a garden hose to clean the sensor
9. Immerse the cleaned sensor in the sodium sulphite solution
10. Select "Do You Want to Start the Calibration" ('Hold' will turn to 'Active')
11. Wait 5 to 10 minutes for the sensor to stabilise
12. When the calibration is complete, save the data
13. To return the screen to 'Measuring' mode, press "ESC" until you are returned to the 'Home Screen'
14. Place the sensor back in the tank

WWTP Monthly DO Calibration Check Sheet-Aeration Tank 3

520600-ELE-CHK-0051



Location	Aeration Tank 3
Parts/Tools Required	Sodium sulphite (approx. 5grams/litre), small beacon, wet soapy rag

Transmitter Number	AIT 1101 DO
Manufacturer	Endress + Hauser
Controller Model	Liquiline
Sensor	Oxymax
Calibrated Range	0 - 20 mg/litre
Span	N/A

As Found Reading	1.89 mg/L 2.40 mg/L
------------------	---------------------

The technician must use a sodium sulphite solution mixed from the lab to perform a zero-point calibration. Please see the reverse of this form for the procedure to carry out this calibration.

As Found Before Calibration	59.23 PS 58.17	Controller Cleaned?	☒ Yes ☐ No
As Found After Calibration	58.68 57.27	Sensor Cleaned?	☒ Yes ☐ No

As Left Reading	1.86 mg/L 2.38 mg/L
-----------------	---------------------

COMMENTS: calibrated D.O. unit using prepared zero point solution unit operated as expected

Completed By:

Name: Vinny Smith Signature: [Signature] Date: 12.7.18

Inspection Reviewed By Supervisor:

Name: A. PLAYDON Signature: [Signature] Date: 13/7/18

DO Calibration Procedure

1. Make up a sodium sulphite solution in a beaker
2. Select "CAL"
3. Select "CH1 1:1 Oxygen" (option)
4. Select "OXYGEN"
5. Select "ZERO POINT"
6. Select "1 POINT CAL"
7. Remove the sensor from the tank (when looking at the controller, only the sensor on the left is to be calibrated)
8. Use a garden hose to clean the sensor
9. Immerse the cleaned sensor in the sodium sulphite solution
10. Select "Do You Want to Start the Calibration" ('Hold' will turn to 'Active')
11. Wait 5 to 10 minutes for the sensor to stabilise
12. When the calibration is complete, save the data
13. To return the screen to 'Measuring' mode, press "ESC" until you are returned to the 'Home Screen'
14. Place the sensor back in the tank

WWTP Monthly DO Calibration Check Sheet-Aeration Tank 2
520600-ELE-CHK-0050



Location	Aeration Tank 2
Parts/Tools Required	Sodium sulphite (approx. 5grams/litre), small beaker

Transmitter Number	AIT 301 DO2 <i>DO1</i>
Manufacturer	Endress + Hauser
Controller Model	Liquiline
Sensor	Oxymax
Calibrated Range	0 - 20 mg/litre
Span	N/A

As Found Reading	<i>1.89 mg/L</i>
------------------	------------------

The technician must use a sodium sulphite solution mixed from the lab to perform a zero-point calibration. Please see the reverse of this form for the procedure to carry out this calibration.

As Found Before Calibration	<i>59.23 μS</i>	Controller Cleaned?	☒ Yes ☐ No
As Found After Calibration	<i>58.68 μS</i>	Sensor Cleaned?	☒ Yes ☐ No

As Left Reading	<i>1.75 mg/L</i>
-----------------	------------------

COMMENTS:
<i>cleaned and calibrated sensor unit using zero point calibration method. Unit worked as expected</i>

Completed By:

Name: *Vinny Smith* Signature: *[Signature]* Date: *12.7.18*

Inspection Reviewed By Supervisor:

Name: *A. PLAYDON* Signature: *[Signature]* Date: *13/7/18*

Ventia Work Order



Please contact the Ventia representative in the Request Description section in the event that work is unable to be undertaken safely. ALL PERSONNEL ATTENDING SITE MUST BE INDUCTED TO THE SITE.

WO No: 17/125176

125176

Address: Ichthys OPS-1
Bladin Point
Wickham Point Road,
Bladin Point, Darwin, NT 0800

Contractor: 520600.OPS-1 Electrical**Budget Code:** 520600 20 65

Location: 520600.3A.TFS.WWTP
Waste Water Treatment Plant

Priority: Preventive Maintenance**Make Safe Due:** 28/07/2018 17:30:00**Maintenance Type:** Preventive**Date Due:** 28/07/2018 17:30:00**Frequency:** 1 Monthly (28th)**Request Description:**

WWTP Instrument Calibration - Monthly
Device Type - MAGFLOW
WWTP Annual Magflow Inspection Form 520600-ELE-FRM-0019
Tags: FIT 201; FIT 301; FIT 302; FIT 303; FIT 304; FIT 601; FIT 602; FIT 1101

Equipment ID:**Call 1800 FMHELP on job completion to close the Work Order****Ventia representative:** OPS1 Electrical**Requestor Details:**

A Permit must be obtained and authorised by the Ventia representative before any work commences involving: Hot Work; Explosive; Excavation/Penetration where live services may be present; Entry into confined spaces; Working at heights where there is no hand rail or height fixed edge protection; Working in the vicinity of overhead powerlines; Isolation of energy; Entry into HV compounds; Any other activity identified, through a risk assessment, requiring a permit. All authorised permit numbers must be readily available to be quoted if requested. Lift plans are considered permits for heavy lifting.

If required, please undertake a safe work analysis and hazard identification prior to commencing work. A Take 5 must be carried out if the environment or job has changed from SOP.

Job Comments:*complete*

WWTP Monthly Magflow Check Sheet

520600-ELE-CHK-0061



Location	MBR Tank 1
Parts/Tools Required	Meter, wet soapy rag

Transmitter Number	FIT 201, FIT 301, FIT 302, FIT 303, FIT 304, FIT 601, FIT 602, FIT 1101
Manufacturer	Endress + Hauser
Model	Promag

Visually inspect the magflow and clean	☒ Yes ☐ No
Check the cable, gland and display	☒ Yes ☐ No
Check that the mounting is secure	☒ Yes ☐ No
Check the earthing	☒ Yes ☐ No

Transmitter	SCADA Reading	Healthy?	Transmitter	SCADA Reading	Healthy?
FIT 201	8.38 mA 44.0 m ³ /hr	☒ Yes ☐ No	FIT 301	7.89 mA 24.5 m ³ /hr	☒ Yes ☐ No
FIT 302	7.83 mA 24.7 m ³ /hr	☒ Yes ☐ No	FIT 303	5.33 mA 63.2 m ³ /hr	☒ Yes ☐ No
FIT 304	5.87 mA 23.4 m ³ /hr	☒ Yes ☐ No	FIT 601	4.0 mA 0 m ³ /hr	☒ Yes ☐ No
FIT 602	4.0 mA 0 m ³ /hr	☒ Yes ☐ No	FIT 1101	63.2 mA 21.5 m ³ /hr	☒ Yes ☐ No

COMMENTS:
Inspected each Magflow units. Found All to be working and in good condition

The technician must visually inspect the magflow and carry out a current to flow check to confirm that it is functioning correctly.

Completed By:

Name: Vinny Smith

Signature: [Signature]

Date: 11.7.18

Inspection Reviewed By Supervisor:

Name: A. PLAYDON

Signature: [Signature]

Date: 13/7/18



Ventia Work Order



Please contact the Ventia representative in the Request Description section in the event that work is unable to be undertaken safely. ALL PERSONNEL ATTENDING SITE MUST BE INDUCTED TO THE SITE.

WO No: 17/125142

125142

Address: Ichthys OPS-1
Bladin Point
Wickham Point Road,
Bladin Point, Darwin, NT 0800

Contractor: 520600.OPS-1 Building Maintenance**Budget Code:** 520600 605 003

Location: 520600.3A.TFS.WWTP
Waste Water Treatment Plant

Priority: Preventive Maintenance**Make Safe Due:** 28/07/2018 17:30:00**Maintenance Type:** Preventive**Date Due:** 28/07/2018 17:30:00**Frequency:** 1 Monthly (28th)**Request Description:**

WWTP - Monthly Filter Clean - Fitters to check
WWTP Monthly Aeration Blower Filter Clean Maintenance Inspection Sheet B301 520600-MNT-CHK-0018
WWTP Monthly Aeration Blower Filter Clean Maintenance Inspection Sheet B302 520600-MNT-CHK-0019
WWTP Monthly Aeration Blower Filter Clean Maintenance Inspection Sheet B1101 520600-MNT-CHK-0020
WWTP Monthly Aeration Blower Filter Clean Maintenance Inspection Sheet B1102 520600-MNT-CHK-0021
WWTP Monthly MBR Blower Filter Clean Maintenance Inspection Sheet 501 520600-MNT-CHK-0022
WWTP Monthly MBR Blower Filter Clean Maintenance Inspection Sheet 502 520600-MNT-CHK-0023
WWTP Monthly Air Compressor Maintenance Inspection Sheet 520600-MNT-CHK-0024
WWTP Monthly Pump Maintenance Inspection Sheet 520600-MNT-CHK-0025

COMPLETED
*RMS***Equipment ID:****Call 1800 FMHELP on job completion to close the Work Order****Ventia representative:** OPS1 Workshop**Requestor Details:**

A Permit must be obtained and authorised by the Ventia representative before any work commences involving: Hot Work; Explosive; Excavation/Penetration where live services may be present; Entry into confined spaces; Working at heights where there is no hand rail or height fixed edge protection; Working in the vicinity of overhead powerlines; Isolation of energy; Entry into HV compounds; Any other activity identified, through a risk assessment, requiring a permit. All authorised permit numbers must be readily available to be quoted if requested. Lift plans are considered permits for heavy lifting.

If required, please undertake a safe work analysis and hazard identification prior to commencing work. A Take 5 must be carried out if the environment or job has changed from SOP.

Job Comments:*As attached.***INDRA**
28-SEP-2018

UNCONTROLLED WHEN PRINTED

WWTP Monthly Aeration Blower Filter Clean Maintenance Inspection Sheet B301 - 520600-MNT-CHK-0018



Correct PPE must be worn including eye protection and hearing protection
Check with the operator to isolate/tag out - change duty

AERATION BLOWER - B1101				Tick
Check and record hours = performance. <u>6862</u>				☒
Remove the air filter element and blow out with air then check for damage and reinstall.				☒
Check the aeration blower belts and adjust/replace as necessary.				☒
Check oil levels and top up as necessary.				☒

CHECK	OPERATION	FREQUENCY		Tick
		HOURS	MONTHS	
Lubrication	Oil Level Check	500		☒
	Oil Leakage		1	☒
	Mineral Oil Replacement	4000		☒
	PAO Oil Replacement	8000		☒
Inlet Filter	Maximum Obstruction - 45mbar <u>-9 mbar</u>		1	☒
	Element Replacement	8000	12	☒
Shaft Seal	Status Visual Check		12	☒
Refrigeration	Cooling Liquid Leaks		1	☒
Chamber	Working Chamber Cleaning	As necessary		☒
Belt Driver	Belts Alignment	2000		☒
	Belts Wear	4000		☒
	Belts Tension	2000		☒
	Belts Replacement	1600	24	☒
Blower	General Revision	25,000	36	☒
Check Valve	Seal Tightness Control	8000		☒
Safety Valve	Operation	1000		☒
Motor	Lubrication			☒
	General			☒

PARTS REQUIRED

COMMENTS:

Adjusted Belts, Blew out Air filter, topped up oil
all ok.

MONTHLY CHECKS COMPLETED

Name: <u>Ben Swann</u>	Signature: <u>[Signature]</u>	Date: <u>5/7/18</u>
Name: _____	Signature: _____	Date: _____

ventia

AERATION BLOWER - B1101		Tick
Check and record hours = performance.	1337	☒
Remove the air filter element and blow out with air then check for damage and reinstall.		☒
Check the aeration blower belts and adjust/replace as necessary.		☒
Check oil levels and top up as necessary.		☒

<u>PARTS REQUIRED</u>	
<u>COMMENTS:</u> Slight oil leak from front seal. not required to change. at this stage.	

Name: Ben Scown	Signature:	Date: 5/7/18
Name: _____	Signature: _____	Date: _____

WWTP Monthly Aeration Blower Filter Clean Maintenance Inspection Sheet B1101 - 520600-MNT-CHK-0020



Correct PPE must be worn including eye protection and hearing protection
Check with the operator to isolate/tag out - change duty

AERATION BLOWER - B1101

Check and record hours = performance. **6731**

Tick

Remove the air filter element and blow out with air then check for damage and reinstall.

Tick

Check the aeration blower belts and adjust/replace as necessary.

Tick

Check oil levels and top up as necessary.

Tick

CHECK	OPERATION	FREQUENCY		Tick
		HOURS	MONTHS	
Lubrication	Oil Level Check	500		☒
	Oil Leakage			☒
	Mineral Oil Replacement		1	☒
	PAO Oil Replacement	4000		☒
Inlet Filter	Maximum Obstruction - 45mbar - 15mbar	8000		☒
	Element Replacement		1	☒
Shaft Seal	Status Visual Check	8000	12	☒
Refrigeration	Cooling Liquid Leaks		12	☒
Chamber	Working Chamber Cleaning		1	☒
Belt Driver	Belts Alignment	As necessary		☒
	Belts Wear	2000		☒
	Belts Tension	4000		☒
	Belts Replacement	2000		☒
Blower	General Revision	1600	24	☒
Check Valve	Seal Tightness Control	25,000	36	☒
Safety Valve	Operation	8000		☒
Motor	Lubrication	1000		☒
	General			☒

PARTS REQUIRED

COMMENTS:

MONTHLY CHECKS COMPLETED

Name: <u>R. Ryan</u>	Signature: <u>[Signature]</u>	Date: <u>9-7-18</u>
Name: _____	Signature: _____	Date: _____

WWTP Monthly Aeration Blower Filter Clean Maintenance Inspection Sheet B1102 - 520600-MNT-CHK-0021



Correct PPE must be worn including eye protection and hearing protection
Check with the operator to isolate/tag out - change duty

AERATION BLOWER - B1101				Tick
Check and record hours = performance. <u>6852</u>				☒
Remove the air filter element and blow out with air then check for damage and reinstall.				☒
Check the aeration blower belts and adjust/replace as necessary.				☒
Check oil levels and top up as necessary.				☒

CHECK	OPERATION	FREQUENCY		Tick
		HOURS	MONTHS	
Lubrication	Oil Level Check	500		☒
	Oil Leakage		1	☒
	Mineral Oil Replacement	4000		☒
	PAO Oil Replacement	8000		☒
Inlet Filter	Maximum Obstruction - 45mbar - <u>16mbar</u>		1	☒
	Element Replacement	8000	12	☒
Shaft Seal	Status Visual Check		12	☒
Refrigeration	Cooling Liquid Leaks		1	☒
Chamber	Working Chamber Cleaning	As necessary		☒
Belt Driver	Belts Alignment	2000		☒
	Belts Wear	4000		☒
	Belts Tension	2000		☒
	Belts Replacement	1600	24	☒
Blower	General Revision	25,000	36	☒
Check Valve	Seal Tightness Control	8000		☒
Safety Valve	Operation	1000		☒
Motor	Lubrication			☒
	General			☒

PARTS REQUIRED

COMMENTS:

MONTHLY CHECKS COMPLETED

Name: <u>R. Hyatt</u>	Signature: <u>[Signature]</u>	Date: <u>9-7-18</u>
Name: _____	Signature: _____	Date: _____

WWTP Monthly MBR Blower Filter Clean Maintenance Inspection Sheet 501 - 520600-MNT-CHK-0022



Correct PPE must be worn including eye protection and hearing protection
Check with the operator to isolate/tag out - change duty

AERATION BLOWER - B1101				Tick
Check and record hours = performance. <i>7605</i>				☒
Remove the air filter element and blow out with air then check for damage and reinstall. <i>Replaced</i>				☒
Check the aeration blower belts and adjust/replace as necessary. <i>Adjusted</i>				☒
Check oil levels and top up as necessary. <i>Topped up</i>				☒

CHECK	OPERATION	FREQUENCY		Tick
		HOURS	MONTHS	
Lubrication	Oil Level Check	500		☒
	Oil Leakage		1	☒
	Mineral Oil Replacement	4000		☒
	PAO Oil Replacement	8000		☒
Inlet Filter	Maximum Obstruction - 45mbar <i>- 19mbar</i>		1	☒
	Element Replacement	8000	12	☒
Shaft Seal	Status Visual Check		12	☒
Refrigeration	Cooling Liquid Leaks		1	☒
Chamber	Working Chamber Cleaning	As necessary		☒
Belt Driver	Belts Alignment	2000		☒
	Belts Wear	4000		☒
	Belts Tension <i>adjusted</i>	2000		☒
	Belts Replacement	1600	24	☒
Blower	General Revision	25,000	36	☒
Check Valve	Seal Tightness Control	8000		☒
Safety Valve	Operation	1000		☒
Motor	Lubrication			☒
	General			☒

PARTS REQUIRED

N/A

COMMENTS:

Topped up oil, Adjusted belts. Replaced Air filter.

MONTHLY CHECKS COMPLETED

Name: <i>Ben Scann</i>	Signature: <i>[Signature]</i>	Date: <i>5/7/18</i>
Name: _____	Signature: _____	Date: _____

WWTP Monthly MBR Blower Filter Clean Maintenance Inspection Sheet 502 - 520600-MNT-CHK-0023



Correct PPE must be worn including eye protection and hearing protection
Check with the operator to isolate/tag out - change duty

AERATION BLOWER - B1101				Tick
Check and record hours = performance. 2947				☒
Remove the air filter element and blow out with air then check for damage and reinstall.				☒
Check the aeration blower belts and adjust/replace as necessary.				☒
Check oil levels and top up as necessary.				☒
CHECK	OPERATION	FREQUENCY		Tick
		HOURS	MONTHS	
Lubrication	Oil Level Check	500		☒
	Oil Leakage		1	☒
	Mineral Oil Replacement	4000		☒
	PAO Oil Replacement	8000		☒
Inlet Filter	Maximum Obstruction - 45mbar - 12mbar		1	☒
	Element Replacement Blew out	8000	12	☒
Shaft Seal	Status Visual Check		12	☒
Refrigeration	Cooling Liquid Leaks		1	☒
Chamber	Working Chamber Cleaning	As necessary		☒
Belt Driver	Belts Alignment	2000		☒
	Belts Wear	4000		☒
	Belts Tension	2000		☒
	Belts Replacement	1600	24	☒
Blower	General Revision	25,000	36	☒
Check Valve	Seal Tightness Control	8000		☒
Safety Valve	Operation	1000		☒
Motor	Lubrication			☒
	General			☒
PARTS REQUIRED				
N/A				
COMMENTS:				
All OK.				

MONTHLY CHECKS COMPLETED

Name: Ben Scown	Signature:	Date: 5/7/18
Name: _____	Signature: _____	Date: _____

WWTP Monthly Air Compressor Maintenance Inspection Sheet

520600-MNT-CHK-0024



Correct PPE must be worn including eye protection and hearing protection

Check with the operator to isolate/tag out - change duty

CHECK	OPERATION	FREQUENCY		Tick
		HOURS	MONTHS	
Air Compressor M1001				
Lubrication	Oil Level Check or Change Out		1	☒
Belt Driver	Belts Alignment		1	☒
	Belts Wear		1	☒
	Belts Tension		1	☒
	Belts Replacement if required		1	☒
	Filters	Check or Change Out		1
	Drain water		1	☒
Air Compressor M1002				
Lubrication	Oil Level Check or Change Out		1	☒
Belt Driver	Belts Alignment		1	☒
	Belts Wear		1	☒
	Belts Tension		1	☒
	Belts Replacement		1	☒
	Filters	Check or Change Out		1
	Drain water		1	☒

PARTS REQUIRED

N/A

COMMENTS:

All OK.

MONTHLY CHECKS COMPLETED

Name: Ben Swan	Signature:	Date: 5/7/18
Name: _____	Signature: _____	Date: _____

WWTP Monthly Pump Maintenance Inspection Sheet

520600-MNT-CHK-0025



Correct PPE must be worn including eye protection and hearing protection
Check with the operator to isolate/tag out - change duty

CHECK	OPERATION	FREQUENCY		Tick
		HOURS	MONTHS	
Permeate Pump 501		8625		
Lubrication	Oil Level Check	no oil / Filled.	1	☒
	Oil Pressure Check	10 psi	1	☒
Permeate Pump 502		2292		
Lubrication	Oil Level Check		1	☒
	Oil Pressure Check	10 psi	1	☒
Permeate Pump 503		379		
Lubrication	Oil Level Check		1	☒
	Oil Pressure Check	10 psi	1	☒
Sludge Pump 701		5943		
Lubrication	Oil Level Check		1	☐
Sludge Pump 702		4093		
Lubrication	Oil Level Check		1	☐
COMMENTS: No oil present in Permeate pump 501. Filled with oil but need to monitor.				

MONTHLY CHECKS COMPLETED

Name: Ben Swann	Signature:	Date: 5/7/18
Name: _____	Signature: _____	Date: _____

otification o n ta ation

INDRA
28-SEP-2018

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JKC AUSTRALIA LNG PTY LTD

ABN 14 154 383 409

Level 50, BankWest Tower
108 St Georges Terrace
Perth WA 6000

Darwin Port Corporation
GPO Box 390
Darwin NT, 0801

Date: 3 April 2014

Reply required : No

Attention: Captain Tony O'Malley
Harbourmaster

Reference Number: JKC-NTG-00014

Subject : Notification of Installation of Wastewater Treatment Plant Outfall Pipeline in Darwin

Dear Captain O'Malley,

As you are aware JKC Australia LNG Pty Ltd (JKC) has completed installation of the temporary Wastewater Treatment Plant (WWTP) and associated outfall pipeline in Darwin Harbour.

In accordance with the Darwin Port Corporation (DPC) approval (dated 29 May 2013) JKC was to provide notification of the final outfall pipeline and diffuser location and characteristics of the special mark.

As-constructed co-ordinates of the outfall pipeline and diffuser and associated levels are shown in Table 1 and Attachment 1 (V-3210-TMP-1-2506_Rev 13).

Table 1: Survey co-ordinates and levels of the outfall pipeline and diffuser

Survey Point ID	Description	Latitude	Longitude	Outfall Invert Level
SOP H221	Outfall Pipeline (above MHWS)	-12°31'35.8026"	130°55'41.943"	4.266 m AHD
SOP H191	Outfall Pipeline	-12°31'32.66644"	130°55'54.54555"	0.0 m AHD
SOP H192	Outfall Pipeline	-12°31'31.60711"	130°55'57.69854"	-2.0 m AHD
SOP H167	Outfall Diffuser	-12°31'29.68628"	130°56'02.54080"	-7.0 m AHD

Characteristics of Special Mark

- Sealite SL-B1750-SM-TM Poseidon 1750mm diameter Ocean Buoy IALA Topmark & Radar Reflector - Yellow in colour
- IALA Topmark is a St Andrews Cross - Yellow in colour
- Solar Navigation Light is a Sealite SL125-1-Y-AIS, 5-7 Nautical Mile 36 LED Single Tier Marine Lantern - Yellow in colour
- Flash rate 5 seconds (0.5 seconds on / 4.5 seconds off).

In addition, Development Permit DP012/0065G (Note 7) requires notification to DPC following installation of the outfall. Please accept this letter as formal notification.



If you require further information please contact Nicolas Morgan, Government Approvals Advisor, on (08) 8980 9815 or email: morgan.nicolas@jkc-Ing.com.

Yours sincerely,



Sten Jacobsson
Commercial Manager

NM

Attachment 1 V-3210-TMP-1-2506_Rev 13 – Outfall Alignment

w S ow e o t

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FIT201 TWWTP Inlet Flowmeter		FIT301 Aeration Tank 1 Inlet Flowmeter		FIT302 Aeration Tank 2 Inlet Flowmeter		FIT602 UV Discharge Flowmeter		OUTFALL FLOW (m3)		
Total Overall Pulses	4198544 Pulses	Total Overall Pulses	8462215 Pulses	Total Overall Pulses	6625762 Pulses	Total Overall Pulses	687828 Pulses	Time	Yesterday	Today
Liters per Pulse	50 Liters	Liters per Pulse	50 Liters	Liters per Pulse	50 Liters	Liters per Pulse	50 Liters	00:00-01:00	0.0	0.0
Total Overall Flow	209927.2 m3	Total Overall Flow	423110.8 m3	Total Overall Flow	331288.1 m3	Total Overall Flow	34391.4 m3	01:00-02:00	0.0	0.0
								02:00-03:00	0.0	0.0
Volume Today	49.0 m3	Volume Today	302.1 m3	Volume Today	300.8 m3	Volume Today	23.8 m3	03:00-04:00	0.0	0.0
Volume Yesterday	104.1 m3	Volume Yesterday	603.0 m3	Volume Yesterday	600.5 m3	Volume Yesterday	98.5 m3	04:00-05:00	0.0	0.0
Volume 2 Days Ago	80.2 m3	Volume 2 Days Ago	602.7 m3	Volume 2 Days Ago	600.4 m3	Volume 2 Days Ago	88.3 m3	05:00-06:00	0.0	0.0
Volume 3 Days Ago	20.8 m3	Volume 3 Days Ago	603.0 m3	Volume 3 Days Ago	600.5 m3	Volume 3 Days Ago	0.0 m3	06:00-07:00	0.0	0.0
Volume 4 Days Ago	74.4 m3	Volume 4 Days Ago	601.8 m3	Volume 4 Days Ago	601.6 m3	Volume 4 Days Ago	32.7 m3	07:00-08:00	14.6	0.0
Volume 5 Days Ago	96.7 m3	Volume 5 Days Ago	602.3 m3	Volume 5 Days Ago	599.9 m3	Volume 5 Days Ago	167.1 m3	08:00-09:00	18.6	8.6
Volume 6 Days Ago	96.9 m3	Volume 6 Days Ago	602.9 m3	Volume 6 Days Ago	600.7 m3	Volume 6 Days Ago	68.1 m3	09:00-10:00	0.0	0.0
Volume 7 Days Ago	102.2 m3	Volume 7 Days Ago	602.7 m3	Volume 7 Days Ago	600.2 m3	Volume 7 Days Ago	99.1 m3	10:00-11:00	21.4	0.0
Volume 8 Days Ago	92.3 m3	Volume 8 Days Ago	602.7 m3	Volume 8 Days Ago	600.3 m3	Volume 8 Days Ago	124.9 m3	11:00-12:00	0.0	14.8
Volume 9 Days Ago	95.1 m3	Volume 9 Days Ago	602.7 m3	Volume 9 Days Ago	600.3 m3	Volume 9 Days Ago	103.2 m3	12:00-13:00	8.4	0.3
Volume 10 Days Ago	23.5 m3	Volume 10 Days Ago	603.0 m3	Volume 10 Days Ago	600.3 m3	Volume 10 Days Ago	0.0 m3	13:00-14:00	13.2	0.0
Reset Today's Totalizer	Reset 10 Days Totalizer	Reset Today's Totalizer	Reset 10 Days Totalizer	Reset Today's Totalizer	Reset 10 Days Totalizer	Reset Today's Totalizer	Reset 10 Days Totalizer	14:00-15:00	0.0	0.0
Reset Complete Totalizer		Reset Complete Totalizer		Reset Complete Totalizer		Reset Complete Totalizer		15:00-16:00	21.6	0.0
WTP Inlet Flow - Currently		Aeration Tank 1 Inlet Flow - Currently		Aeration Tank 2 Inlet Flow - Currently		UV Discharge Flow - Currently 24.9 m3/hr		16:00-17:00	0.7	0.0
WTP Highest Inlet Flow - Today	73.0 m3/hr	Aeration Tank 1 Average Inlet Flow - Today	30.5 m3/hr	Aeration Tank 2 Average Inlet Flow - Today	27.7 m3/hr	UV Discharge Flow - Today Max	28.0 m3/hr	17:00-18:00	0.0	0.0
WTP Average Inlet Flow - Today	4.0 m3/hr	Aeration Tank 1 Average Inlet Flow - Yesterday	25.0 m3/hr	Aeration Tank 2 Average Inlet Flow - Yesterday	25.0 m3/hr	UV Discharge Flow - Today Average	2.0 m3/hr	18:00-19:00	0.0	0.0
WTP Lowest Inlet Flow - Today	-2.1 m3/hr	Aeration Tank 1 Average Inlet Flow - Today Min	19.1 m3/hr	Aeration Tank 2 Average Inlet Flow - Today Min	22.2 m3/hr	UV Discharge Flow - Today Min	0.0 m3/hr	19:00-20:00	0.0	0.0
WTP Inlet Flow - Yesterday		Aeration Tank 1 Inlet Flow - Yesterday		Aeration Tank 2 Inlet Flow - Yesterday		UV Discharge Flow - Yesterday		20:00-21:00	0.0	0.0
WTP Highest Inlet Flow - Yesterday	87.0 m3/hr	Aeration Tank 1 Average Inlet Flow - Yesterday	28.5 m3/hr	Aeration Tank 2 Average Inlet Flow - Yesterday	28.7 m3/hr	UV Discharge Flow - Yesterday Max	28.5 m3/hr	21:00-22:00	0.0	0.0
WTP Average Inlet Flow - Yesterday	4.3 m3/hr	Aeration Tank 1 Average Inlet Flow - Yesterday Min	25.0 m3/hr	Aeration Tank 2 Average Inlet Flow - Yesterday Min	25.0 m3/hr	UV Discharge Flow - Yesterday Average	4.1 m3/hr	22:00-23:00	0.0	0.0
WTP Lowest Inlet Flow - Yesterday	-2.2 m3/hr	Aeration Tank 1 Average Inlet Flow - Yesterday Max	21.3 m3/hr	Aeration Tank 2 Average Inlet Flow - Yesterday Max	21.1 m3/hr	UV Discharge Flow - Yesterday Min	0.0 m3/hr	23:00-24:00	0.0	0.0



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Waste Discharge Licence No. WDL 192

Onshore Sampling Point

STMP-T1

L on o iance oti ication

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28-SEP-2018

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Chris Gamble

From: Shoanne Labowitch <labowitch.shoanne@jkc-Ing.com>
Sent: Monday, 20 August 2018 2:17 PM
To: 'Waste NTEPA'
Cc: Kresho Zic; Anthony Black
Subject: RE: WDL 192-3 Notification of Non-Compliance - 23rd July 2018

Thanks Sally-Anne,

Noted, I have raised the data delays with my site colleagues to see if we can obtain the results earlier from the subcontractor.

Kind regards

Shoanne Labowitch
Government Approvals Manager
Ichthys Project
JKC Australia LNG Pty Ltd
T300, 130 The Esplanade,
Darwin, NT, 0800
PO Box 2079,
Darwin, NT. 0801
Office: 08 89 318 735
Mobile: +61 417 027 013
labowitch.shoanne@jkc-Ing.com

From: Sally-anne Orchard [mailto:Sally-anne.Orchard@nt.gov.au] **On Behalf Of** Waste NTEPA
Sent: Monday, 20 August 2018 2:06 PM
To: Shoanne Labowitch <labowitch.shoanne@jkc-Ing.com>
Cc: Anthony Black <black.anthony@jkc-Ing.com>; Kresho Zic <zic.kresho@jkc-Ing.com>
Subject: RE: WDL 192-3 Notification of Non-Compliance - 23rd July 2018

Hi Shoanne,

Thank you for notifying us of this non-compliance. I acknowledge that the exceedances did not extend to the receiving mixing zone and risk of environmental harm is reported low.

To allow effective administration of the *Water Act* by Authorised Officers of this department, please ensure that data processing and exceedance reporting delays are reduced in future, should action be required to investigate a cause, or to mitigate environmental harm.

Sally-Anne

Sally-Anne Orchard | Environmental Officer | Environmental Authorisations
Environment Division | **Department of Environment and Natural Resources**
p...(08) 8924 4028 | f... (08) 8924 4053
e Sally-anne.Orchard@nt.gov.au | www.ntepa.nt.gov.au

Providing services for the

Northern Territory Environment Protection Authority

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Environment Protection Authority



Our Vision: Creating a public sector that provides the highest quality service to Territorians

Our Values: **Commitment to Service** | **Ethical Practice** | **Respect** | **Accountability** | **Impartiality** | **Diversity**



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From: Shoanne Labowitch <labowitch.shoanne@jkc-lng.com>

Sent: Monday, 20 August 2018 12:45 PM

To: Waste NTEPA <Waste.NTEPA@nt.gov.au>

Cc: Anthony Black <black.anthony@jkc-lng.com>; Kresho Zic <zic.kresho@jkc-lng.com>

Subject: WDL 192-3 Notification of Non-Compliance - 23rd July 2018

Good afternoon,

In accordance with the reporting requirements under WDL 192-3, specifically Licence Conditions 21, JKC Australia LNG Pty Ltd (JKC) hereby notifies NT EPA with respect to an exceedance of the trigger values recorded on the 23rd July 2018, for Biological Oxygen Demand (BOD), Total Suspended Solids (TSS) and *Enterococci* for STPM-T1 – the outlet for the wastewater treatment plant.

JKC was notified of this exceedance today, 20th August 2018 by the Project Environmental Monitoring Subcontractor. Details of the exceedance detected during the surface water monitoring sampling event is outlined below:

Source Water (STP Tank Outlet):

There were three single exceedances of the WDL 192-3 Reporting Limits at the STP Tank Outlet, as follows:

1. Biochemical oxygen demand (BOD-5 day) at 28 mg/L (WDL 192-3 Reporting Limit of 20 mg/L);
2. TSS at 37 mg/L (WDL 192-3 Reporting Limit of 30 mg/L); and
3. *Enterococci* at 200 cfu/100mL (WDL 192-3 Reporting Limit of 100 cfu/100mL).

There were no reportable median exceedances of receiving environment trigger values for the mixing zone sites, which demonstrated that the discharge did not have any negative impact on the water quality in Darwin Harbour and therefore the risk of potential impacts in the receiving environment is Low.

A review of the operational monitoring undertaken at the plant did not record any departure from turbidity targets (surrogate for TSS) for this same period and all nutrient parameters remain within the design criteria, indicating that the variance in water quality was for a very short duration. The contributing factors associated with the non-compliance have been attributed to a short term departure from the operational discharge targets.

Please do not hesitate to contact me with any queries regarding the reported non-compliance.

Kind regards

Shoanne Labowitch

Government Approvals Manager

Ichthys Project

JKC Australia LNG Pty Ltd

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