NEW CENTURY RESOURCES

Reducing estimated rehabilitation costs and best practice approach dealing with DES

27 May 2021

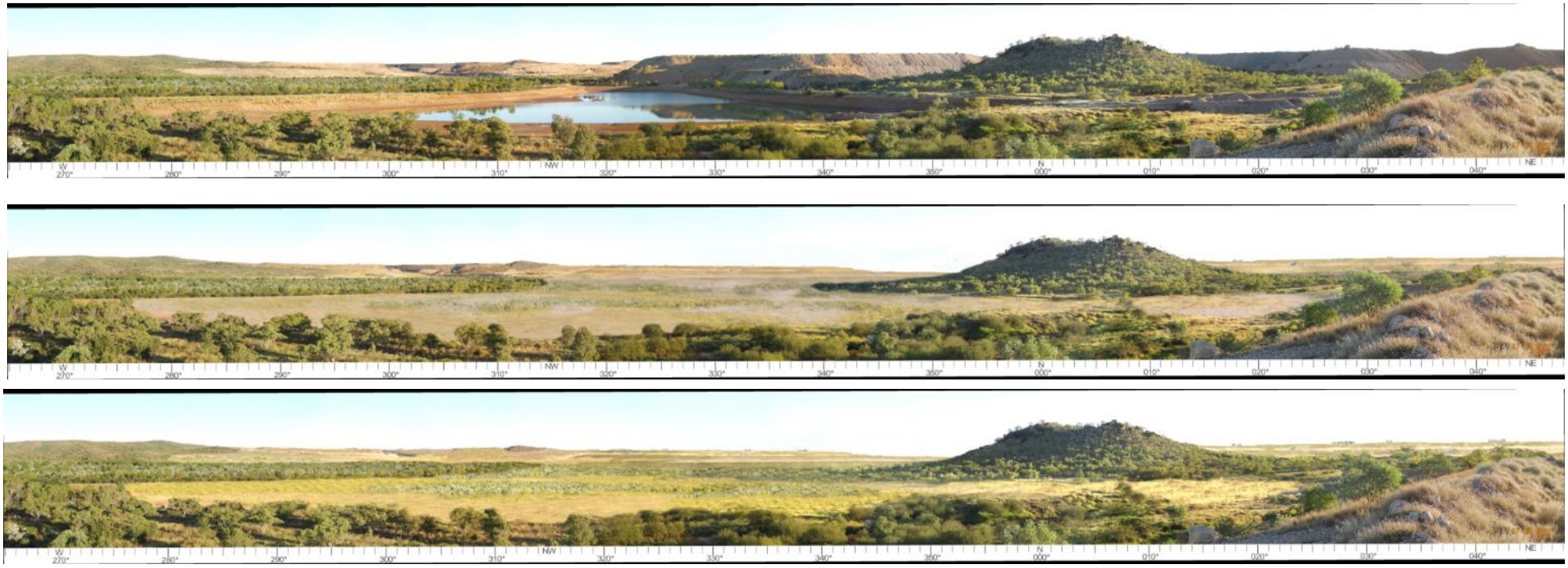
Overview

- Company's Vision
- Location and Site Details
- Climate
- Cover Design Process
- Waste Rock Cover
- Tailings Cover
- Conclusions

NEW CENTURY RESOURCES

New Century Resources Vision

To optimise value from the Century Assets whilst establishing the Company as the industry leader in economic mine rehabilitation



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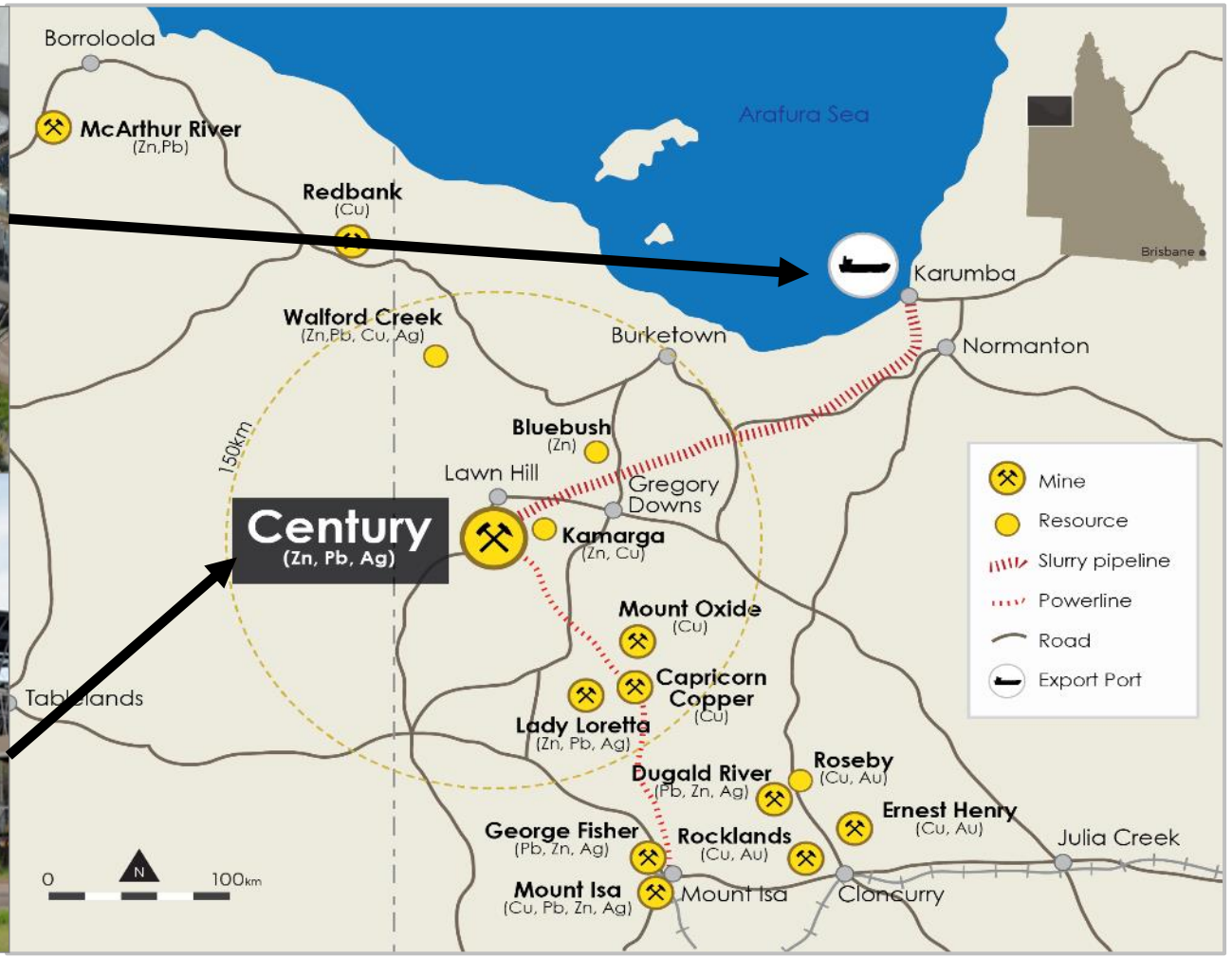
Location



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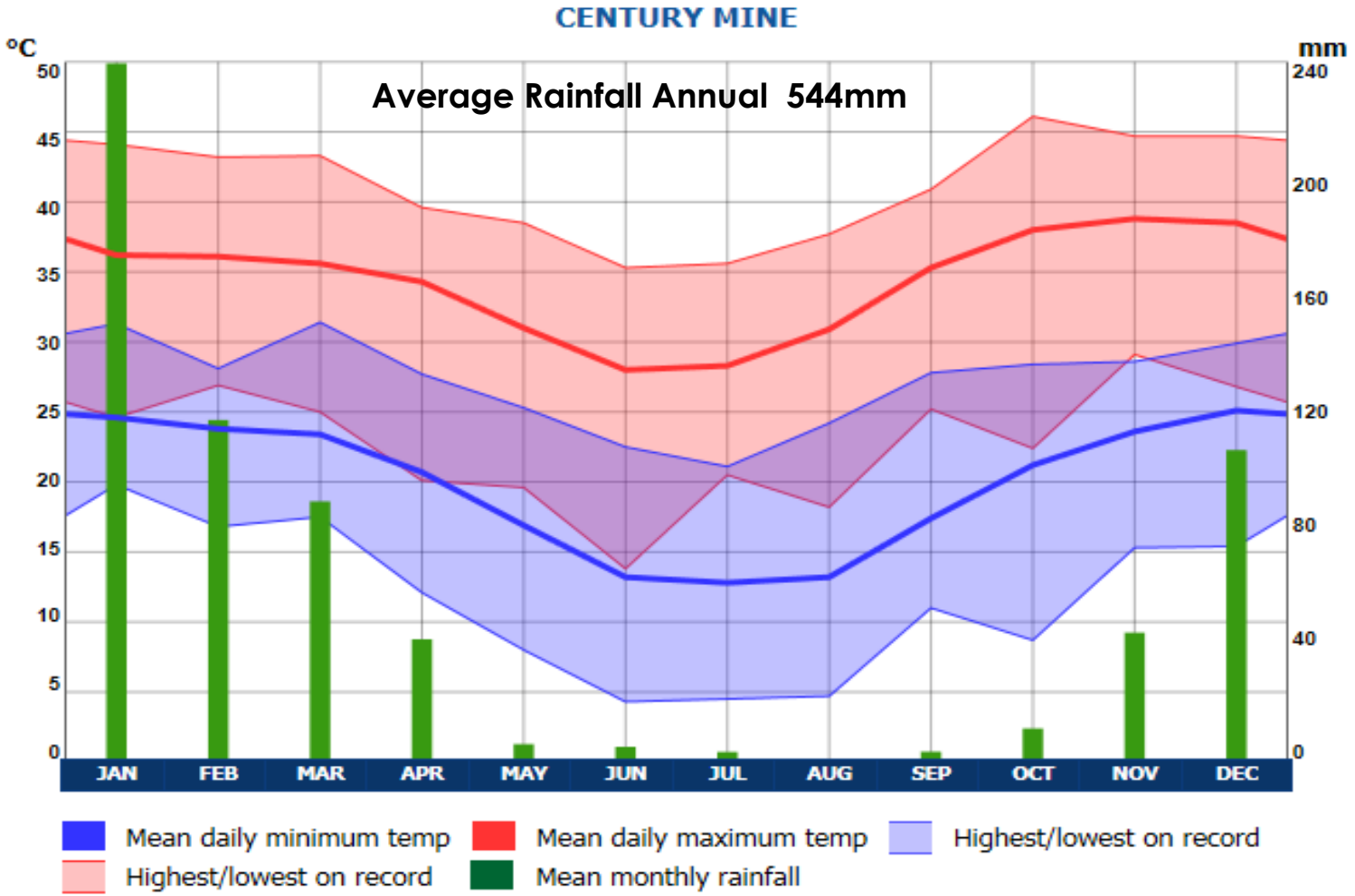
Climate

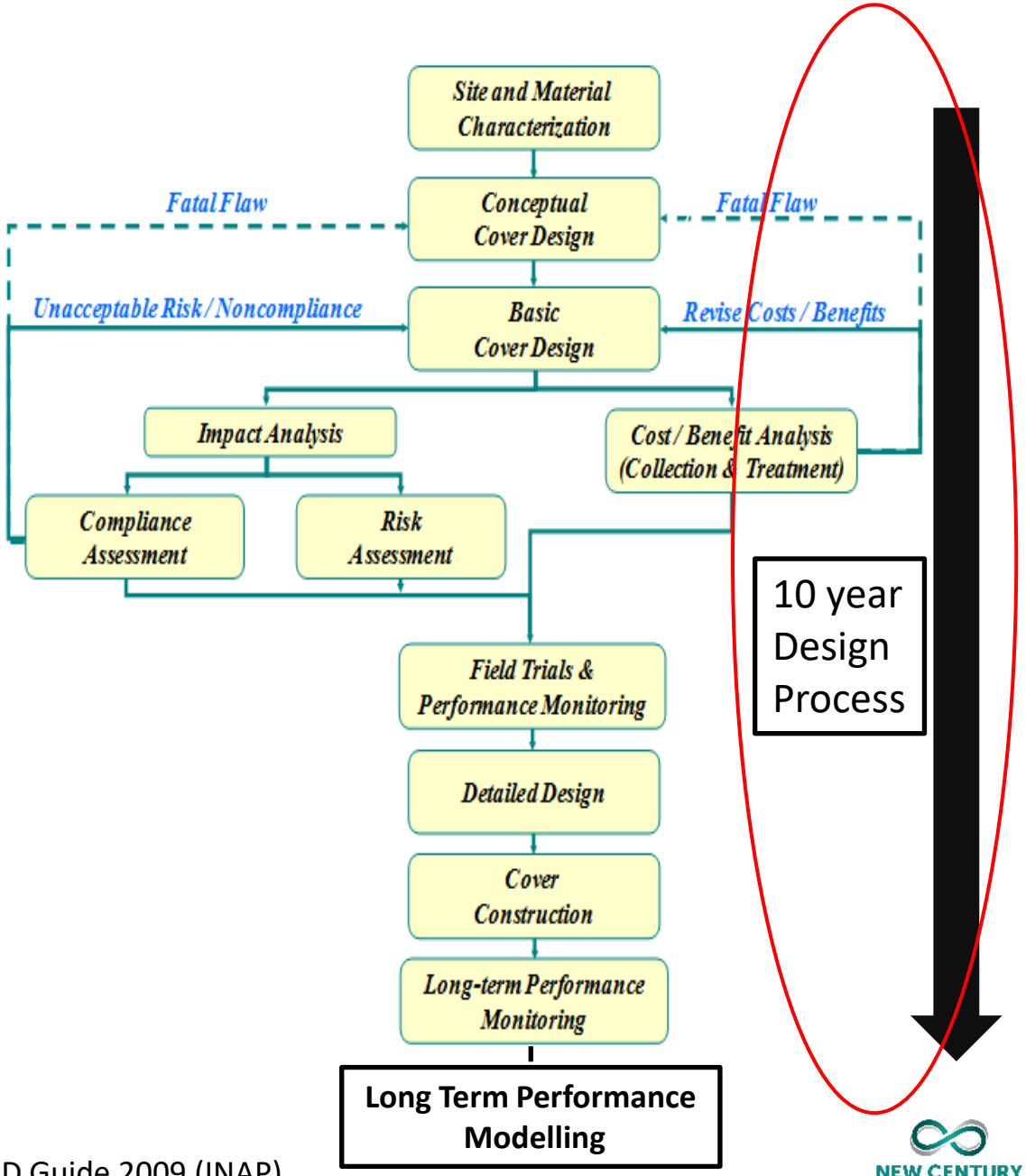
Century Mine



NEW CENTURY RESOURCES

The Design Process

- 10 Year design process
  - Climate
  - Hydrology
  - Human Activities
  - Vegetation
  - Settlement
  - Constructability
- Site material characterisation
- Basic design/cost Benefit
- Modelling & sensitivity analysis
- Long Term Performance Modelling

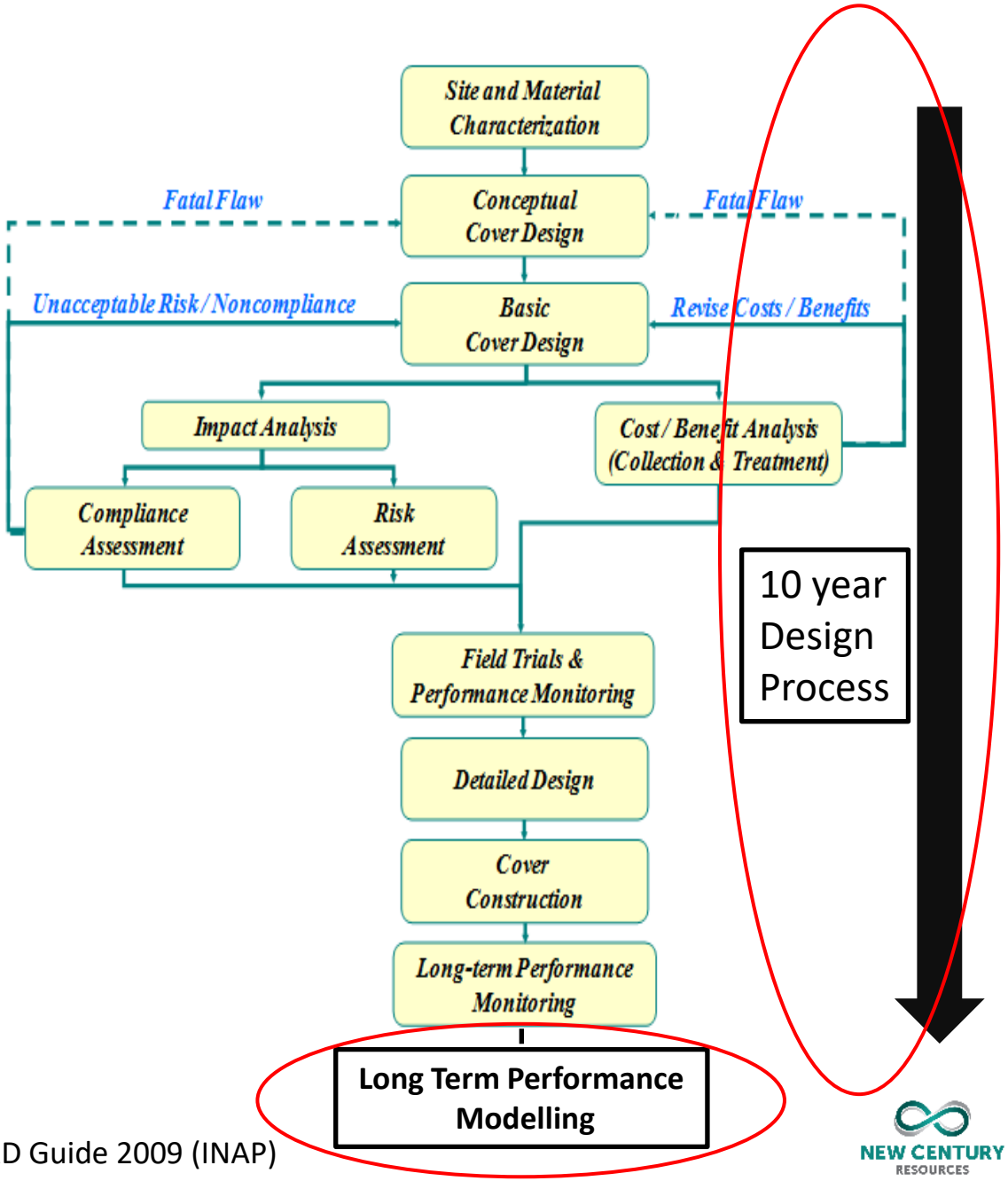


GARD Guide 2009 (INAP)

NEW CENTURY RESOURCES

The Design Process

- Modelling & sensitivity analysis
- Field trials and monitoring
  - Robust equipment
  - Annual maintenance
  - Quarterly data download
  - Staff continuity crucial
  - Quarantine of trials
- Long Term Performance Modelling
  - Developed from trial data
  - Dry, average and wet Scenarios modelled
  - Engagement tool with DES



GARD Guide 2009 (INAP)

NEW CENTURY RESOURCES

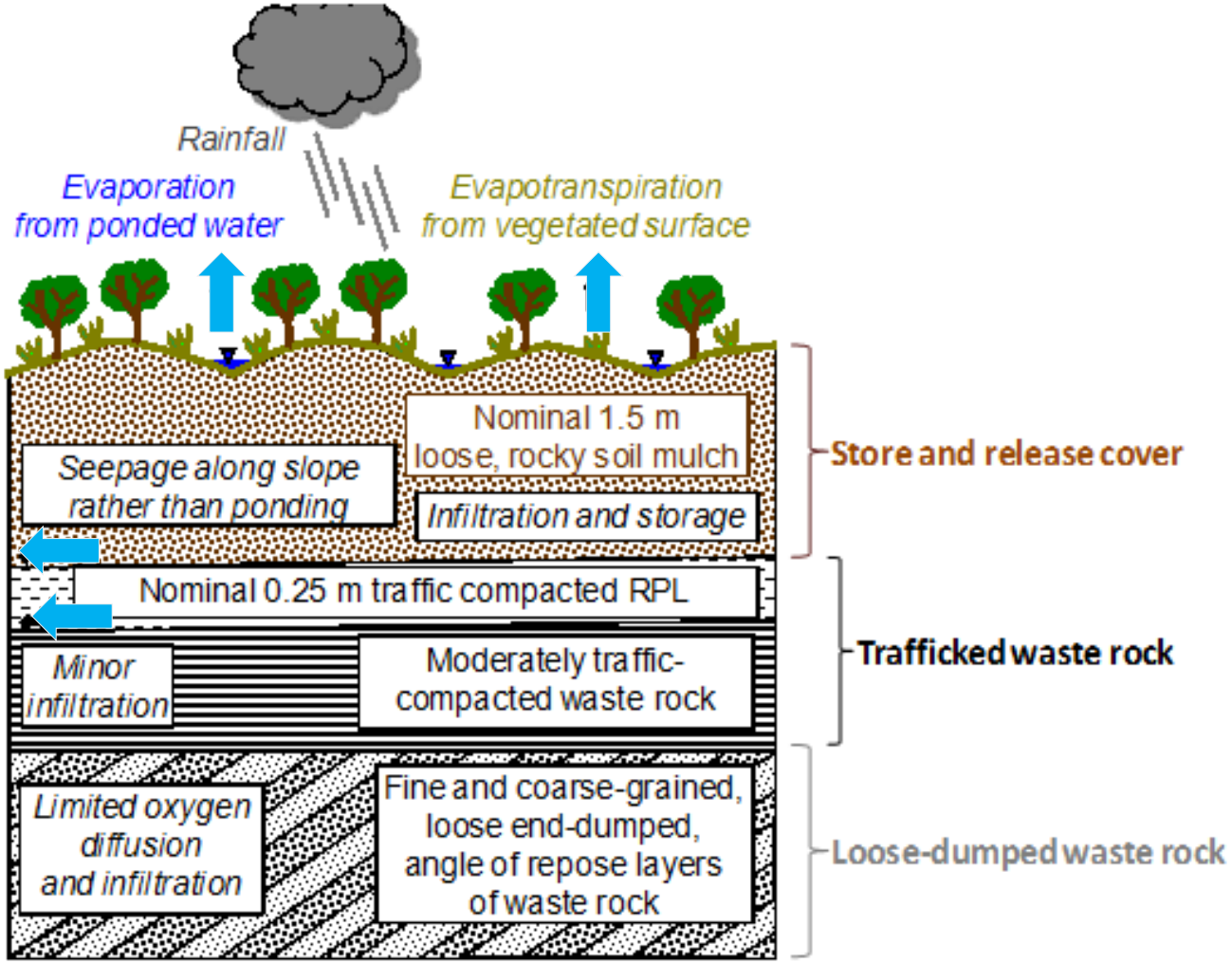
Waste Rock Cover

- Store and release cover installed in early 2010 (120ha)
- (5) Monitoring trees installed in 2012
- Fauna protection in design
- Dedicated weather station
- Remote login for data capture
- Cover Performance
  - Seepage decreasing (1.6 -3.7% of cumulative rainfall)
  - Meets minimum industry standard for seepage (10%)
  - EC decreased confirming no capillary rise

NEW CENTURY RESOURCES

Waste Rock Cover

Store and Release Cover



(Williams et al)

NEW CENTURY RESOURCES

Waste Rock Cover

Store and Release Cover

1. Removal of Oversized Material

3. Surface Sheeting

2. Levelling

4. Filling Depressions

NEW CENTURY RESOURCES

Waste Rock Cover

Store and Release Cover

5. RPL Compaction with Fully Laden 830E

7. Dolomite Storage Layer Paddock Dumped Out

6. Quality Control RPL Permeability Testing

8. Muting of Storage Layer Using D11 Dozer

NEW CENTURY RESOURCES

Waste Rock Cover

Store and Release Cover

9. Provenance Seed Collection

10. Seed Cleaning and Preparation

11. Aerial Seeding

12. Post Cover Construction Landform

NEW CENTURY RESOURCES

Waste Rock Cover

Monitoring Stations

2012

2021

NEW CENTURY RESOURCES

Waste Rock Cover

Monitoring Station Locations

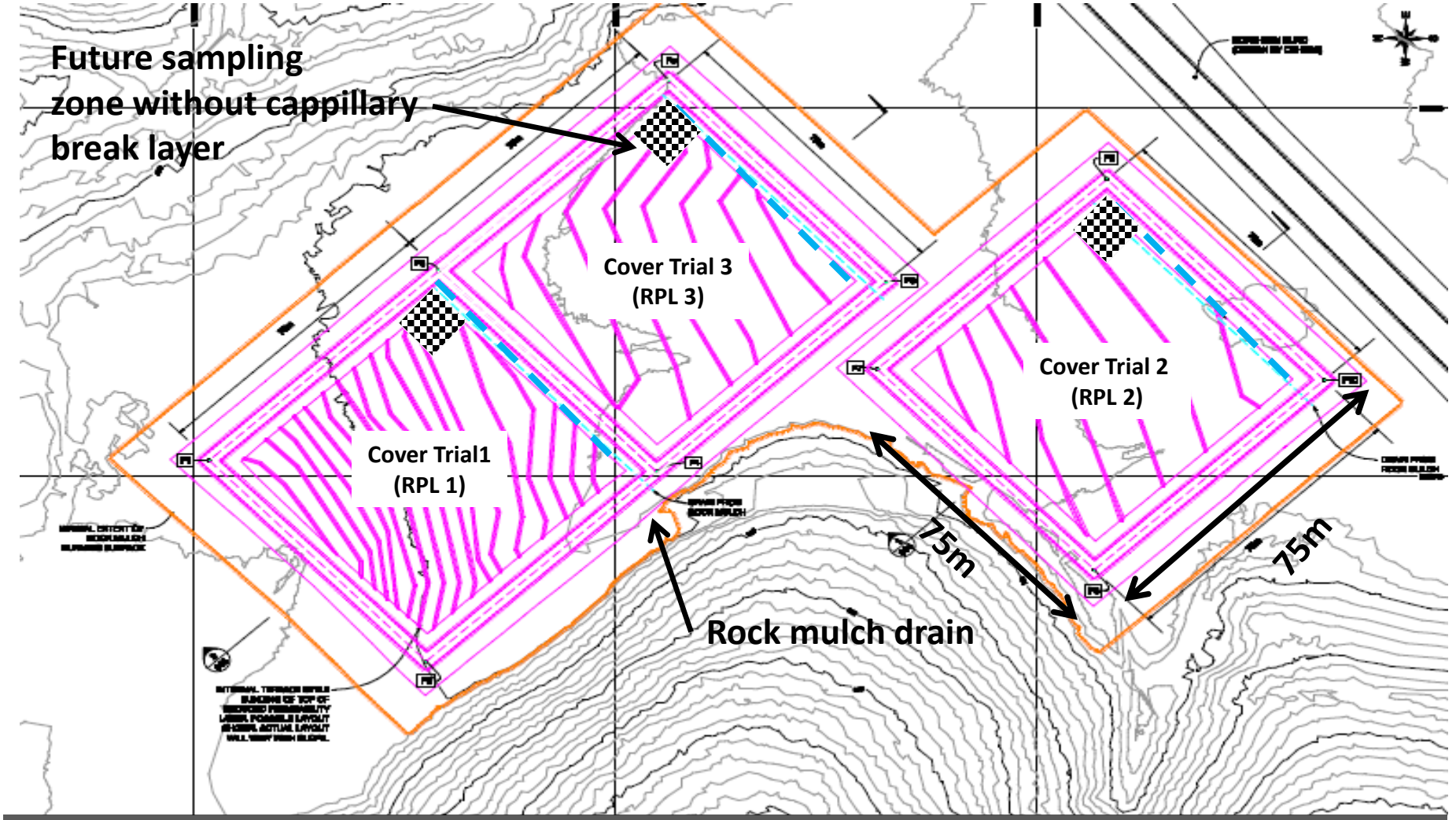
NEW CENTURY RESOURCES

TSF Cover Design

- Three (3) TSF store and release cover trials installed on tailings dam in 2013
- Cover trials fully instrumented as well as lysimeters installed for direct measurement
- Fauna protection in design
- Dedicated weather station
- Remote login for data capture
- Cover Performance
  - Seepage decreasing (4.7 -8.5% of cumulative rainfall)
  - Meets minimum industry standard for seepage (10%)
  - EC decreased confirming no capillary rise

NEW CENTURY RESOURCES

TSF Cover Design



TSF Cover Trial Plan View

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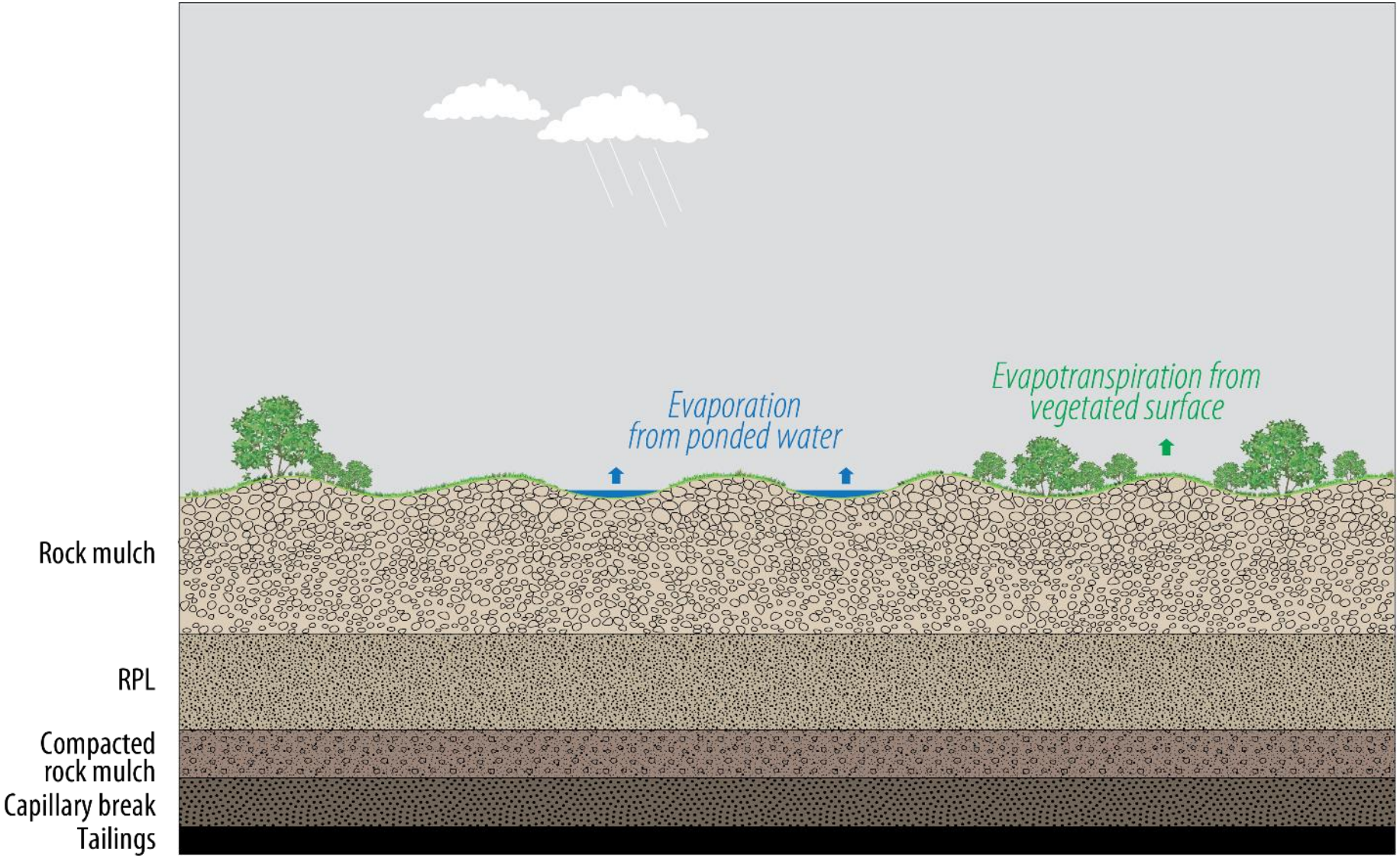
TSF Cover Design

	DIMENSION	RPL1	RPL2	RPL3	
ROCK MULCH (RM)	1500mm	ROCK MULCH	ROCK MULCH	ROCK MULCH	ROCK MULCH (RM)
REDUCED PERMEABILITY LAYER (RPL)	600mm	CLAYEY SAND/GRAVEL -10mm manufactured material with 30% fines passing 0.075mm	CLAYEY SAND/GRAVEL -10mm manufactured material with 15% fines and a maximum 30% fines passing 0.075mm with 10% by dry weight (1-2mm granular)	CLAYEY SAND/GRAVEL - Centrally positioned GCL within -10mm manufactured material with maximum 20% fines passing 0.075mm	REDUCED PERMEABILITY LAYER (RPL)
UPPER BASE ROCK MULCH	200mm	ROCK MULCH	ROCK MULCH	ROCK MULCH	UPPER BASE ROCK MULCH
CAPILLARY BREAK LAYER (CB)	300mm	+10mm -30mm manufactured material	+10mm -30mm manufactured material	+10mm -30mm manufactured material	CAPILLARY BREAK LAYER (CB)
EXISTING TAILINGS					EXISTING TAILINGS

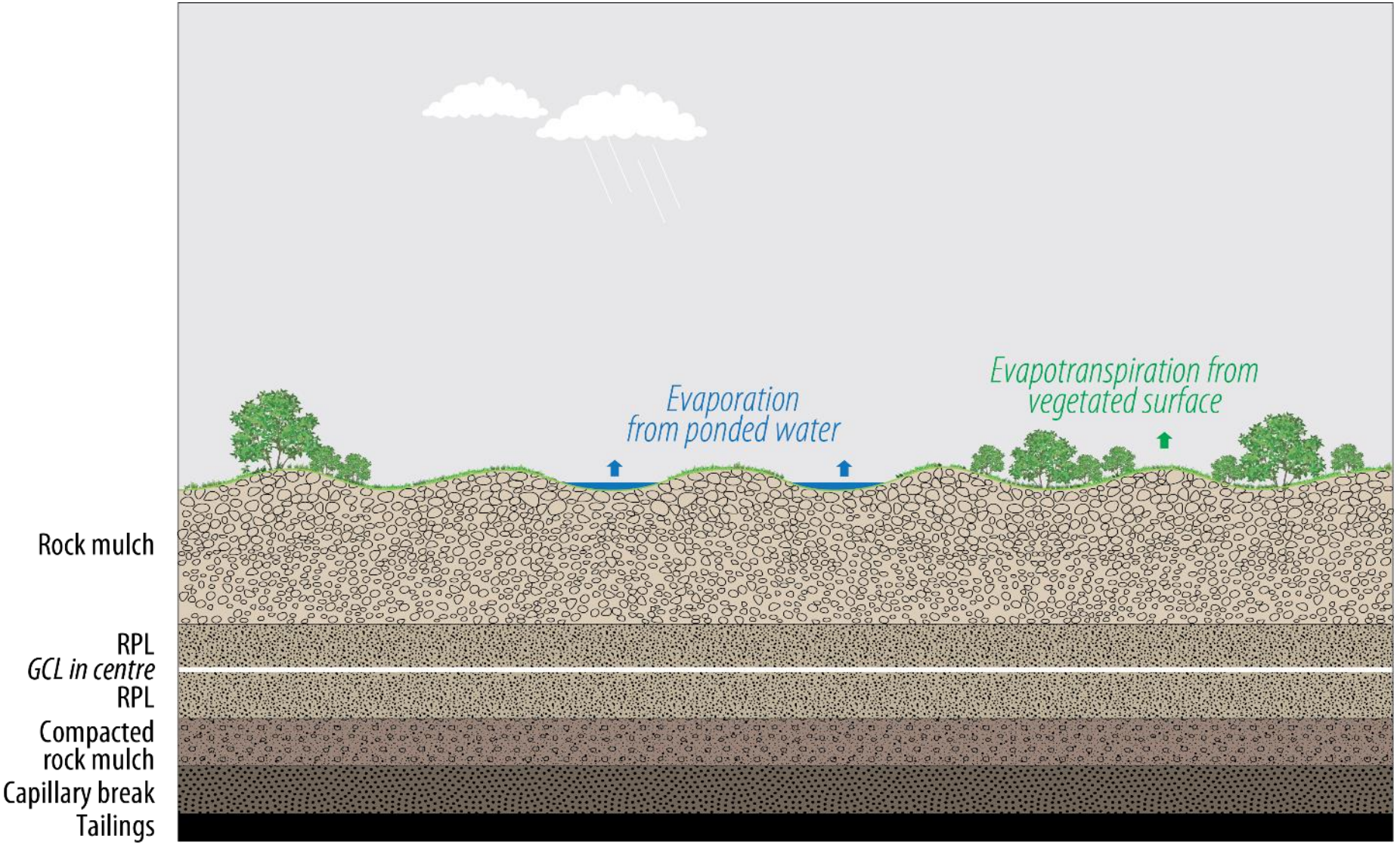
NEW CENTURY RESOURCES

TSF Cover Design



NEW CENTURY
RESOURCES

TSF Cover Design



NEW CENTURY
RESOURCES

TSF Cover Trial Construction

TSF Beach Preparation

Lysimeter Sump Installation

Lysimeter Placement Below Tailings Beach

Backfill Around Lysimeter and Sump

NEW CENTURY RESOURCES

TSF Cover Trial Construction

Compaction of Backfilled Tailings

Backfill Lysimeter with Filter Sand

Geo-fabric Filter Placed on Base of Lysimeter

Backfill Lysimeter with Tailings

NEW CENTURY RESOURCES

TSF Cover Trial Construction

Instrumentation Tree Pre-wiring

Instrument Tree Secured with Wire Stays

Instrumentation Tree Placement

Sensors Buried In Tailings and Capillary Break

NEW CENTURY RESOURCES

TSF Cover Trial Construction

Embankment Keyed Into Tailings Beach

Embankment Construction

Embankment Clay Material Excavated from Borrow

Embankment Compaction Testing

NEW CENTURY RESOURCES

TSF Cover Trial Construction

Cover Trial Cell Embankment Foundation & Instrumentation Installed Centrally

NEW CENTURY RESOURCES

TSF Cover Trial Construction

Bentonite Laydown & Cover Material Crushing Plant

NEW CENTURY RESOURCES

TSF Cover Trial Construction

Bentonite Laydown & Cover Material Crushing Plant

NEW CENTURY RESOURCES

TSF Cover Trial Construction

Bentonite Laydown & Cover Material Crushing Plant

NEW CENTURY RESOURCES

TSF Cover Trial Construction

Placement of Capillary Break Material

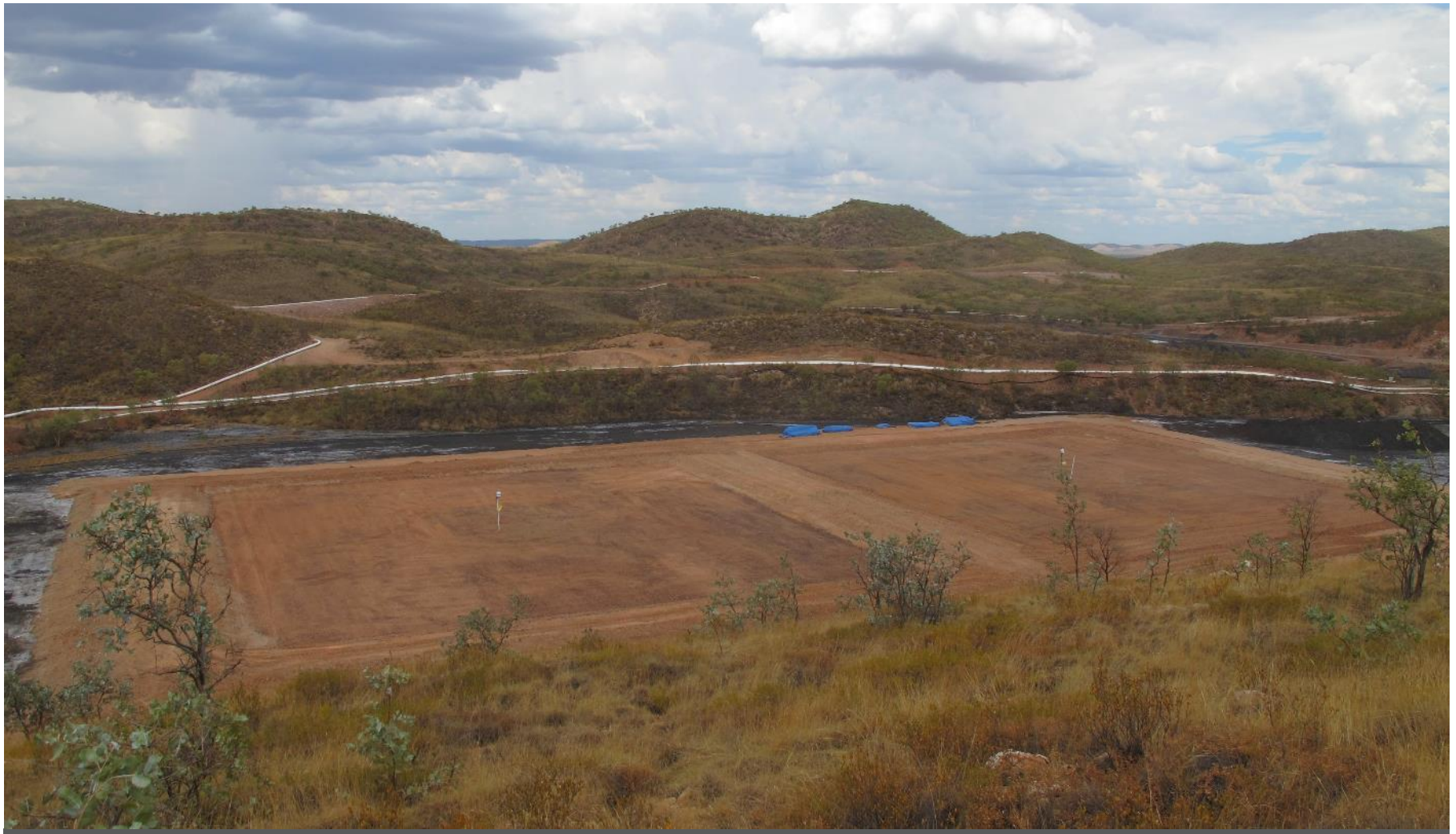
NEW CENTURY RESOURCES

TSF Cover Trial Construction

Placement of Capillary Break Material

NEW CENTURY RESOURCES

TSF Cover Trial Construction



Placement of Running Layer

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TSF Cover Trial Construction

Bentonite Conditioning of Crusher Dust with Pug Mill

NEW CENTURY RESOURCES

TSF Cover Trial Construction

Placement and Compaction of RPL

NEW CENTURY RESOURCES

TSF Cover Trial Construction

Permeability Testing of RPL

NEW CENTURY RESOURCES

TSF Cover Trial Construction

Laying of Geosynthetic Clay Liner

NEW CENTURY RESOURCES

TSF Cover Trial Construction

Laying of Geosynthetic Clay Liner

NEW CENTURY RESOURCES

TSF Cover Trial Construction

Laying of Geosynthetic Clay Liner

NEW CENTURY RESOURCES

TSF Cover Trial Construction

Placement of Rock Mulch Layer Around Instrument Tree

NEW CENTURY RESOURCES

TSF Cover Trial Construction

Seeded with Native Tree and Shrub Mix

NEW CENTURY RESOURCES

Conclusions

- 10 year cover design process for TSF and WRD covers
  - Design process consisted of extensive waste characterisation
  - Modelling and sensitivity analysis
  - Long term performance modelling
- Field Trials and monitoring
  - Robust equipment
  - Annual maintenance
  - Quarterly data download (9 years continuous data)
  - Quarantine of cover trials
- TSF Cover performance
  - Meets minimum industry standards (4.7% - 8.5% cumulative rainfall)
  - Meets minimum industry standard for seepage (10%)
  - EC decreased confirming no capillary rise
- WRD Cover Performance
  - Seepage decreasing (1.6 -3.7% of cumulative rainfall)
  - Meets minimum industry standard for seepage (10%)
  - EC decreased confirming no capillary rise

The End.

NEW CENTURY
RESOURCES

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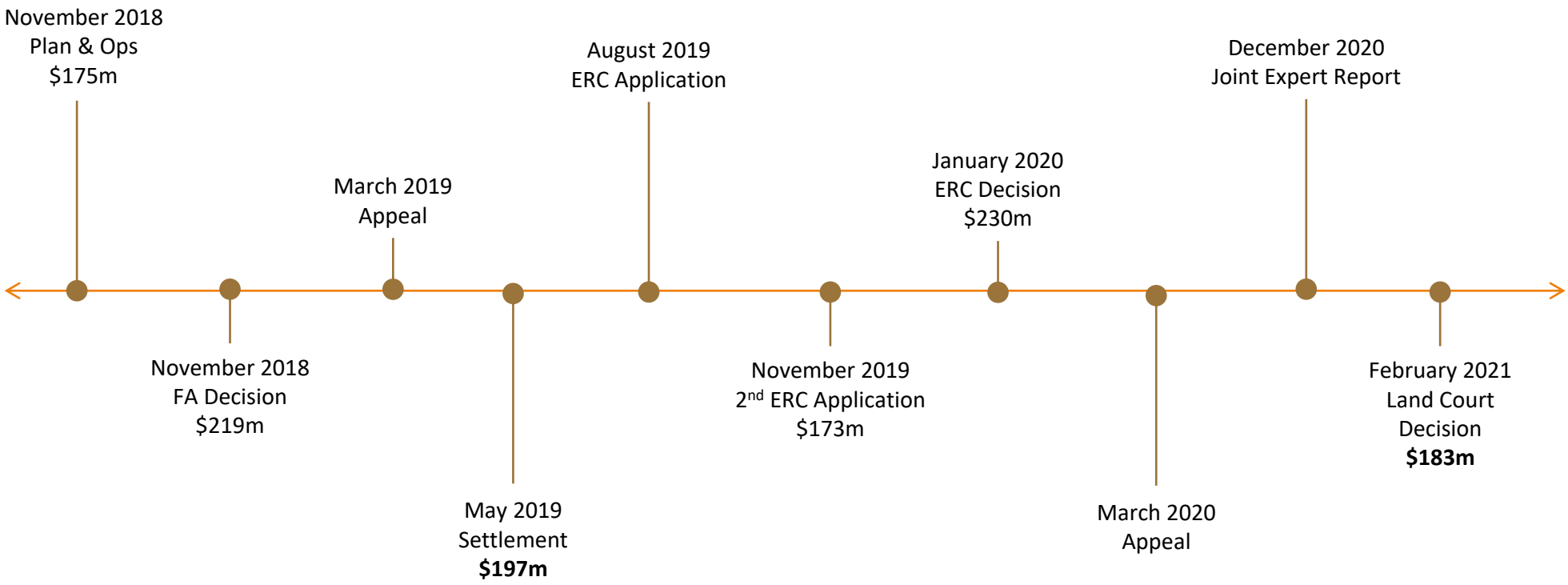
New Century: Reducing ERC

FA/ERC timeline



Land Court Appeal - grounds

- In deciding ERC, DES must apply s300(1)
- In relying on the Guideline, DES wrongly determined the default rate applied to capping
  - TSFs
  - WRDs
- DES is required to have regard to an applicant's costing when worked out pursuant to the EP Act
- A ERC decision which exceeds an amount calculated pursuant to s300(1) should not be allowed

300 Making ERC decision

(1) After receiving the application, the administering authority must decide, for the ERC period, the amount of the estimated cost of—

(a) rehabilitating the land on which the resource activity is carried out; and

(b) preventing or minimising environmental harm, or rehabilitating or restoring the environment, in relation to the resource activity.

Land Court Appeal - issues

That the DES rehabilitation methodology for WRDs and TSFs is not the only appropriate methodology for calculating ERC pursuant to section 300(1)

Whether the waste rock dump (WRD) covers and the tailing storage facility (TSF) cover as designed and proposed by NCZ meet the obligations under the EA and the EP Act

Whether, and why, the ERC for WRD covers and the TSF cover should be calculated by reference to:

- the DES Calculator calculations and the rehabilitation methodology relating to those items and rates; or
- the NCZ proposed designs

Whether the ERC should be:

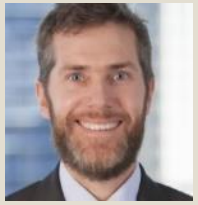
- the DES proposed ERC calculation;
- the NCZ 2020 ERC Amount; or
- an alternative amount.

Land Court decision

'*The purpose of a Guideline… is "to provide guidance"*'. Decision maker must consider what weight to give ERC Guideline and approved calculator.

Nothing requires that DES '*must slavishly apply the amount arrived at using the approved calculation methodology*'. '*That would be inconsistent with the decision-making process provided for*'.

'*(T)he ERC Guideline, as a statutory instrument, must yield to the Act*'.



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