



VUL-SWP-093(1)-Dewatering Operations

SAFE WORK PROCEDURE (SWP)			
Description	Pump & Pit Dewatering Operation		
Site	Vulcan Mine		
Department	Operations		
PPE Required		Job Hazard Analysis Reference	
 Safety helmets must be worn in this area  Ear protection must be worn  Protective footwear must be worn  Protective gloves must be worn  High visibility clothing must be worn in this area  Eye protection must be worn			
VUL SOP / PRO Reference		Other Relevant Information	
VUL-SOP-003a-Ground Control Management VUL-SOP-094-Check, Examine & Restrict Work Area VUL-SOP-093-Working near water VUL-SOP-065-PPE VUL-SOP-072g-Towing mobile plant VUL-TAR-003-Geotechnical Failure VUL-SOP-078-Isolation & Tagging VUL-SOP-096b-Manual Handling Tasks		☐ Relevant OEM instructions & specification available	
		☐ Complete Take 5	
		☐ OCE Report	
		☐ Pre-start Meeting	
		☐ Personal Isolation	
		☐ Carry out work area inspection	
People, Equipment, Materials and Tools Required			
People	Equipment	Materials	Tools
Competent Operators	Pumps	Pipes	Drill & drill pieces
Open Cut Examiner	Service Cart	Pipe fittings	General tools
Supervisors	Light Vehicles	Nuts & bolts	Slings & shackles
Emergency Response Team	Rescue Vehicles	Rope	
Poly welders	Water Cart	Shovel	
	Lighting Plants		

1. Area Inspection and Hazard Identification

- 1.1 Carry out a Take 5 and area to be inspected to determine suitability/required actions to take to improve conditions to suit tasks to be carried out.
- 1.2 Consult with supervisor on the following:
 - a) What is the task
 - b) Resources required
 - c) Timeframe to complete
 - d) Hazards associated with the task
- 1.3 Where a hazard or task is identified, that is not controlled via a Take 5 and this procedure, an additional JHA is to be completed on the additional steps and hazards that will cause you harm.



2. Wearing of PPE

- 2.1 To prevent exposure to heat and solar radiation, workers must:
 - a) Wear suitable hat that protects face, ears and neck e.g brims on hard hats
 - b) Sunscreen
 - c) Rotation of work tasks
 - d) Utilize shade structures if available
 - e) Work planning tasks outside of the hottest hours of the day.
- 2.2 For manual handling tasks related to pump operations follow [Vul_SOP_96b-Manual Handling Tasks](#)



3. Towing Poly Pipe

- 3.1 When towing lengths of poly pipe exceeding 50m, past work areas or onto a roadway a general call to notify prior to towing and an escort must be in place (typically at the rear) to ensure people and equipment are not in the line of fire.
- 3.2 A general call must be made to warn other road users that the towing is about to commence between location X and location Y.

4. Slinging Poly Pipe

4.1 Three typical methods of slinging poly pipe are:

- a) Loose sling
- b) Single wrap
- c) Double wrap

4.2 Use correct manual handling technique when working with poly pipe.

4.3 Secure sling to the correct tow point:

- a) Light/Medium vehicle – pintle hook
- b) Dozer blade – Ripper or blade
- c) Excavator – Bucket or dog bone

4.4 Ensure sling is situated behind the stub ring so ring does not slide up the poly pipe upon towing.

4.5 Shorten sling, if necessary, to prevent excessive wear on stub ends and flange ring when towing



5. Slot Dozing

5.1 Driver of the vehicle towing/repositioning poly pipe must not move the vehicle unless the persons on the ground have made positive communication indicating it is safe to move.

5.2 Hazards that may be present and must be considered include:

- a) Interaction with other vehicles/equipment and personnel that may be in the line of fire when moving vehicles, towing or repositioning Poly Pipe.
- b) Interaction with other work areas within or adjacent to/above and below the tow route
- c) Uncontrolled movement of poly pipe during towing due to length, weight and water.
- d) Adequate controls must be implemented to ensure all identified hazards can be effectively controlled.

5.3 At the commencement of the tow/repositioning low speed must be used to reduce the risk of persons being struck by stored energies such as the “whip” that can occur when Poly pipe has been partially submerged in mud.

5.4 Monitor tow item during tow process following the escort(s) procedure, using spotter(s) and the use of positive communication.

5.5 Drive to conditions and observe maximum tow speed limits for poly pipe, 40km/h.

5.6 Observe site traffic rules and communication procedures.

5.7 Park appropriately when allowing traffic to pass and use positive communication.

5.8 Rectify any damage to roadway, road markers and signage.

5.9 Operator of the tow equipment must hold the relevant equipment competency as per the Training Scheme.



6. Mine Affected Water (MAW) Management

- 6.1 Before any existing infrastructure (Pumps, Poly or Lay flat hose) is disconnected the uncontrolled release of MAW must be considered and controls implemented to manage the release.
- 6.2 Before any new infrastructure is installed harm to the environment must be considered during planning and controls implemented to manage the potential for a release of MAW.
- 6.3 These controls may include the installation of levy banks, sumps or ponds to capture any MAW so it can be pumped (transferred) back to an MAW storage facility.
- 6.4 Before pumping water, check discharge line that any unsecured valves are closed to reduce the risk of release of MAW (do not rely on non-return valves).



7. Disconnecting and Reconnecting Poly Pipe

- 7.1 Isolate and tag out relevant pumps and valves.
- 7.2 Release stored energy and purge line. Stand out of the line of fire.
- 7.3 Maintain awareness of ground conditions.
- 7.4 Use correct manual handling technique when working with poly pipe. Make use of slings, crowbars or mechanical advantage when required.
- 7.5 Vehicle/Machine not to move without positive communication between ground personnel and tow vehicle.
- 7.6 Tow poly pipe apart using spotter(s) and positive communication as required
- 7.7 Clean poly face before joining.
- 7.8 Tow/push poly pipe ends together.
- 7.9 Use a spotter positioned out of the line of fire, if vehicle/machine operator can't see poly pipe ends.
- 7.10 Ensure spotters hands are clear of the pinch point between poly pipe ends being joined.



8. Disconnection and Reconnection of Lay Flat

- 8.1 When disconnecting Lay Flat:
 - a) Complete a workplace area inspection
 - b) Release residual pressure
 - c) Release connections (consider manual handling or mechanical advantage where possible)
 - d) Be aware of stored pressure and pinch points at Bauer coupling
 - e) Pull lay flat free from pump in preparation for removal
- 8.2 When connecting Lay Flat hose:
 - a) Complete a workplace area inspection
 - b) Plan the hose path
 - c) Pull lay flat into position in preparation of connection
 - d) Prepare the face on the male connection



e) Clean seal of female connection f) Apply rubber grease (when required) g) Connect male to female Bauer couplings h) Close Bauer coupling (pinch points) i) Lay out the remaining lay flat hose to reduce kinks or uncontrolled movement on start up 8.3 To reduce the hazards associated with manual handling, the following applies: a) Limit Length of lay flat hose b) Follow Vul_SOP_96b-Maunal handling tasks c) Use Mechanical Aids (where required)	
9. Burying Poly Pipe	
9.1 Where relevant, ensure required Work Permits are obtained for example permit to dig (around industrial area), permit to work within 25m of power lines. 9.2 Identify traffic interaction hazards and implement appropriate traffic management controls including signage, barricading and positive communication. 9.3 Delineate either side of poly crossover using witches' hats. 9.4 Ensure sufficient depth of material covers the poly pipe, dependent on the work area and the size/weight of equipment that will be operating in that area. 9.5 If necessary, install Pipe Buried Below signs. 9.6 Never leave an open excavation without demarcation.	
10. Installing Poly Pipe Over Drop Off	
10.1 Conduct a visual inspection of the work area to identify hazards. 10.2 Follow Vul_SOP_003a-Ground control management when working near drop offs and below vertical faces 10.3 Ensure the pipe is of adequate length and any connections that will hang over the wall have the maximum number of bolts fitted. 10.4 Ensure a tag line is attached to the end of the poly pipe that is to be fed over the wall. 10.5 Sling poly minimum 15m from the leading end. 10.6 Spotter to remain in visual contact with machine operator at all times and stay out of the line of fire. 10.7 Feed the pipe from higher position where possible. This is to avoid potential damage of the pipe. 10.8 Ensure that the pipe is stable before resetting the sling when lowering pipe. 10.9 Once the pipe can be accessed from below, attach a sling and tow. 10.10 Ensure the sling is detached from the vehicle/machine that is above when it is determined that the Poly is secure. 10.11 Ensure that there is sufficient pipe on the upper level.	 

11. Towing Pumps (Trailer and Skid Mounted Pumps)

- 11.1 Conduct Isolation of the pump
- 11.2 Complete prestart checklist prior to towing (wheeled pumps)
- 11.3 Inspect for fuel, oil on skids (Wash down if required)
- 11.4 Positive Communication with towing equipment operator
- 11.5 General Call to advise of route (if required)
- 11.6 Plan the route
- 11.7 Do not tow skid pump through dry grass (area to be graded if excessive vegetation)
- 11.8 No safety chains to be used for towing (safety chains are not tow chains)
- 11.9 Ensure pump is fundamentally stable or weight taken and remove wheel chocks before towing
- 11.10 Chock wheels of trailer before unhooking trailer pump
- 11.11 Follow **Vul_SOP_072g-Towing mobile plant**
- 11.12 When connecting or disconnecting skid and trailer pump:
 - a) Establish positive communication or line of sight between spotter and equipment operator.
 - b) Lower implements and apply park brake to immobilise equipment, maintain positive communication with spotter
 - c) Spotter/operator enters line of fire or blind spots to disconnect.
 - d) Use correct manual handling technique to unhook/hook sling or trailer to tow vehicle. Make use of two person lift or mechanical advantage if required. (A-frame winch)
 - e) Retreat from line of fire or blind spot
 - f) Re-establish positive communication between spotter and equipment operator prior to equipment moving off



12. Transfer Pump – Pad Preparation

- 12.1 Review Geotechnical report, OCE and Interaction Report to determine correct placement of pump
- 12.2 Complete Workplace Area Inspection
- 12.3 Communication Plan between Pump Operator and Mobile Equipment Operator (Position of Spotter to be included)
- 12.4 If required to work within the standoff distance, contact supervisor and OCE as a JHA may be required.
- 12.5 When working within the excavation:
 - a) Take 5 if required
 - b) Follow **Vul_SOP_003b-Ground control management**
 - c) Positive Communication between equipment operator and spotter
- 12.6 To reduce dust hazard:
 - a) Stay upwind
 - b) Stop other impacting activities



12.7 If gas is present within the pit withdraw to a safe location and contact OCE. 12.8 Plan Drainage: a) Drainage must be developed for the pump pad b) Apply a >2% grade (if practical) to allow water to flow away from the pump in the event of leaks or rain 12.9 Service Truck Access must be established as part of the preparation work 12.10 Spotter is to be used when working the Dozer or Rubber tyred dozer in close proximity to the sump area 12.11 The pad is to be large enough to safely accommodate the pump and have safe access around the pump for pedestrians. This is to allow for servicing of the pump. Ensure adequate bunding (where required)	
13. Transfer Pump - Install	
13.1 When working within the excavation: a) Take 5 if required b) Follow <i>Vul_SOP_003b Ground Control Management</i> c) Positive Communication between equipment operator and spotter d) If working within a 2metres of water edge apply <i>Vul_SOP_93 Working near body of water</i> 13.2 To reduce dust hazard: a) Stay upwind b) Stop other impacting activities 13.3 In the event that gas is present within the pit withdraw to a safe location and contact OCE. 13.4 Spotter is to assist pump placement. 13.5 When pushing the pump, the push bar should be used and to be placed low into the cutting edge 13.6 Tow sling should always be returned to the hanging brackets before the pump is pushed. (Skid Pumps) 13.7 The pad is to be large enough to safely accommodate the pump and have safe access around the pump for pedestrians. This is to allow for servicing of the pump 13.8 If more than one pump is to be used, they should have 5m separation 13.9 When pushing the pump into position it is important that the 13.10 suction clears the bund as damage can occur	

14. Commissioning (First Start Up – Post Install)

- 14.1 Complete a Prestart on pump and discharge line
- 14.2 Inspect wet end or suction in preparation for pumping
- 14.3 Stay clear from the line of fire
- 14.4 Start pump as per start up procedure
- 14.5 Pump operator to remain at pump
- 14.6 Competent assistant to run poly line inspecting for leaks and discharge at end
- 14.7 Any concerns to be raised with pump operator immediately



15. Working in the Hours of Darkness

- 15.1 In addition to the controls and required competencies for the tasks detailed in this SWI, night time operation will require the following controls to also be implemented:
 - a) Positive communication between work parties to be established
 - b) Call in to OCE "location and upon exit"
 - c) Call work area supervisor for assistance if required e.g. escort
 - d) Adequate lighting for the task being performed e.g. lighting plants, torches, head lamps, vehicle headlights
 - e) Pre-starts to be checked and or completed prior to restarting pumps and mobile equipment
 - f) Insect Repellent to be available and used when required
 - g) Fitness for Work - Monitor fatigue levels of workers throughout shift, adequate supervision, task rotation
 - h) Hand-held radios to be used where required to ensure communication can be maintained with OCE or Supervisor

