To:	Cassidy Kuiper	**Date:**	July 2022
From:	Ofentse Mokonoto	**Proj #:**	AFT7855
RE:	**Surface Water Inputs for Uis Tin Mine ESIA Update**		

Dear Cassidy,

It is Digby Wells Environmental (hereinafter DWE) understanding that AfriTin Mining (Pty) Ltd (hereinafter AfriTin) are planning to construct a bulk sampling processing facility (including a tantalum processing plant and lithium pilot plant) at their Uis Tin Mine, in Namibia. The proposed construction will require an Environmental Social Impact Assessment (ESIA) which is currently being undertaken by AfriTin.

This memorandum provides feedback on surface water-related queries that the ESIA consultants have.

1. Hydrology and Topography

DWE is of the view that floodline modelling will not be required for the proposed activities. The nearest watercourse with substantial streamflow during a heavy rainfall event is on the eastern side of the mountain ridge. The 1:50 and 1:100 year floodlines were delineated by DWE (Digby Wells Environmental, 2022) floodline report which was provided to AfriTin.

There is a non-perennial drainage line flowing in a south-westerly direction from the hills and along the plant area (see Figure 1-1). However, the drainage line is deemed too small to collect any significant amount of runoff that can potentially cause flooding to the planned mining infrastructure site. A berm extending across the foot of the mountain will therefore be required to prevent clean water from entering the plant area. See Section 1.1 for the recommended height.

Based on the plant layout provided by AfriTin (see Figure 1-1), there is a proposed clean water channel which will collect all the runoff from upstream of the plant area and divert it along the southern boundary towards the old pit area. Alongside the clean water channel, there is a berm that will prevent the clean water from entering the plant area. DWE proposes the berm is extended north around the plant area to prevent runoff from the hills from entering the plant area.

Based on the topography of the catchment, during a significant rainfall event, runoff from the hills will be captured by the proposed clean water channel and will divert water past the plant area and towards the pit area (west of the proposed process facility). As indicated in Figure 1-1, some of the runoff from the hill will follow the gradient of the topography towards the road and will flow along the road in a north-easterly direction towards Namclay Bricks and Pavers.

As indicated above, the proposed berm will allow the runoff to be diverted away from the plant area. With these berms in place, clean water runoff from the hills will not enter the plant area.

1.1. Conceptual Sizing of the Clean Water Channel

It is important to ensure that all stormwater structures (see Figure 1-1) that will be designed to keep dirty and clean water separate should accommodate the magnitude of the precipitation event for a 1:50 year, 24-hour event. This is in line with the Best Practice Guidelines and in line with the South African National Water Act (Act 36 of 1998) as well as the Government Notice 704 (Government Gazette 20119 of June 1999). As per the scope of work, this memo only provides the conceptual sizing of the stormwater infrastructure outside the plant area to avoid clean water runoff entering the plant area.

The Manning Equation was used to provide a conceptual size of the clean water channel. The Manning Equation is described by the following equation $V = (1 / n) \times R2/3 \times s1/2$.

Where:

- V- Velocity or water mass flow rate;
- n - Manning's roughness coefficient;
- R - The channel's hydraulic radius, calculated by dividing the water flow's cross-sectional area “A” by its wetted perimeter P (i.e., R = A / P); and
- s - Slope of the channel's bottom surface.

The dimensions and characteristics of the proposed clean water channel are presented in Table 1-1. The stormwater channels should be sized to convey the 1:50-year return period flood peak in accordance with the best practice guidelines. It is assumed that the channels will have a slope of at least 2%. The Manning’s roughness coefficient assumed for the proposed clean water (concrete) channel was 0.013 (see Table 1-1). The 1:50 and 1:100 year Floodlines Report (Digby Wells Environmental, 2022) indicated that the 24-hour design rainfall depths for a 1:50-year is 56 mm. The proposed berms should have a minimum height of at least 0.6 m.

Table 1-1: Proposed Storm Water Channel Characteristics

Name	Shape	Depth (m)	Top Width (m)	Bottom Width (m)	Max Velocity (m/s)	Max Velocity (m^3/s)	1:50 Year Peak Flow (m^3/s)
Catchment A	Trapezoidal	0.40	0.92	0.46	3.7	1.03	1.0

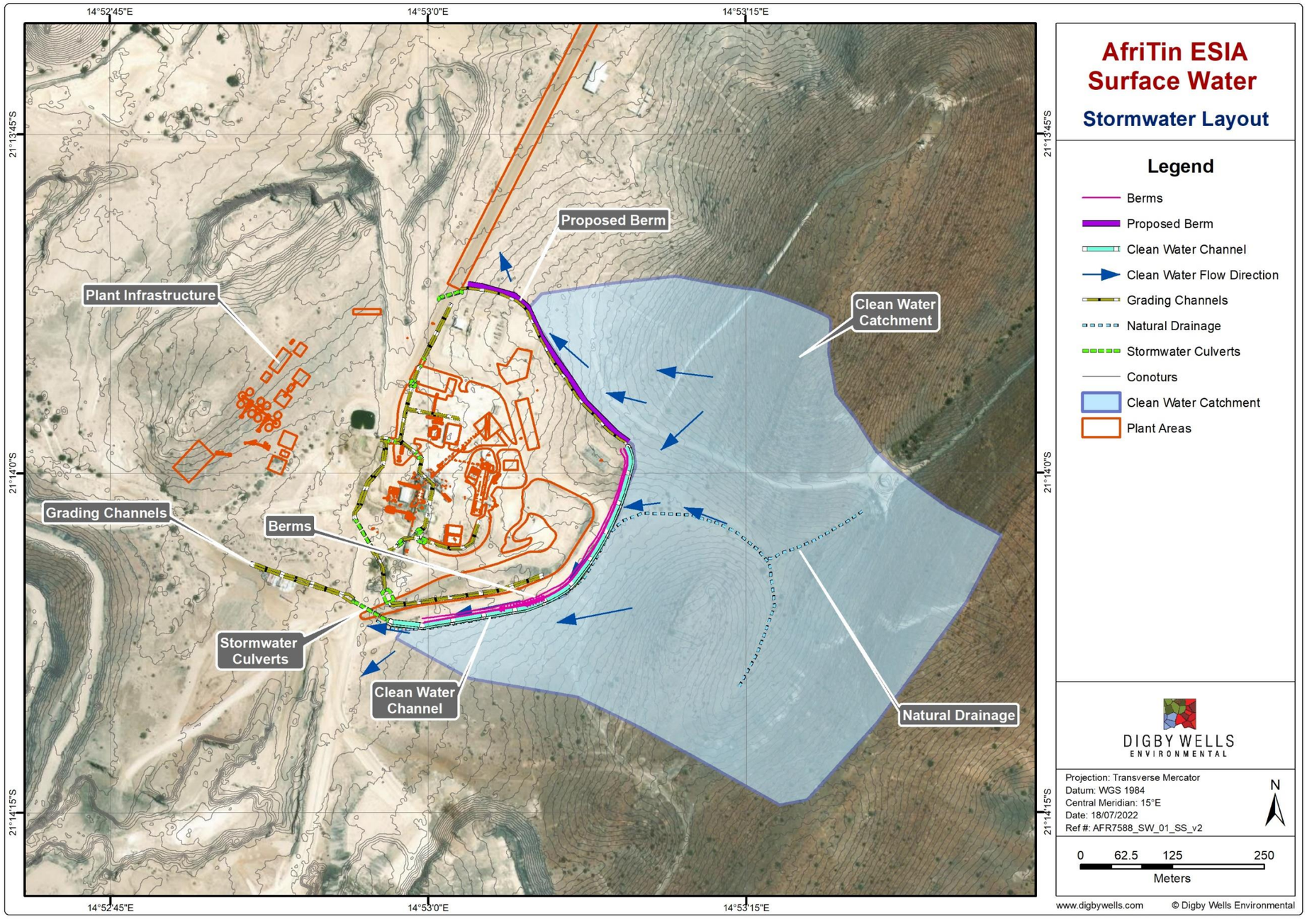


Figure 1-1: The Proposed Plant Upgrade Layout

2. Surface Water Impact Assessment

The Surface Water Impact Assessment (SWIA) includes the description of the potential and existing surface water impacts of the project activities on water resources (i.e., runoff from the hills) and the mitigation/management recommendations. The impacts were rated as the indicated methodology in **Appendix A**.

Since AfriTin is an existing mine, and as such this study will only consider potential impacts for the operational phase and decommissioning phase. This impact assessment does not consider the impacts of the proposed bulk sampling and processing plant, because this is addressed in the **ESIA Groundwater Responses memo**.

Similar projects were researched to identify additional impacts and risks and were compared to the context of the proposed development.

2.1. Operational Phase

The project site (i.e., plant area) is situated adjacent to an unnamed drainage line and any runoff from the site (without any mitigations) would end up in the natural environment. Activities during the operational phase that may have potential impacts on the surface water resources are presented in Table 2-1 and the appropriate management/mitigation measures are provided below.

Table 2-1: Interactions and Impacts of Activity

Interactions	Impacts
Runoff from the Waste Rock Dumps (WRD) footprint	1. Siltation and sedimentation as runoff from the WRD can report the nearby drainage line
Loading, hauling and stockpiling of overburden material and waste rock.	
Runoff from the contaminated surface due to moving trucks during transportation of materials	2. Surface water contamination due to runoff from contaminated areas leading to deteriorated water quality
General operation of operation of plant, ancillary infrastructure and services (including use of vehicles and machinery as well as storage and handling of waste and hazardous material).	
Capturing runoff water and precipitation	3 Reduction in catchment size and less runoff to the environment

2.1.1. Impact Description: Sedimentation and siltation of nearby watercourses from the plant area (Interactions 1&2)

Under a significant rainfall event and without any mitigations in place, runoff from the WRD and surrounding contaminated areas could potentially mix with the surface runoff from the adjacent hills. This would potentially lead to siltation and sedimentation of the non-perennial drainage line. Under the Best Practice Guidelines, the mixing of clean and dirty water is prohibited.

2.1.2. Impact Description: Contamination of water resources and deterioration of water quality (Interactions 1&2)

Hydrocarbon spillages and leakages from services workshops, maintenance of haul roads, and machinery as well as general waste could potentially end up in the adjacent drainage line under a heavy rainfall event. This could lead to surface water contamination. It is understood that the tailings material will be neutralized and dewatered before being deposited on the WRD facilities. However, during a rainfall event, these tailings materials could end up in the adjacent drainage line if there are no measures to prevent the mixing of clean and dirty water.

2.1.3. Impact Description: Reduced runoff reporting to the environment

The reduction in catchment size will subsequently reduce the amount of runoff entering the natural environment. This could result in the modification of the localised water balance/hydrology. However, the impact is likely to be negligible because the catchment of the mining activity is small in comparison to the catchment of the affected watercourse. In addition, the catchment is already disturbed and therefore the impact will be minimal.

2.1.4. Impact Rating

The following tables (Table 2-2 to Table 2-4) rate the impacts of the operational phase:

Table 2-2: Impact Significance Rating for Sedimentation and Siltation

Dimension	Rating	Motivation	Significance
Activity and Interaction: Runoff from WRDs and loading, hauling and stockpiling of waste materials			
Impact Description: Sedimentation and siltation of the adjacent non-perennial drainage line from the WRD and surrounding contaminated areas.			
Prior to Mitigation/Management			
Duration	5	The impact will likely occur during the operational phase. Impact will cease after operation	-24 Negligible (Negative)
Extent	1	Very limited. Limited to isolated parts of the project site.	

Dimension	Rating	Motivation	Significance
Intensity	2	Minor natural impacts which are mostly replaceable. Very little change to the baseline. Damages can be rehabilitated. The drainage line hardly has flowing water.	
Probability	3	There is a possibility that the impact will occur.	
Nature	Negative		
Mitigation/Management Actions			
• Erect vegetated berms along the eastern portion of the plant area to divert surface water runoff from the hills away from the plant; • Implement vegetated berms around stockpiles to limit soil erosion; • Construct a clean water channel to divert the surface water runoff from the hills; • Ensure a storm water management plan is in place and implemented so that contaminated runoff from dirty catchment areas is contained; • All stormwater drainage infrastructure should be designed to contain the 1:50-year rainfall events to reduce the potential of contaminating water courses; • Install silt fences, and erosion blankets prior to soil stabilisation on steep surfaces to reduce chances of erosion; and • Water quality monitoring should continue to detect any potential sources of pollution.			
Post-Mitigation			
Duration	5	The impact will likely occur during the operational phase. Impact will cease after operation	-14 Negligible (Negative)
Extent	1	Very limited. Limited to isolated parts of the project site.	
Intensity	1	With mitigations in place, it is envisaged that there will be minor to no impact on the environment.	
Probability	2	With mitigations in place the possibility of the impact happening is very low.	
Nature	Negative		

Table 2-3: Impact Significance Rating for Contamination of Water Resources

Dimension	Rating	Motivation	Significance
Activity and Interaction: Contamination of water resources due to runoff from contaminated surface and general mining operations			

Dimension	Rating	Motivation	Significance
Impact Description: Contamination of water resources			
Prior to Mitigation/Management			
Duration	5	The impact will likely occur during the operational phase. Impact will cease after operation	-24 Negligible (Negative)
Extent	1	Very limited. Limited to isolated parts of the project site.	
Intensity	2	Minor natural impacts which are mostly replaceable. Damages (if any) can be rehabilitated.	
Probability	3	There is a possibility that the impact will occur.	
Nature	Negative		
Mitigation/Management Actions			
• Erect vegetated berms along the eastern portion of the plant area to divert surface water runoff from the hills away from the plant; • Implement vegetated berms around stockpiles to limit soil erosion; • Construct a clean water channel to divert the surface water runoff from the hills; • Ensure a storm water management plan is in place and implemented so that contaminated runoff from dirty catchment areas is contained; • All stormwater drainage infrastructure should be designed to contain the 1:50-year rainfall events to reduce the potential of contaminating water courses; • All storage areas for fuels, paints and oils should be appropriately bunded and spill kits should be in place; and • Water quality monitoring should continue to detect any potential sources of pollution.			
Post-Mitigation			
Duration	5	The impact will likely occur during the operational phase. Impact will cease after operation	-14 Negligible (Negative)
Extent	1	Very limited. Limited to isolated parts of the project site.	
Intensity	1	With mitigations in place, it is envisaged that there will be minor to no impact on the environment.	
Probability	2	With mitigations in place the possibility of the impact happening is very low.	
Nature	Negative		

Table 2-4: Impact Significance Rating for Reduction in Runoff

Dimension	Rating	Motivation	Significance
Activity and Interaction: Capturing runoff water and precipitation			
Impact Description: Reduced runoff entering the natural environment.			
Prior to Mitigation/Management			
Duration	5	The impact will likely occur during the operational phase. Impact will cease after operation	-21 Negligible (Negative)
Extent	1	Very limited. Limited to isolated parts of the project site.	
Intensity	1	Limited damage to minimal area. The catchment area is already disturbed.	
Probability	3	There is a possibility that the impact will occur.	
Nature	Negative		
Mitigation/Management Actions			
• Allow some of the rainfall/runoff water to flow freely into the environment, • Constructing a clean water open drain that will collect some of the water currently flowing towards the plant site and allow it to flow to the environment; and • Construct berms to divert water away from the plant area and allow this to seep away into the environment.			
Post-Mitigation			
Duration	5	The impact will likely occur during the operational phase. Impact will cease after operation	-14 Negligible (Negative)
Extent	1	Very limited. Limited to isolated parts of the project site.	
Intensity	1	With mitigations in place, it is envisaged that there will be minor to no impact on the environment.	
Probability	2	With mitigations in place the possibility of the impact happening is very low.	
Nature	Negative		

2.2. Decommissioning, Rehabilitation and Post Closure Phases

Table 2-5 outlines the potential impacts to surface water which could arise during the Decommissioning and Rehabilitation Phase.

Table 2-5: Interactions and Impacts of Activity

Interaction	Impact
Demolition and removal of infrastructure	1. Sedimentation and siltation of the nearby drainage line.
Shaping and final rehabilitation of remaining overburden stockpiles and WRDs	
Rehabilitation of disturbed areas (possibly including soil, re-vegetation and profiling or contouring).	2. Possible contamination of surface water due to spillages of hydrocarbons during rehabilitation activities.
Mine closure and vegetating the project area close to its pre-mining state	3 The landscape will not be as pre-mining state, but the reduction in catchment area will be restored as well as the naturalised flow.

2.2.1. Impact Description: Sedimentation and siltation of nearby watercourses (Interaction 1)

Sedimentation and siltation of nearby watercourses is likely to occur during the demolition phase. Disturbance of soils through demolition and removal of infrastructure including the plant and WRD increases the rate of soil erosion leading to sedimentation and siltation of the nearby drainage lines.

2.2.2. Impact Description: Sedimentation and siltation of nearby watercourses (Interaction 2)

Surface water contamination due to hydrocarbon waste spillages. Spillages of hydrocarbons (oils, fuels, and grease) by vehicles and machinery used during the demolition and transportation of material from the decommissioned mine will contaminate surface water resources when washed into the drainage lines. Post-closure monitoring of water resources water quality is pivotal for a successful rehabilitation and closure plan.

2.2.3. Impact Description: Sedimentation and siltation of nearby watercourses (Interaction 3)

The drainage systems (where applicable) and landscapes will be rehabilitated close to their natural state before the mining activities. The impact rating was based on comparing the post-closure conditions with the pre-mining conditions.

2.2.4. Impact Rating

The following tables (Table 2-6 to Table 2-8) rate the impacts of the decommissioning phase:

Table 2-6: The Potential Impacts of Demolition and Removal of Infrastructure

Dimension	Rating	Motivation	Significance
Activity and Interaction: Demolition and removal of infrastructure			
Impact Description: Sedimentation and siltation of the nearby drainage line.			
Prior to Mitigation/Management			
Duration	3	Medium term (1-5 years). The impact will occur during the demolition phase	-18 Negligible (Negative)
Extent	1	Limited to isolated parts of the project site.	
Intensity	2	Minor natural impacts which are mostly replaceable. Damages (if any) can be rehabilitated.	
Probability	3	There is a possibility that the impact will occur.	
Nature	Negative		
Mitigation/Management Actions			
• Limit soil disturbances to relevant areas during demolition. Movement of all demolition or any other heavy vehicles should be limited to the area of demolition and use of existing roads should be encouraged; • Demolition should be undertaken during the dry winter period to reduce sedimentation in the proximal watercourses since there will be minimal to no occurrence of rainfall during this period; • Install silt fences, erosion blankets prior to soil stabilisation on steep surfaces to reduce chances of erosion and further ensure that there is enough vegetation around the watercourses (drainage line); • Ensure that waste stockpiles are frequently collected and away from watercourses (drainage line); and • Monitoring of water quality should continue to take place post-mining activities.			
Post-Mitigation			
Duration	4	Medium term (1-5 years). The impact will occur during the demolition phase	-10 Negligible (Negative)
Extent	1	Limited to isolated parts of the project site.	

Dimension	Rating	Motivation	Significance
Intensity	1	With mitigations in place, it is envisaged that there will be minor to no impact on the environment.	
Probability	2	With mitigations in place the possibility of the impact happening is very low.	
Nature	Negative		

Table 2-7: The Potential Impacts of Spillages and Leakages from Vehicles and Machinery During the Demolition of Infrastructure

Dimension	Rating	Motivation	Significance
Activity and Interaction: Spillages and leakages from vehicles and machinery during the demolition of infrastructure.			
Impact Description: Contamination of water resources.			
Prior to Mitigation/Management			
Duration	3	Medium term (1-5 years). The impact will occur during the demolition phase	-18 Negligible (Negative)
Extent	1	Limited to isolated parts of the project site.	
Intensity	2	Minor natural impacts which are mostly replaceable. Damages (if any) can be rehabilitated.	
Probability	3	There is a possibility that the impact will occur.	
Nature	Negative		
Mitigation/Management Actions			
• All waste from the demolition process should be taken off-site as soon as possible to avoid any demolition debris which may cause suspended solids during a heavy rainfall event; • The demolition of chemical storages or facilities should be carefully handled by suitable professional companies to avoid spillages; and • Monitoring of water quality in the canal should continue to take place post-mining activities. • Demolition should be undertaken during the dry winter period; • Washing and servicing of vehicles and machinery should only be undertaken at designated, appropriately designed areas; and • Monitoring of water quality should continue to take place post-mining activities.			
Post-Mitigation			

Dimension	Rating	Motivation	Significance
Duration	4	Medium term (1-5 years). The impact will occur during the demolition phase	-10 Negligible (Negative)
Extent	1	Limited to isolated parts of the project site.	
Intensity	1	With mitigations in place, it is envisaged that there will be minor to no impact on the environment.	
Probability	2	With mitigations in place the possibility of the impact happening is very low.	
Nature	Negative		

Table 2-8: Impact Significance Rating for Improvement in Drainage after Rehabilitation

Dimension	Rating	Motivation	Significance
Activity and Interaction: Rehabilitation including reprofiling of channel lining and landscape close its pre-mining state			
Impact Description: The reduction in catchment area will be restored as well as the naturalised flows to the environment.			
Prior to Mitigation/Management			
Duration	5	The impact will likely occur during the operational phase. Impact will cease after operation	-21 Negligible (Negative)
Extent	1	Very limited. Limited to isolated parts of the project site.	
Intensity	1	Limited damage to minimal area. The catchment area is already disturbed.	
Probability	3	There is a possibility that the impact will occur.	
Nature	Negative		
Mitigation/Management Actions			
• Allow the rainfall/runoff water will flow freely into the environment.			
Post-Mitigation			
Duration	3	The impact will be average, but it will have on-going benefits to the environment	5 Negligible (Positive)
Extent	1	Some environmental benefits felt by very few of the population.	
Intensity	1	Some environmental benefits that will improve the local bio-aquatic environment.	

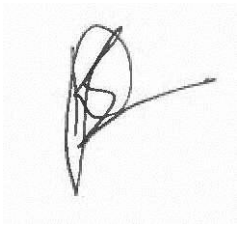
Dimension	Rating	Motivation	Significance
Probability	1	The impact will be average, but it will have on-going benefits to the environment.	
Nature	Positive		

3. Conclusions and Recommendations

- The objective of this memo was to investigate how the plant infrastructure and surrounding upgrade could be affected by the surface water runoff from the upstream catchment and to provide the potential impact (pre and post mitigations) of the plant on the water resources;
- In addition to the proposed stormwater infrastructure that was provided by the Client, DWE proposed an additional berm along the northern portion to divert clean water away from the plant;
- The surface water impact assessment of the mine indicated that the mine will most likely have minor impacts on the hydrology of the area and that the mitigations would minimise these small impacts even further;
- The identified potential surface water/hydrological impacts that could emanate from the project and its associated activities include:
    - Siltation and sedimentation of the nearby drainage line; and
    - Contamination of surface water resources due to hydrocarbon leakages from moving vehicles; and
- The following is recommended to manage and mitigate identified surface water impacts:
    - The stormwater infrastructure (e.g., berms and silt-fence) should be well maintained;
    - Where applicable, berms should be vegetated to minimise or prevent soil erosion;
    - All operational vehicles must be inspected and maintained (on hardstanding surfaces only) regularly and stored/parked in designated areas equipped with drainage infrastructure to divert that runoff to storage on-site;
    - All mining personnel should be taught and trained to handle hazardous chemical waste to minimise spillages.
    - The use of spill kits is highly recommended and all storage facilities should be bunded; and
    - Water quality monitoring should continue to quickly detect pollution sources in order to implement mitigation measures at source before pollutants spread to other areas;

It can be concluded that if AfriTin is compliant with the various regulations guiding the management and protection of water resources and effectively implements an effective (undertaken by a separate company), its impact on the local and regional hydrology should be negligible.

Regards,



Ofentse Mokonoto

Hydrologist

Kevin Bursey

Principal Hydrologist

Appendix A: Impact/risk assessment

The significance rating process follows the established impact/risk assessment formula:

Significance = Consequence x Probability x Nature

Where

Consequence = Intensity + Extent + Duration

And

Probability = Likelihood of an impact occurring

And

Nature = Positive (+1) or negative (-1) impact

The matrix calculates the rating out of 147, whereby Intensity, Extent, Duration and Probability are each rated out of seven as indicated in **Table 3-3**. The weight assigned to the various parameters is then multiplied by +1 for positive and -1 for negative impacts.

Impacts are rated prior to mitigation and again after consideration of the mitigation measure(s) in this EIA/EMP Report. The significance of an impact is then determined and categorised into one of eight categories, as indicated in **Table 3-3**, which is extracted from **Table 3-1**. The description of the significance ratings is discussed in **Table 3-3**.

It is important to note that the pre-mitigation rating takes into consideration the activity as proposed, i.e. there may already be certain types of mitigation measures included in the design (for example due to legal requirements). If the potential impact is still considered too high, additional mitigation measures are proposed.

Table 3-1: Impact Assessment Parameter Ratings

Rating	Intensity		Spatial scale	Duration	Probability
	Negative Impacts (Type of Impact = -1)	***Positive Impacts (Type of Impact = +1)***			
7	Very significant impact on the environment. Irreparable and irreplaceable damage to highly valued species, habitat or ecosystem. Persistent severe damage. Irreparable and irreplaceable damage to highly valued items of high cultural significance or complete breakdown of social order.	Noticeable, on-going social and environmental benefits which have improved the livelihoods and living standards of the local community in general and the environmental features.	<u>International</u> The effect will occur across international borders.	<u>Permanent: No Mitigation</u> The impact will remain long after the life of the Project. The impacts are irreversible.	<u>Certain/Definite.</u> There are sound scientific reasons to expect that the impact will definitely occur.

Rating	Intensity		Spatial scale	Duration	Probability
	Negative Impacts (Type of Impact = -1)	***Positive Impacts (Type of Impact = +1)***			
6	Significant impact on highly valued species, habitat or ecosystem. Significant management and rehabilitation measures required to prevent irreplaceable impacts. Irreparable damage to highly valued items of cultural significance or breakdown of social order.	Great improvement to livelihoods and living standards of a large percentage of population, as well as significant increase in the quality of the receiving environment.	National Will affect the entire country.	Beyond Project Life The impact will remain for some time after the life of a Project.	Almost certain/Highly probable It is most likely that the impact will occur.
5	Very serious, long-term environmental impairment of ecosystem function that may take several years to rehabilitate. Very serious widespread social impacts. Irreparable damage to highly valued items.	On-going and widespread positive benefits to local communities which improves livelihoods, as well as a positive improvement to the receiving environment.	Province/ Region Will affect the entire province or region.	Project Life The impact will cease after the operational life span of the Project.	Likely The impact may occur.

Rating	Intensity		Spatial scale	Duration	Probability
	Negative Impacts (Type of Impact = -1)	***Positive Impacts (Type of Impact = +1)***			
4	Serious medium term environmental effects. Environmental damage can be reversed in less than a year. On-going serious social issues. Significant damage to structures / items of cultural significance.	Average to intense social benefits to some people. Average to intense environmental enhancements.	Municipal Area Will affect the whole municipal area.	Long term 6-15 years to reverse impacts.	Probable Has occurred here or elsewhere and could therefore occur.
3	Moderate, short-term effects but not affecting ecosystem function. Rehabilitation requires intervention of external specialists and can be done in less than a month. On-going social issues. Damage to items of cultural significance.	Average, on-going positive benefits, not widespread but felt by some.	Local Extending across the site and to nearby settlements.	Medium term 1-5 years to reverse impacts.	Unlikely Has not happened yet but could happen once in the lifetime of the Project, therefore there is a possibility that the impact will occur.
2	Minor effects on biological or physical environment. Environmental damage can be rehabilitated internally with/ without help of external consultants. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	Low positive impacts experience by very few of population.	Limited Limited to the site and its immediate surroundings.	Short term Less than 1 year to completely reverse the impact.	Rare/improbable Conceivable, but only in extreme circumstances and/ or has not happened during lifetime of the Project but has happened elsewhere. The possibility of the impact materialising is very low as a result of design, historic experience or implementation of adequate mitigation measures.

Rating	Intensity		Spatial scale	Duration	Probability
	Negative Impacts (Type of Impact = -1)	***Positive Impacts (Type of Impact = +1)***			
1	Limited damage to minimal area of low significance that will have no impact on the environment. No irreplaceable loss of a significant aspect to the environment. Minimal social impacts, low-level repairable damage to commonplace structures.	Some low-level social and environmental benefits felt by very few of the population.	Very limited Limited to specific isolated parts of the site.	Immediate Less than 1 month to completely reverse the impact.	Highly unlikely/None Expected never to happen.

Table 3-2: Probability/Consequence Matrix

Probability	Significance																																										
7	-147	-140	-133	-126	-119	-112	-105	-98	-91	-84	-77	-70	-63	-56	-49	-42	-35	-28	-21	21	28	35	42	49	56	63	70	77	84	91	98	105	112	119	126	133	140	147
6	-126	-120	-114	-108	-102	-96	-90	-84	-78	-72	-66	-60	-54	-48	-42	-36	-30	-24	-18	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120	126
5	-105	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105
4	-84	-80	-76	-72	-68	-64	-60	-56	-52	-48	-44	-40	-36	-32	-28	-24	-20	-16	-12	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80	84
3	-63	-60	-57	-54	-51	-48	-45	-42	-39	-36	-33	-30	-27	-24	-21	-18	-15	-12	-9	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60	63
2	-42	-40	-38	-36	-34	-32	-30	-28	-26	-24	-22	-20	-18	-16	-14	-12	-10	-8	-6	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42
1	-21	-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	-21	**-20**	**-19**	**-18**	**-17**	**-16**	**-15**	**-14**	**-13**	**-12**	**-11**	**-10**	**-9**	**-8**	**-7**	**-6**	**-5**	**-4**	**-3**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**
Consequence																																										

Table 3-3: Significance Rating Description

Score	Description	Rating
109 to 147	A very beneficial impact that may be sufficient by itself to justify implementation of the project. The impact may result in permanent positive change	Major (positive) (+)
73 to 108	A beneficial impact which may help to justify the implementation of the project. These impacts would be considered by society as constituting a major and usually a long-term positive change to the (natural and/or social) environment	Moderate (positive) (+)
36 to 72	A positive impact. These impacts will usually result in positive medium to long-term effect on the natural and/or social environment	Minor (positive) (+)
3 to 35	A small positive impact. The impact will result in medium to short term effects on the natural and/or social environment	Negligible (positive) (+)
-3 to -35	An acceptable negative impact for which mitigation is desirable. The impact by itself is insufficient even in combination with other low impacts to prevent the development being approved. These impacts will result in negative medium to short term effects on the natural and/or social environment	Negligible (negative) (-)
-36 to -72	A minor negative impact requires mitigation. The impact is insufficient by itself to prevent the implementation of the project but which in conjunction with other impacts may prevent its implementation. These impacts will usually result in negative medium to long-term effect on the natural and/or social environment	Minor (negative) (-)
-73 to -108	A moderate negative impact may prevent the implementation of the project. These impacts would be considered as constituting a major and usually a long-term change to the (natural and/or social) environment and result in severe changes.	Moderate (negative) (-)
-109 to -147	A major negative impact may be sufficient by itself to prevent implementation of the project. The impact may result in permanent change. Very often these impacts are immitigable and usually result in very severe effects. The impacts are likely to be irreversible and/or irreplaceable.	Major (negative) (-)