

# COMPREHENSIVE WORKING PLAN FOR TRANSFER OF EFFLUENT FROM TI APOLLO LIMITED AND TI ACCLES & POLLOCK LIMITED TO MARLHOLE

## **STATEMENT**



# 1. Site Development

Effluent from both TI Accles & Pollock Limited and TI Apollo Limited is transferred to the "acid holding well" as indicated on the plan. It is discharged via approx. 12" diameter earthenware pipework. The "well", constructed of brick, is approx. 3.75m x 1.75m x 5m deep overall, but the liquid level is normally approx. 2m deep. It is surrounded by a brick wall approx. 0.9m high.

The discharge pipes into the acid holding well are approx. 2.75m below road level and the effluent level is maintained at approx. 0.25m below these pipes by the use of two main pumps and one stand by pump. These are operated by a float/micro switch system. In the event of a pump failure, an alarm bell rings to alert personnel of the problem.

The effluent is transferred via. 9cm diameter plastic pipes from the acid holding well to a "V" notch weir adjacent to Rounds Green Road and then under the road to be discharged into the Marlhole. The effluent is extracted from the Marlhole at a point approx. 100 metres from the inlet pipes by the use of one/two submersible pumps. These are supported by rope from the end of the gantry such that the pumps are approx. two metres away from the bank and one metre below the level. The effluent is transferred, via two 15cm approx. diameter plastic pipes, along a gantry into a "V" notch weir sited within a 25m x 4m corrugated steel shed, which is kept locked. From the "V" notch weir, the effluent is discharged via two approx. 15cm diameter plastic pipes to an inspection cover situated within the Marlhole boundary adjacent to Rounds Green Road, and then to a foul drain to the sewage treatment works. The large settlement tank and the old caustic soda holding tank adjacent to the corrugated steel shed are redundant.

The Marlhole site is bounded by Portway Road, Shidas Lane and Rounds Green Road, as indicated on the plan. The point of entry is off Rounds Green Road, as if entering the Percy Business Park, and then immediately right through the double iron gates, which are kept locked. As indicated on the 1:500 plan, there is a manned security check in the vicinity. The locked gates on the corner of Shidas Lane/Portway Road are generally used for entry for landscaping purposes only.

The site is made secure by the provision of approx. 3m high brick wall along Rounds Green Road, a 2 metre high iron fence along Shidas Lane and a 2 metre high chain link wire fence around the remainder of the boundary. A visual inspection of the fencing is made frequently.

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The present Site Licence SL137 indicates that we should maintain the lagoon between pH7 to 10 and that we should ensure that we extract more effluent from the lagoon than enters.

The Trade Effluent Consent Conditions issued by Severn Trent Water Limited include the following:-

- 1. Max. volume of trade effluent to be discharged in any continuous period of 24 hours shall not exceed 1,200 per cubic metres.
- 2. The highest rate at which the trade effluent may be discharged shall not exceed 15 litres per second.
- 3. The pH value of the trade effluent shall not be less than pH 6.0 nor greater than pH 10.0.
- 4. The total of suspended solids in the trade effluent shall not exceed 400mg/L.
- 5. The chemical oxygen demand from acidified dichromate (COD) of the trade effluent shall not exceed 600mg/L expressed as O.
- 6. The total of chromium, copper, lead, nickel and zinc in the trade effluent shall not exceed 25mg/L expressed as metals.
- 7. The total of each of the following individual metals in the trade effluent shall not exceed the limit specified below, in respect thereof, in mg/L expressed as the metal.

The total of chromium shall not exceed: 10 mg/L
The total of copper shall not exceed: 5 mg/L
The total of lead shall not exceed: 5 mg/L
The total of nickel shall not exceed: 25 mg/L
The total of zinc shall not exceed: 5 mg/L

- 8. The total of soluble compound of iron in the trade effluent shall not exceed 250 mg/L expressed as Fe (Sol).
- 9. The temperature of the trade effluent shall not exceed 43°C.
- 10. The trade effluent shall be free from physically separable, dispersed or emulsified oil and soluble oils.

## 2. Wastes and Other Materials to be Handled

Wastes transferred to the Marlhole are obtained from both TI Accles & Pollock Limited and TI Apollo Limited.

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# A) TI APOLLO LIMITED

Location	Product .	Approx Quantity	Frequency
Wet Process Bay	Hydrochloric Acid	15,000 ltrs	4-5 weeks
	lst cold water swill (after acid)	15,000 ltrs	Weekly
	2nd cold water swill (after acid)	15,000 ltrs	Weekly
	Hot water swill (after acid)	15,000 ltrs	Weekly
	Phosphate solution	15,000 ltrs	Fortnightly
	Cold water swill (after phosphate)	15,000 ltrs	Weekly
	Hot water swill (after phosphate)	15,000 ltrs	Weekly
	Bonderlube 235)	300 kg	1-2 weeks
Pre Anneal Cleaning Bay	Derust X (long ) bosh)	15,000 ltrs	12 weeks
	Derust X (short) bosh)	12,000 ltrs	12 weeks
	Hot water swill (after Derust X)	15,000 ltrs	weekly
	Hot sodium nitrite solution (dilute)	15,000 ltrs	weekly
Polishing Shop	M/c No. 1 dilute water soluble oil Brasway S360	900 ltrs	8 weeks
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Location	Product	<u>Approx</u> Quantity	Frequency
Polishing Shop	M/c No. 2 dilute water soluble oil Brasway S360	900 ltrs	8 weeks
531 Dept Tunnel { Washing M/c	Neutral cleaner Pyroclean	200 ltrs	Every 2 months
Outside Cleaning Line prior to Plating	Hydrochloric acid	1,300 ltrs	4 weeks
	Cold water swill	1,300 ltrs	Running
	Alkali cleaner 2329	1,300 ltrs	Every 2 days
	Hot water swill	1,300 ltrs	Weekly
Titan Plating Plant (	Stiroclean S.55 (Alkali Cleaner)	3,000 ltrs	3-4 times/ year
	Swill	1,000 ltrs	Running
	Swill	1,000 ltrs	Running
	Hydrochloric Acid (15%)	3,000 ltrs	Twice/year
	Swill	1,000 ltrs	Running
	Swill	1,000 ltrs	Running
(	Strioclean S.55 (Alkali Cleaner)	1,000 ltrs	3-4 times/ year
	Swill	1,000 ltrs	Running
	Swill	1,000 ltrs	Running

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	Location	Product	Approx Quantity	Frequency
•		Sulphuric Acid Etch	1,000 ltrs	6 weeks
		Swill	1,000 ltrs	Running
•	•	Swill	1,000 ltrs	Running
		Nickel Plating Solution	Not discharged	,
		Swill	1,000 ltrs	Running
		Swill	1,000 ltrs	Running
	19293	Chromic Acid Solution	Not discharged	
		Chrome Drag Out Tank	Rarely dischar	ged ·
		Chrome Neutraliser	1,000 ltrs	
		Hot Water Swill	1,000 ltrs	Weekly
	Titan Plate Plant	Nitric Acid based solution.	250L	4 weeks
	Transporter Plating Plant	Emphax (Alkali Cleaner)	3,250 ltrs	4 weeks
		Swill	3,250 ltrs	
· ·	•	Hydrochleric Acid (20%)	3,250 ltrs	6-8 weeks
		Swill	3,250 ltrs	
		Swill	3,250 ltrs	
		Emphax (Alkali Cleaner)	3,250 ltrs	6 weeks
	NES ANES	Swill	3,250 ltrs	
WEST	MIRLANES MAR 1994	Sulphuric Acid (20%)	2,350 ltrs	6-8 weeks
18	DOUS WASTE UNIT	Nickel Plating	Not discharged	
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<u>Loçation</u>	<u>Product</u>	Approx Quantity	Frequency
	Swill	3,250 ltrs	7,
	Swill	3,250 ltrs	7
	Chrome Acid Solution	Not discharged	
	Chrome Drag Out (	Rarely dischar	ged ?
	Chrome Neutraliser	3,250 ltrs	Weekly
	Swill	3,250 ltrs	7
	Phosphoric Acid (dilute)	3,250 ltrs	Weekly
	Canphos 501 Phosphate Solution	3,250 ltrs	3 months
	Phosphoric Acid (dilute)	3,250 ltrs	Weekly
	Swill	3,250 ltrs	?
	Swill	3,250 ltrs	\$ \psi
	Hot Water Swill	3,250 ltrs	Weekly
Austemper Furnace	Hot Swill Cold Swill Hot Swill	900 ltrs 900 ltrs 900 ltrs	Weekly Weekly Weekly
Current trial:- (Alternative \ vapour degreasing)	Water soluble (6% mineral oil)	2,000 ltrs per approx. (Severn Trent Valready informations)	Water Limited

To maintain the process boshes at the optimum levels, chemicals are often added from 25 litre plastic containers. These empty drums can be swilled out with water and the contents discharged to the Marlhole in the usual way. The drums, free from contaminants, can then be disposed of in the general rubbish skips. The majority of these drums are used for topping up the nickel plating boshes, and all contaminants involved are as in the nickel swills already discharged to the Marlhole.

#### B) TI ACCLES & POLLOCK LIMITED

<u>Location</u>	Product	Approx Quantity	Frequency
Stainless Mill Wet Process Bay	(General) Pyroclean 638	120kg	6-8 weeks
Stainless Mill - Wet Process Bay	(Nuclear) Pyroclean 638	120kg	3-4 weeks
	No. 1 $HF/HNO_3$ ) No. 2 $HF/HNO_3$ )	Nitric Acid 1620 ltrs Hydrochloric	Annually
	)	Acid 375 ltrs	Annually
	(Parcolene 21	25kg	Weekly
	Industrial Soap	1 <b>90</b> kg	4-6 weeks
	(Scalox)	300 ltrs	3-4 months
Carbon Mill - Wet Proces Bay	Pyroclean 638	120kg	6-8weeks
	Hydrochloric Acid	<b>2000</b> ltrs	Annually
	(Parcolene 21 )	25kg	Weekly
	(Bonderlube 234)	100kg	6-8 months
Electro- polishing Section	Electropol 501 (3 tanks)	1,000 ltrs each	Once-Twice/ year

A number of swill tanks are associated with the above processes and discharged to the Marlhole via the Acid Holding Well.

TI Apollo Limited currently obtain "spent" 10% caustic liquur from MEL Chemicals, Swinton, Manchester. This is used to maintain the pH of the Marlhole between 7 to 10. On average, 3 loads of 20-23 tonnes each are delivered every month and discharged into the Acid Holding Well. Occasionally, a 4,000 gallon load of "spent" 6% caustic liquor is obtained from Alcan Speciality Limited.

The approximate capacity of the Acid Holding Well is 3,000 galls and of the Marlhole is 5 million gallons.

The level of the acid holding well is maintained at a constant level by the use of three pumps.

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# 3. <u>Day to Day Methods for Handling Waste</u>

All wastes mentioned in Section (2) are discharged into the Acid Holding Well direct except the Derust X. Due to the gelatinous nature of this caustic soda based product in its "spent" condition, problems can arise with solidification within the drainage system on cooling. Hence this product is transferred to a tanker and discharged directly into the Marlhole, near to the inlet pipe. This process takes place during normal working hours.

TI Apollo Limited currently operate a three shift system, Monday to Saturday lunchtime, during which time effluent is continuously being discharged to the Acid Holding Well. This is transferred to the Marlhole and then to the local sewerage system. The company aim to keep the Marlhole level reasonably constant by the operation of one or two submersible pumps. The level is monitored by observing painted rings on the outlet pipe. A black ring is painted at the optimum level with three yellow rings below and three red rings above, all at six inch intervals. A flow chart recorder and flow counter is linked to the "V" notch weir adjacent to Rounds Green Road to record the amount of effluent discharged into the Marlhole. A similar arrangement is in operation in the steel shed adjacent to the Marlhole to record the amount of effluent discharged into the sewerage system. The volume of effluent leaving the Marlhole should be greater than the effluent entering. Volume readings are taken monthly and submitted to the West Midland Hazardous Waste Unit.

The pH value of the effluent in the final "V" notch weir, before discharge to the sewerage system is taken weekly using a portable pH meter and recorded in the log book.

The "spent" caustic liquor used to neutralise the effluent is checked for alkalinity with a pH meter or pH paper and visually for solids/oil etc before discharging to the Acid Holding Well.

The Acid Holding Well is emptied annually during the July/August shutdown period and the sludge transferred to the Marlhole. At the same time an inspection of the "Well" is made and any necessary repair work undertaken. A daily visual inspection of the "Well" is made by either the Environment/Process Chemist and/or a member of the Maintenance Department to ensure that the pumps are functioning correctly and that there is no abnormal discharge occurring.

#### SPECIAL WASTES

#### 1. TI APOLLO LIMITED

Plating waste such as chromic acid sludge and nickel salts are removed annually by a waste disposal company under Section 17 regulations.

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"Used trichloroethylene" is stored in 45 gallon steel drums and stored in a compound adjacent to the Acid Holding Well until sufficient accumulates to warrant removal by a waste disposal company. It is removed under Section 17 regulations. The trichloroethylene is contaminated with oil.

Waste oil is collected in 45 gallon steel drums and either collected by a waste disposal company or sent away to be reconditioned and reused on site.

#### 2. TI ACCLES & POLLOCK LIMITED

Waste oil is contained in a 500 gallon storage tank and emptied by tanker when required.

A new supply of trichloroethylene is used in the End Cap Department and when it is too dirty for further use, it is transferred to the vapour degreasing unit. It then alternates between the vapour degreasing unit and the recycling still. Any debris in the still is put into the waste oil tank to be taken away when the tank is emptied.

## 4. Manning

The Environmental/Process Chemist, employed by TI Apollo Limited is responsible for ensuring that the conditions as laid down in the Site Licence No. SL137 are met and also that the final discharge to the sewerage system complies with the conditions of consent as stated by the Severn Trent Water Authority. He is available during normal working hours ie. Monday to Thursday 8.30am - 5.00pm and Friday 8.30am - 4.00pm, but can be contacted at home if the need arises. He is a qualified chemist and has been employed at TI Accles & Pollock and TI Apollo Limited for over 20 years. He is the person with whom to liaise in waste disposal matters and is the point of contact with TI Accles & Pollock in effluent matters. In his absence, another member of the Development Department would be responsible.

The Maintenance Department are responsible for ensuring that the pumps are working effectively in the Acid Holding Well, and the Environment/Process Chemist reports any malfunction of the Marlhole pumps to the Maintenance Department.

A member of the Maintenance Department is available at any time to deal with pumping problems. In the event of the level in the Acid Holding Well rising too far, personnel throughout the two companies would be instructed to reduce the water swills to an absolute minimum, or even turn them off. Also, any release of boshes would be curtailed, until the problem had been resolved.

# 5. <u>Precautionary Measures</u>

#### a) <u>UNACCEPTABLE WASTE</u>

In the event of an unexpected delivery of drums of waste material being dumped on company property, the drums would be labelled "unknown waste material - do not touch" and bonded in the compound adjacent to the Acid Holding Well.

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The West Midlands Hazardous Waste Unit would be notified and advice sought on subsequent action to be taken.

An unexpected delivery of unacceptable waste arriving on company grounds by tanker would not be allowed to discharge their contents into the Acid Holding Well. Details of the vehicle registration number, tanker company name and if possible driver's name would be noted and the West Midland Hazardous Waste Unit notified for their attention.

## b) SURFACE/YARD MAINTENANCE

The area adjacent to the Acid Holding Well is currently used for storing drums of oil for use throughout the company. It is also used for the storage of "waste trichloroethylene" and "waste oil" before subsequent removal. In the event of a leak, floor absorbent material would be used to help contain the spillage but it is hoped that a containment wall will be provided, in the near future.

#### c) SERVICES

Lighting is available in the vicinity of the Acid Holding Well as indicated on the plan.

Also, fluorescent lighting is installed in the steel shed adjacent to the Marlhole.

An electric meter is situated on the bank of the Marlhole near to the inlet pipe, adjacent to the wall running besides Rounds Green Road. This records the supply used for the Marlhole pumps, lighting and instrumentation in the steel shed.

Water is available from a hose pipe attached to a water tap adjacent to the wall of the Acid Holding Well. This is primarily used for hosing down the area in the vicinity of the tanker after discharge of the caustic soda into the Acid Holding Well.

#### d) FIRE

A fire hydrant is situated close to the Acid Holding Well as marked on the plan. In the event of a fire etc., the Security Officer would alert the Fire Brigade by dialling 999. The Site Manager would be informed and appropriate safety precautions taken. To reach the Acid Holding Well, access would be via the main entrance from Rounds Green Road and turn right. To reach the Marlhole, access would be via the Percy Business Park main entrance from Rounds Green Road and then immediately right through the double steel gates.

#### e) <u>PLANT BREAKDOWN</u>

Three pumps are situated in the Acid Holding Well but in normal circumstances two pumps are capable of coping with the effluent volume should one pump fail or require maintenance.

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In the unlikely event of the level in the Acid Holding Well rising too far, personnel throughout the two companies would be instructed to reduce water swills to an absolute minimum and if necessary, turned off completely. Also, any release of boshes would be curtailed until the problem had been resolved.

Due to the huge capacity of the Marlhole, pump failure would only have a minimal effect in the short term, providing the water level was reasonable. Nevertheless, if either of the two pumps begins to malfunction the offending pump is repaired or replaced as soon as possible.

In the event of a tanker containing waste caustic soda breaking down whilst discharging the load into the Acid Holding Well it would be the driver's responsibility to take appropriate action. If it was safe to do so he could leave the premises and return at a later date or arrange for another tanker to assist him.

#### f) SAFETY

Adjacent to the Acid Holding Well is a water tap with a hose pipe connected. On arrival, the tanker driver delivering waste caustic soda is informed of the position of the tap. It is used to swill down the roadway in the vicinity of the tanker, as a precaution, after the load has been discharged.

It is also available if personnel should be accidently splashed.

It is important that the sodium nitrite bosh is not discharged at the same time as concentrated acid. A mixture of toxic fumes of nitrogen dioxide could be produced. For this reason, the sodium nitrite tank is fitted with a padlock and chain to prevent unauthorised discharge of the contents. The key is kept in the Maintenance Department so that Maintenance personnel are not at risk should any work have to be carried out in the Acid Holding Well.

In any event, the sodium nitrite bosh is normally run off at the weekend in isolation from the discharge of any acid boshes. Very occasionally, discharge is requested during the week. The Environment/Process Chemist is informed and instructions are given to the appropriate personnel on both sites not to discharge any acid boshes whilst this is in progress.

# 6. <u>Environmental Controls</u>

#### a) <u>SPILLAGES</u>

If a spillage did occur whilst transferring the waste caustic soda into the Acid Holding Well, this would be swilled down with a copious supply of water from the nearby hose pipe.

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#### b) PLANT MALFUNCTION

Two of the three pipes in the Acid Holding Well should normally cope with the effluent volume, and the third pump is effectively a "standby pump".

Swill tanks would be reduced or turned off and boshes refrained from being run off until the pumps in the Acid Holding Well were able to cope with maintaining a reasonable level in the Well.

The capacity of the Marlhole is so vast that the pumps used for extraction can be repaired or replaced without any adverse environmental effect providing that regular inspection is carried out.

#### c) ODOURS

In the Acid Holding Well, odours from nitrogen dioxide produced from the interaction of sodium nitrite and acid have been eliminated as described previously.

The discharge of waste caustic soda from the tanker into the well is performed with the tanker pipe placed as far down into the well as possible.

Odours from the Marlhole have not been experienced.

In either case, treatment with deodorizers could be considered if a problem should arise.

#### d) <u>VERMIN/INSECTS</u>

Rentokil or Sandwell Metropolitan Borough Council could be contacted if this became a problem.

#### e) NOISE

Tanker drivers would be informed if it was noticed that pumps used to transfer their load into the Well were producing excessive noise.

If the Acid Holding Well pump were producing excessive noise, the Maintenance Department would be informed.

### d) TRANSPORT MOVEMENT

A quick, visual assessment of tankers is made before they leave the company grounds to make sure that no mud or debris is transferred to the public highways.

#### e) <u>DUST</u>

If any dust should be produced this would be damped down with a hose.

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## f) LITTER

Contractors are employed to clean up the site on a regular basis and skips are emptied frequently.

## 7. Records

An effluent log book is used to record:

- a) Deliveries of waste caustic soda.
- b) pH value of the Marlhole.
- c) Malfunctions that occur and actions taken.
- d) Volume of effluent into and out of the Marlhole.

A duplicate copy of the monthly returns submitted to the West Midland Hazardous Waste Unit is available.

Samples of the effluent, from the final weir by the Marlhole, are taken frequently by Severn Trent Water Limited for analysis. Copies of the analysis are received by the company so that appropriate action can be taken to ensure that the company continues to meet the consent conditions.

Relevant paperwork to comply with the Duty of Care, including registration details of waste disposal companies dealing with our waste, are available.

Copies of Section 17 dealing with waste entering and leaving the site are available.



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