Attachment 3 Treatment

1. Overview

1.1. Objective

The objective of this attachment is to set the minimum controls for planning and implementing flow isolation / flow management (FIFM) to ensure the safety of people exposed to the risk of engulfment by flow from treatment plant assets.

1.2. Scope

This attachment applies to the following people who manage or work with treatment plant assets where flow could engulf a person working in, on or near the asset:

- Persons requesting FIFM (Sydney Water employee or contractor).
- Production officer: the FIFM plan coordinator for Treatment.
- Treatment Plant Manager: the responsible manager for Treatment.
- Treatment Area Manager: the responsible manager when single isolation and/ or flow management is used.
- Responsible person for FIFM: the person who will implement the FIFM schedule.
- Service providers who require FIFM to work on the asset without being engulfed.

1.3. Summary

The person requesting FIFM must decide if a FIFM plan is required by determining if entry into a treatment asset is required.

If a plan is required, the person requesting FIFM must submit a Request for FIFM to the Treatment Plant Manager.

The Treatment Plant Manager must review the Request for FIFM and nominate a production officer to be a FIFM plan coordinator, and then hand over to them.

The FIFM plan coordinator must not let FIFM be implemented until:

- they:
  - have allocated roles and responsibilities for the FIFM
  - have facilitated FIFM HIDRA
  - are satisfied that key participants have reviewed and acknowledge the HIDRA
  - have prepared a FIFM plan, including a trial FIFM schedule (if required)
- the responsible manager has approved the FIFM plan (with a trial if required)
- the responsible person for FIFM has accepted the FIFM plan.

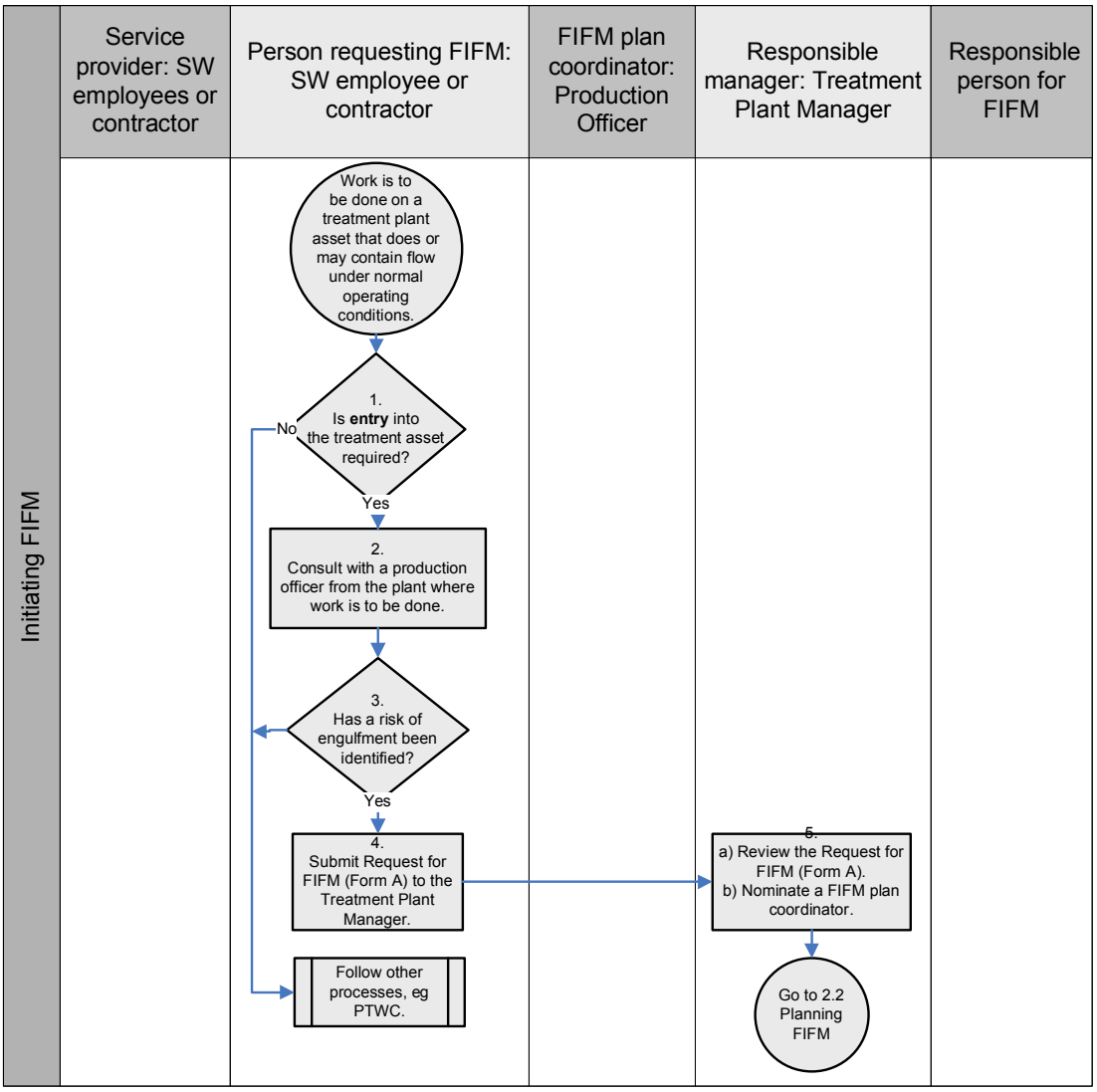
The FIFM plan coordinator must not let work commence on the asset until confirming that:

- persons have accepted their responsibilities
- FIFM communication has been done
- the responsible person for FIFM has completed and proven the FIFM schedule.
- controls are signed off, still applicable and that there are no new hazards.

The FIFM plan coordinator must not allow a responsible person for FIFM to recommission an asset until the service provider signs off that they have safely completed the work.

2. Procedure

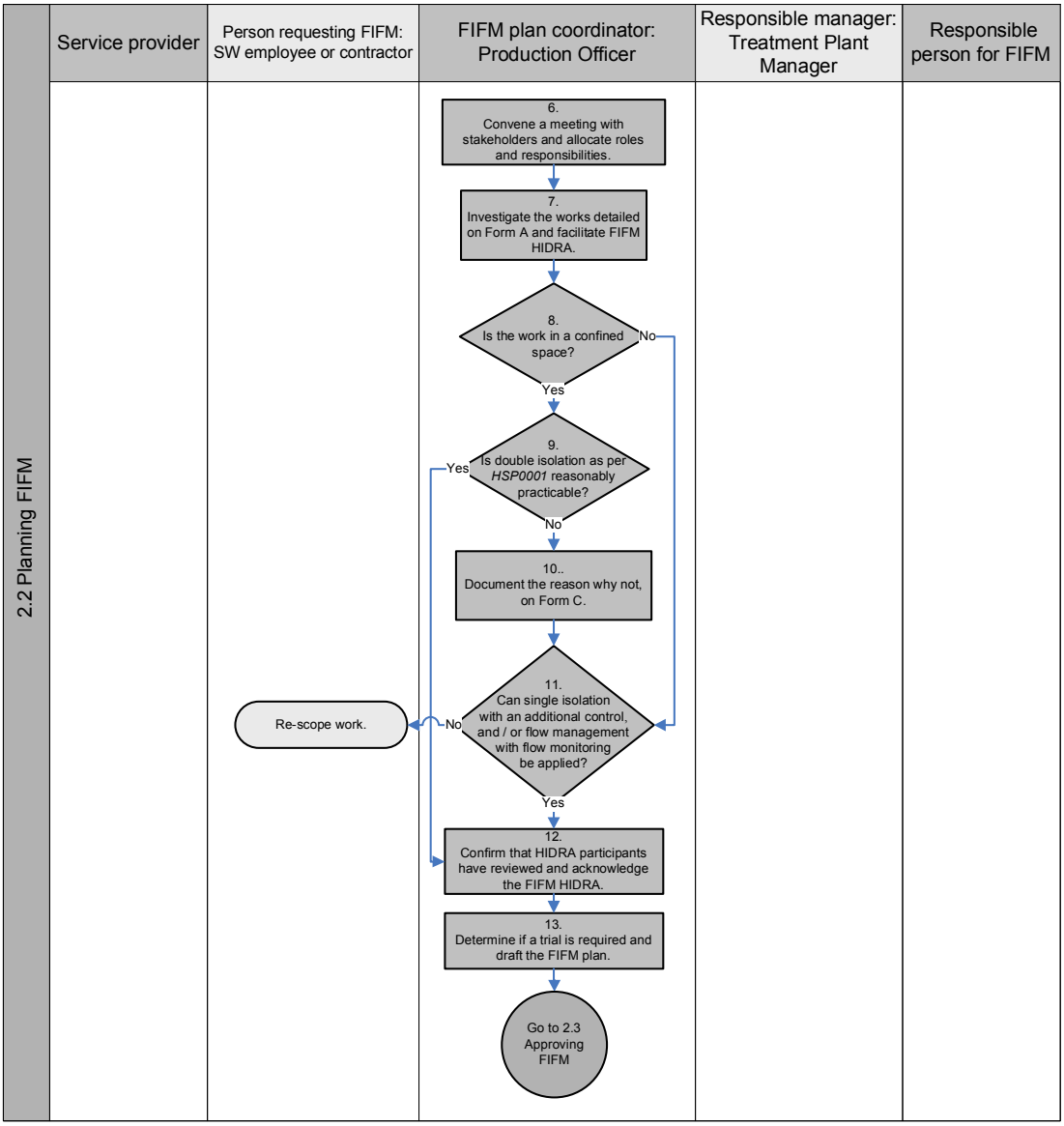
2.1. Initiating FIFM



Box	Description	Who	Explanation	Forms
	Work is to be done on a treatment plant asset that does or may contain flow under normal operating conditions			
1	Is entry into the treatment asset required?	Person requesting the FIFM: SW employee or contractor.	This is to determine if a FIFM plan is required when work is to be done on a treatment plant asset that does or may contain flow. If yes, go to box 3. If no, there is no requirement for a FIFM plan. You must use the PTWC process. This initial assessment will be reviewed during 2.2 Planning.	Nil
2	Consult with a production officer from the plant where work is to be done.	Person requesting the FIFM: SW employee or contractor.	The production officer can explain the treatment process that the asset is part of to help identify if there is a risk of engulfment when entry is required.	

Box	Description	Who	Explanation	Forms
3	Has a risk of engulfment been identified?	Person requesting the FIFM: SW employee or contractor.	If a risk of engulfment has been identified, eg by site inspection, system knowledge etc, go to box 4. If no, there is no requirement for a FIFM plan. You must use the PTWC process.	
4	Submit Request for FIFM (Form A) to the Treatment Plant Manager.	Person requesting the FIFM: SW employee or contractor.	This is a formal request to have the works commenced. Make sure Form A includes hazards that could cause a risk of engulfment due to uncontrolled flow. Submit the request to the relevant Treatment Plant Manager.	A
5	Review the Request for FIFM (Form A) and nominate a FIFM plan coordinator.	Responsible manager: Treatment Plant Manager.	a) The Treatment Plant Manager reviews the works on From A and notes any special requirements, such as: environmental, customer, political and interaction with other Sydney Water activities. b) A Production Officer will be nominated to do the role of a FIFM plan coordinator for the proposed work. c) Once these are done, go to 2.2 Planning and handover to the FIFM plan coordinator.	

2.2. Planning FIFM

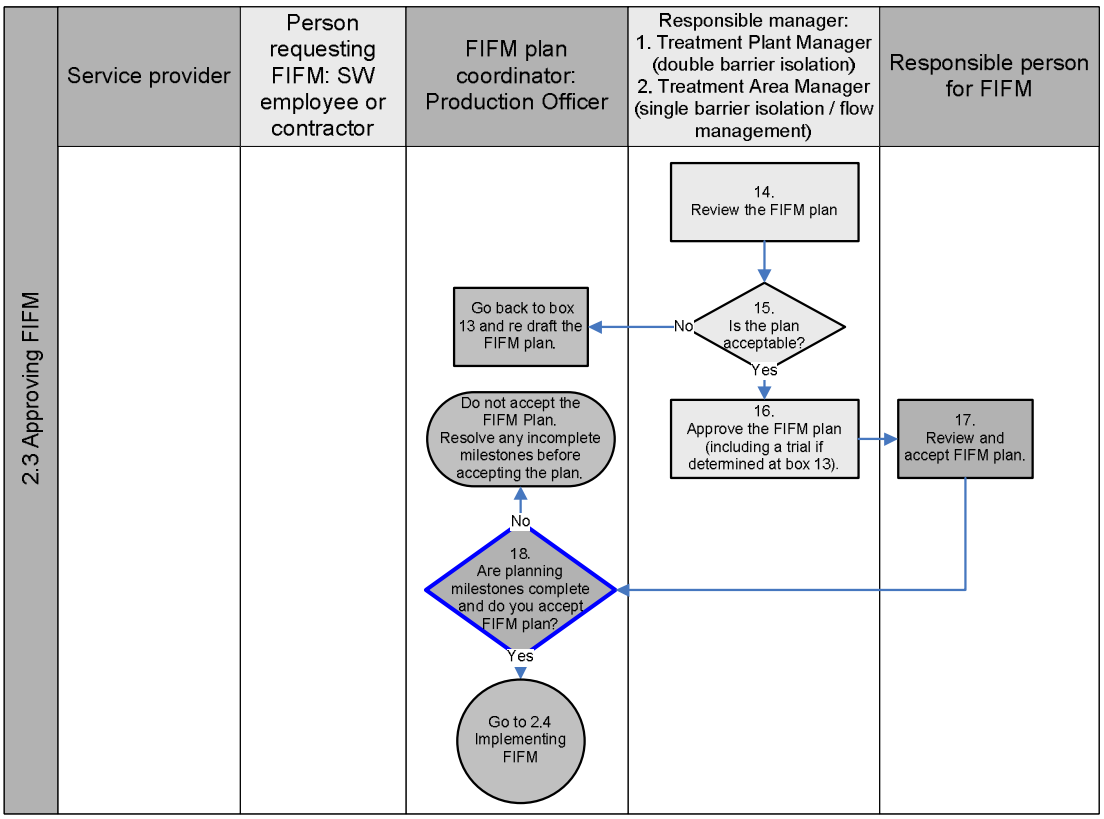


Box	Description	Who	Explanation	Forms
6	Convene a meeting with stakeholders and allocate roles and responsibilities.	FIFM plan coordinator: Production Officer.	Convene a meeting to: • review the scope of work • investigate initial hazards and risks • identify potential: operational, environmental, customer and political impacts. Where relevant, information on the PTWC and Form A should be considered. Allocate roles and responsibilities for the: • FIFM plan coordinator • responsible manager (either Plant Manager or Area Manager – to be determined by the outcome of the FIFM HIDRA - Form C. • responsible person for FIFM • service provider.	B

Box	Description	Who	Explanation	Forms
			People nominated for these roles must accept their responsibilities by signing Form B.	
7	Investigate the works detailed on Form A and facilitate the FIFM HIDRA (Form C).	FIFM plan coordinator: Production Officer.	Consult the people nominated in box 6, and facilitate a FIFM HIDRA. The HIDRA must: • follow the instructions given in boxes, 8, 9, 10 and 11 below • considers all hazard(s) associated with the risk of engulfment as well as hazards and controls identified on Form A • includes impacts on the environment, customer, community and business, where relevant • includes a record of the FIFM HIDRA participants • refers to the emergency response, if the controls fail, eg evacuation procedure.	C
8	Is the work in a confined space?	FIFM plan coordinator: Production Officer.	Does the FIFM HIDRA (Form C), show that the engulfment hazard is associated with work in a confined space, such as a pipe or tank, as shown in example 1 of Appendix 1. If yes, go to box 9. If no, go to box 11.	C
9	Is double barrier isolation as described in *HSP0001 Confined Space Safety* reasonably practicable?	FIFM plan coordinator: Production Officer.	If the FIFM HIDRA (Form C) shows that the work is in a confined space, is it reasonably practicable to control the engulfment hazard with double barrier isolation as per *HSP0001 Confined Space Safety,* as shown in example 1 of Appendix 1. If yes, go to box 12. If no, go to box 10.	C
10	Document the reason why not, on Form C.	FIFM plan coordinator: Production Officer.	Document on Form C, the reason why double barrier isolation for confined space work is not reasonably practicable. Example 2 from Appendix 1 has examples of why it may not be reasonably practicable. Once this is done, go to box 11.	C
11	Can single isolation with an additional control, and / or flow management with flow monitoring be applied?	FIFM plan coordinator: Production Officer.	Assess if single isolation with an additional control and / or flow management with flow monitoring can be applied if double isolation is not reasonably practicable and the FIFM HIDRA (Form C) shows that the work is: • in a confined space with a risk of engulfment • not in a confined space but there is still a risk of engulfment. □If yes, and for example, single isolation with an additional control is to be used: a) at line 1 of Form C, specify what the single isolation will be, eg a stop board, as shown in example 2 of Appendix 1 b) at line 2 of Form C, specify what additional control will be used to ensure that the single isolation remains secure, by	C

Box	Description	Who	Explanation	Forms
			choosing from one of the options shown in example 2 of Appendix 1 c) go to box 12. If no, hand back to the person requesting FIFM to re-scope the work.	
12	Confirm that HIDRA participants have reviewed and acknowledge the FIFM HIDRA.	FIFM plan coordinator: Production Officer.	The FIFM plan coordinator signs off on Form K, line 4 when they are satisfied that all key HIDRA participants have reviewed and acknowledge the FIFM HIDRA (Form C).	K, line 4
13	Determine if a trial is required and draft the FIFM plan:	FIFM plan coordinator: Production Officer.	The draft FIFM plan can now be developed. It may need to be re-developed later depending on the outcome of a trial FIFM.	
	• Determine if a trial FIFM and re-commissioning schedule is required.		A trial FIFM must be considered to prove the effectiveness of relevant controls in the FIFM plan. A trial should also be considered when there is significant uncertainty about the: safety, customer, environmental or political impacts that the FIFM may have, especially when system behavior can't be predicted. Experience shows that what has worked in the past, may not work on the day. A trial can be done separately or as the initial part of the FIFM plan implementation. If a trial FIFM is required, document the success factors for the trial on Form E, and circle Y (Yes) on Form K at line 7.	E E and K, line 7.
	• Prepare communication for FIFM (if required).		A communication strategy should be considered depending on the risks and controls identified on Form C, for safety, environment, customer and business. Indicate on Form K (line 7) if a communication strategy is required, by circling Y or N.	D
	• Prepare FIFM schedule.		It is mandatory that a FIFM schedule including a method of proving FIFM is prepared using Form H. Ensure this is signed on Form K, line 6, as prepared, before submitting for approval.	H K, line 6
	• Prepare FIFM monitoring plan (if required).		If a FIFM monitoring plan is required, used Form I. If monitoring the operational status of a wet well is required, use Form G. Indicate on Form K (line 7) if either of these is required by circling Y or N.	I G K
	• Prepare re-commissioning schedule.		It is mandatory that a re-commissioning schedule using Form J is completed.	J

2.3. Approving FIFM

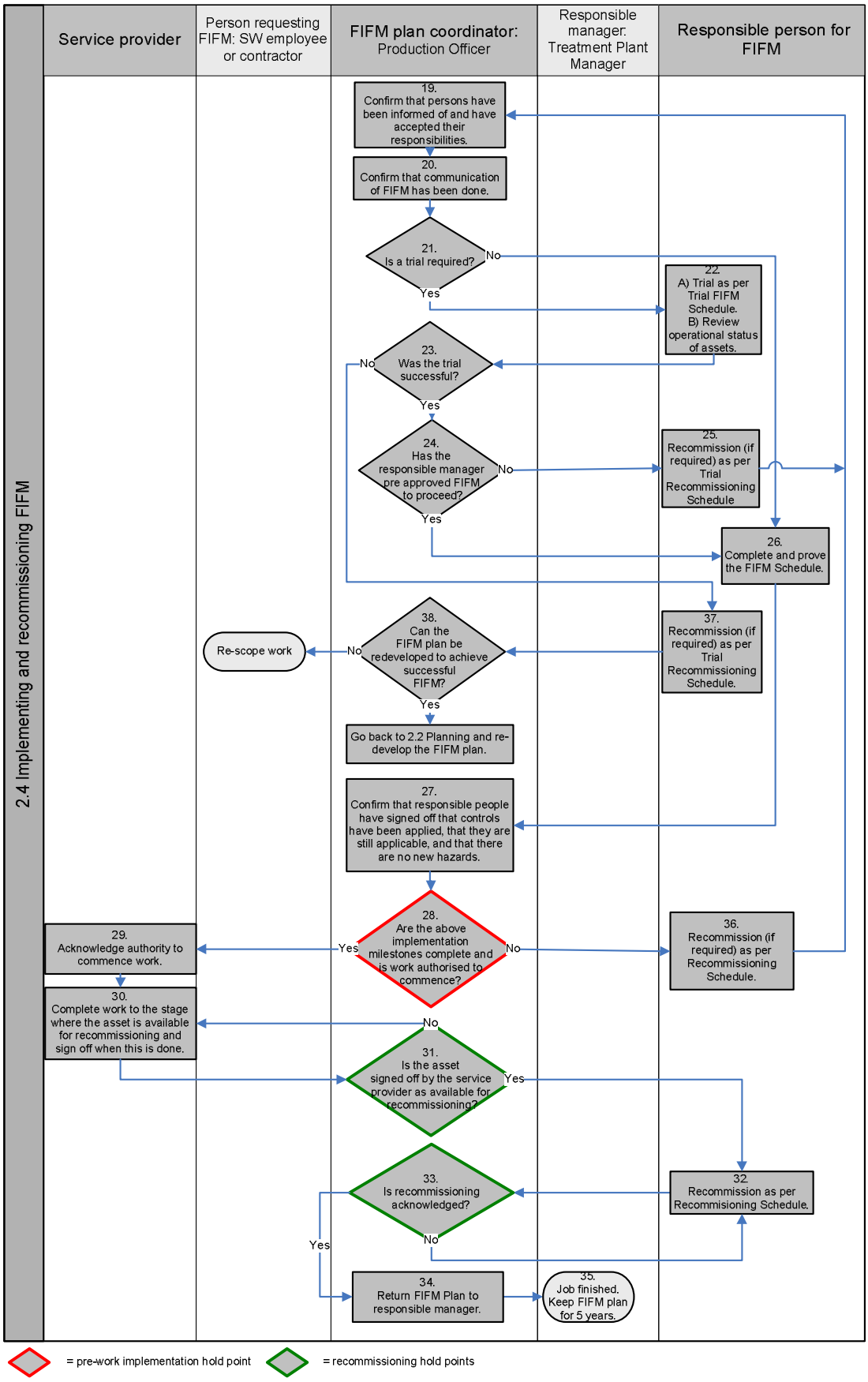


= hold point

Box	Description	Who	Explanation	Forms
14	Review the FIFM plan.	Treatment Plant Manager	Review the plan including any requirements for a trial.	
15	Is the plan acceptable (including a trial if required at box 13)?	Treatment Plant Manager	If the plan is acceptable, go to box 16. If not, hand back to the FIFM plan coordinator to re draft the unacceptable parts of the plan.	
16	Approve FIFM plan.	Responsible manager: • Treatment Plant Manager for double Isolation. • Treatment Area Manager for single isolation / and or flow management, after endorsement by plant manager.	Approve Roles and Responsibilities (Form B) on Form K, line 2. Approve the FIFM HIDRA (Form C) on Form K, line 3. **Approve the overall plan on Form K at line 7 as follows:** Communication of FIFM (Form D). Trial FIFM and Recommissioning Schedule and checking the operational status of assets (Form E / F). If a trial is successful, can FIFM proceed to Form H without a trial recommissioning on Form E. FIFM Schedule, including method of proving successful FIFM (Form H). FIFM Monitoring Plan (Form I / G). Recommissioning Schedule (Form J).	K, line 2, line 3, **line 7**
17	Review and accept	Responsible	It is mandatory that a responsible person for	K,

Box	Description	Who	Explanation	Forms
	the FIFM plan.	person for FIFM.	FIFM from the area that will complete and prove the FIFM schedule on Form H, reviews and accepts the FIFM plan.	line 8
18	**Are planning milestones complete and do you accept the FIFM plan?**	**FIFM plan coordinator: Production Officer.**	**This is a hold point.** **Confirm that milestones 2 – 8 on Form K have been completed.** If a trial is required at milestone 7, confirm that this has been approved on Form E. If the planning milestones are complete, go to 2.4 Implementing FIFM. If any planning milestones are not complete, do not accept the plan. FIFM can't be implemented. Resolve any incomplete milestones before accepting the plan.	**K line 9**

2.4. Implementing and recommissioning FIFM



Box	Description	Who	Explanation	Forms
19	Confirm that persons have been informed of and have accepted their responsibilites.	FIFM plan coordinator: Production Officer.	Confirm that Form B has been completed before signing Form K.	K, line10
20	Confirm that communication of FIFM has been done.	FIFM plan coordinator: Production Officer.	Confirm that Form D has been completed before signing Form K.	K, line11
21	Is a trial required?	FIFM plan coordinator: Production Officer.	Check Form K to see if the responsible manager has approved a trial FIFM. If a trial is required, go to box 22. If a trial is **not** required, go to box 26.	K, line 7
22	Trial as per Trial FIFM Schedule and review operational status of assets	FIFM plan coordinator: Production Officer.	Complete and prove the trial according to the sequence on Form E. **Service providers are not permitted to do the work that requires FIFM, during trials**. If the trial is not successful, record the reason why and any actions required, on Form E. Check the operational status of assets after the trial using Form F. Notify the FIFM coordinator when finished or if additional activities to complete the trial are required.	E F
23	Was the trial succesful?	FIFM plan coordinator: Production Officer.	Assess the trial against the pre-determined success factors on Form E. If the trial was successful, go to box 24. If the trial is not successful, go to box 38 (via box 37 if the asset needs to be recommissioned in the meantime).	E
24	Has the responsible manager pre approved the FIFM to proceed.	FIFM plan coordinator: Production Officer.	If the trial FIFM is successful and the work is able to commence, there may not be a need to do a trial recommissioning. The actual FIFM schedule can proceed **if** the responsible manager has given pre approval on Form K, line 7. If so, go to box 26. If the trial was successful but the responsible manager has not approved FIFM to proceed, for instance, the work can't be completed within a certain time period, go to box 25.	K, line 7
25	Recommison (if required) as per Trial Recommissioning Schedule.	Responsible person for FIFM.	Recommission as per the sequence on Form E, and inform the FIFM plan coordinator when this is done.	E

Box	Description	Who	Explanation	Forms
26	Complete and prove the FIFM schedule.	Responsible person for FIFM.	Complete and prove the actual FIFM schedule according to the sequence on Form H, and sign off on Form K when this is done. Identify any risks associated with operational assets, such as: pipes, valves or pumps, and confirm their operational status. If any of the activities are unable to be completed, consult the responsible manager to identify additional FIFM activities to enable FIFM. If they still can't be completed, notify the FIFM plan coordinator to cancel work.	H and K, line12
27	Confirm that responsible people have signed off that controls have been applied, that they are still applicable, and that there are no new hazards.	FIFM plan coordinator: Production Officer.	Confirm that Form C has been completed and signed off before signing Form K. Also, check that these controls are still relevant to when the FIFM HIDRA was done and that no new hazards are present.	K, line12
28	**Are the above implementation milestones complete and is work authorised to commence?**	**FIFM plan coordinator: Production Officer**	**This is a hold point.** If it is confirmed that forms B, C and D have been signed off, **and** that the FIFM plan schedule (Form H) has been completed and proven, go to box 29. If any these forms are not signed off and / or Form H has not been completed and proven, work is **not** authorised to commence. In this case, go back to box 19 (via box 36 if the asset needs to be recommissioned in the meantime) and reconfirm any of the forms B, C, D and H as necessary.	K, line 14
29	Acknowledge authority to commence work.	Service provider.	The service provider signs off Form K line 15, **only** after the FIFM plan coordinator signs off Form K, line 14. The service provider must not commence work until these are signed.	K, line 15
30	Complete work to the stage where the asset is available for recommissioning.	Service provider.	The service provider completes the work up to the re-commissioning stage and signs off on Form K, line 17 when this is done.	K, line 17
31	**Is the asset signed off by the service provider as available for recommisioning?**	**FIFM plan coordinator :Production Officer**	**This is a hold point.** If work is signed off as completed, go to box 32. If work is not signed off as completed, go back to box 30.	**K, line 18**
32	Recommission as per the Recommisioning Schedule.	Responsible person for FIFM.	Recommission the assets as per the sequence on Form J, and sign off on Form K when this is done.	J and K, line 20

Box	Description	Who	Explanation	Forms
			If recommissioning is not successful, give the reason why on Form J.	
33	**Is recommissioning acknowledged?**	**FIFM plan Coordinator: Production Officer**	**This is a hold point.** If recommissioning is acknowledged, go to box 34. If recommissioning is **not** acknowledged, go back to box 32.	**K, line 21**
34	Return the FIFM plan to the relevant responsible manager.	FIFM plan coordinator: Production Officer.	FIFM plan coordinator: Production Officer.	**K, line 21**
35	Job finished. Keep FIFM plan for 5 years.	Responsible manager.	Records must be available for auditing purposes.	
36	Recommison (if required) as per recommisoning schedule.	Responsible person for FIFM.	Recommission the assets as per the sequence on Form J.	J
37	Recommison (if required) as per trial recommissioning schedule.	Responsible person for FIFM.	Recommission the asset as per the sequence on Form E.	E
38	Can the FIFM plan be re-developed to achieve successful FIFM?	FIFM plan coordinator: Production Officer.	Review the FIFM plan to see if it can be re-developed. Amend the plan as necessary and re-trial until the trial is successful. Modify any forms as required and resubmit for approval. If the plan can be re-developed, go back to 2.2 Planning and re-develop the FIFM plan. If the plan can't be re-developed, the work can't meet the requirements of this procedure and needs to be re-scoped.	

Appendix 1 Examples of FIFM HIDRA for Treatment

Example 1: Double barrier isolation

HIDRA FOR FLOW ISOLATION / FLOW MANAGEMENT FORM C

PROJECT TITLE / NAME	Context Of Assessment	Person(s) Conducting Assessment
Grit tank repair	Failure of single isolation of flow to the grit tank while people are working in the tank.	Di Gester and Sid Imentationtank ***Date Of Assessment***

	Very Likely	Likely	Unlikely	Very Unlikely
CAT.	1	1	2	3
SEVERE	1	2	3	4
MODERATE	2	3		5
MINOR	3	4	5	6
INSIGNIF.	4	5	6	6

Hazard	Impact		Risk Before Controls			CONTROLS (List all controls – current & required – intended to support the development of safe systems of work)	Risk After Controls			Group responsible to implement control	Sign off – controls applied	
What can harm you?	*What can happen?*	*How it can happen?*	Consequ-ence	Likelihood	Risk Rating	Note: this example would comply with *HSP0001 Confined Space Safety.*	Consequ-ence	Likelihood	Risk Rating		Print Name	Signature
Engulfment by sewage in confined space.	Drowning.	Uncontrolled flow fills grit tank while people are working in it.	Catastrophic	Very Likely	**1**	**Double Isolation:** Two stop boards in-between the source of flow to the grit tank and the work area will be installed and isolated as per *HSP049 Lock Out Tag Out,* and the channel in between the stop boards will be drained. **Monitor Leakage:** A nominated person will monitor the upstream stop board for any signs of leakage and alert the FIFM plan coordinator for evacuation.	Catastrophic	Unlikely	**2**			

Example 2: Single barrier isolation plus additional control

HIDRA FOR FLOW ISOLATION / FLOW MANAGEMENT FORM C

PROJECT TITLE / NAME	Context Of Assessment	Person(s) Conducting Assessment
Grit tank repair	Failure of single isolation of flow to the grit tank while people are working in the tank.	Clary Fier and D.Wateredsludge ***Date Of Assessment***

	Very Likely	Likely	Unlikely	Very Unlikely
CAT.	1	1	2	3
SEVERE	1	2	3	4
MODERATE	2	3	4	5
MINOR	3	4	5	6
INSIGNIF.	4	5	6	6

Hazard	Impact		Risk before controls			CONTROLS (List all controls – current & required – intended to support the development of safe systems of work)	Risk After Controls			Group responsible to implement control	Sign off – controls applied	
What can harm you?	*What can happen?*	*How it can happen*	Consequence	Likelihood	Risk Rating	Note: This example would comply with section 2.2.2 of *HSP0070 FIFM.*	Consequence	Likelihood	Risk Rating		Print Name	Signature
Engulfment by sewage in confined space.	Drowning	Uncontrolled flow fills grit tank while people are working in it.	Catastrophic	Very Likely	**1**	**Single Isolation:** A stop board will be installed between the source of flow to the grit tank and the work area, and the tank dewatered.	Catastrophic	Unlikely	**2**			
		The first stop board to the grit tank is removed while workers are in the tank.	Catastrophic	Unlikely	**2**	**Choose from one of the following additional controls:** **Lock out:** The stop board will be locked in accordance with *HSP049 Lock Out Tag Out.* **Or:** **Prevent access:** Access to the stop board will be barricaded and signposted to prevent it from being inadvertently removed. **Or:** **Monitor for leakage:** A nominated person will monitor the stop board for any signs of leakage and alert the FIFM plan coordinator for evacuation. **Or:** **Guard the penstock:** A nominated person will guard the penstock and alert the FIFM plan coordinator if there is a potential for the stop board to be removed.	Catastrophic	Very Unlikely	**3**			
		The stop board collapses or is pulled from its guides	Catastrophic	Unlikely	**2**	The stop board has been designed to withstand operational flows. Also the stop board has been trialled and demonstrated capacity to withstand flows.	Catastrophic	Very Unlikely	**3**			
Comments: It is not reasonably practicable to implement double isolation as described in *HSP0001 Confined Space Safety*. This is because the safety risk and / or cost of installing a second isolation is greater than the risk of the first isolation barrier failing and or the risk of the first isolation being defeated with the second controls in place.												