

NEMA GNR 1147 Financial Provisions Comparison against the Superseded MPRDA Regulations



- Financial Provisioning for mine closure was previously done under the MPRDA Section 41.
- Regulations 53 and 54 regulated the making of financial provisioning and the prescribed payment method.
- These have now been superseded by GNR 1147
- This presentation will give an overview on the main differences from a financial point of view between MPRDA S41 financial provisioning and GNR 1147
- Points to be discussed include:
 - Major differences in methodologies applied
 - Old MPRDA Financial Provision Example
 - Example converted into GNR 1147
 - How do we keep the cost down?
 - Basic Approach to Water Management and practical example.
 - Close-out comments and Questions.

Major differences in methodologies applied

Item	MPRDA Model	2018 NEMA Model
General Rates	DMR Rates, escalated to the applicable year	Industry Rates
Land Management Rates	Rehabilitation rates was set by the DMR on a hectare basis – escalated to last year was ~R99k per hectare (inclusive of reshaping, topsoiling and seeding)	Rehabilitation rates is based on Volume. The rates must be industry rates – suggestion is to get a number of rates and run a monte carlo to get an average rate.
Maintenance Cost	Maintenance Cost was a rate per hectare for the total disturbed area, rate provided by the DMR and escalated to the applicable year	There are no prescribed period for the maintenance cost nor rates. This can be determined per site until the site achieve relinquishment (“closure certificate”) status
Demolition	Demolition cost: material type and volume determined the cost – cost was provided by consultants and based on industry rates	Demolition cost: material type and volume determined the cost – cost was provided by consultants and based on industry rates
Water	Water management was calculated but not included in the guarantee. Water Capex and Opex was based on passive treatment and escalated for a 20 year period. Eskom requested active treatment rates towards the end of 2018. Capex	Water management is now included into the Residual Environmental Risk.

Major differences in methodologies applied

Item	MPRDA Model	2018 NEMA Model
Preliminary and General	P&G was set by the DMR: 6% of subtotal 1 if the value was above R100million. 12% of subtotal 1 if the value was below R100million	P&G as a line item fall away. Immediate closure cost must make provision for site establishment – rate / number to be stipulated internally or by consultant and Grand Total will be escalated by CPI + 2% over a 3 year period
Contingencies	Contingencies was set at 10% of subtotal 1 by the DMR	Contingencies as a line item fall away. CPI + 2% escalation over 3 years replace this item.
Grand Total	Grand Total was not escalated or discounted, neither were VAT added.	15% Vat must be added and Grand Total then again escalated with CPI + 2%
Auditing	Model and Process was well understood by the DMR and mines, not a lot of queries, financial auditing of the model was done as part of the company Annual Financial Auditing. The requirement was that a competent technical third party audit was done on the model every three years	New Legislation and Model – will probably take 2 years for authorities and mines to understand the model well. Financial auditing of the model can still be done as part of the company Annual Financial Auditing. Every year a Third Party Technical Expert must sign off on the model. We can therefore use a consultant in the first year to set up the model. In the following years we can populate the model ourselves but get a peer review done.

DMR table and rates (2005 escalated to 2018): Example

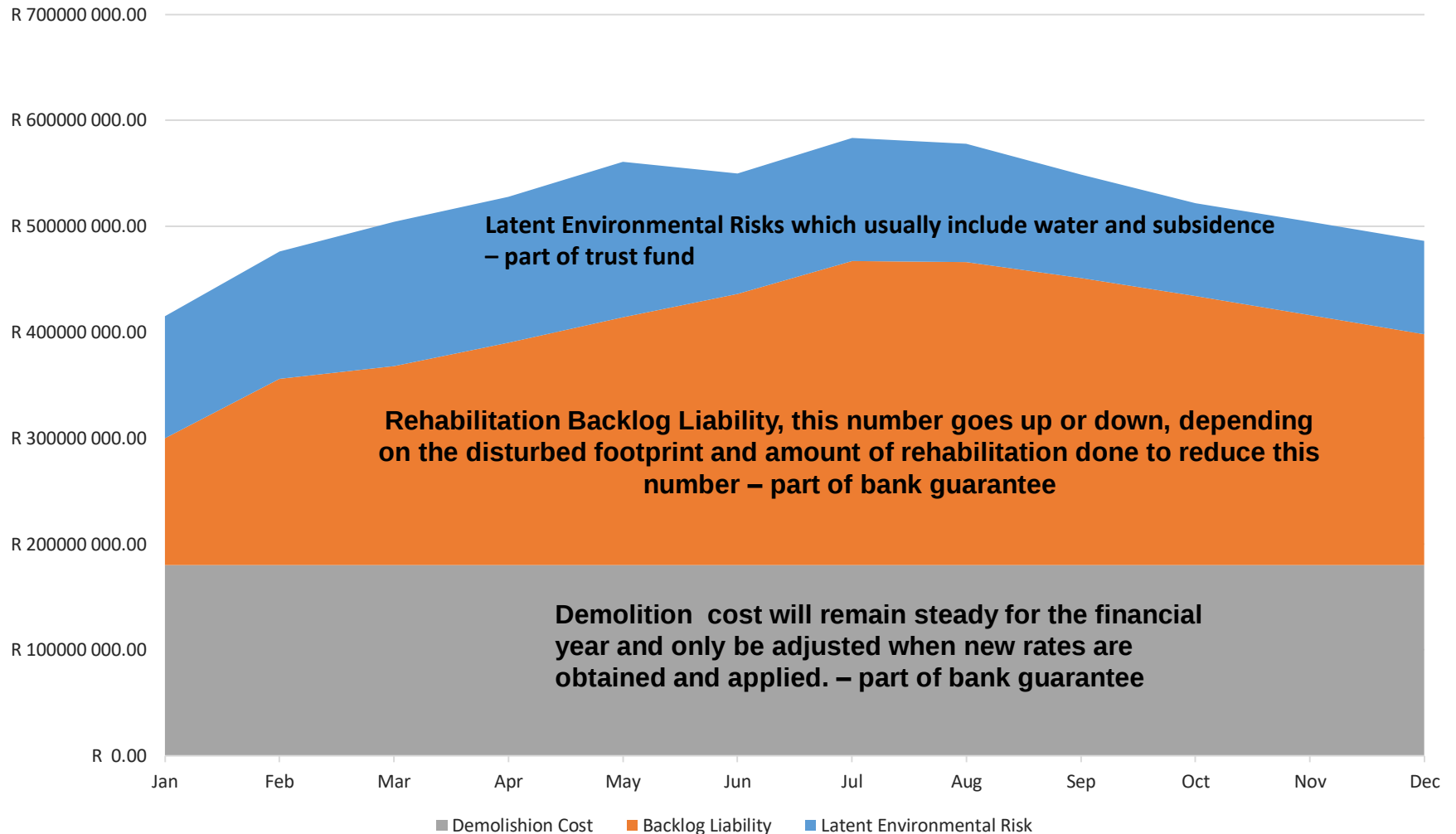
Basis of Estimate	For the DMR table and methodology, escalated rates from 2005 to 2017 are applied. CPI was used for the escalation, as checked and agreed with by the financial department. For the NEMA exercise, industry rates were applied to the volumes as supplied by a Quantity Surveyor		Ground and surface Water Models were used to determine water balance. Active treatment has been assumed .. The treatment model is based on acidity and salinity loads related to average water quality and volumes.	
Item	Immediate Closure	Immediate Closure		
Closure Component	Monetary Value	Unit (MI)	Monetary Value	
Infrastructural aspects	R 81 737 391,21			
Mining aspects	R 168 958 258,76			
General surface rehabilitation	R 7 102 225,12			
Water management	R 0,00			
Site Infrastructure	R 29 382 671,82			
Water Treatment Capex	R 0,00	19,67	R 264 724 716,30	
Water Treatment Opex	R 0,00		R 19 762 589,55	
Rehabilitation monitoring	R 0,00			
Additional Allowances	R 1 550 401,82			
Preliminary and general	R 373 079,14			
Contingencies	R 3 381 334,00			
Financial Provision Amount Communicated to the Authorities	R 331 419 580,43			

NEMA methodology – contractor rates (2018): Example

Assumptions			
	Estimated CPI Year 1		6,0%
	Estimated CPI Year 2		6,0%
	Estimated CPI Year 3		6,0%
	VAT		15,0%
Steps	Provision for final rehabilitation, decommissioning and mine closure plan		
1	Year 0	<u>Total Premature Closure Estimate</u> based on actual costs using prevailing rates (current footprint including all backlog, post-closure management and monitoring requirements as well as <u>current</u> residual environmental impacts).	R 497 047 443
2	Year 1	Year 0 total escalated at CPI + 2%	R 536 811 238
3	Year 2	Year 1 total escalated at CPI +2%	R 579 756 137
4	Year 3	Year 2 total escalated at CPI +2%	R 626 136 628
5	Total 1		R 626 136 628
	Provision for water management		
6	Year 0	<u>Total Estimate for Residual Environmental Impacts</u> which will occur in the <u>future</u> based on <u>Net Present Value (NPV)</u> using prevailing rates.	R 284 487 306
7	Year 1	Year 0 total escalated at CPI +2%	R 307 246 290
8	Year 2	Year 1 total escalated at CPI +2%	R 331 825 994
9	Year 3	Year 2 total escalated at CPI +2%	R 358 372 073
10	Total 2		R 358 372 073
11	Total 1 + Total 2 = TOTAL PROVISION as per Appendix 2 of Regulations		R 984 508 701
12	TOTAL PROVISION (with a further CPI +2% added as per Reg7(2))		R 1 063 269 398
13	TOTAL PROVISION AFTER ADDING VAT		R 1 222 759 807

Financial Provisioning Graph – Annual Basis

Financial Provision Graph



How do we keep the cost down?

Demolition (Limited Opportunity)

The volumes never change and the rates applied is industry rates. The only opportunity therefore lies within the rates applied for demolition. The latest trend is now to go out on enquiry and obtain a number of rates from different companies. Different company rates is then run through a monte carlo simulation where the rate can then be selected from the curve. This is an accepted method that the authorities will not dispute.

Rehabilitation (Medium Opportunity)

Financial provisions is determined by unrehabilitated volumes and the rate of machinery required to rehabilitate the area. There are therefore two opportunities 1.) reduce your unrehabilitated volumes by wiping out your backlog, closing up of legacy areas (old pits and ramps), not disturbing areas that does not need to be disturbed 2.) Do a cost benefit analysis wrt using contractors to do rehabilitation in the operational phase with targets and a contract in place vs in-house rehabilitation where your equipment often end up on the production side (volumes moved vs volumes not moved and rehab cost then escalated with CPI +2% etc.), Use the right equipment for rehabilitation, attempt to use equipment that the mine already have (e.g. dragline), do good quality rehabilitation to avoid future maintenance (reseeding, fixing of erosion etc.).

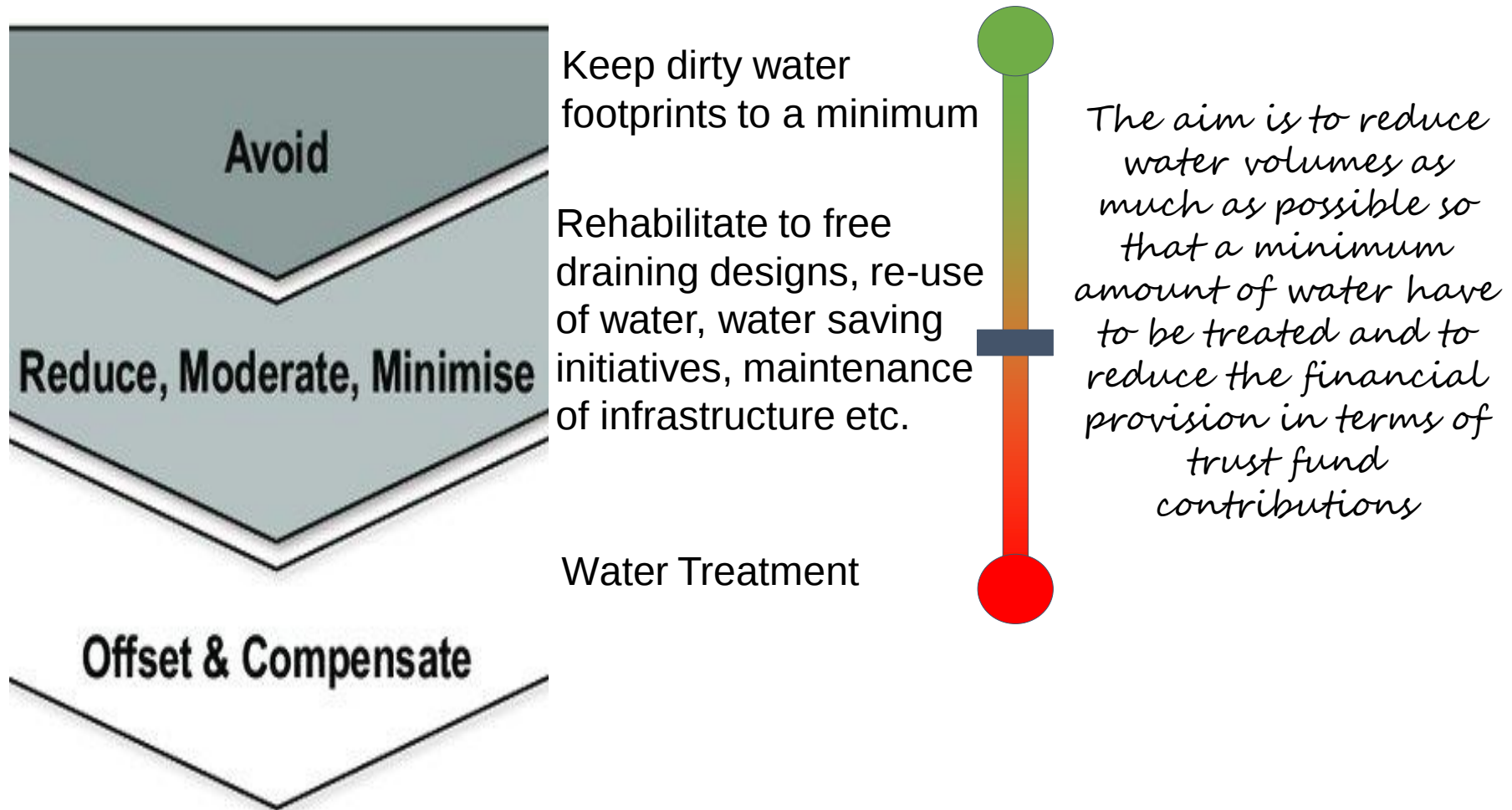
How do we keep the cost down?

Water Management (Major Opportunity)

- Water volumes on the mine that need to be managed is a function of groundwater, surface water, precipitation and import of water, water being used for dust and fire suppression, change house water, CM water, plant water etc.
- All these volumes contribute to a water balance with the excess water requiring a management strategy.

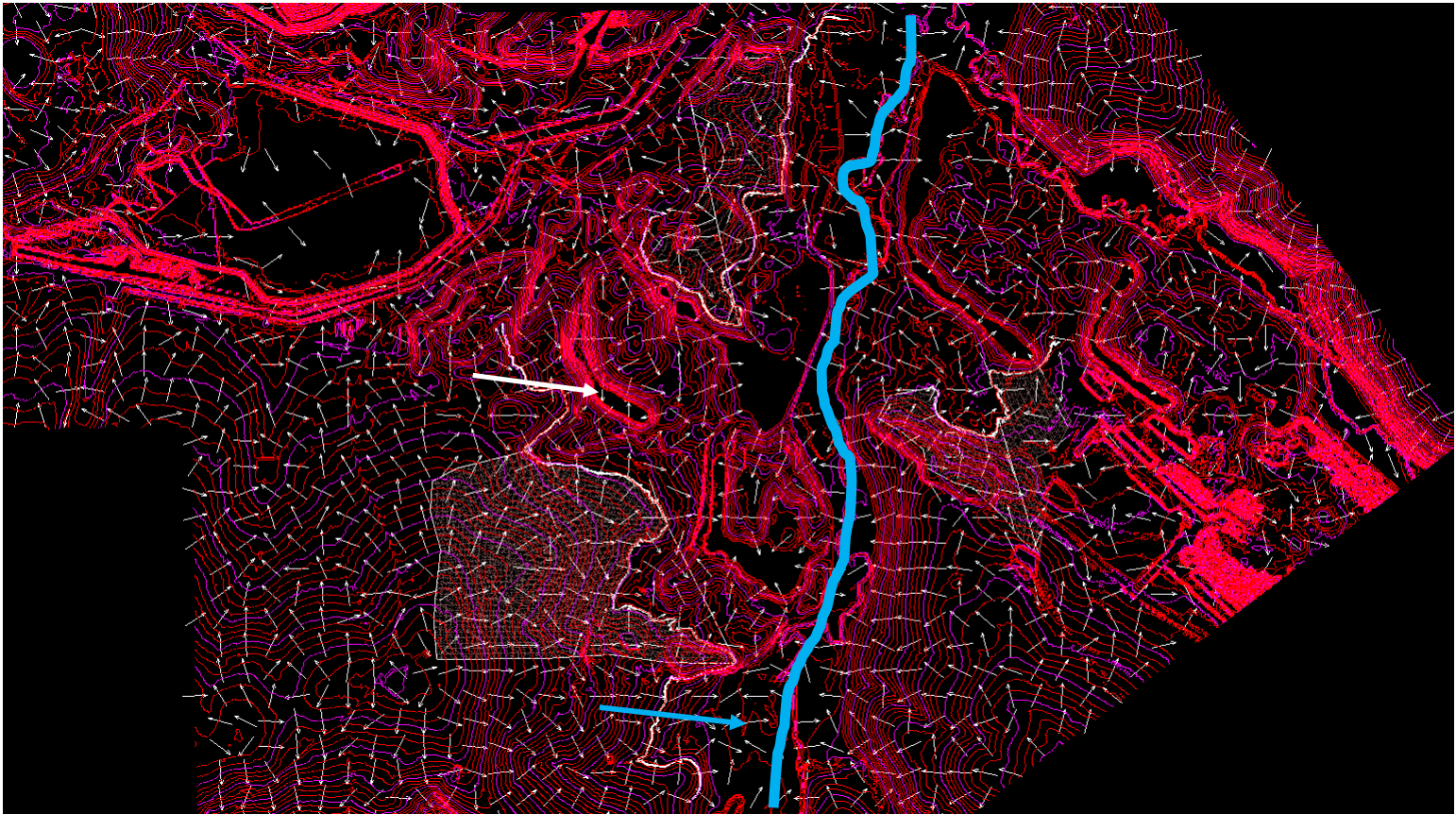
Import	Water Usage
Groundwater (Natural)	Dust and Fire Suppression
Surface Water (Natural)	Domestic Use (Potable, ablution, change house etc.)
Precipitation (Natural)	CM Water
Import of water (Artificial)	Plant Water
Import – Water Usage = Excess Water that require Financial Provisioning	

Basic approach to water management



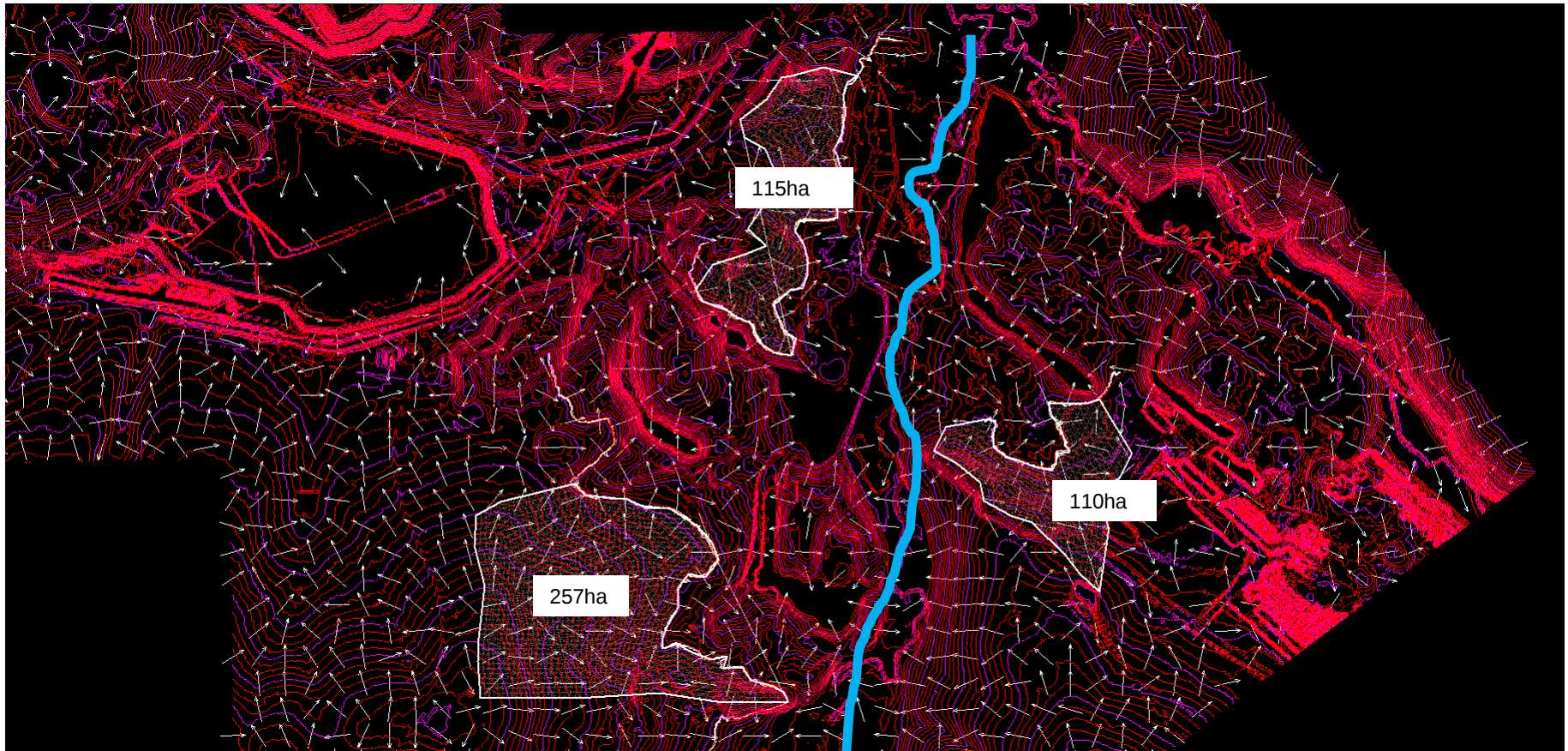
Practical Example: **Avoid**

Designing of Cut-Off berms and identifying areas for more in-fill to allow a greater run-off of clean water into the receiving environment



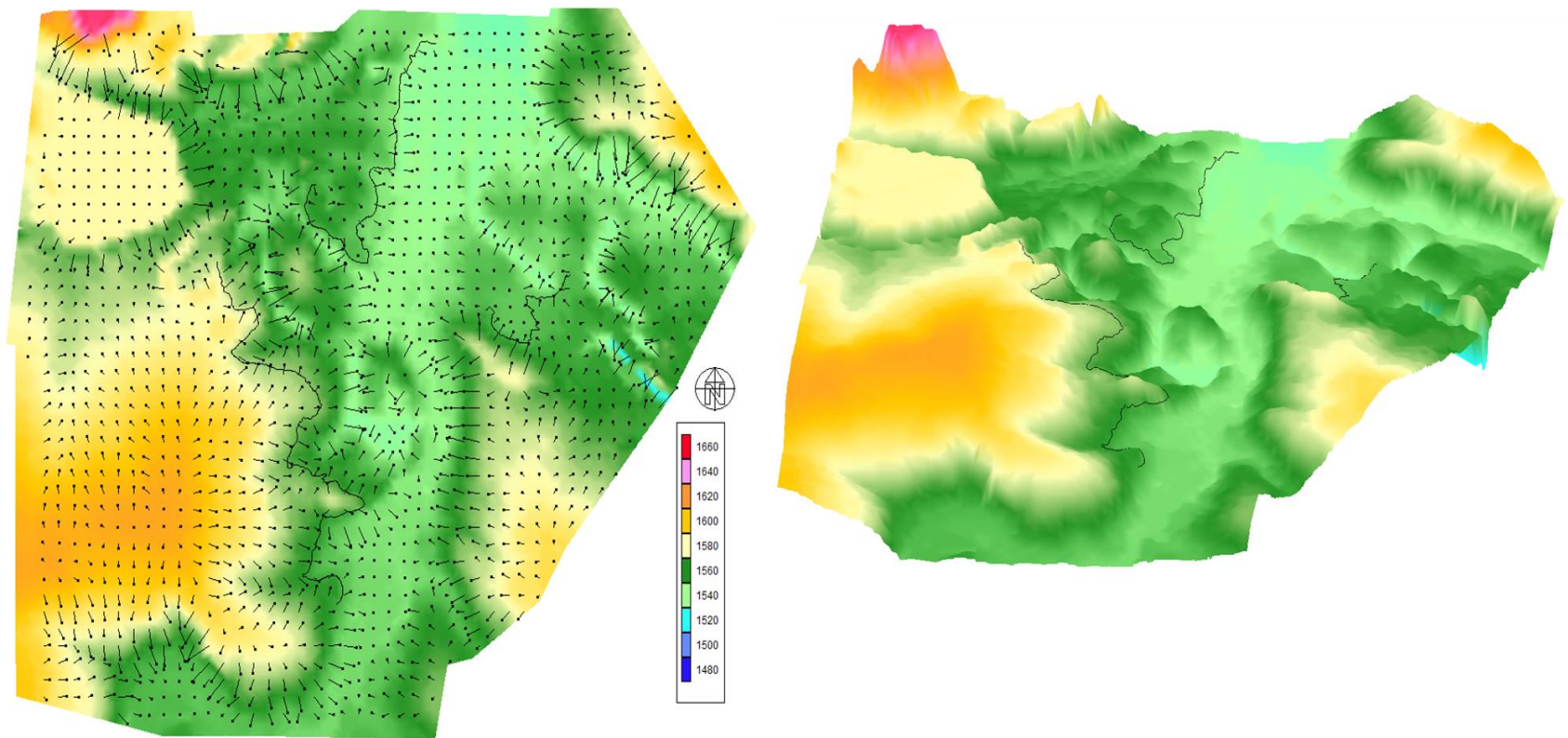
Practical Example: **AVOID**

Catchment areas in hectare that will become free draining after cut-off berms are implemented



Practical Example: **AVOID**

The three stormwater cut-off berms will result in a total of 482ha becoming free-draining. This will result in 1,89 ML of water run-off for which financial provisioning are not required.



- All environmental impacts can be converted into a financial cost whether it be an incident, rehabilitation, water management, wetland offset etc.
- The financial provisioning regulations therefore require the “final impacts” of an operation to be financially provided for.
- It is possible to reduce these costs significantly by the development of integrated strategies that compliment one another (specific reference to the relationship between good rehabilitation and water management).
- The development of these strategies must have a multi-disciplinary approach and cannot be done only by the site environmentalist or environmental consultant. The engineering, mining and financial disciplines need to be involved throughout the process in order to *“keep the solutions real and practical”*.
- When financial provisioning is done, there is very little the financial manager can do in order to reduce the cost. The environmental impacts and footprints therefore needs to be managed very closely and be monitored regularly through the use of a financial model that gets updated regularly.

Questions?

