

Bioresources - Tankered Trade Waste			
Document Title	SOP 03 TDW Non-Conformance		
Document Owner Role	Process Manager	Version Number	3.0
Date of Last Review	05/11/21	Date of next Review	05/11/22
Identified Risks			
<ul style="list-style-type: none"> • HS&W risks associated with unsuitable / volatile / hazardous waste streams. • Excessive solids could damage the pipework infrastructure • Activated Sludge Process lanes collapse: from Overloading of nutrients <ul style="list-style-type: none"> ○ Inhibition of the microbial activity through the introduction of too many inhibitory compounds such as metals or cyanide or pH concentrations are too extreme • Digestors inhibits Methane (CH₄) generation due to: <ul style="list-style-type: none"> ○ excessive volume of heavy metals such as Chromium (Cr III) and Cadmium (Cd) ○ They can poison the active bacteria and inhibit the methanogenic bacteria ○ This leads the presence of organic acids • Combined Heat Power process impacted by: <ul style="list-style-type: none"> ○ High concentrations of Hydrogen Sulphide (H₂S) can damage engines ○ High concentrations of Siloxanes (Si) pas through the biogas and result in silica deposits. ○ These damage the engine valves, oil life etc leading to greater downtime and more equipment to be replaced • Compliance risks: <ul style="list-style-type: none"> ○ Loss of waste permits if waste not listed on them permitted or waste does not have the appropriate EWC. ○ Final effluent discharge consents missed due to high solids or heavy metals or Phosphorus (P) ○ BAS Compliance for Biosolids non-conforming if too high metal content ○ Wider environmental damage from failures of the treatment processes due to unsuitable waste streams being accepted. 			
<p>If this is a printed version please ensure that it is still within the current review period, if not 'DO NOT USE' and contact your line manager for a new version</p>			
<p style="text-align: center;">Remember – If you can't do the job safely, don't do it. 'DO NOT CARRY OUT THE PROCEDURE' And seek advice from your line manager</p>			

Introduction
The non-conformance procedure outlines how a non-conformance is raised and potential reasons as to why a waste is deemed non-conforming.

Key Roles and Responsibilities	
Tankered Trade Waste Manager (TWM):	<ul style="list-style-type: none"> ○ Ensure that the approval process is be followed ○ Ensure that the operating procedures are followed ○ Ensure that the Tankered Trade Waste Technicians (TTWT) have undergone appropriate training ○ Investigate HSW & Environmental concerns from the TTWT
Tankered Process Team (TPT)	<ul style="list-style-type: none"> ○ Reviewing and updating the non-conformance process as required ○ Supporting TTWT with non-conformances through discussing concerns
Tankered Trade Waste Technicians (TTWT)/Technical Competent Person (TCP):	<ul style="list-style-type: none"> ○ Raising Non-conformances to the appropriate parties where waste does not comply within the acceptable parameters ○ Capture all non-conformances ○ Escalating concerns to TWM or TPT where H&S, regulatory compliance or processes are at risk
Commercial Team:	<ul style="list-style-type: none"> ○ Notifying the customer of a rejection and the reasons why.

Required Training	
Tankered Trade Waste Technicians (TTWT)/ Technical Competent Person (TCP):	<ul style="list-style-type: none"> ● In date EMS training ● At least 6 months experience in the waste industry (if they are approving low risk wastes) HNC Chemistry, University Degree in a Scientific Area or similar experience ● Experience undertaking sampling and lab testing ● How to use CWID
Tankered Process Team (TPT):	<p>The requirements for the TTWT in addition to:</p> <ul style="list-style-type: none"> ● Tankered Waste experience or 12 months experience in the waste industry ● CIWM Hazardous Waste Classification course ● Cranfield University Biological Processes/Activated Sludge Treatment course ● University degree or similar level of experience and knowledge in a Scientific Area
Tankered Trade Waste Manager (TWM):	<ul style="list-style-type: none"> ● In date EMS training ● Experience of working in the Waste Industry ● Understanding of Health, Safety, Wellbeing and Environmental Compliance

Documentation & Resources
<ul style="list-style-type: none"> ● Standard Operating Procedures (SOP) ● CWID (Commercial Waste Information Database) ● Waste Transfer Note (WTN)/Consignment Note (if Hazardous)

Procedure:

All the TTW loads are approved against certain requirements, for more information please see the Waste Stream Approvals document (SOP 02). Non-conformance can arise from a range of issues, but the two main categories are:

1. Missing/Invalid Waste Carriers Licence (WCL)
2. Discharging anything not Septic Tank, Cesspool or Toilet waste

All non-conformances must be reported on CWID.

Missing/Invalid Waste Carriers Licence (WCL)

If the non-conformance is in relation to the customer not having a valid waste carriers licence, then the customer is instantly removed from our system (freeze FOBs/Site Access) due to severity of non-compliance. They will immediately not be able to discharge at our sites. A tracker has been developed which looks flags out of date WCLs.

Discharging anything not Septic Tank, Cesspool or Toilet waste:

There is a separate escalation procedure for this behaviour:

- I. First non-conformance: The sample result shall be communicated to the customer via the Trading Commercial Team with the customer being required to provide an explanation. If a satisfactory answer which justifies the non-conformance is not given, the customer shall be given a first written warning.
- II. Second non-conformance: If the customer already has a first written warning and another non-conforming sample is obtained, the customer shall be sent the sample results and be required to provide an explanation. If a satisfactory answer which justifies the non-conformance is not given the customer shall be suspended from discharging for one month.
- III. Third non-conformance: If the customer already has a second written warning and has been suspended previously and another non-conforming sample is obtained, the customer shall be sent the sample results and be required to provide an explanation. If a satisfactory answer which justifies the non-conformance is not given the customer shall be suspended from discharging indefinitely.

Identification of Waste Non-conformance

Between 2018 and 2020 Severn Trent has intensively sampled TDW customers and this has helped to give estimates of the variability and concentrations in TDW. As more and more samples are collected the characteristics of TDW shall be reviewed accordingly.

The table below gives an assessment of the typical characteristics of TDW from the sampling to date:

Action limits have been set on determinants which are deemed to have have an impact on the treatment process. As TDW characteristics can vary significantly a sliding scale has been set in terms of formally identifying a non-conformance. This is set on the basis of 26 determinants which are assigned action limits.

If 25% of the action limits are breached from an analysis of the database, this is deemed to constitute an Non-conformance as even allowing for the general variability of TDW, this takes the waste characteristic outside TDW.

Confirmed None Conformances should be reported to the customer, via the Account

Manager, within 2 weeks.

TDW Characteristic Summary

	pH	Suspended Solids, mg/l	BOD(2mg/l ATU) 5 day suppressed, mg/l	Ammoniacal Nitrogen as N, mg/l	Nitrite, mg/l	Nitrate, mg/l	Iron, mg/l	
Average	7.47	4276.03	2177.77	175.87	0.08	0.73	19.76	
Number of Samples Taken	64	358	61	173	48	47	64	
Max	9.2	59400	21400	671	0.16	1.4	91	
Min	6.1	102	50	10.2	0.08	0.7	0.871	
Action Limit	6 to 9	60000	25000	700		2	100	
	Aluminium, mg/l	Cadmium, mg/l	Chromium, mg/l	Copper, mg/l	Lead, mg/l	Nickel, mg/l	Zinc, mg/l	Phenols, mg/l
Average	6.13	0.003	0.03	0.19	0.13	0.08	2.11	0.45
Number of Samples Taken	64	250	64	64	64	64	341	225
Max	38.8	0.056	0.42	1.1	1.2	1.1	9.9	2.47
Min	0.3	0.00011	0.0012	0.018	0.005	0.0091	0.00018	0.1
Action Limit	40	0.1	0.5	1.2	1.3	1.2	10	2.5

	Silver, mg/l	Fluoride, mg/l	COD, mg/l	Phosphorus (Total) as P, mg/l	Arsenic, mg/l	Mercury, mg/l	Selenium, mg/l	Tin, mg/l
Average	0.00	0.50	7155.34	56.20	0.01	0.00008	0.01	0.03
Number of Samples Taken	64	64	357	64	64	129	64	64
Max	0.0345	1.2	45000	524	0.037	0.000636	0.012	0.13
Min	0.0007	0.1	270	3	0.0014	0.00001	0.0006	0.0015
Action Limit			50000	250	0.04	0.0007		0.13
	Bromide, mg/l	Cyanide, mg/l	Antimony, mg/l	Molybdenum, mg/l	COD 1hr settled, mg/l	Sulphate, mg/l	Chloride, mg/l	Phosphorus total filtered as P, mg/l
Average	3.24	0.01	0.01	0.03	3274.74	72.23	227.00	19.77
Number of Samples Taken	59	49	43	64	356	33	47	58
Max	24.7	0.02	0.024	0.098	37700	299	620	103
Min	0.2	0.009	0.0012	0.0027	62	4.4	38.4	0.49
Action Limit	25	0.03	0.024	0.1	40000	300	650	

We don't have action limits for all determinants we measure because are still assessing their environmental impact. We are continuing to sample TDW and are assessing the lab analysis in order to get sufficient data. The procedure will be changed to to reflect this as required.

Step by Step guide to Assessing Non-Conformances

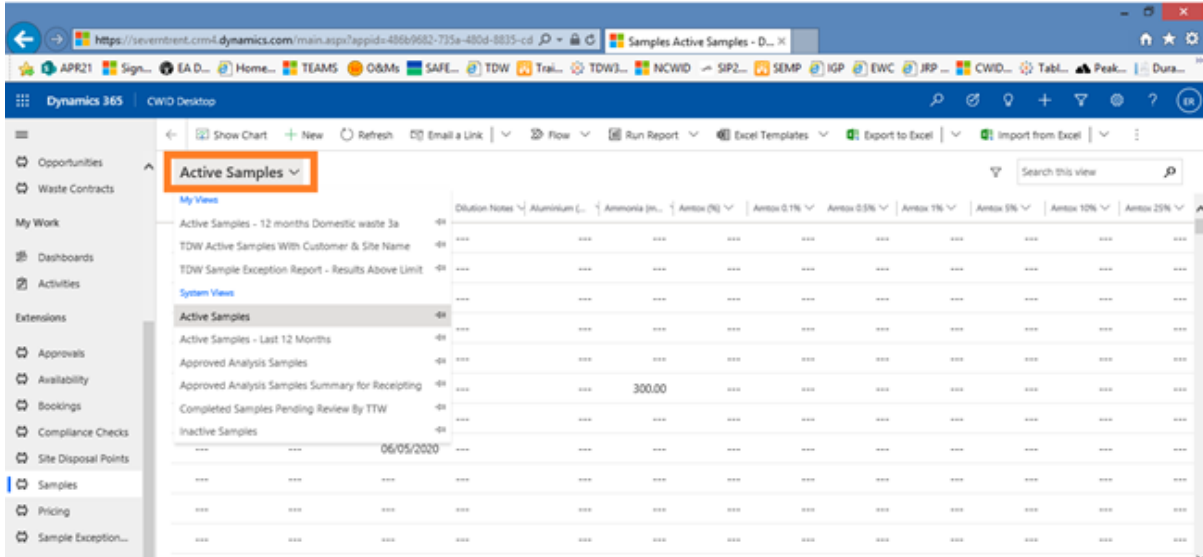
The action limits for the 26 determinants of interest have been inputted into the CWID database.

Sampling data is automatically transferred from the labs database following testing to CWID which will then flag any action limit breaches.

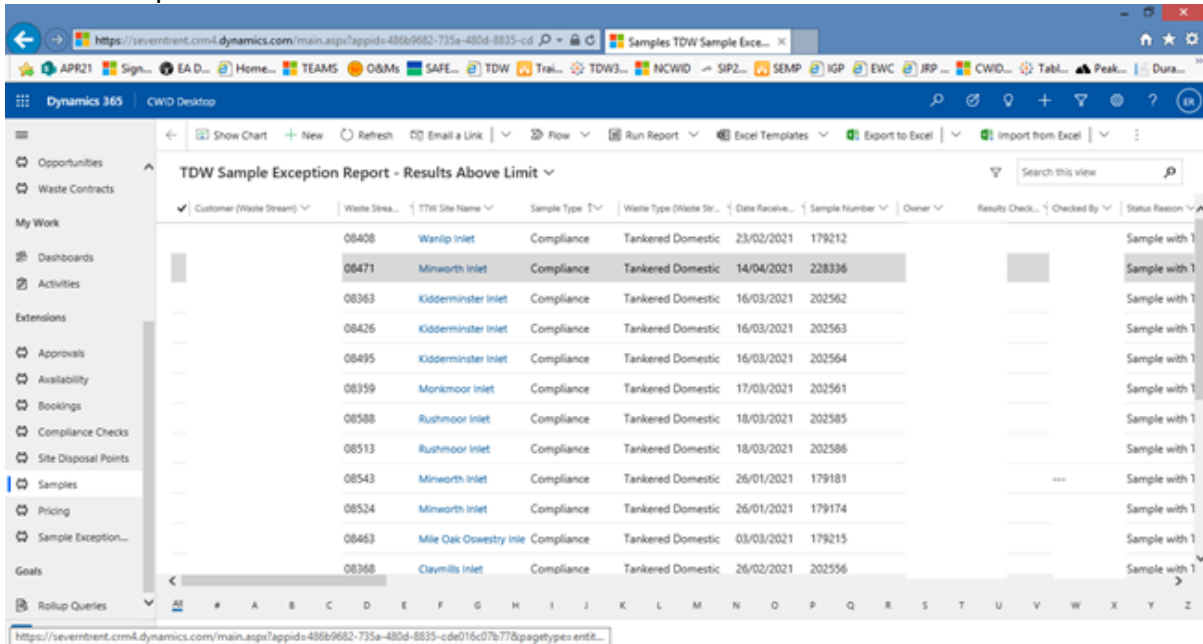
1. Open CWID
2. Select Samples

Name	Waste Stream	Customer	Producer (Waste S...	Waste Description (Rb...	EWC (Waste...	Status Reason	Owner	Next Steps	Customer Contact	Old STW Ref...	Est
				Brine Water	02 02 03	3. Opport...		Send sample off L...		08734	25
				Water	02 02 04	3. Opport...		Send sample off L...		08733	22
				Bio Sludge	05 01 10	3. Opport...		Send sample off L...		08732	26
				Ink Washings	16 10 02	3. Opport...		Send sample off L...		08226	22
				Ink Washings	16 10 02	3. Opport...		Send sample off L...		08225	22
				Ink Washings	16 10 02	3. Opport...		Send sample off L...		08229	22
				Ink Washings	16 10 02	3. Opport...		Send sample off L...		08731	22
				Leachate	19 07 03	3. Opport...		Send sample off L...		08730	22
				Compost Leachate	16 10 02	3. Opport...		Send sample off L...		08729	22
				Groundwater	16 10 02	4. Sample ...		Await results, che...		08727	22
				Beer Waste	02 07 04	4. Sample ...		Await results, che...		08728	27
				Effluent Treatment Plat	02 02 03	4. Sample ...		Await results, che...		08726	26

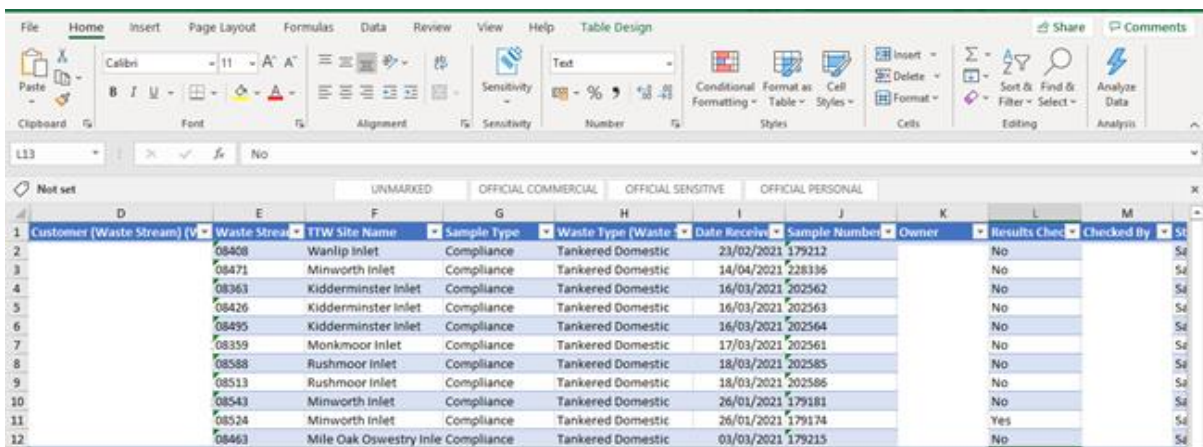
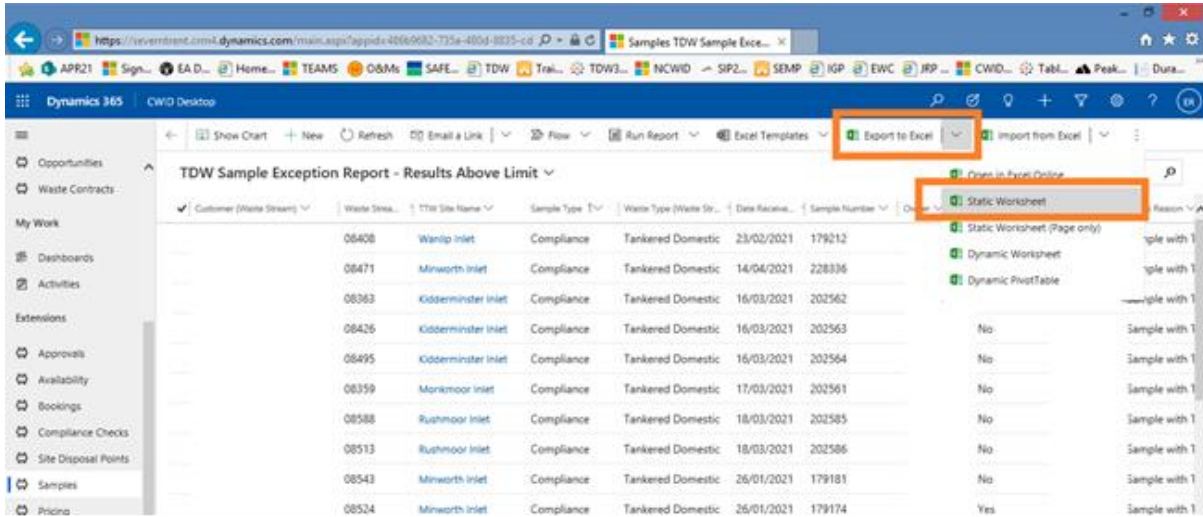
3. Select the Active Samples Drop Down



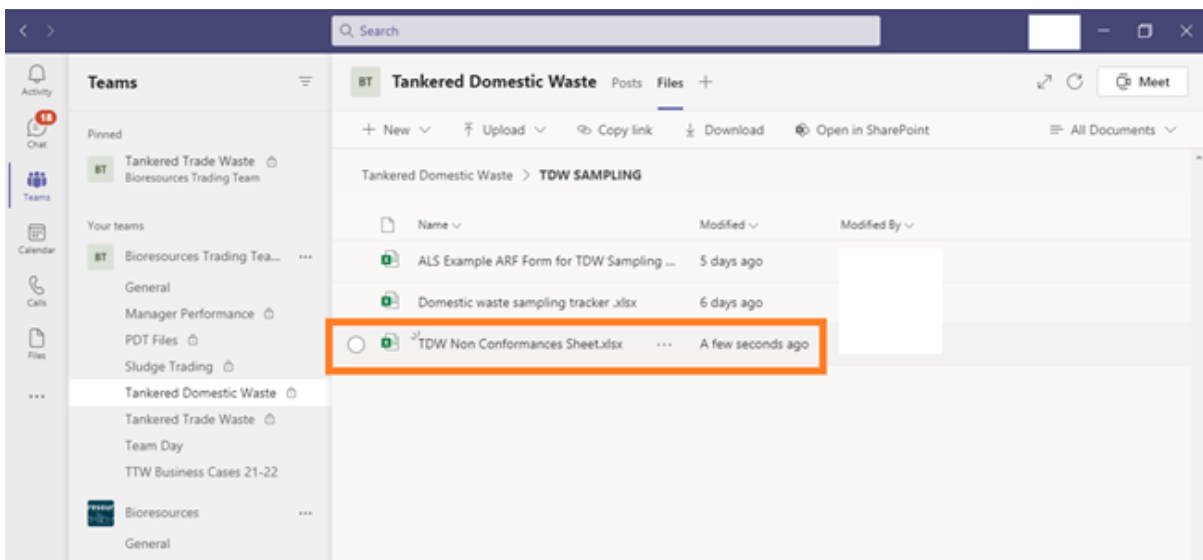
4. Select “TDW Sample Exception Report – Results Above Limit. This will open all the samples where action limit breaches have been identified

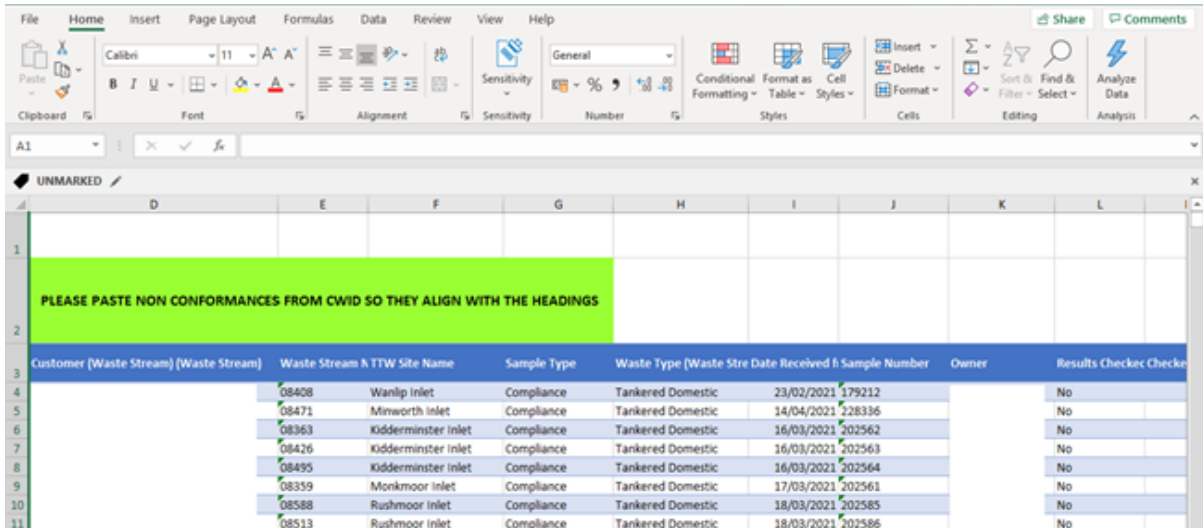


5. Export Results to Excel

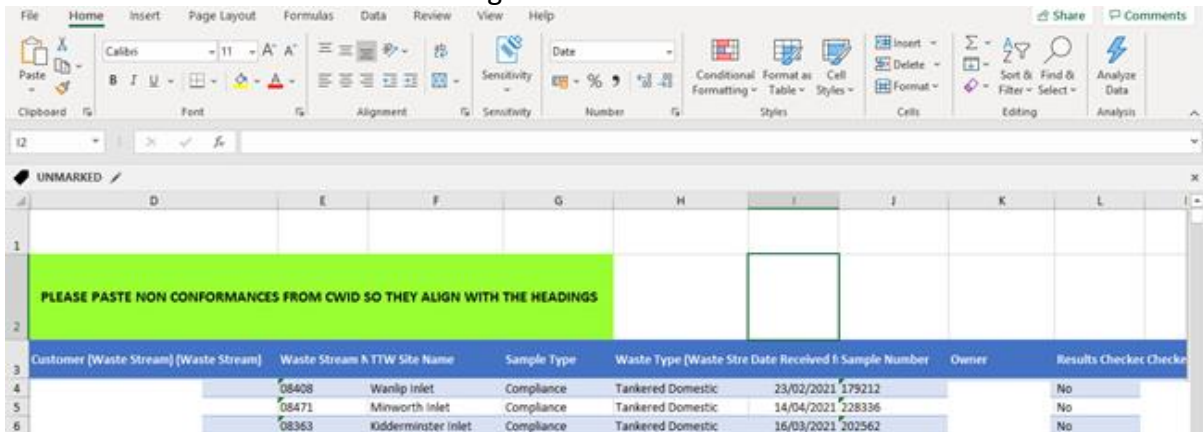


6. Open the TDW Non Conformances Sheet from Teams





7. Paste the Non conformances from CWID to the TDW Non Conformances Sheet. Please ensure the columns align



8. Scroll to the right to column DO to view the Non-conformance assessment outcome. Column DL gives the number of action limits and column DN gives the non-conformance score. Scores >25% shall be flagged as formal non-conformances.

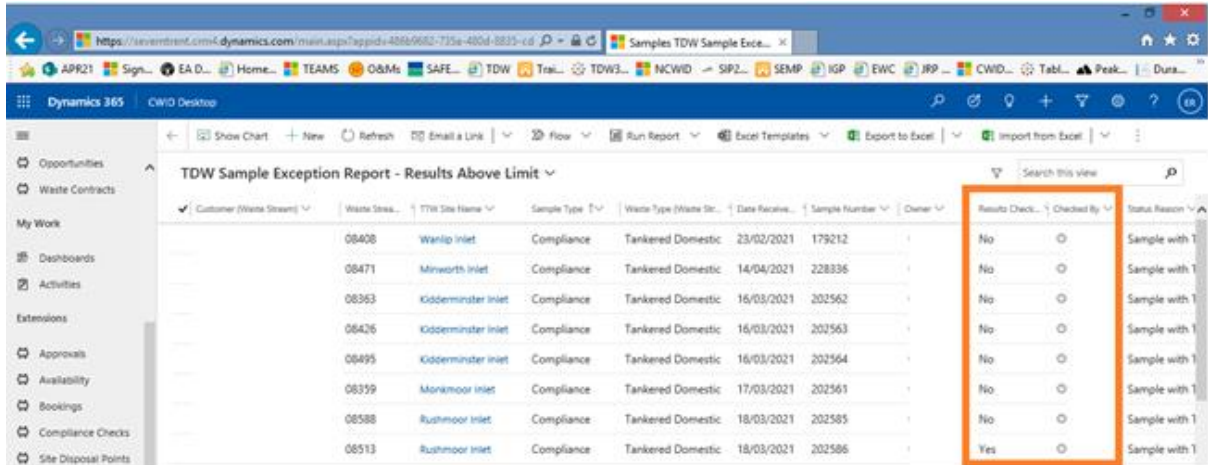
	DI	DJ	DK	DL	DM	DN	DO
2	Non Compliance Score						
3	Tin (mg/l)	Zinc (mg/l)		Non Compliant Determinants	Number Determinants Analysed	Non Compliance Score	Action
4	0	1		6	26	23%	Minor inconsistency no further action required
5	0	1		3	26	12%	Minor inconsistency no further action required
6	0	1		2	26	8%	Minor inconsistency no further action required
7	0	1		3	26	12%	Minor inconsistency no further action required
8	0	1		6	26	23%	Minor inconsistency no further action required
9	0	0		3	26	12%	Minor inconsistency no further action required
10	0	0		3	26	12%	Minor inconsistency no further action required
11	0	1		1	26	4%	Minor inconsistency no further action required
12	1	1		11	26	42%	Non Compliance
13	0	1		3	26	12%	Minor inconsistency no further action required
14	1	1		4	26	15%	Minor inconsistency no further action required
15	0	1		1	26	4%	Minor inconsistency no further action required
16	0	1		7	26	27%	Minor inconsistency no further action required

Once a formal non-conformance is raised the following details shall be passed to the TW commercial team

- Sample results identifying the action limits
- Pictures of the tanker
- JRP data output for the discharge

The TW commercial team shall follow the aforementioned customer contact.

9. Update the TDW Sample Exception Report – Results Above Limit by changing the Result Check column to YES and completing the Checked by column. For formal non-conformances please leave these unfilled until the non-conformance investigation is completed. Also attach emails with the TW Commercial Team to the respective non-conformance during the process.



References:

- SOP 01 TDW Waste Sampling

Version Control			
Version	Date	Details	Published By
1.0	07/04/2020	Initial non-conformance procedure updated	E. Ruswa
2.0	07/04/2021	Merged into a big document.	E.Ruswa
3.0	21/10/2021	Non-conformance procedure reviewed inline with current practices.	O.Boertje