

Road DR08225  
 Borrow Pit 8225/2  
 Stake Value km 13,3 (LHS)  
 Residual Mudstone

**FIGURE 16: ENCOBO ROAD MAINTENANCE PROGRAMME : Borrow Pit 8225/2 Sketch Map.**

NOT TO SCALE SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

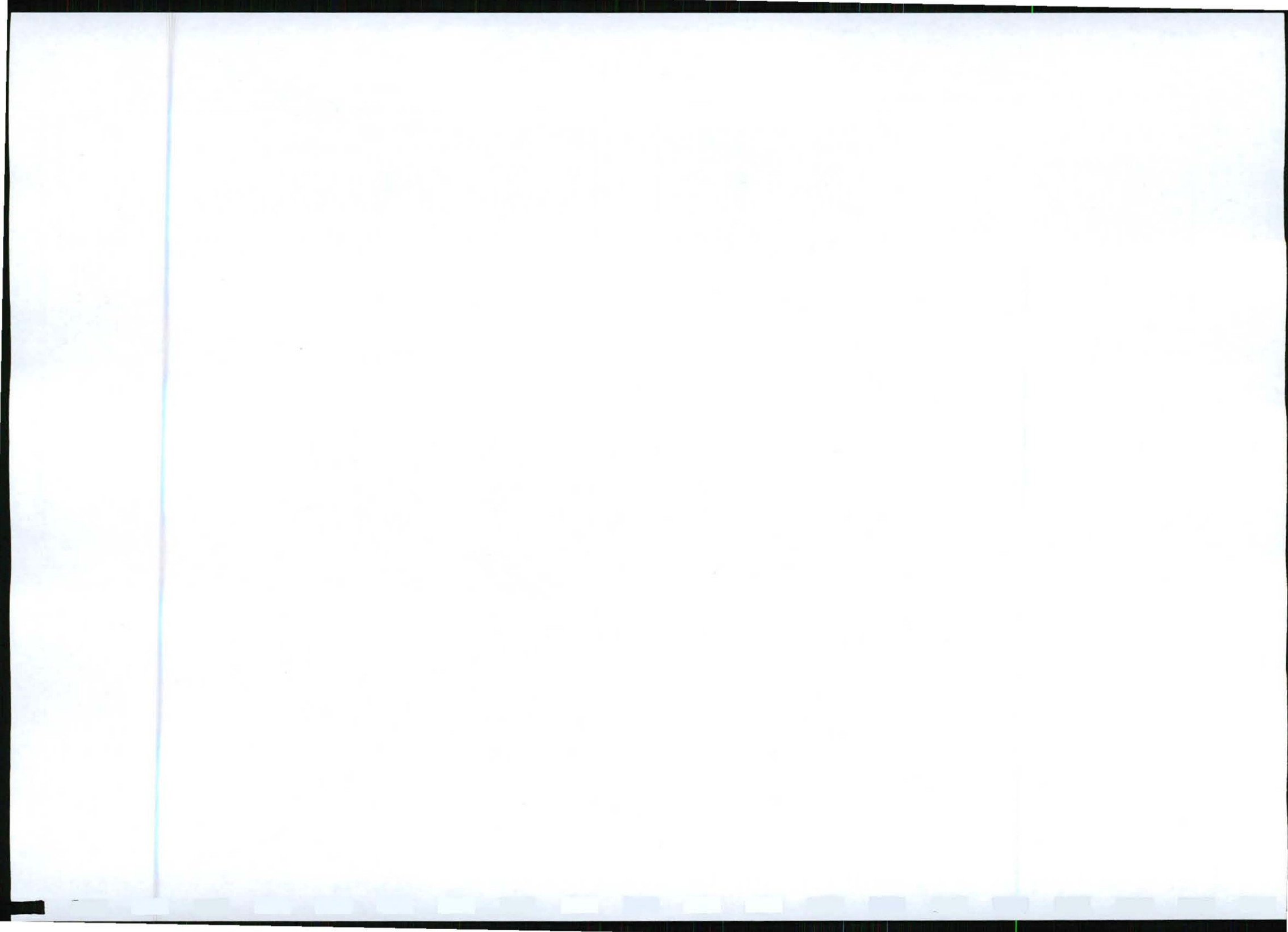
|  |                                  |  |                                  |
|--|----------------------------------|--|----------------------------------|
|  | Gravel Stockpile                 |  | Downslope Gradient               |
|  | Proposed New Quarrying Direction |  | Existing Borrow Pit Sidewall     |
|  | Ponding Surface Water            |  | Access Road                      |
|  | Existing Borrow Pit Boundary     |  | Proposed New Excavation Boundary |

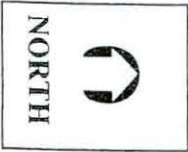
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CK 96 6444023





Gentle to Moderate Downslope Gradient

60m

Geological Contact

10m  
sst  
mst

A A'

5m

20m

20m

4m

Black Wattle Trees

20m

Erosion Scours

Soil Berm

Proposed New Access Road

Culvert

20m

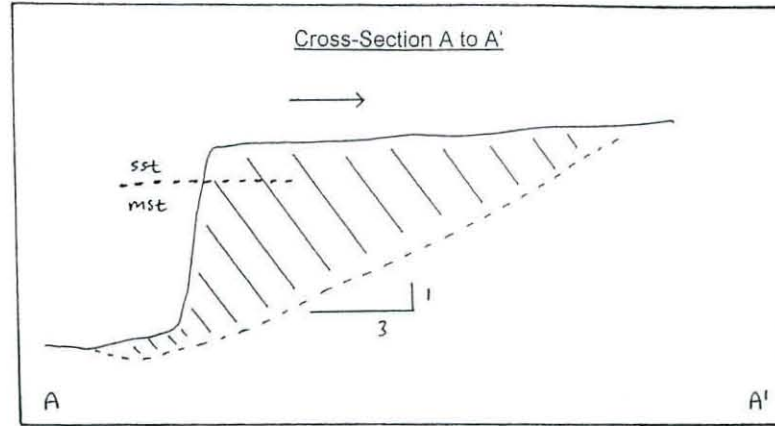
6m

5m

3m

Moderate Downslope Gradient

Grassland











Road DR08225  
Borrow Pit 8225/3  
Stake Value km 13,5 (LHS)  
Mudstone & Sandstone

**FIGURE 17: ENGCOCO ROAD MAINTENANCE PROGRAMME : Borrow Pit 8225/3 Sketch Map.**

NOT TO SCALE

SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

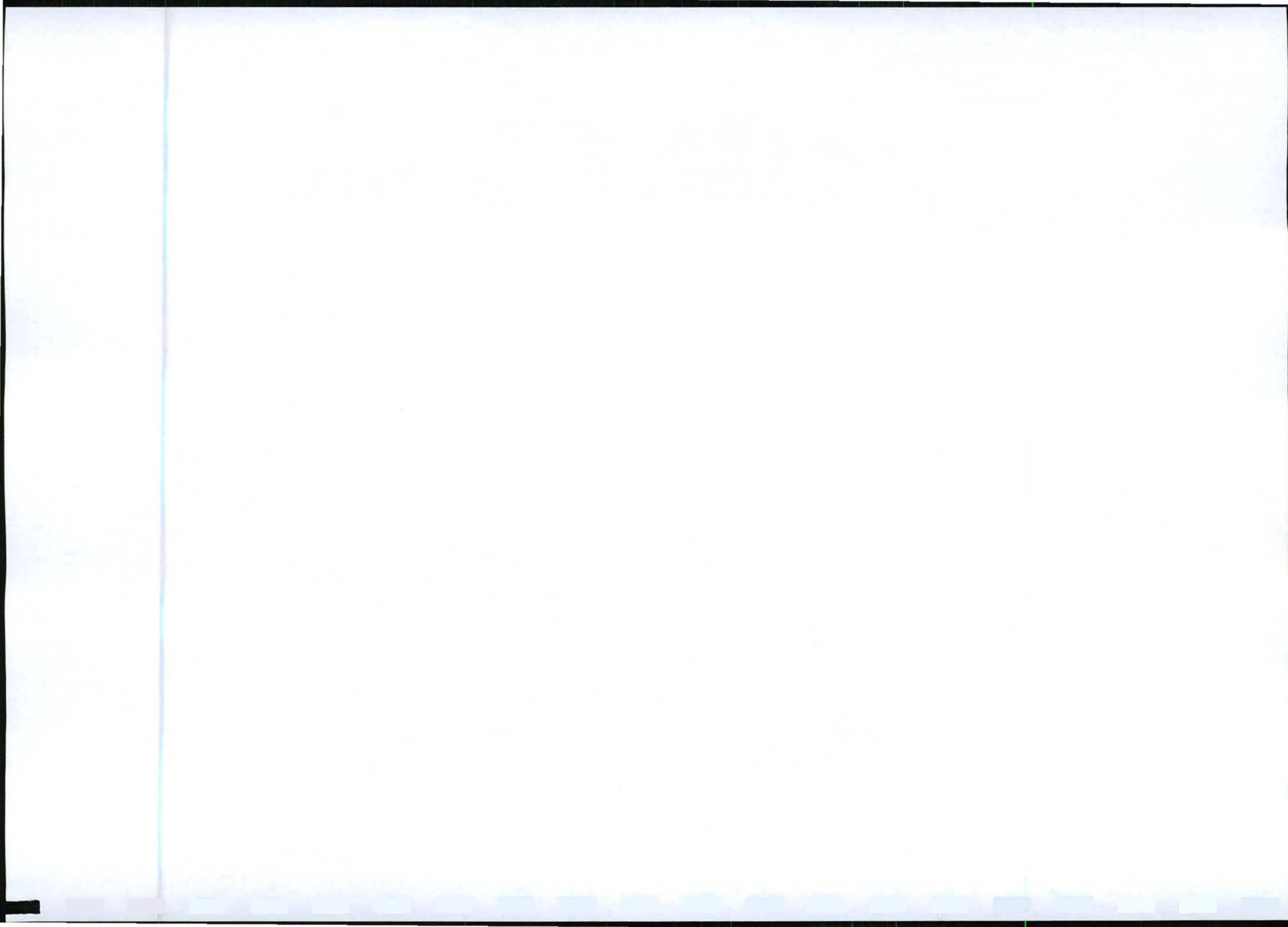
-  Gravel Stockpile
-  Proposed New Quarrying Direction
-  Erosion Donga
-  Existing Borrow Pit Boundary
-  Downslope Gradient
-  Existing Borrow Pit Sidewall
-  River
-  Proposed New Excavation Boundary

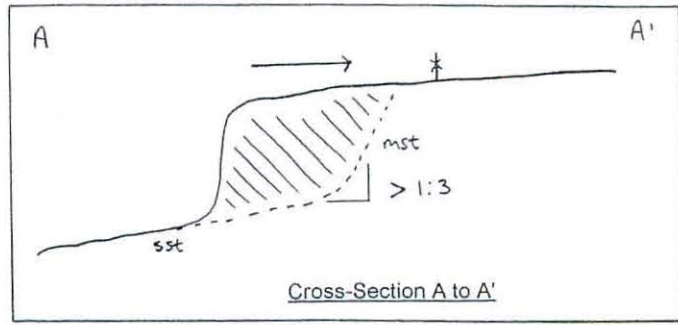
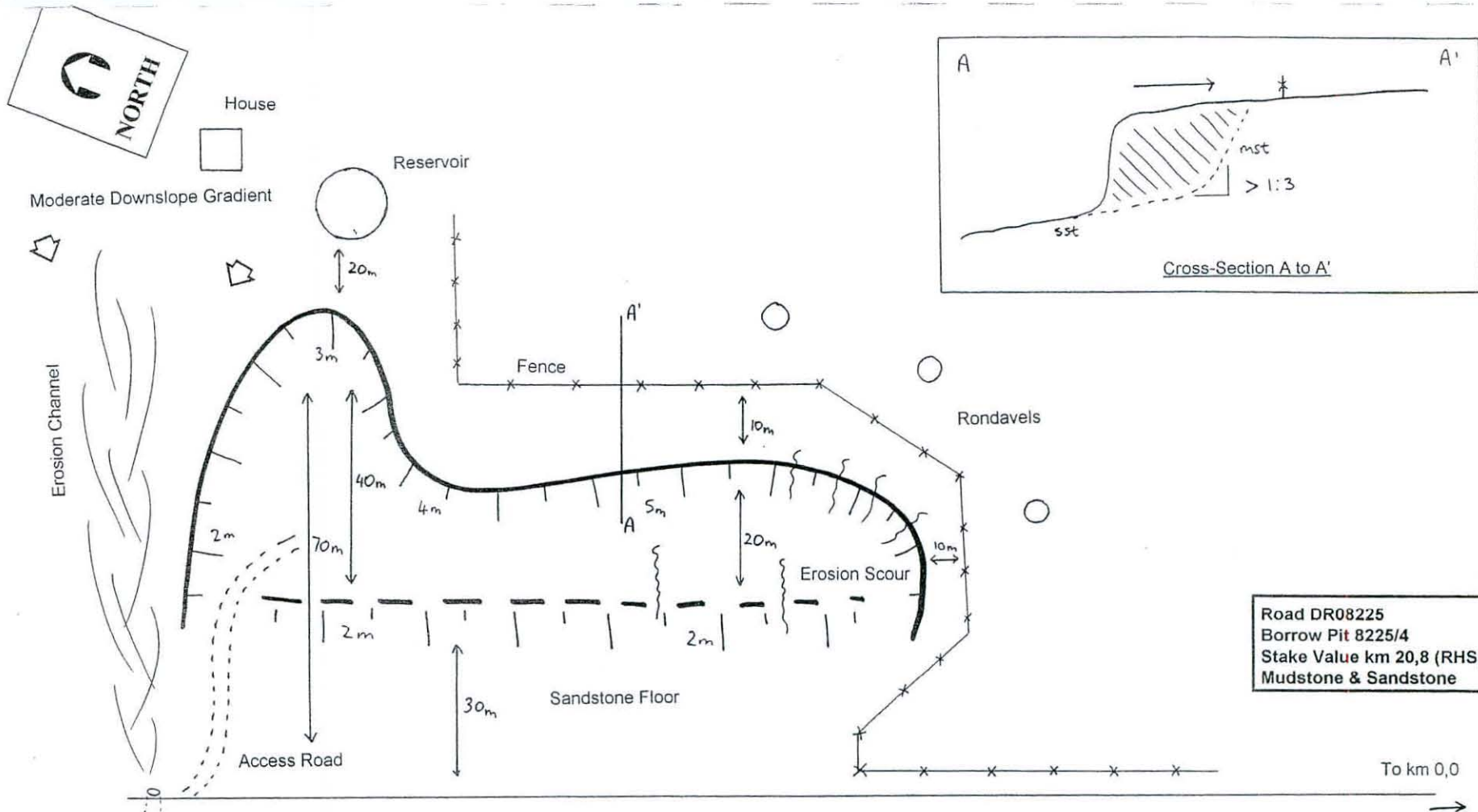
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Road DR08225  
 Borrow Pit 8225/4  
 Stake Value km 20,8 (RHS)  
 Mudstone & Sandstone

**FIGURE 18: ENCOBO ROAD MAINTENANCE PROGRAMME : Borrow Pit 8225/4 Sketch Map.**

NOT TO SCALE SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

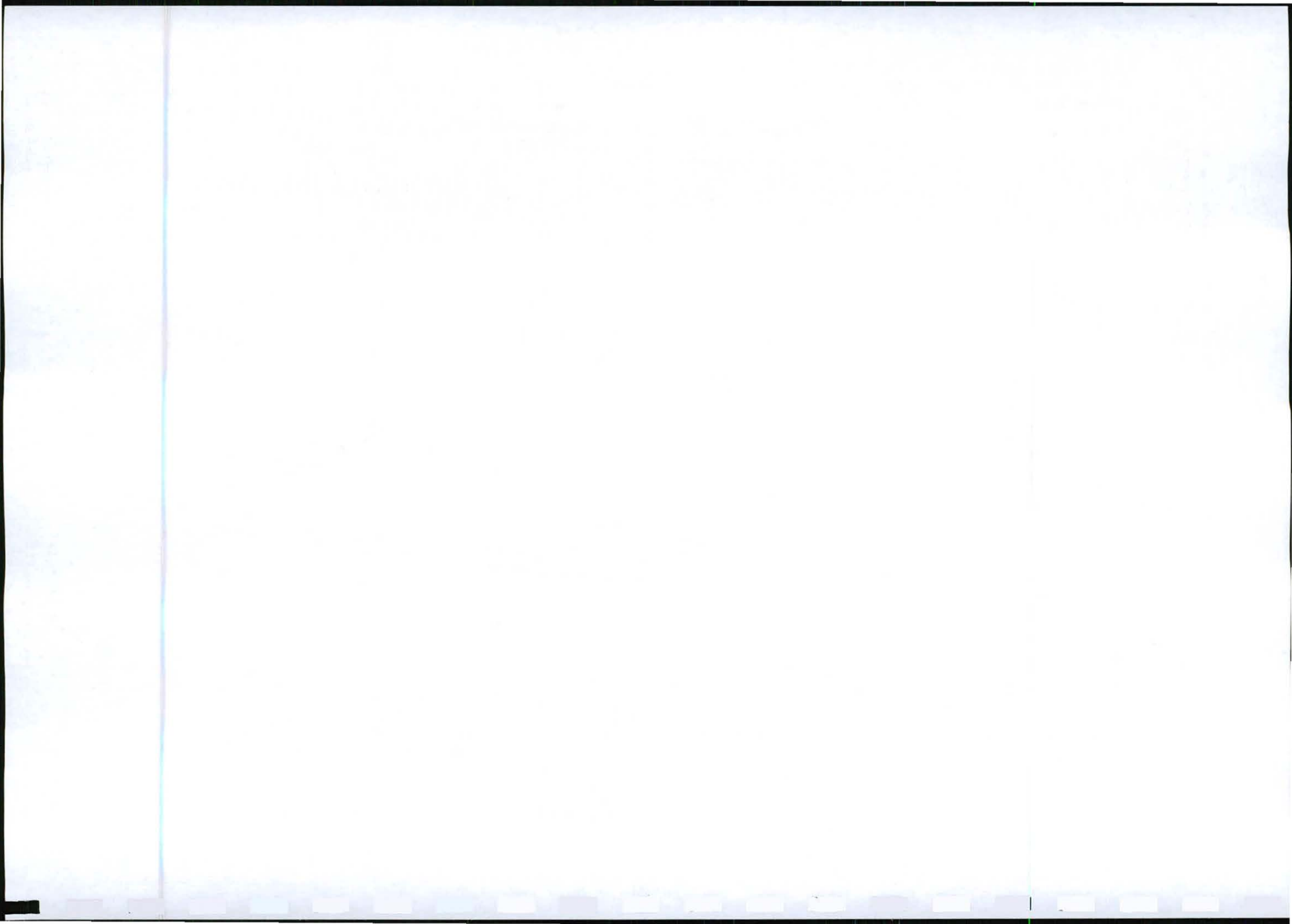
|  |                                  |  |                                  |
|--|----------------------------------|--|----------------------------------|
|  | Quarry Terrace Level             |  | Downslope Gradient               |
|  | Proposed New Quarrying Direction |  | Existing Borrow Pit Sidewall     |
|  | Fence                            |  | Access Road                      |
|  | Existing Borrow Pit Boundary     |  | Proposed New Excavation Boundary |

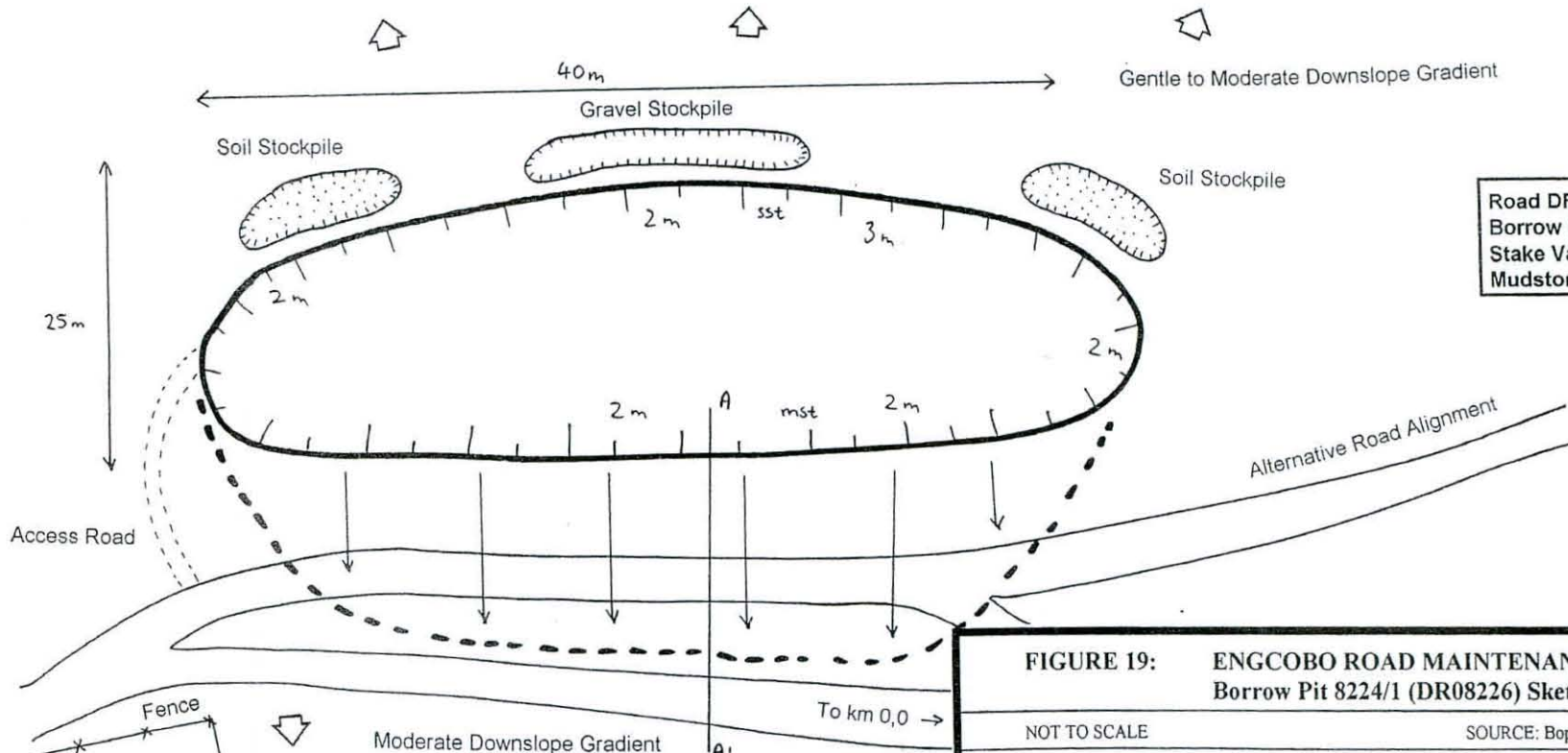
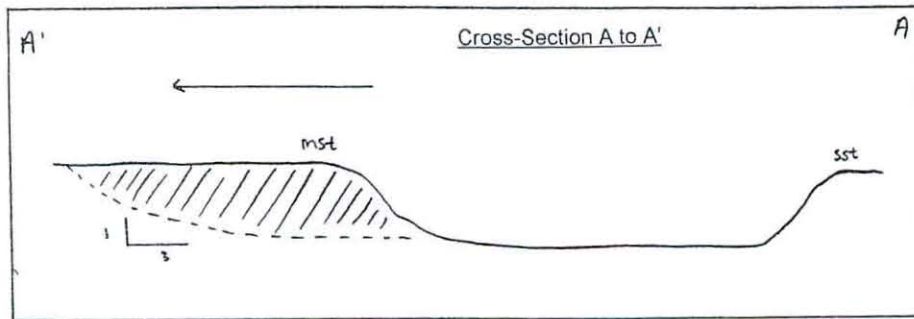
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Road DR08226  
Borrow Pit 8224/1  
Stake Value km 3,2 (RHS)  
Mudstone & Sandstone

**FIGURE 19: ENGCOBO ROAD MAINTENANCE PROGRAMME : Borrow Pit 8224/1 (DR08226) Sketch Map.**

NOT TO SCALE SOURCE: Bopite Engineering Geologists CC

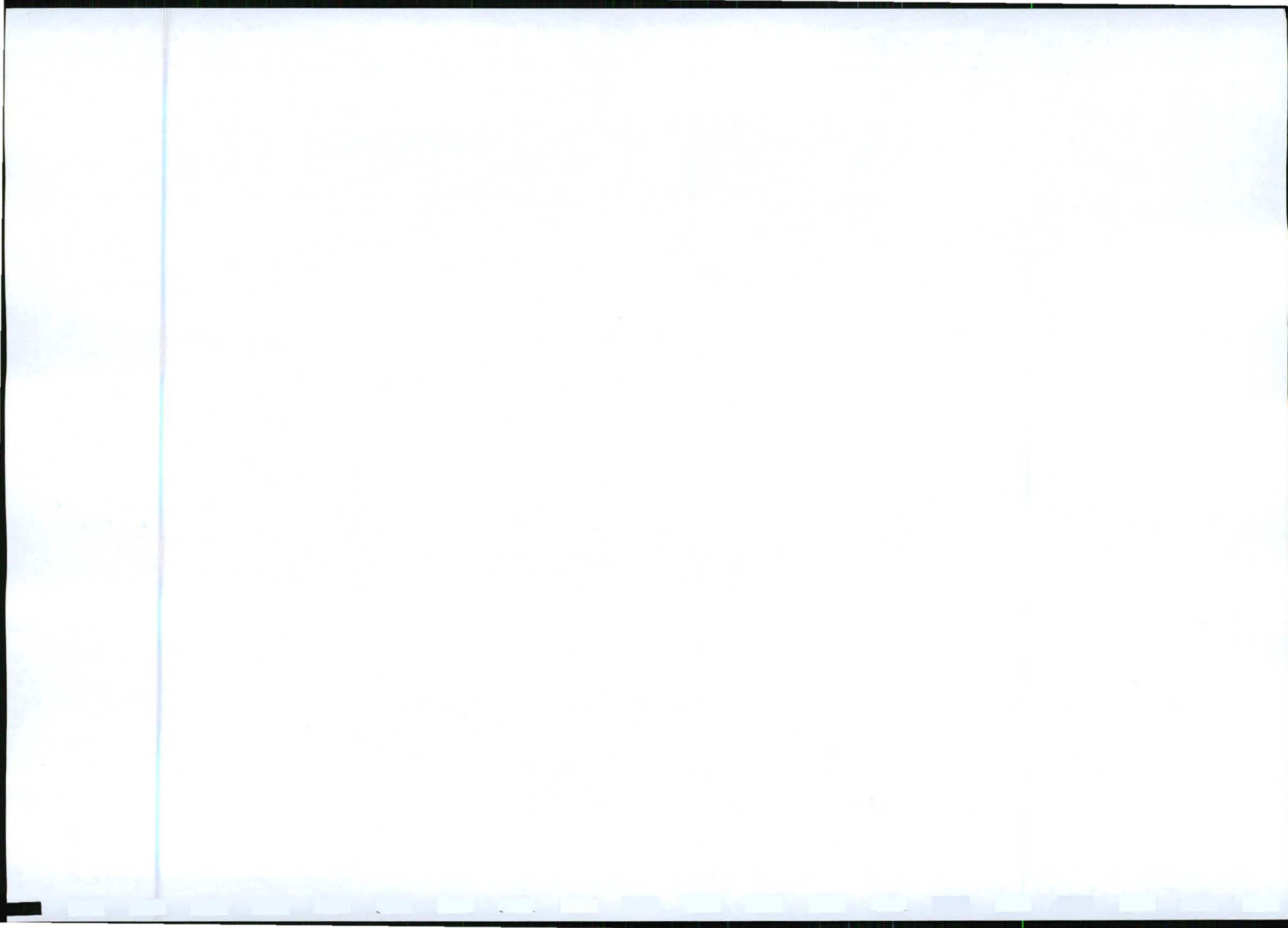
| LEGEND: |                                  |
|---------|----------------------------------|
|         | Gravel Stockpile                 |
|         | Proposed New Quarrying Direction |
|         | Soil Stockpile                   |
|         | Existing Borrow Pit Boundary     |
|         | Downslope Gradient               |
|         | Existing Borrow Pit Sidewall     |
|         | Access Road                      |
|         | Proposed New Excavation Boundary |

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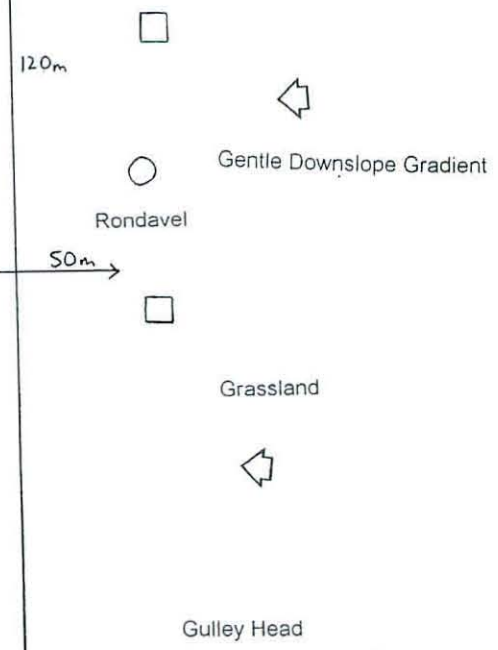
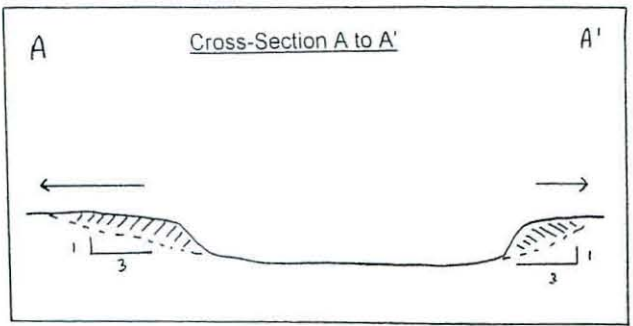
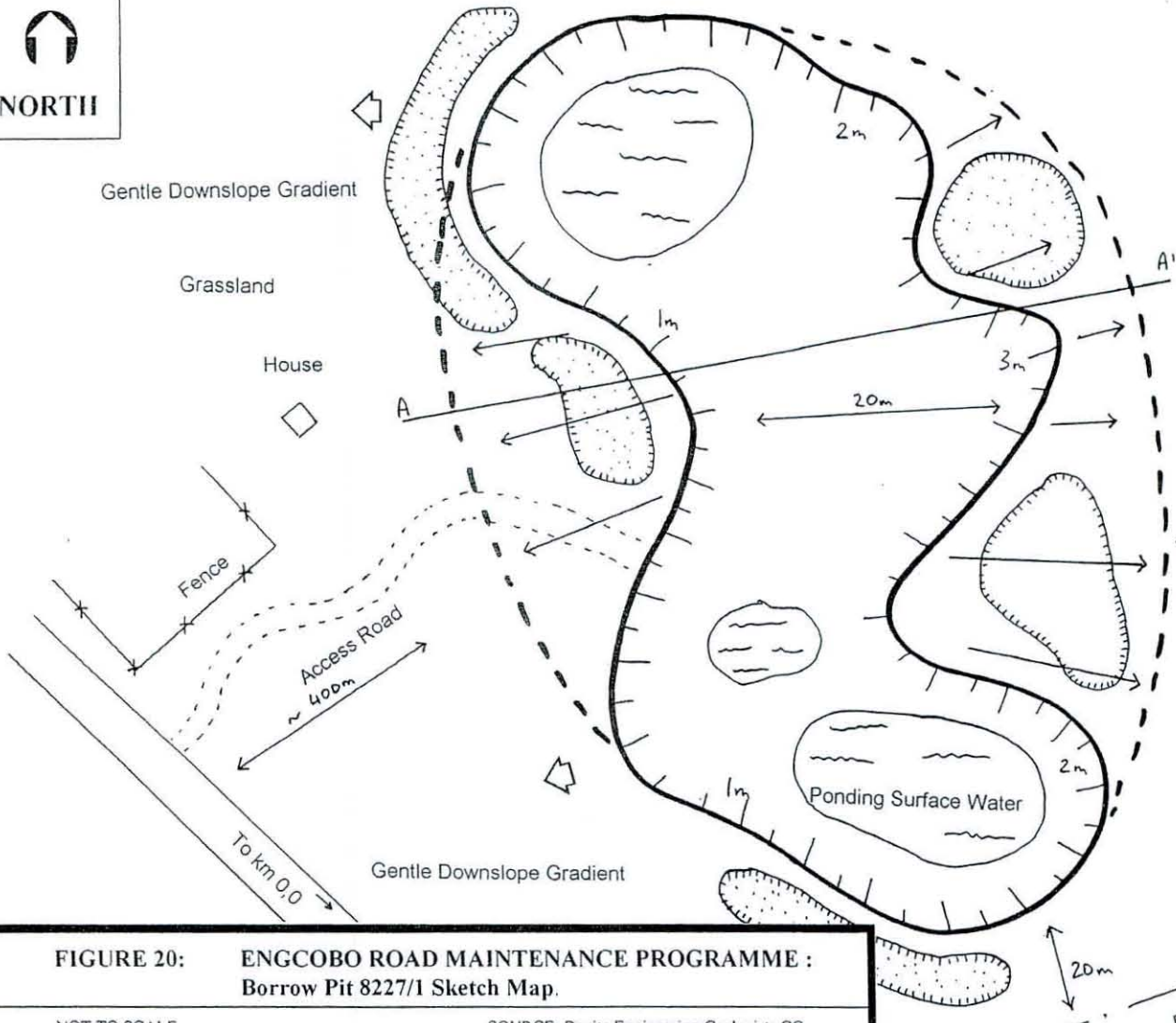
CK 96 6444023







NORTH



Road DR08227  
 Borrow Pit 8227/1  
 Stake Value km 1,5 (RHS)  
 Mudstone & Sandstone

**FIGURE 20: ENCOBO ROAD MAINTENANCE PROGRAMME : Borrow Pit 8227/1 Sketch Map.**

NOT TO SCALE SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

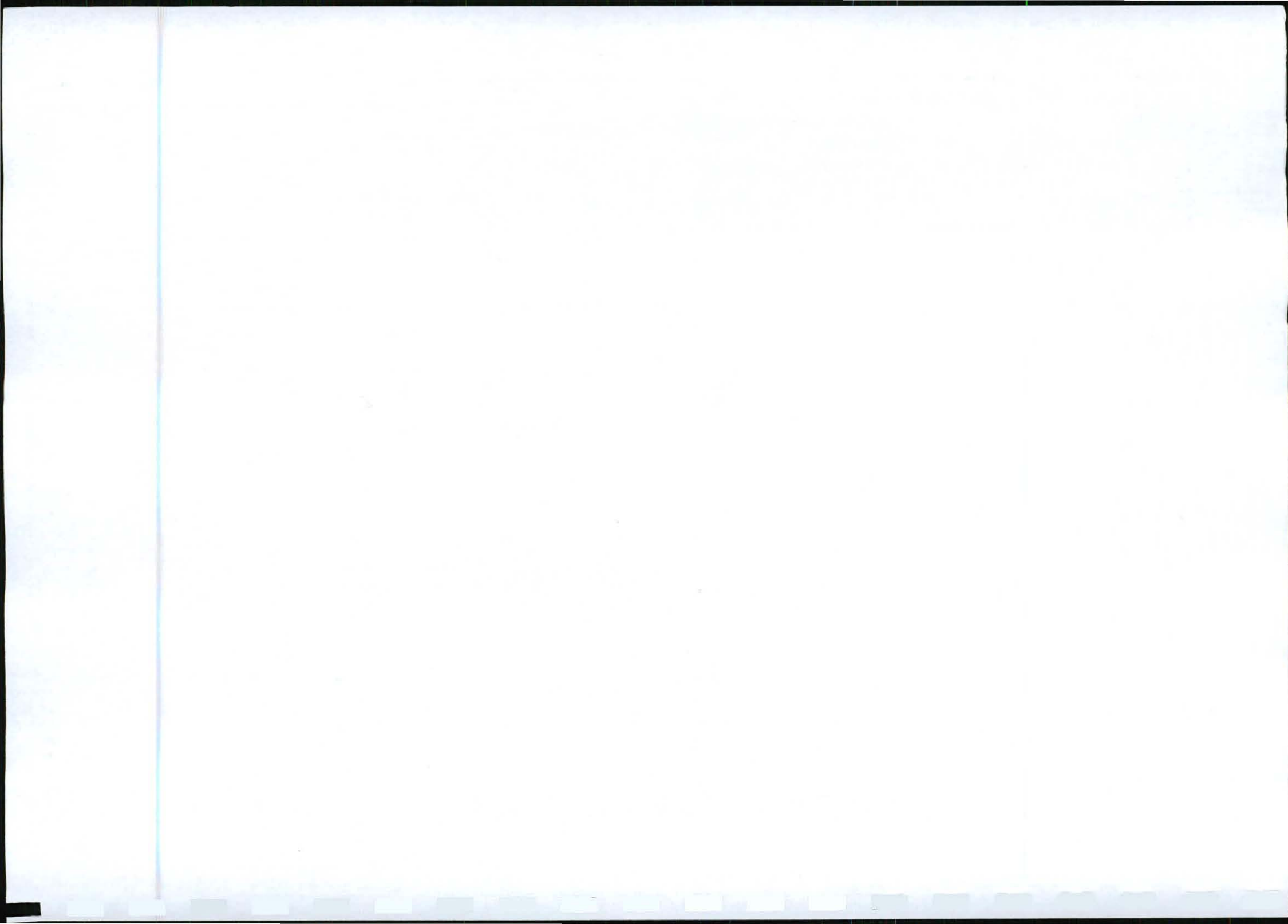
|  |                                  |  |                                  |
|--|----------------------------------|--|----------------------------------|
|  | Stockpile                        |  | Downslope Gradient               |
|  | Proposed New Quarrying Direction |  | Existing Borrow Pit Sidewall     |
|  | Ponding Surface Water            |  | Access Road                      |
|  | Existing Borrow Pit Boundary     |  | Proposed New Excavation Boundary |

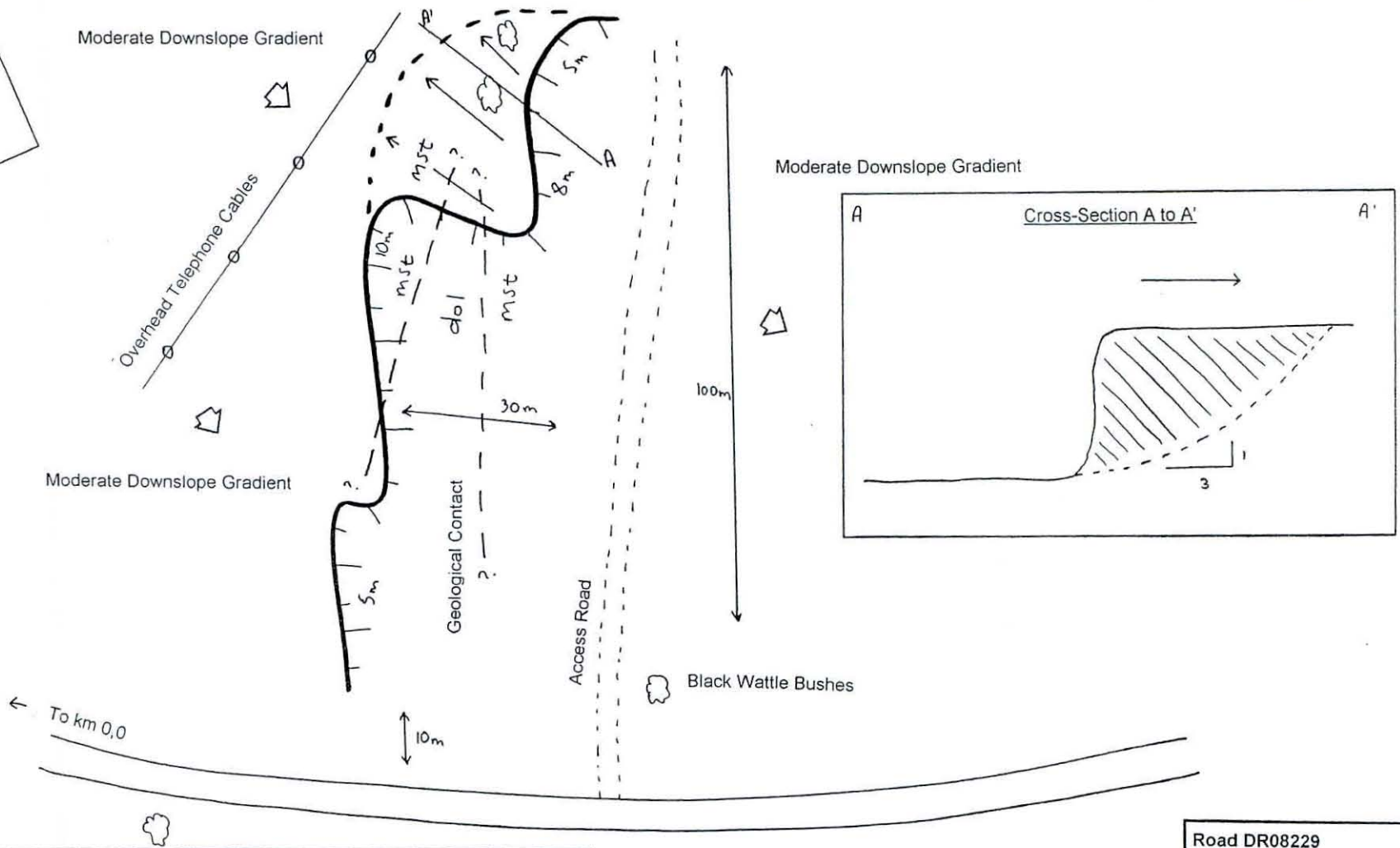
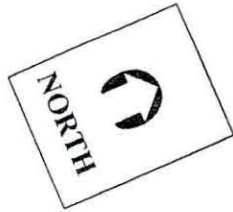
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**FIGURE 21: ENCOBO ROAD MAINTENANCE PROGRAMME :  
Borrow Pit 8229/1 Sketch Map.**

NOT TO SCALE

SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

- |  |                                  |  |                                  |
|--|----------------------------------|--|----------------------------------|
|  | Stockpile                        |  | Downslope Gradient               |
|  | Proposed New Quarrying Direction |  | Existing Borrow Pit Sidewall     |
|  | Geological Contact               |  | Access Road                      |
|  | Existing Borrow Pit Boundary     |  | Proposed New Excavation Boundary |

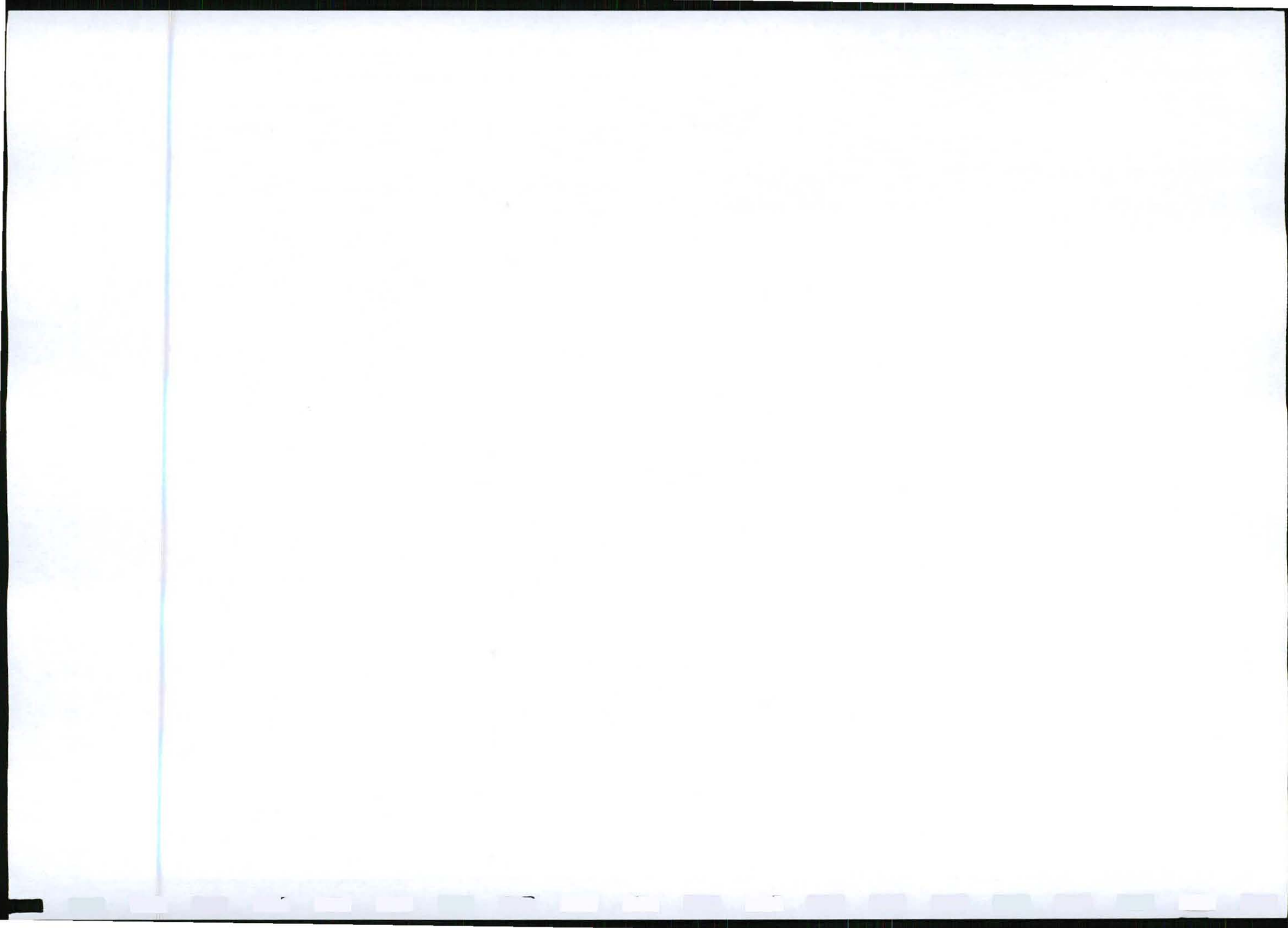
Road DR08229  
Borrow Pit 8229/1  
Stake Value km 1,1 (LHS)  
Mudstone & Dolerite

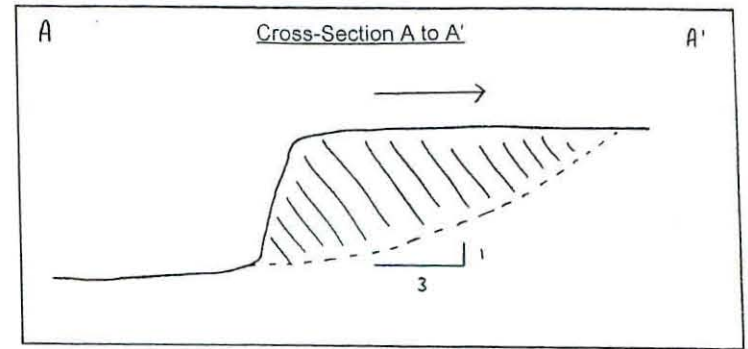
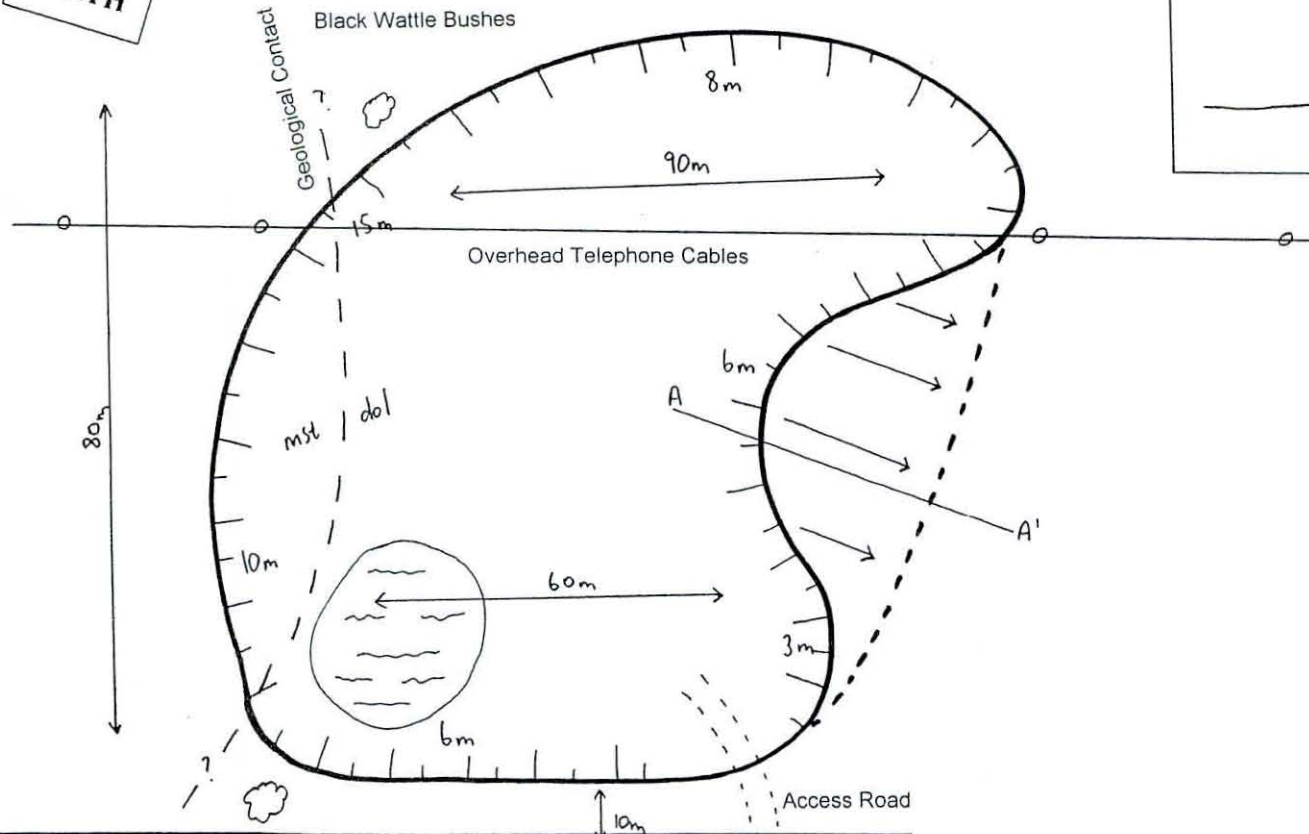
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Road DR08229  
 Borrow Pit 8229/2  
 Stake Value km 1,3 (LHS)  
 Mudstone & Dolerite

**FIGURE 22: ENCOBO ROAD MAINTENANCE PROGRAMME :  
 Borrow Pit 8229/2 Sketch Map.**

NOT TO SCALE

SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

- |  |                                  |  |                                  |
|--|----------------------------------|--|----------------------------------|
|  | Gravel Stockpile                 |  | Downslope Gradient               |
|  | Proposed New Quarrying Direction |  | Existing Borrow Pit Sidewall     |
|  | Overhead Telephone Cables        |  | Ponding Surface Water            |
|  | Existing Borrow Pit Boundary     |  | Proposed New Excavation Boundary |

To km 0,0

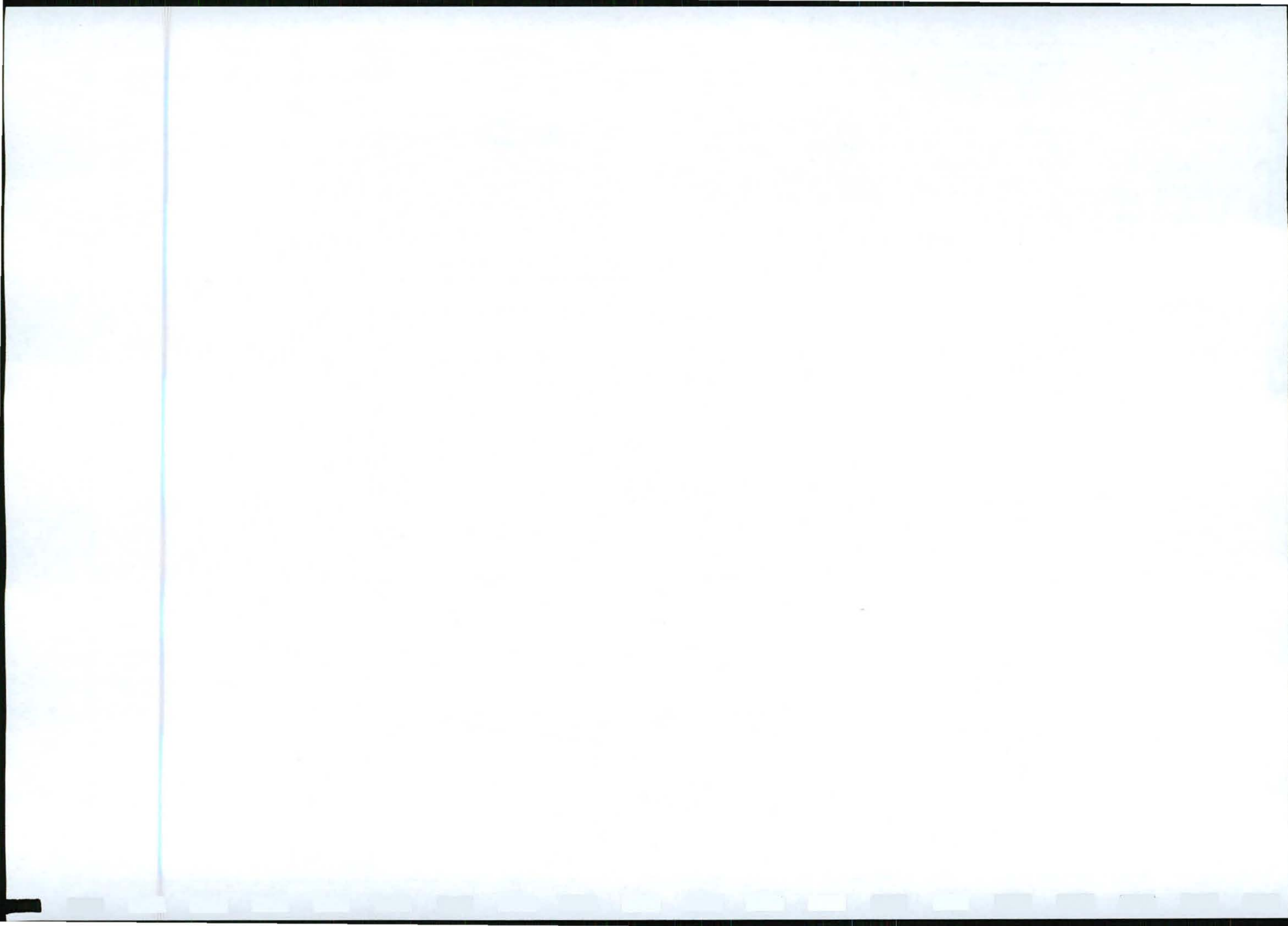


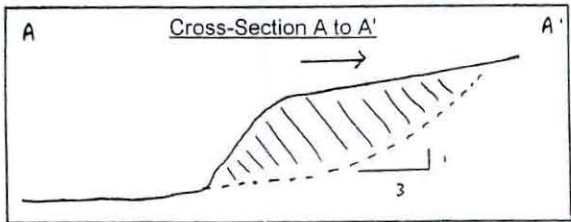
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Gentle to Moderate Downslope Gradient

Black Wattle Thicket

Coral Trees

Geological Contact



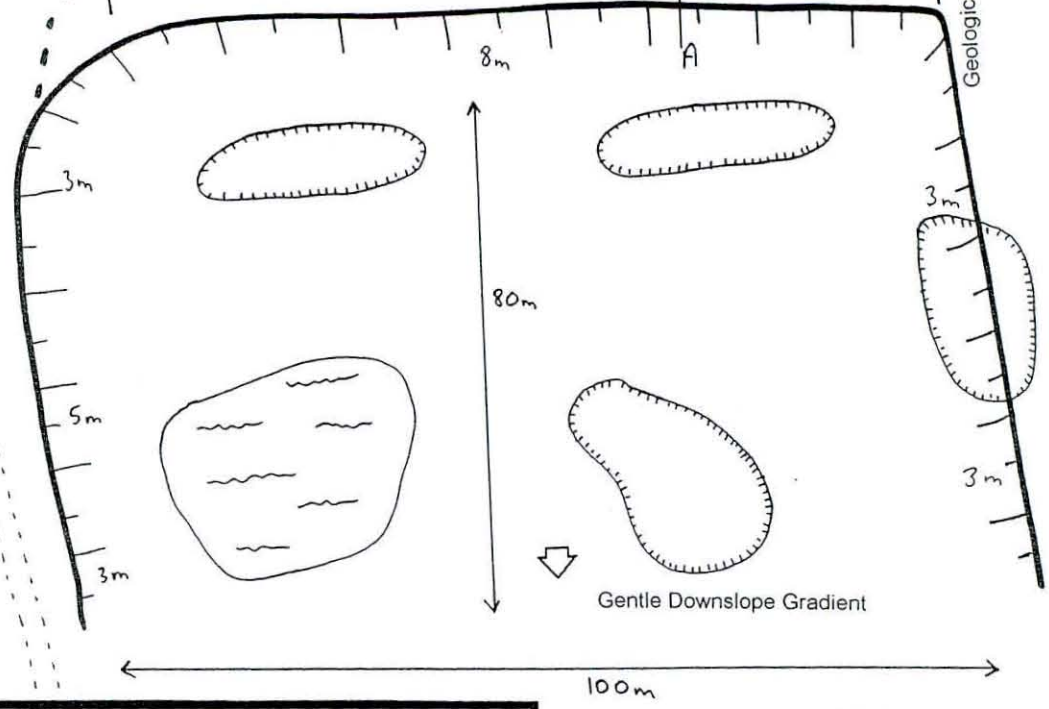
Drainage Channel

Access Road

Drainage Channel

Fence

Road DR08229  
Borrow Pit 8229/3  
Stake Value km 3,6 (LHS)  
Mudstone & Sandstone



100m

← To km 0,0

**FIGURE 23: ENCOBO ROAD MAINTENANCE PROGRAMME : Borrow Pit 8229/3 Sketch Map.**

NOT TO SCALE

SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

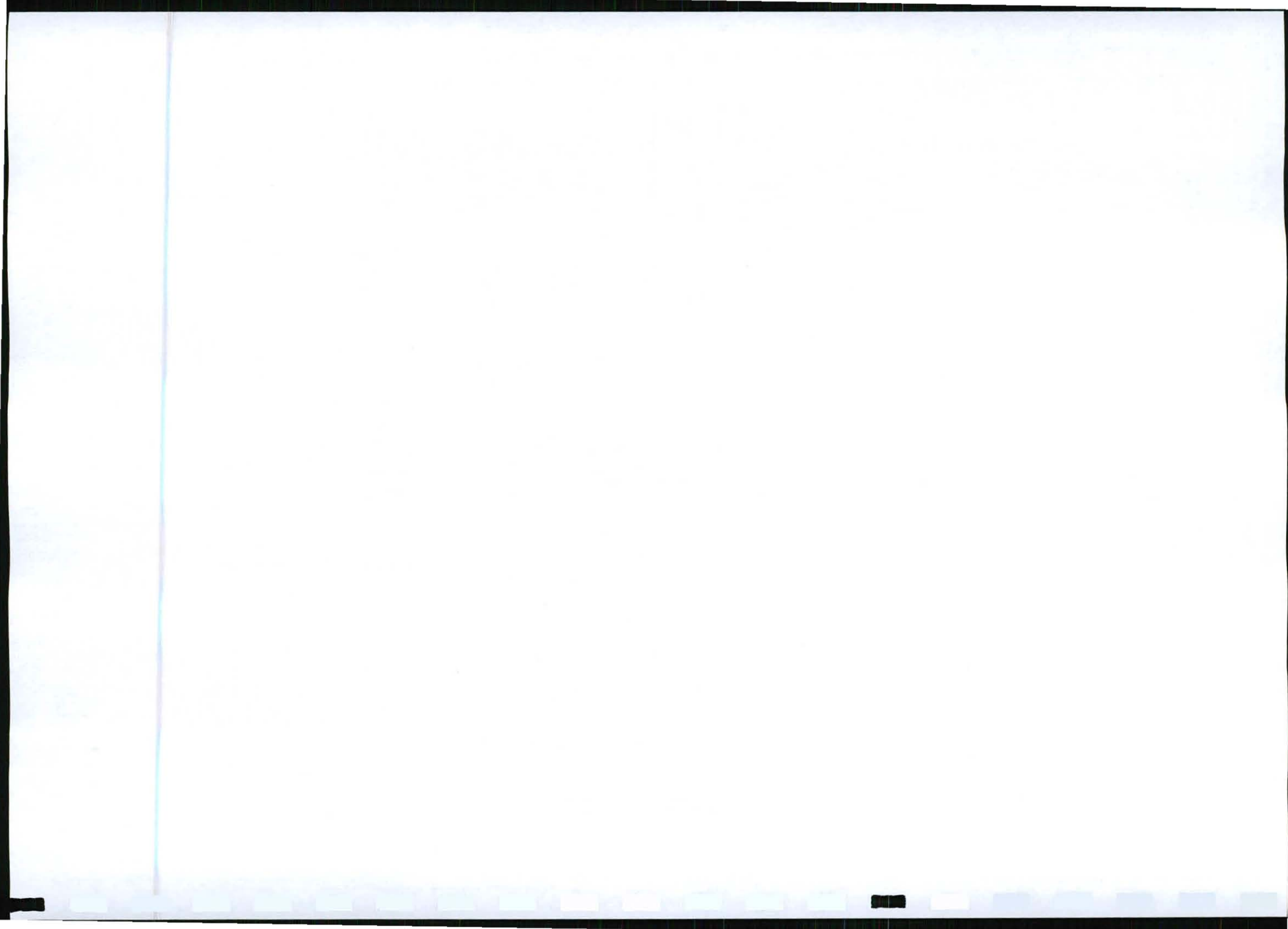
- |  |                                  |  |                                  |
|--|----------------------------------|--|----------------------------------|
|  | Gravel Stockpile                 |  | Downslope Gradient               |
|  | Proposed New Quarrying Direction |  | Existing Borrow Pit Sidewall     |
|  | Fence                            |  | Drainage Channel                 |
|  | Existing Borrow Pit Boundary     |  | Proposed New Excavation Boundary |

**BOPITE ENGINEERING GEOLOGISTS CC**

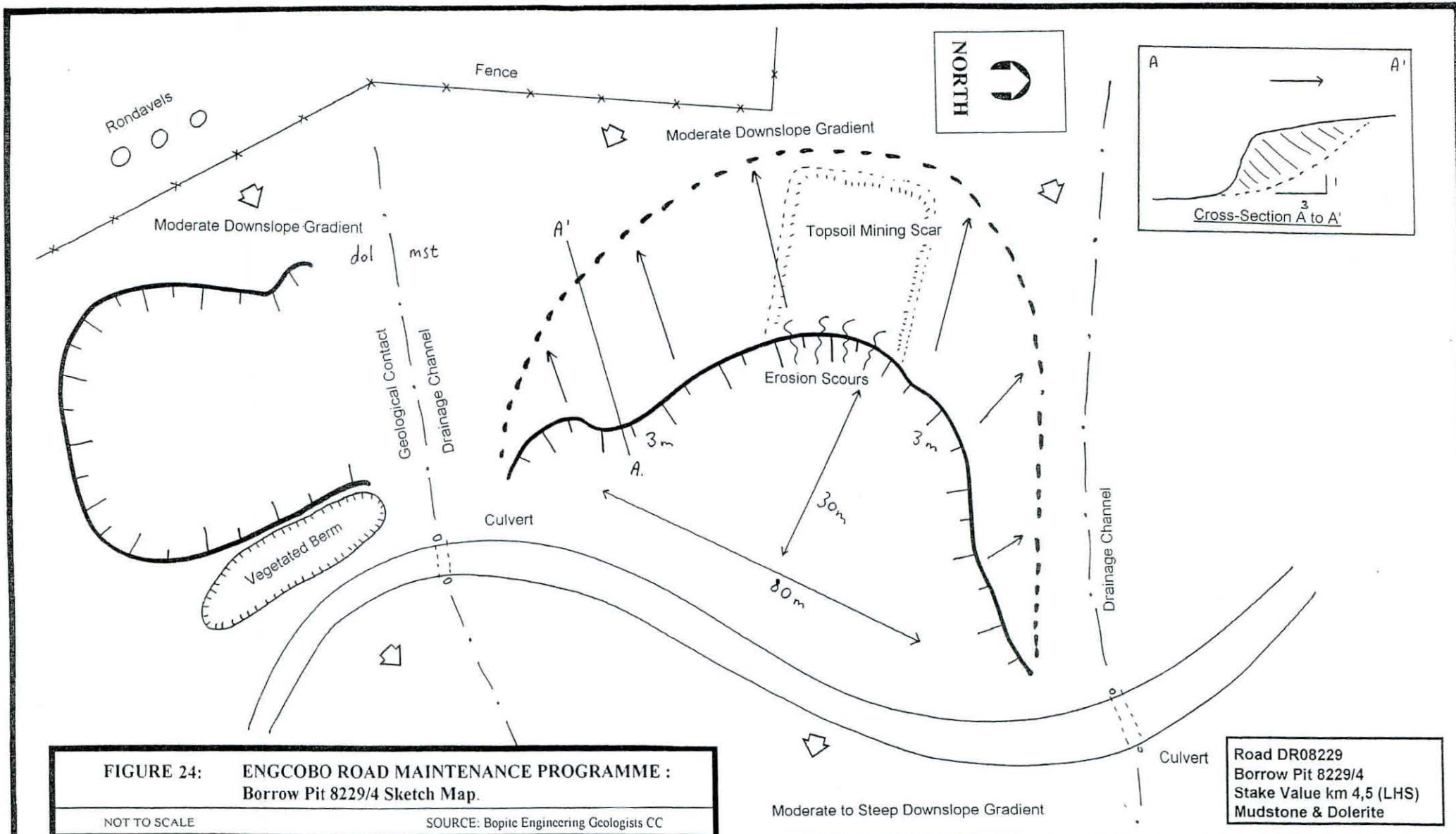
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**FIGURE 24: ENGCOBO ROAD MAINTENANCE PROGRAMME : Borrow Pit 8229/4 Sketch Map.**

NOT TO SCALE SOURCE: Bopite Engineering Geologists CC

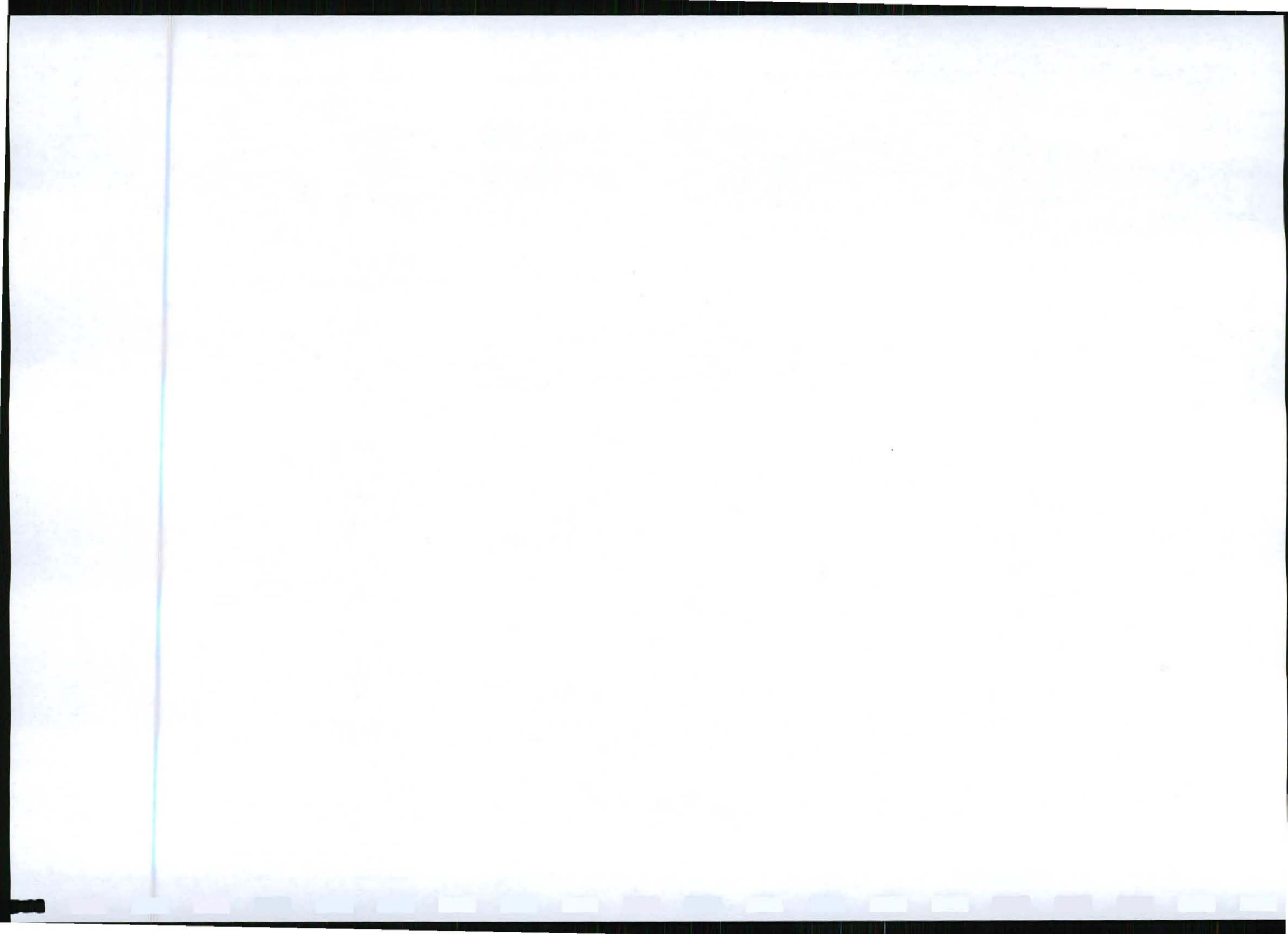
| LEGEND: |                                  |
|---------|----------------------------------|
|         | Drainage Channel                 |
|         | Proposed New Quarrying Direction |
|         | Fence                            |
|         | Existing Borrow Pit Boundary     |
|         | Downslope Gradient               |
|         | Existing Borrow Pit Sidewall     |
|         | Surficial Topsoil Mining Scar    |
|         | Proposed New Excavation Boundary |

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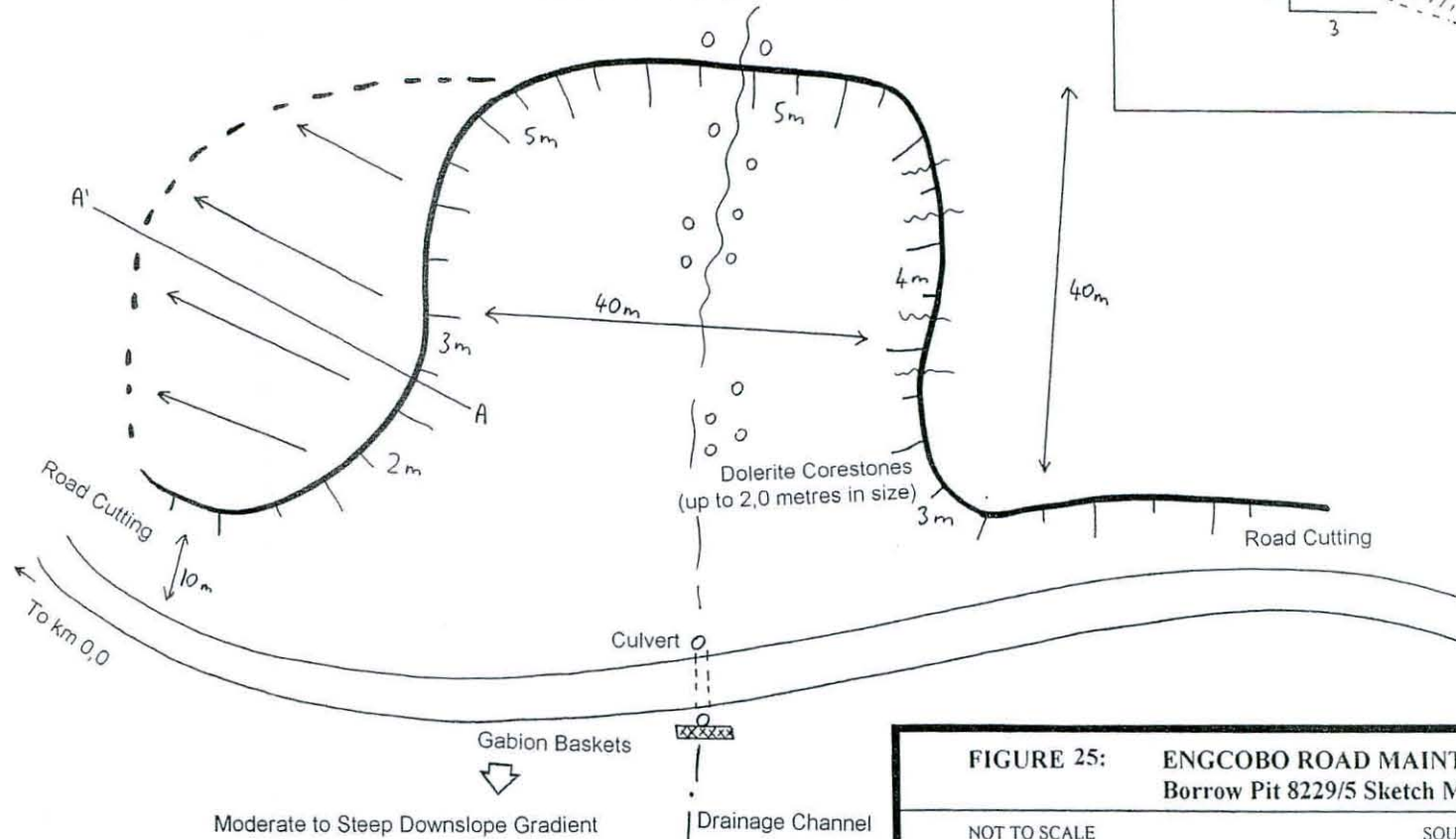
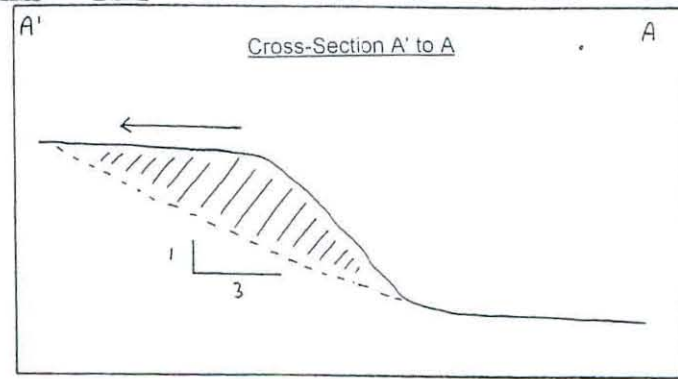
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Moderate Downslope Gradient

Erosion Features (Piping Structures)



Road DR08229  
Borrow Pit 8229/5  
Stake Value km 5,5 (LHS)  
Residual Mudstone

**FIGURE 25: ENCOBO ROAD MAINTENANCE PROGRAMME : Borrow Pit 8229/5 Sketch Map.**

NOT TO SCALE

SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

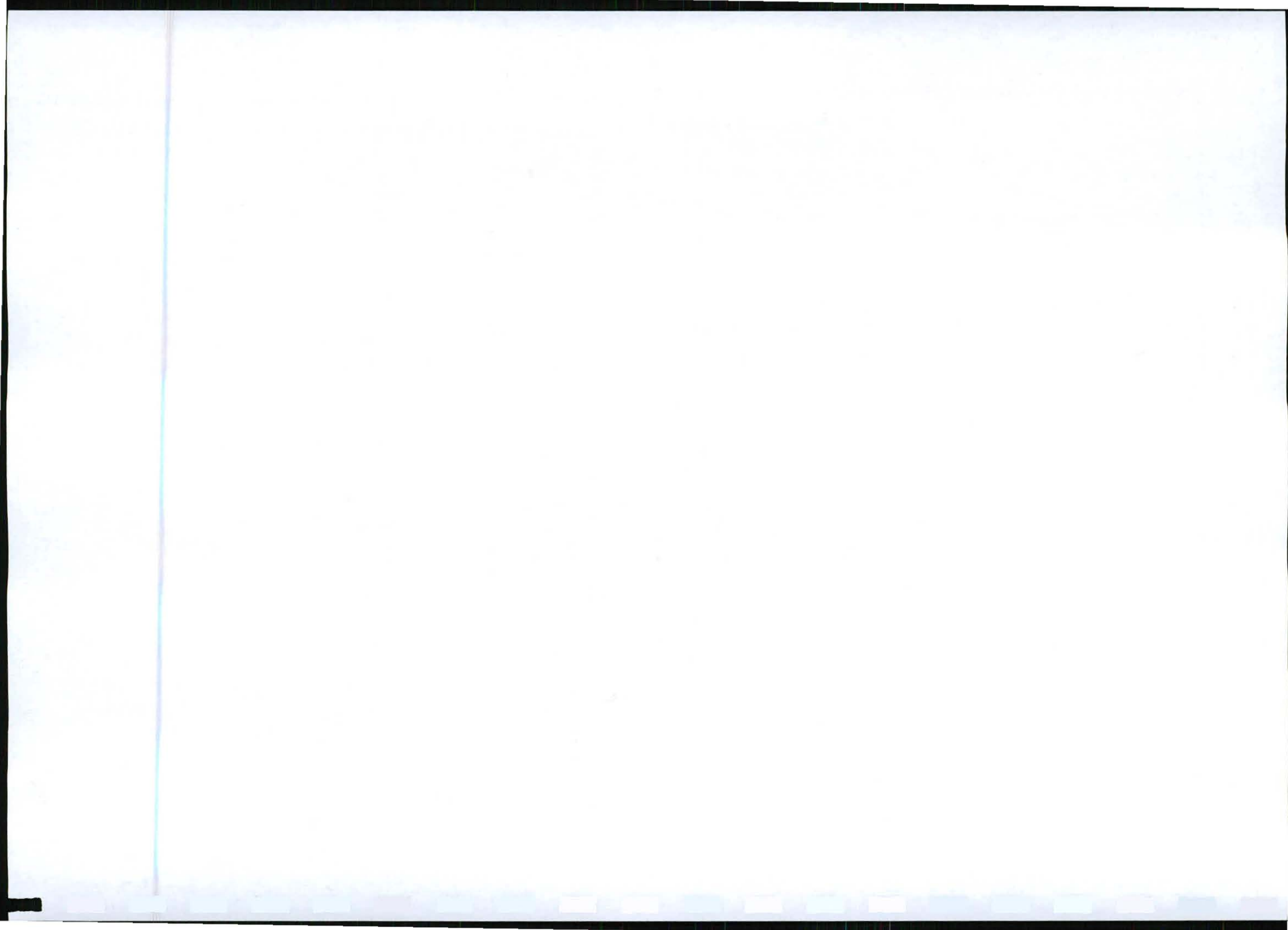
- |  |                                  |  |                                  |
|--|----------------------------------|--|----------------------------------|
|  | Erosion (Piping) Features        |  | Downslope Gradient               |
|  | Proposed New Quarrying Direction |  | Existing Borrow Pit Sidewall     |
|  | Dolerite Corestones              |  | Gabion Baskets                   |
|  | Existing Borrow Pit Boundary     |  | Proposed New Excavation Boundary |

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NORTH



Road DR08229  
Borrow Pit 8229/7  
Stake Value km 13,8 (LHS)  
Residual Mudstone

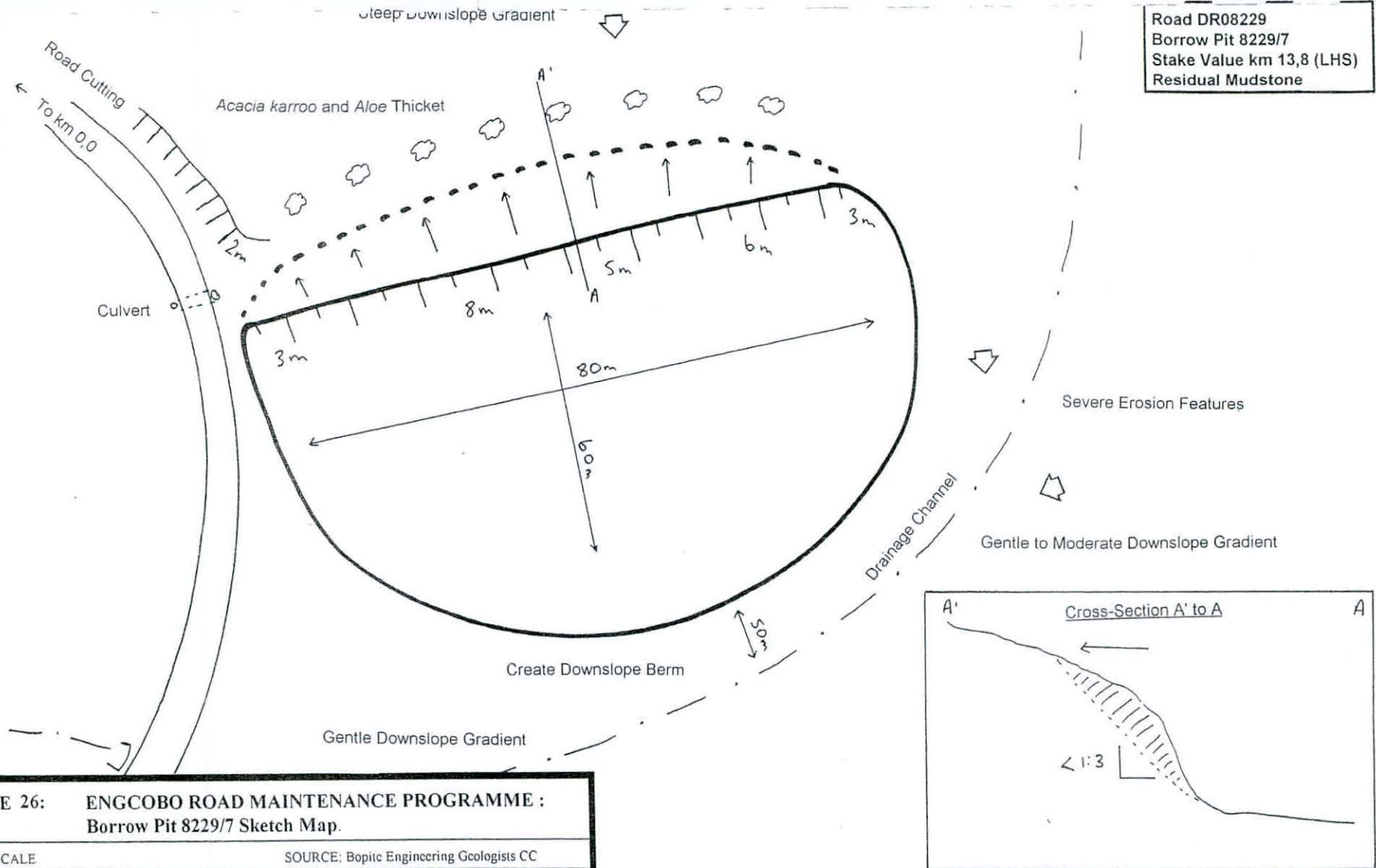


FIGURE 26: ENGCOBO ROAD MAINTENANCE PROGRAMME :  
Borrow Pit 8229/7 Sketch Map.

NOT TO SCALE

SOURCE: Bopite Engineering Geologists CC

LEGEND:

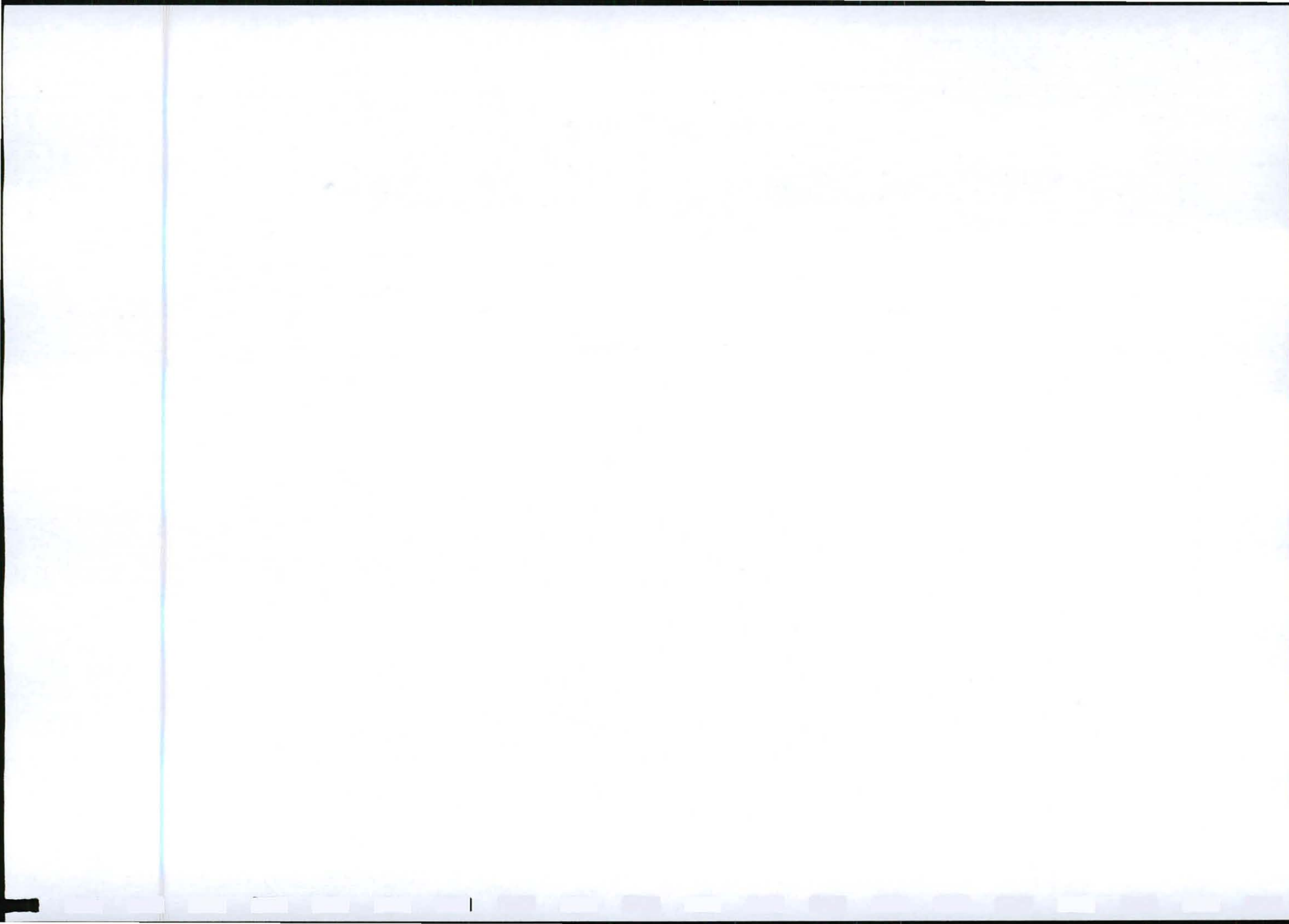
- |  |                                  |  |                                  |
|--|----------------------------------|--|----------------------------------|
|  | Culvert                          |  | Downslope Gradient               |
|  | Proposed New Quarrying Direction |  | Existing Borrow Pit Sidewall     |
|  | Drainage Channel                 |  | Road Cutting                     |
|  | Existing Borrow Pit Boundary     |  | Proposed New Excavation Boundary |

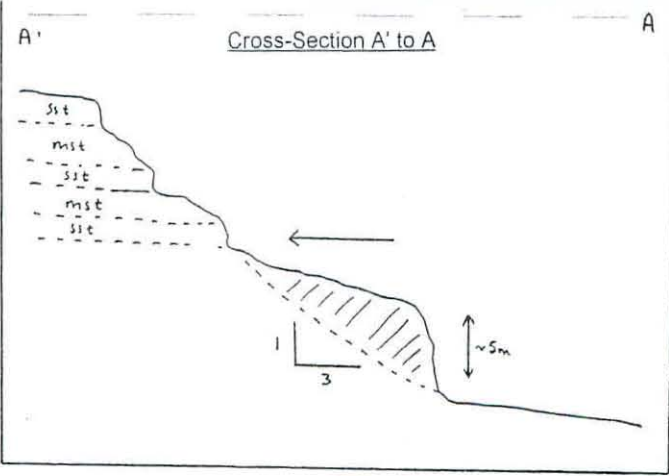
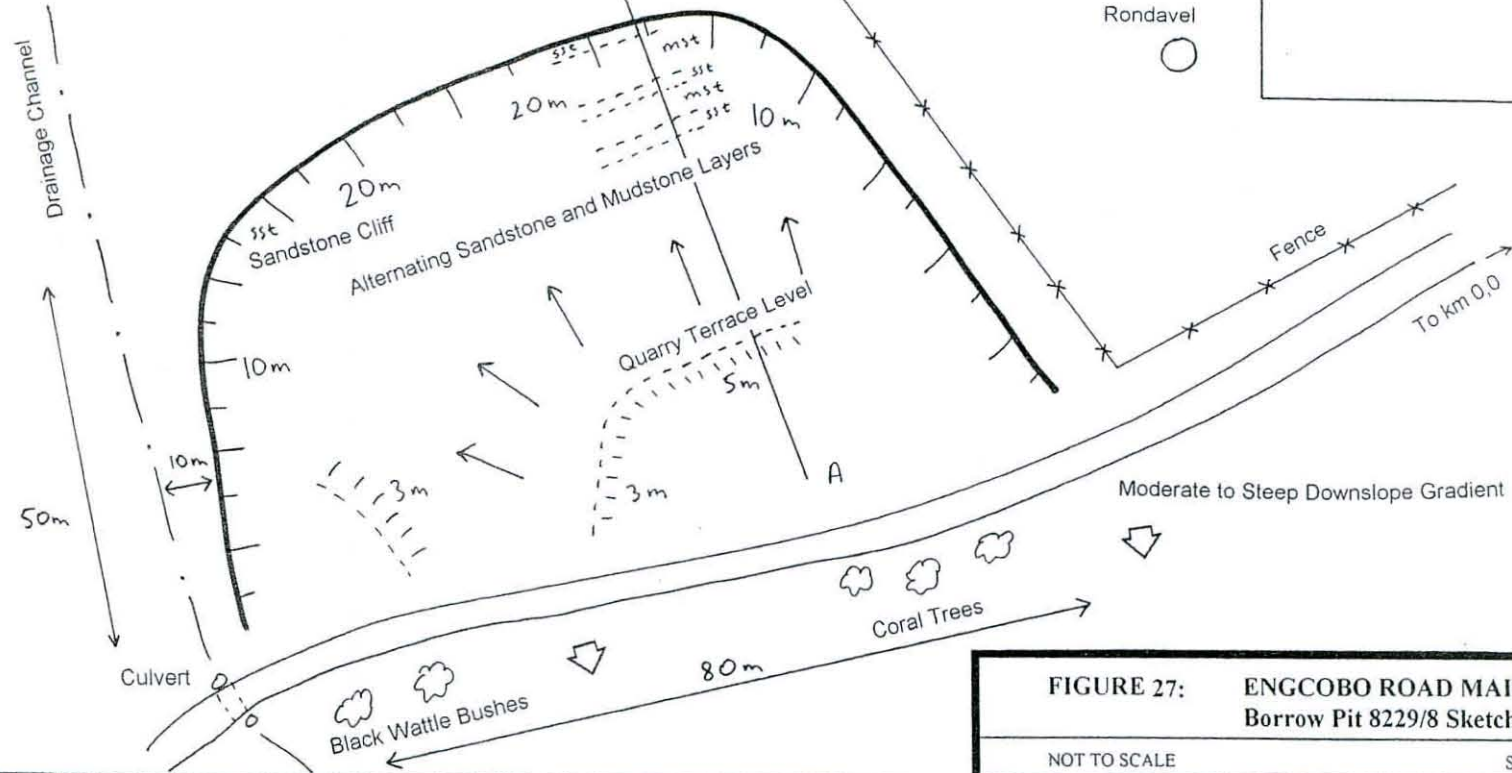
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Road DR08229  
 Borrow Pit 8229/8  
 Stake Value km 17,5 (RHS)  
 Mudstone & Sandstone

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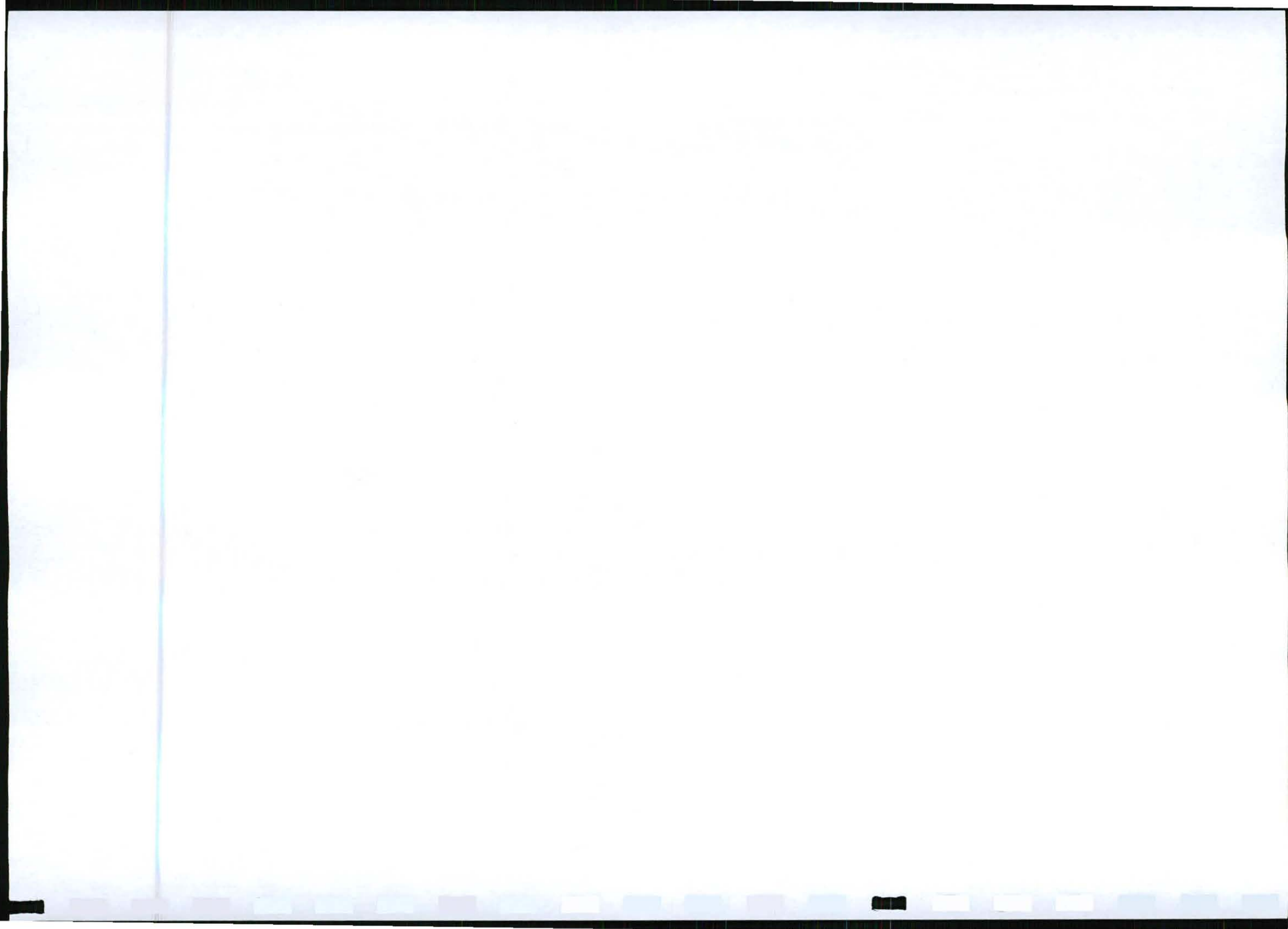
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**FIGURE 27: ENCOBO ROAD MAINTENANCE PROGRAMME : Borrow Pit 8229/8 Sketch Map.**

NOT TO SCALE SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

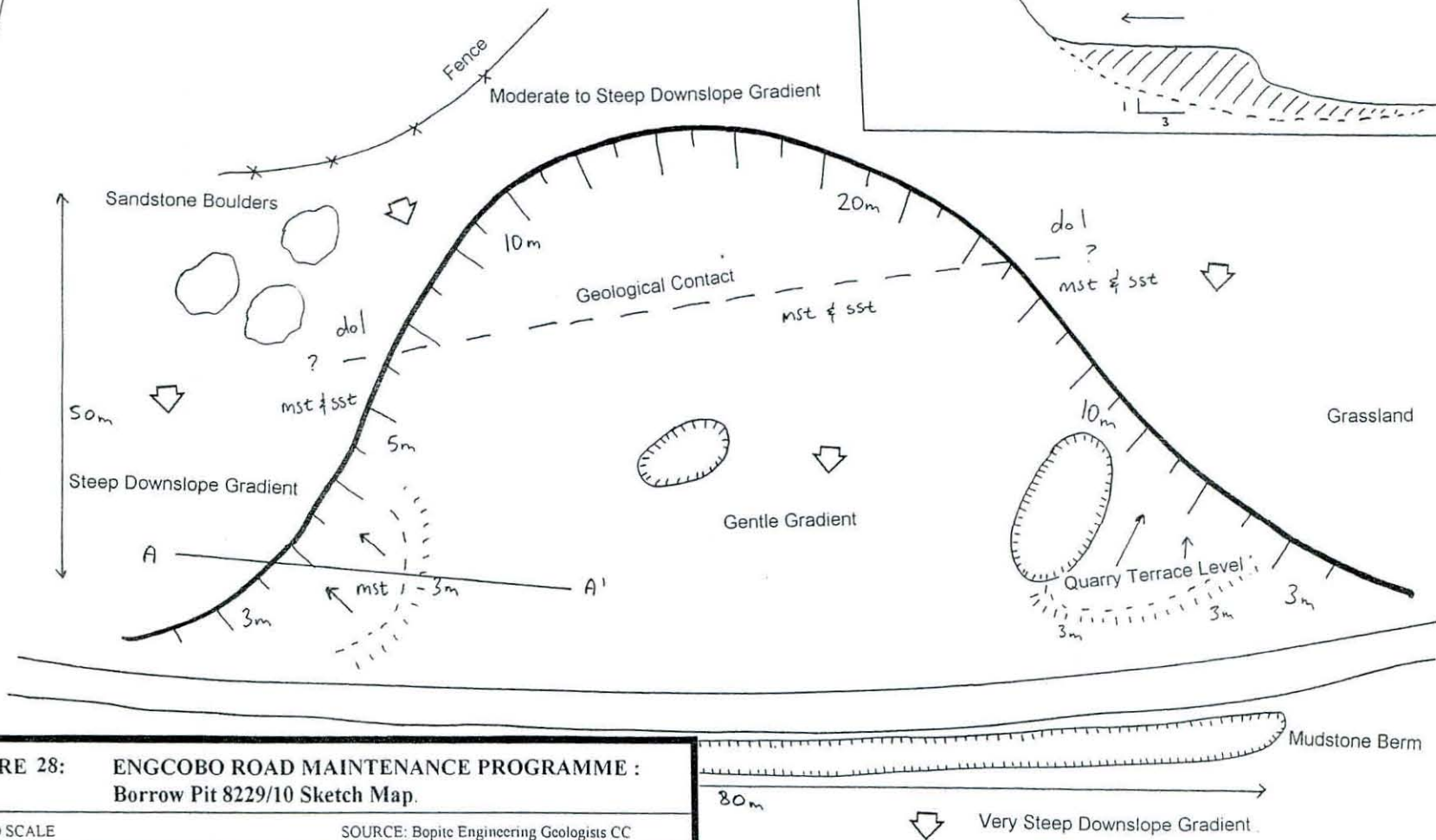
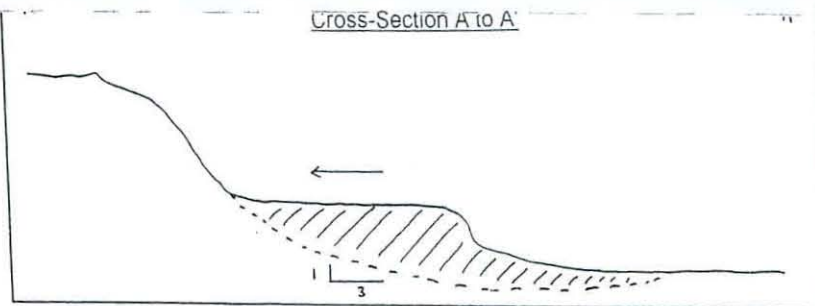
|  |                                  |  |                                  |
|--|----------------------------------|--|----------------------------------|
|  | Black Wattle Thicket             |  | Downslope Gradient               |
|  | Proposed New Quarrying Direction |  | Existing Borrow Pit Sidewall     |
|  | Drainage Channel                 |  | Geological Contact               |
|  | Existing Borrow Pit Boundary     |  | Proposed New Excavation Boundary |







Road nr 08229  
 Borrow Pit 8229/10  
 Stake Value km 22,6 (RHS)  
 Dolerite, Mudstone & Sandstone



**FIGURE 28: ENCOBO ROAD MAINTENANCE PROGRAMME :  
 Borrow Pit 8229/10 Sketch Map.**

NOT TO SCALE

SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

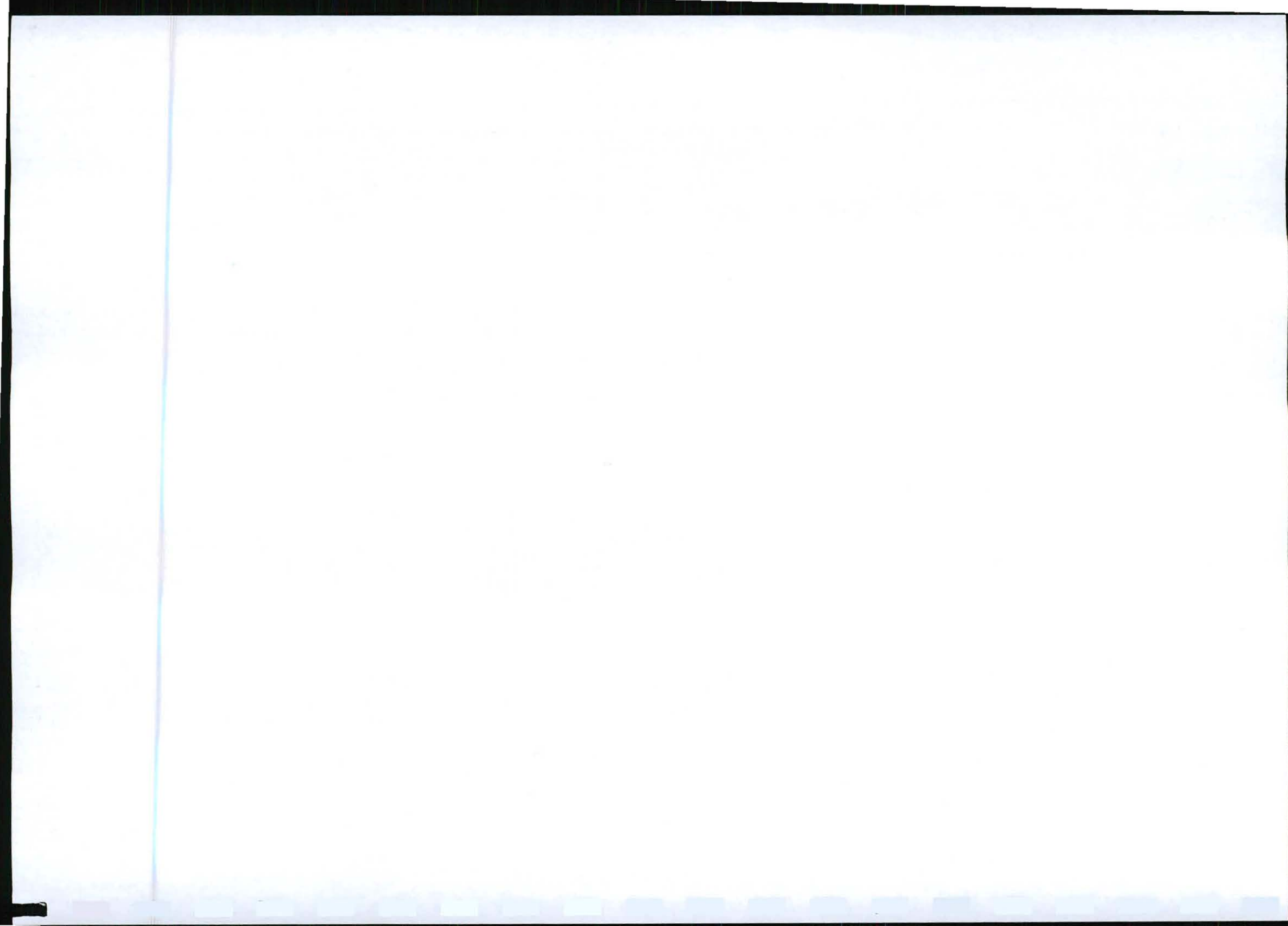
- |  |                                  |  |                                  |
|--|----------------------------------|--|----------------------------------|
|  | Gravel Stockpile                 |  | Downslope Gradient               |
|  | Proposed New Quarrying Direction |  | Existing Borrow Pit Sidewall     |
|  | Quarry Terrace Level             |  | Geological Contact               |
|  | Existing Borrow Pit Boundary     |  | Proposed New Excavation Boundary |

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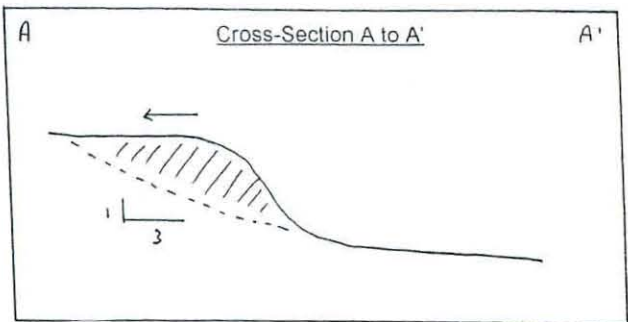
TEL: (041) 7761171  
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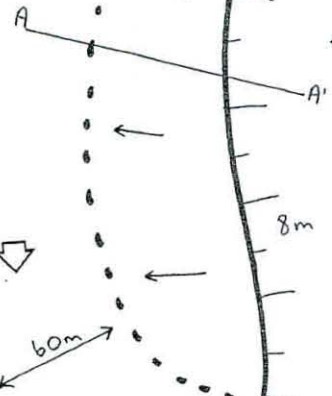
Moderate Downslope Gradient

Erosion Scour



Moderate to Steep Downslope Gradient

Erosion Donga



sst floor

Rehabilitated Area (leave alone)

Sandstone Quarry Floor

Culvert

Steep Downslope Gradient

Road DR08229  
Borrow Pit 8229/11  
Stake Value km 24,9 (RHS)  
Mudstone & Sandstone

To km 0,0 →

**FIGURE 29: ENGCOBO ROAD MAINTENANCE PROGRAMME : Borrow Pit 8229/11 Sketch Map.**

NOT TO SCALE

SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

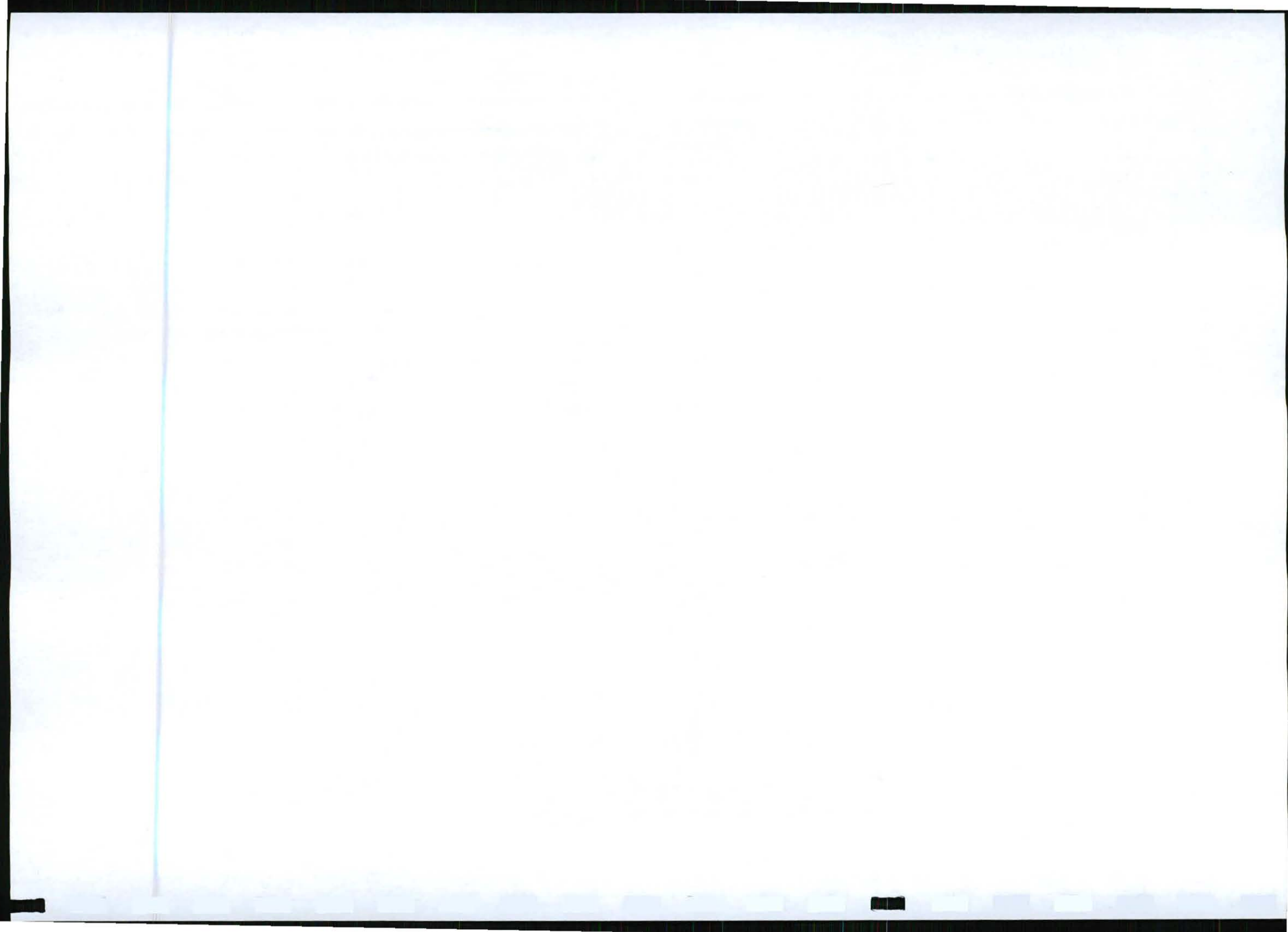
- |  |                                  |  |                                  |
|--|----------------------------------|--|----------------------------------|
|  | Erosion Donga                    |  | Downslope Gradient               |
|  | Proposed New Quarrying Direction |  | Existing Borrow Pit Sidewall     |
|  | Rehabilitated Area               |  | Erosion Scour                    |
|  | Existing Borrow Pit Boundary     |  | Proposed New Excavation Boundary |

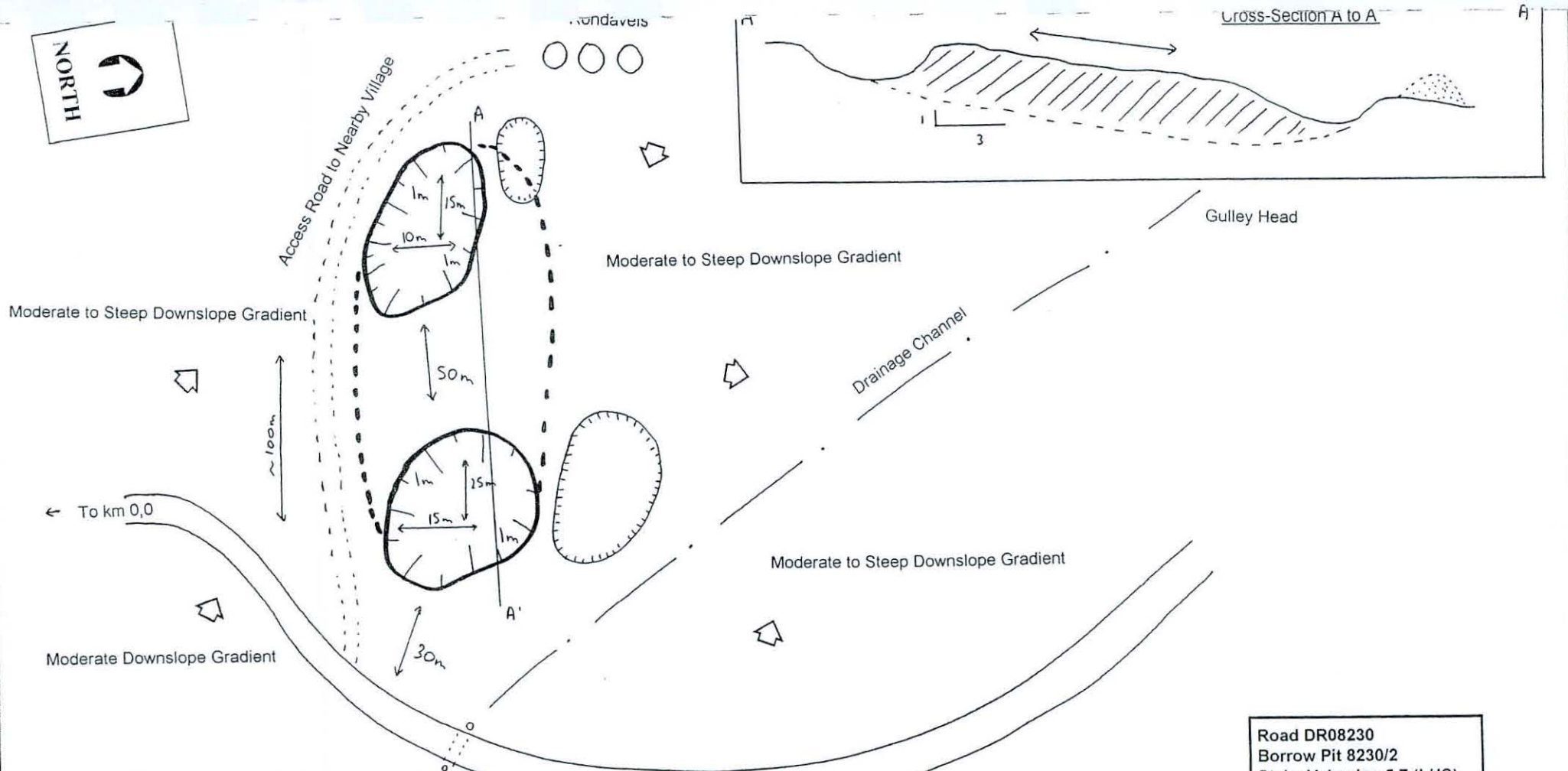
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**FIGURE 30: ENGCOCO ROAD MAINTENANCE PROGRAMME : Borrow Pit 8230/2 Sketch Map.**

NOT TO SCALE

SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

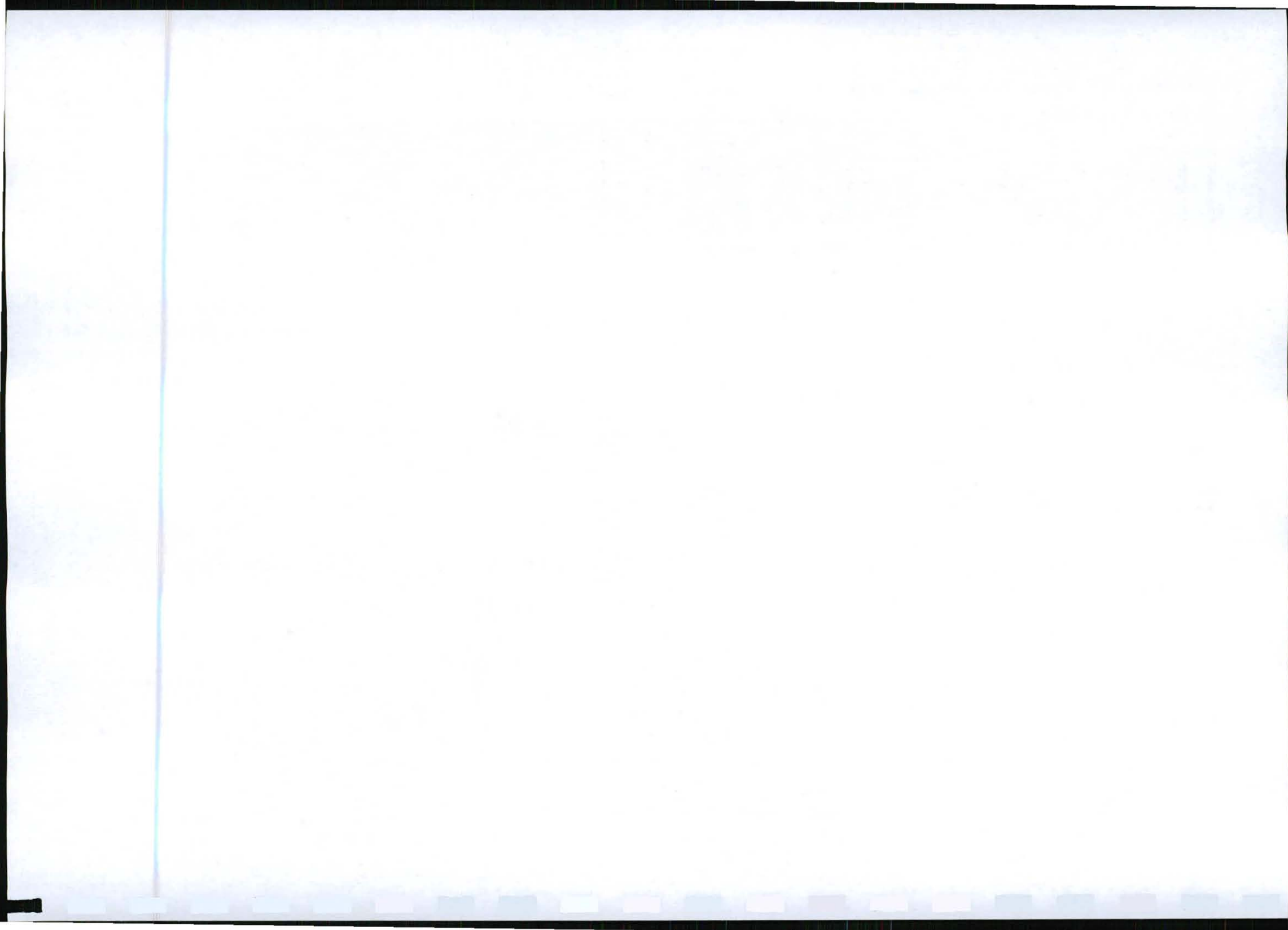
- |   |                              |   |                                  |
|---|------------------------------|---|----------------------------------|
|  | Gravel Stockpile             |  | Downslope Gradient               |
|  | Access Road (to village)     |  | Existing Borrow Pit Sidewalls    |
|  | Drainage Channel             |  | Proposed New Excavation Boundary |
|  | Existing Borrow Pit Boundary |   |                                  |

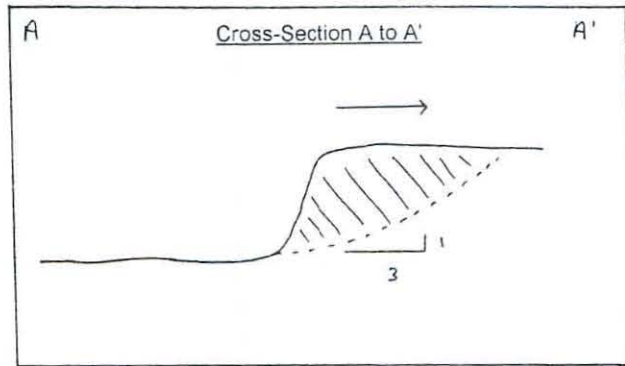
**BOPITE ENGINEERING GEOLOGISTS CC**

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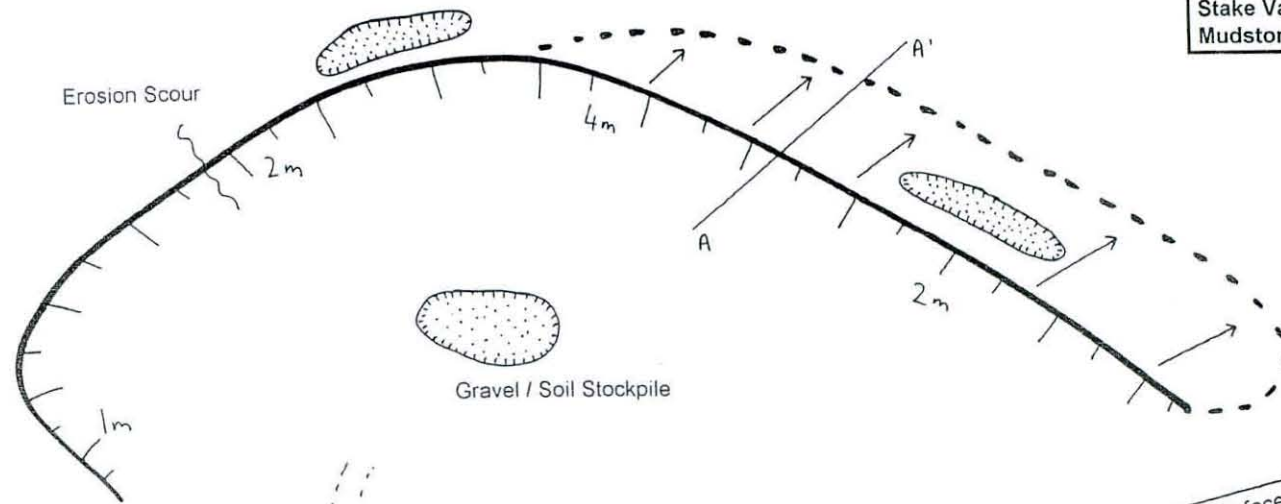
CK 96 6444023





Moderate Downslope Gradient

Road DR08231  
Borrow Pit 8231/1  
Stake Value km 2,1 (RHS)  
Mudstone & Sandstone



To All Saints Hospital  
To km 0,0

**FIGURE 31: ENGCOBO ROAD MAINTENANCE PROGRAMME :  
Borrow Pit 8231/1 Sketch Map.**

NOT TO SCALE

SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

- |  |                              |  |                                  |
|--|------------------------------|--|----------------------------------|
|  | Gravel/Soil Stockpile        |  | Downslope Gradient               |
|  | Access Road (to village)     |  | Existing Borrow Pit Sidewalls    |
|  | Erosion Scour                |  | Access Route                     |
|  | Existing Borrow Pit Boundary |  | Proposed New Excavation Boundary |

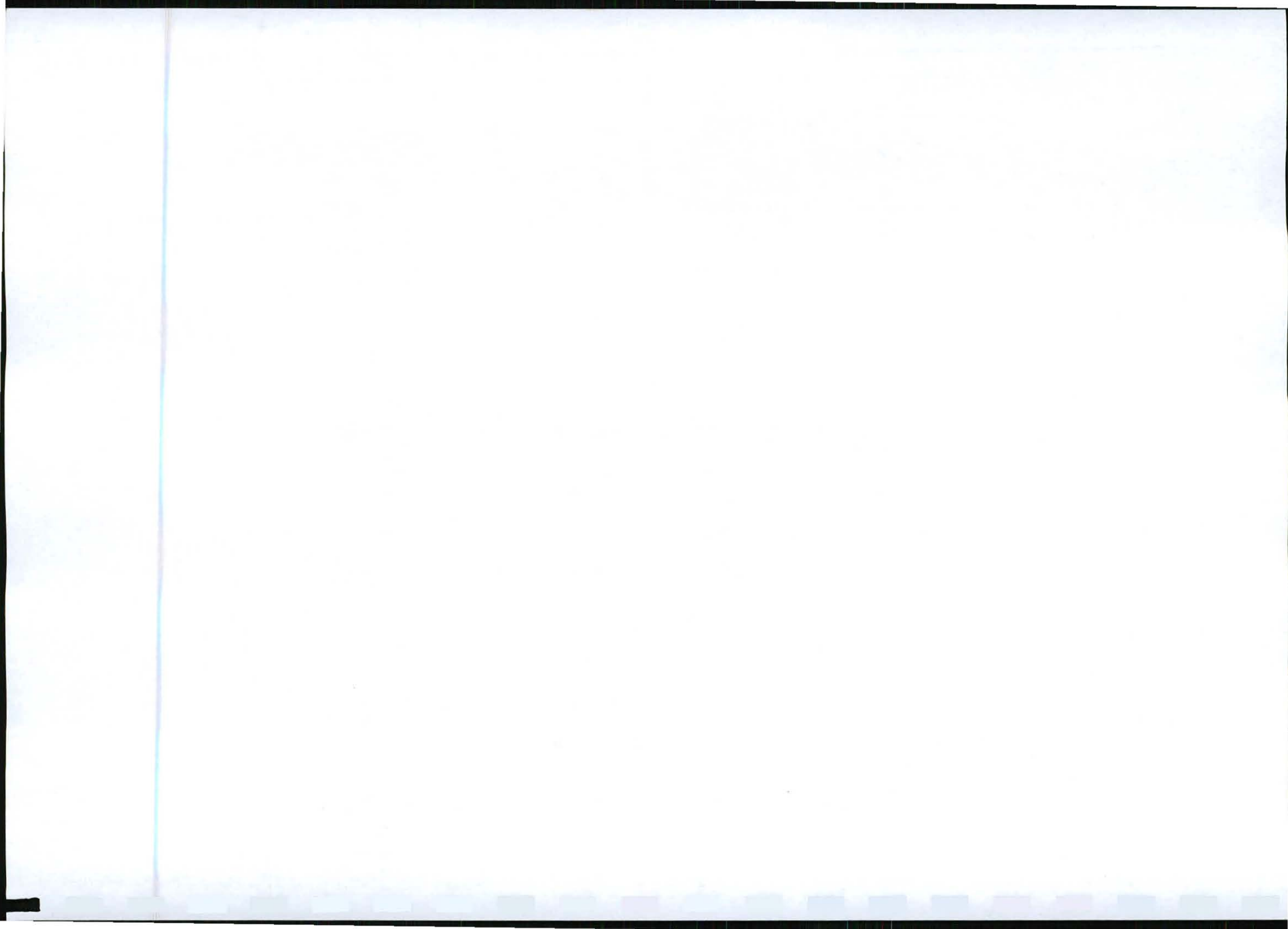
Moderate Downslope Gradient

**BOPITE ENGINEERING GEOLOGISTS CC**

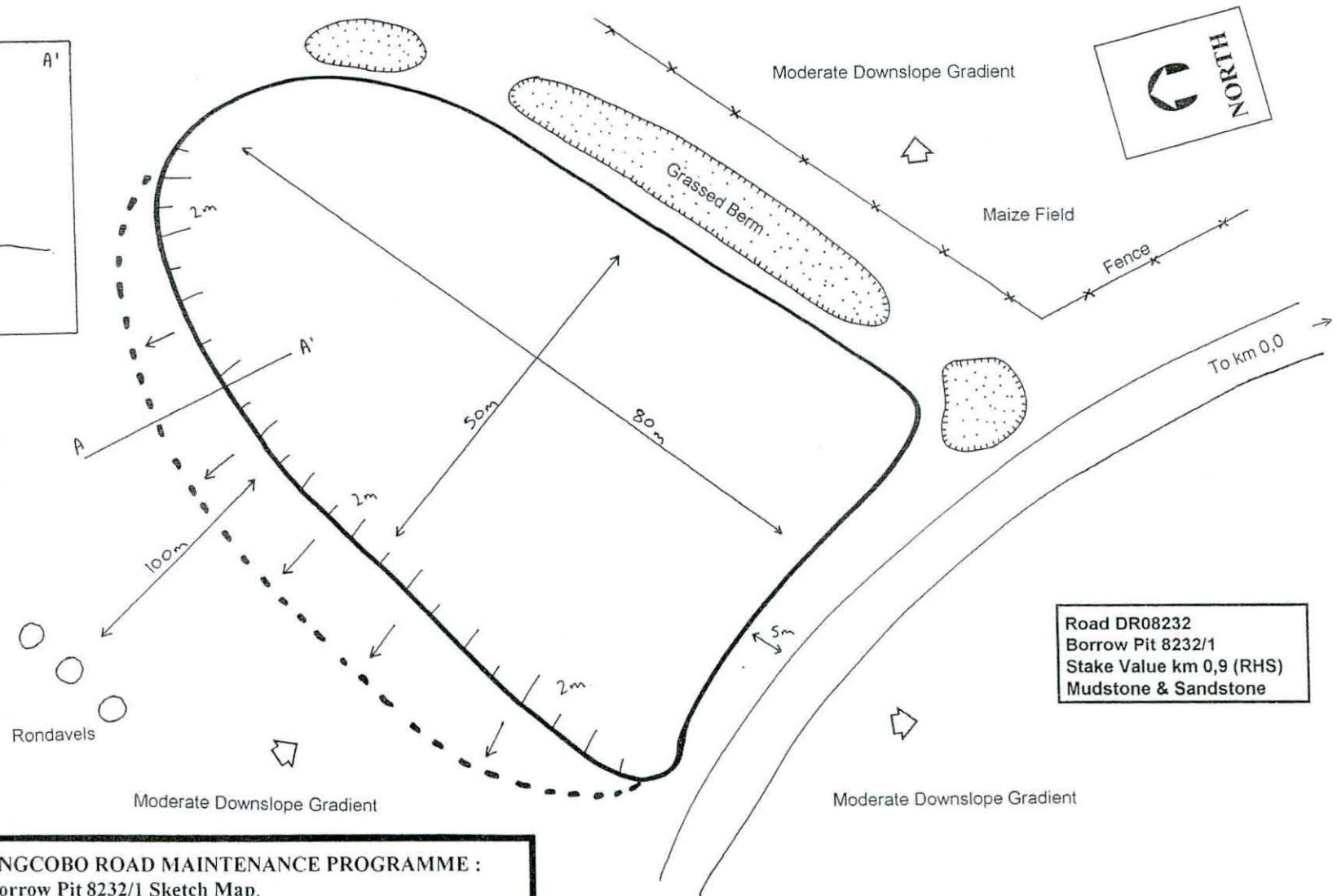
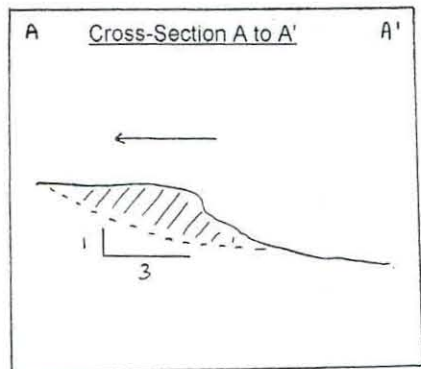
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CELL: 082 5729159

GK 96 6444023







Road DR08232  
 Borrow Pit 8232/1  
 Stake Value km 0,9 (RHS)  
 Mudstone & Sandstone

**FIGURE 32: ENCOBO ROAD MAINTENANCE PROGRAMME :  
 Borrow Pit 8232/1 Sketch Map.**

NOT TO SCALE

SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

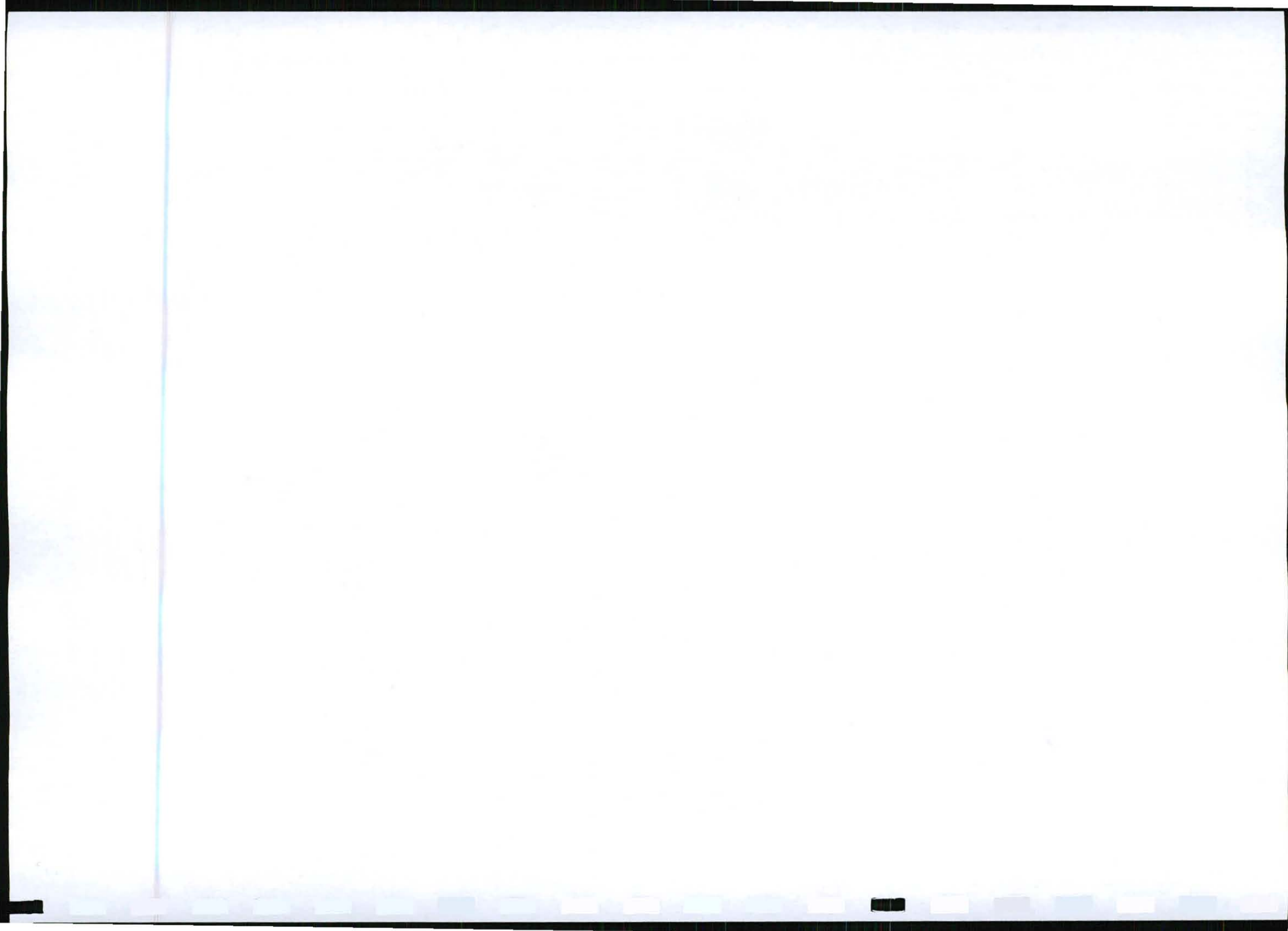
- |  |                                  |  |                                  |
|--|----------------------------------|--|----------------------------------|
|  | Grassed Stockpiles               |  | Downslope Gradient               |
|  | Proposed New Quarrying Direction |  | Existing Borrow Pit Sidewall     |
|  | Fence                            |  | Rondavels                        |
|  | Existing Borrow Pit Boundary     |  | Proposed New Excavation Boundary |

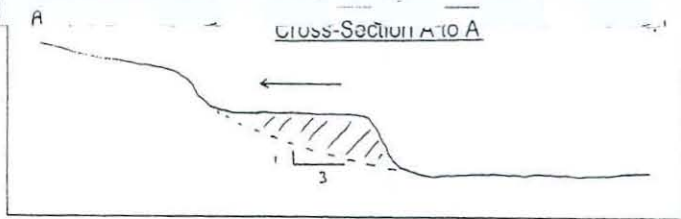
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dol  
Dolerite Outcrop

Moderate Downslope Gradient



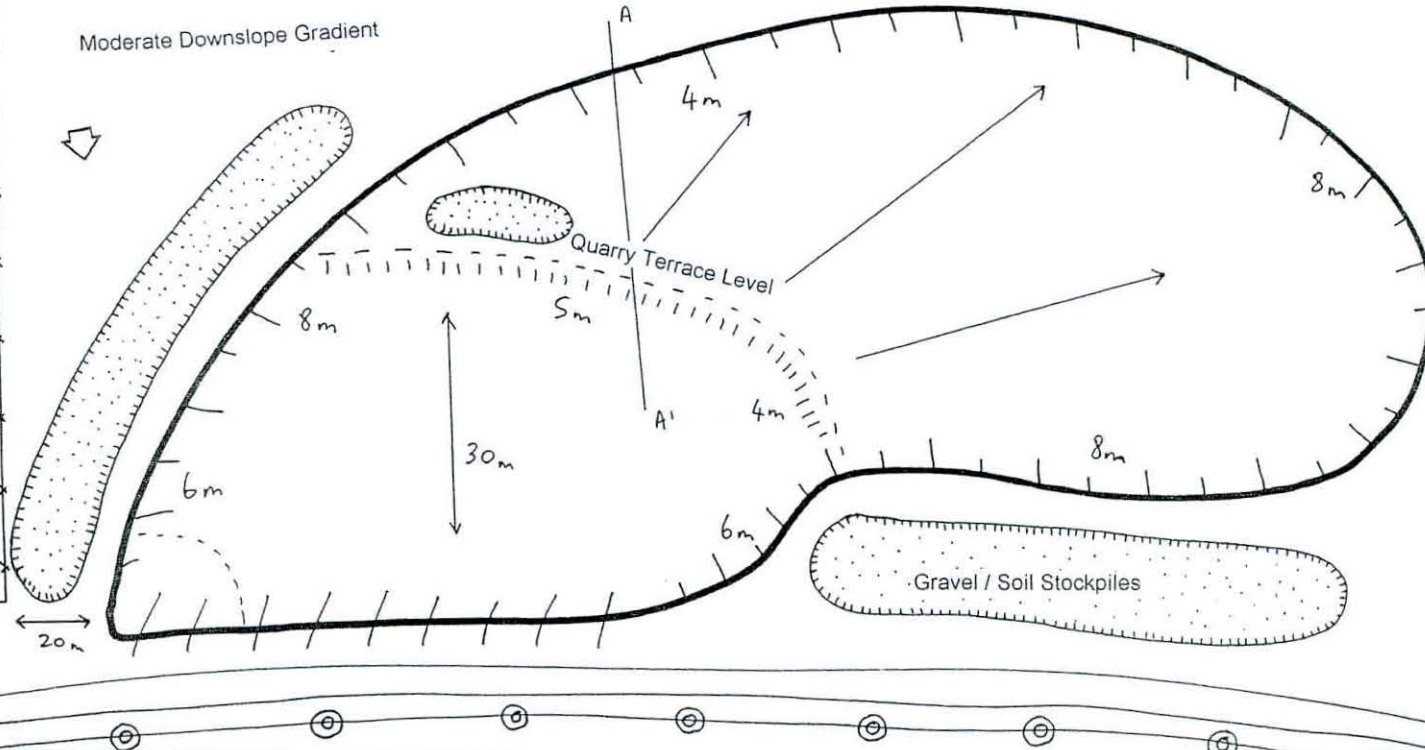
80m

Moderate Downslope Gradient

Road DR08232  
Borrow Pit 8232/2  
Stake Value km 5,2 (LHS)  
Mudstone

Fence

To km 0,0



**FIGURE 33: ENCOBO ROAD MAINTENANCE PROGRAMME :  
Borrow Pit 8232/2 Sketch Map.**

NOT TO SCALE

SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

- |  |                                  |  |                                  |
|--|----------------------------------|--|----------------------------------|
|  | Stockpile                        |  | Downslope Gradient               |
|  | Proposed New Quarrying Direction |  | Existing Borrow Pit Sidewall     |
|  | Quarry Terrace Level             |  | Overhead Power Lines             |
|  | Existing Borrow Pit Boundary     |  | Proposed New Excavation Boundary |



Gulley Head

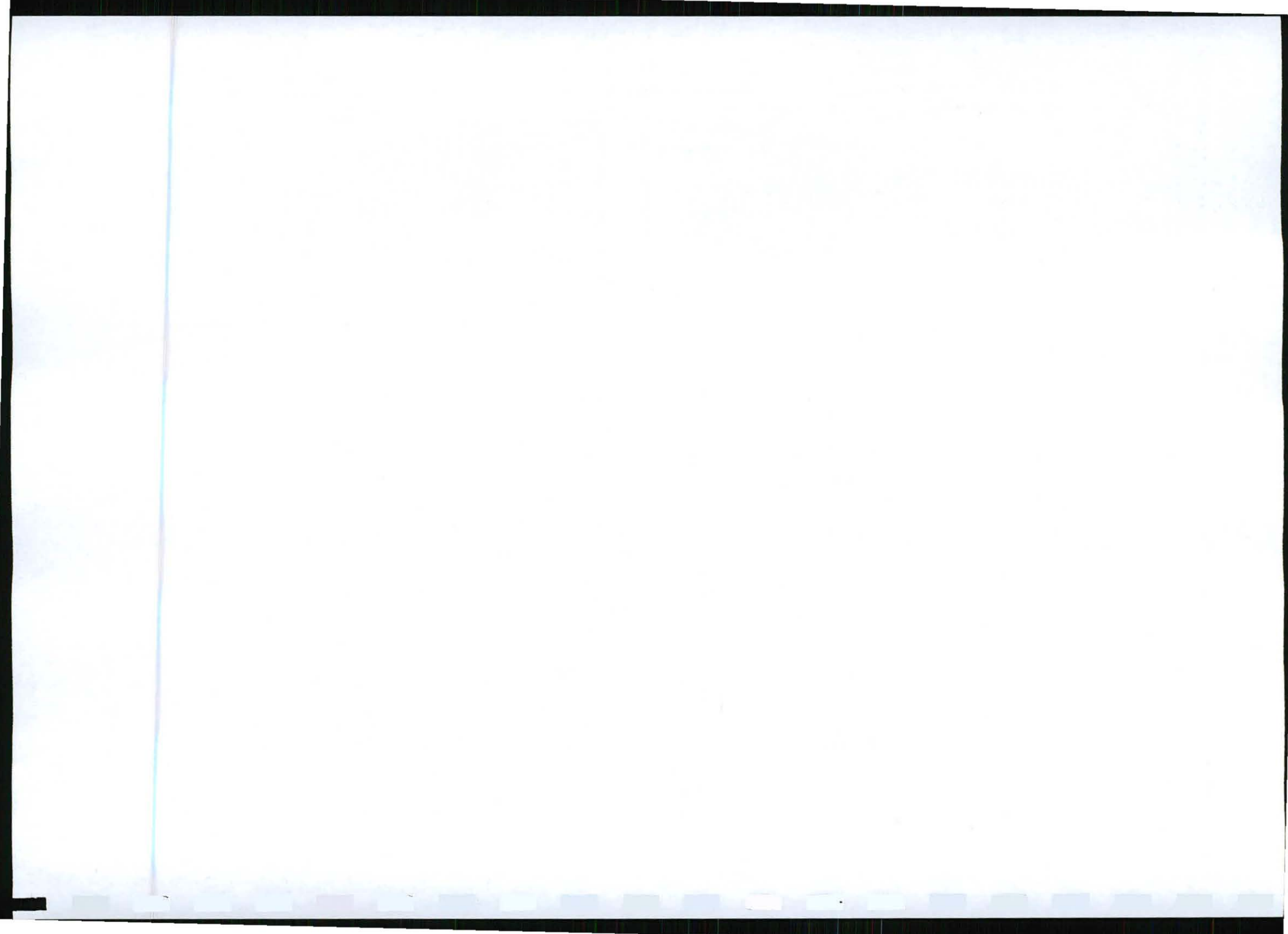
Moderate to Steep Downslope Gradient

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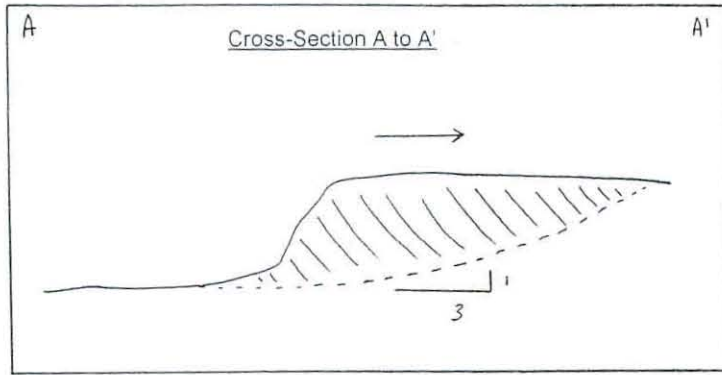
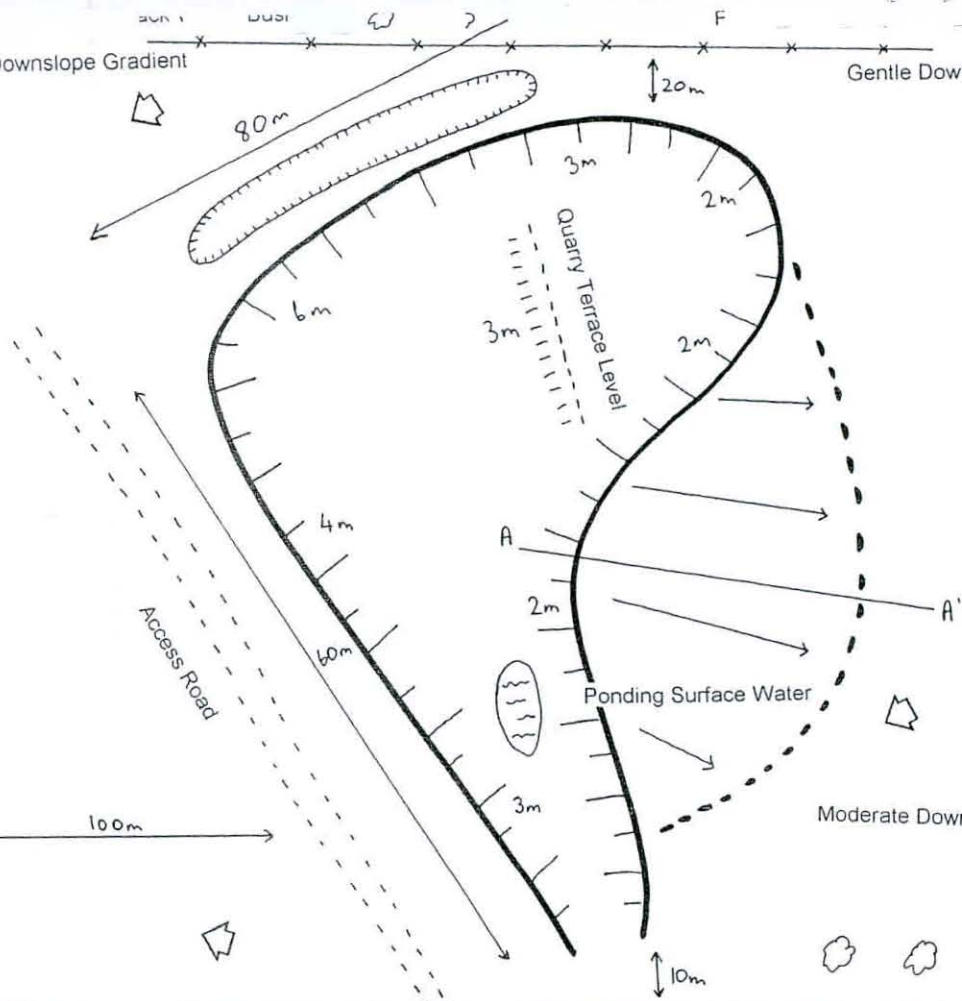
GK 96 6444023

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Gentle Downslope Gradient



Road DR08232  
Borrow Pit 8232/3  
Stake Value km 8,3 (LHS)  
Sandstone

**FIGURE 34: ENCOBO ROAD MAINTENANCE PROGRAMME : Borrow Pit 8232/3 Sketch Map.**

NOT TO SCALE SOURCE: Bopite Engineering Geologists CC

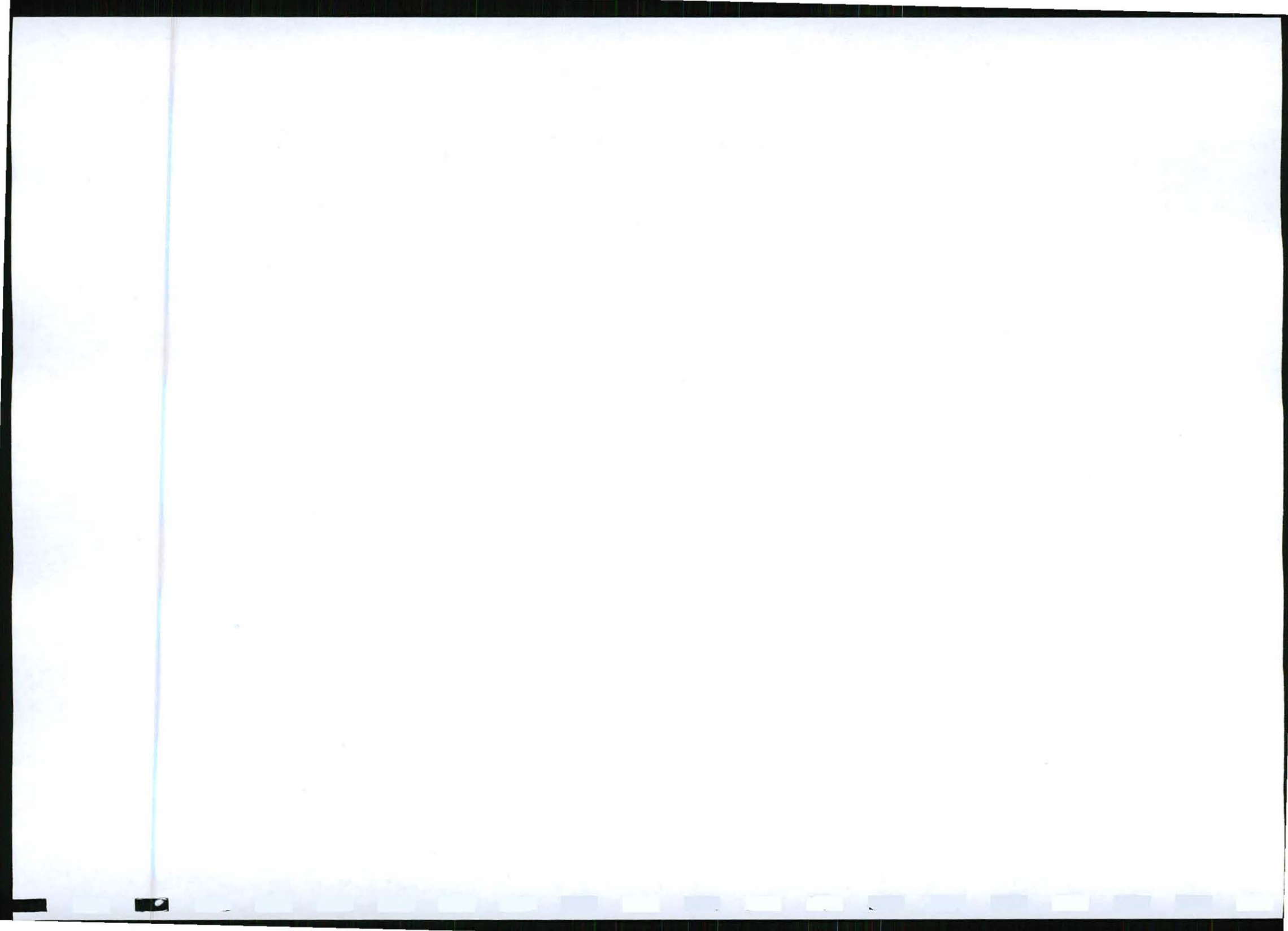
| LEGEND: |                                  |
|---------|----------------------------------|
|         | Gravel / Soil Stockpile          |
|         | Proposed New Quarrying Direction |
|         | Quarry Terrace Level             |
|         | Existing Borrow Pit Boundary     |
|         | Access Road                      |
|         | Proposed New Excavation Boundary |
|         | Downslope Gradient               |
|         | Existing Borrow Pit Sidewall     |

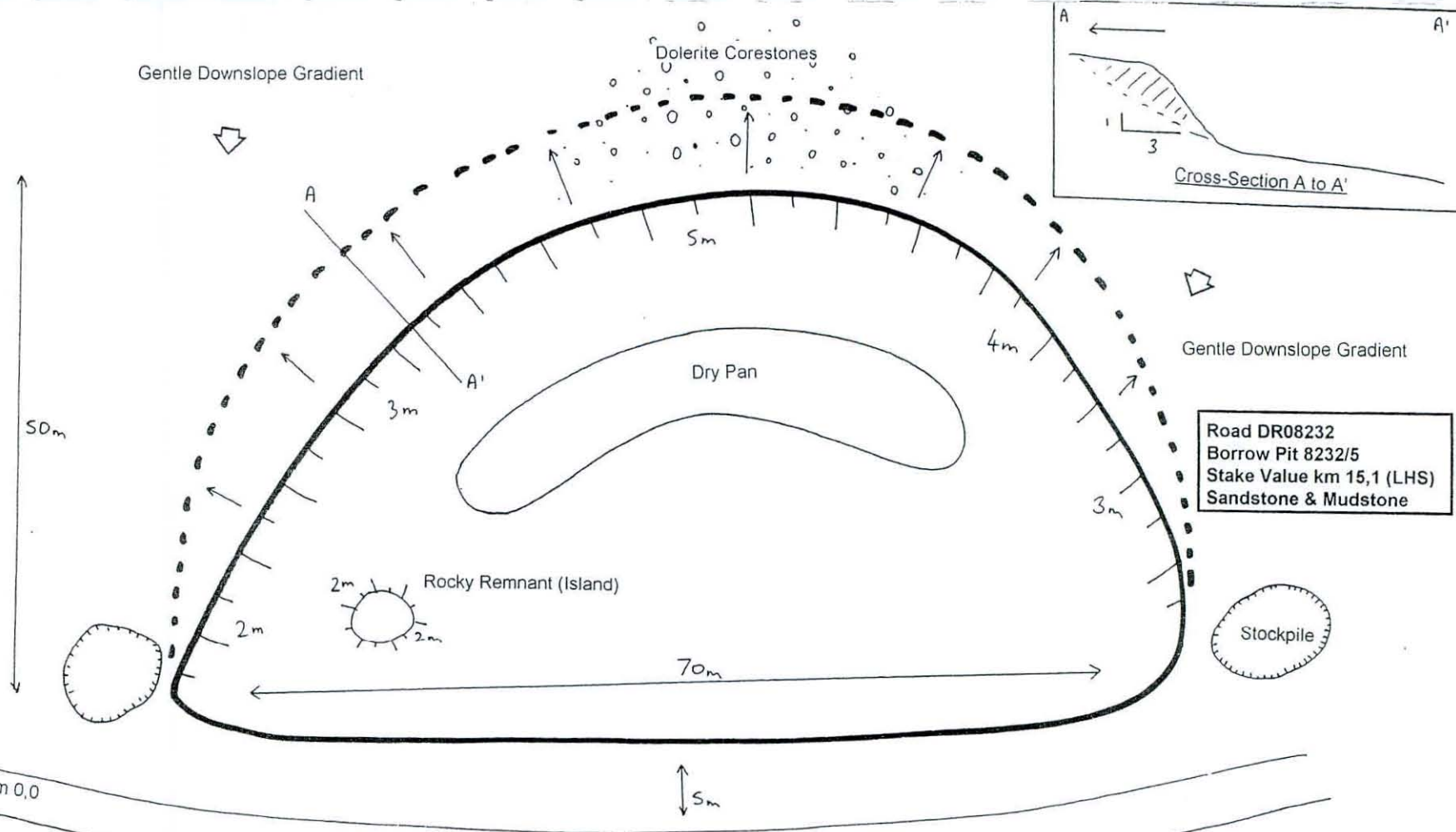
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**FIGURE 35: ENCOBO ROAD MAINTENANCE PROGRAMME : Borrow Pit 8232/5 Sketch Map.**

NOT TO SCALE SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

|  |                                  |  |                                  |  |                     |
|--|----------------------------------|--|----------------------------------|--|---------------------|
|  | Dry Pan                          |  | Proposed New Quarrying Direction |  | Downslope Gradient  |
|  | Proposed New Quarrying Direction |  | Existing Borrow Pit Sidewall     |  | Dolerite Corestones |
|  | Rock Island Remnant              |  | Proposed New Excavation Boundary |  |                     |
|  | Existing Borrow Pit Boundary     |  |                                  |  |                     |

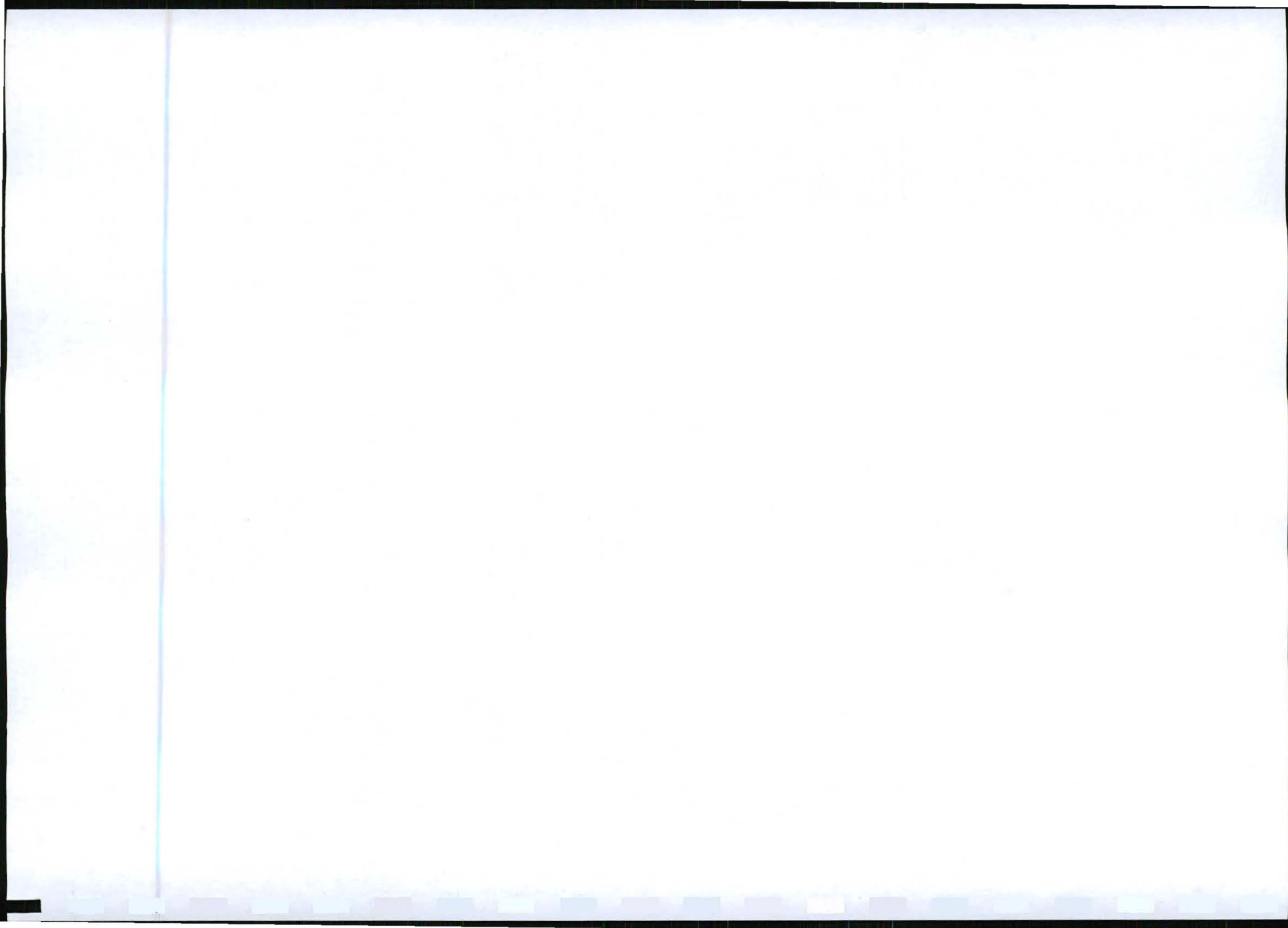
Dolerite Corestones  
 Gentle to Moderate Downslope Gradient  
 River (about 1 000 metres away)

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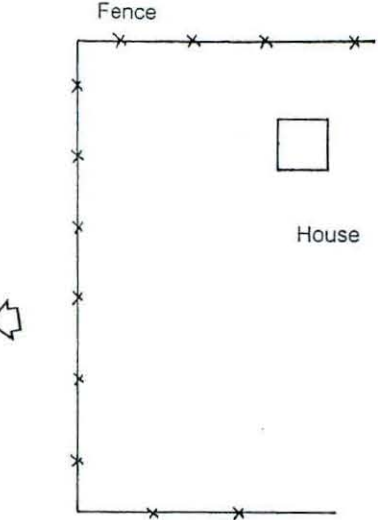
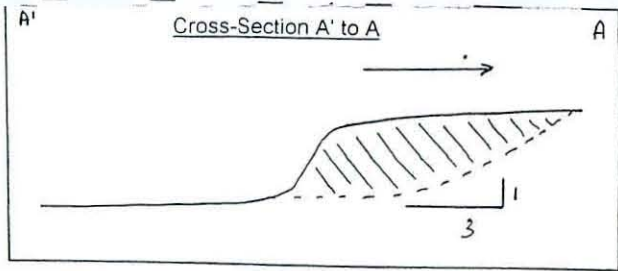
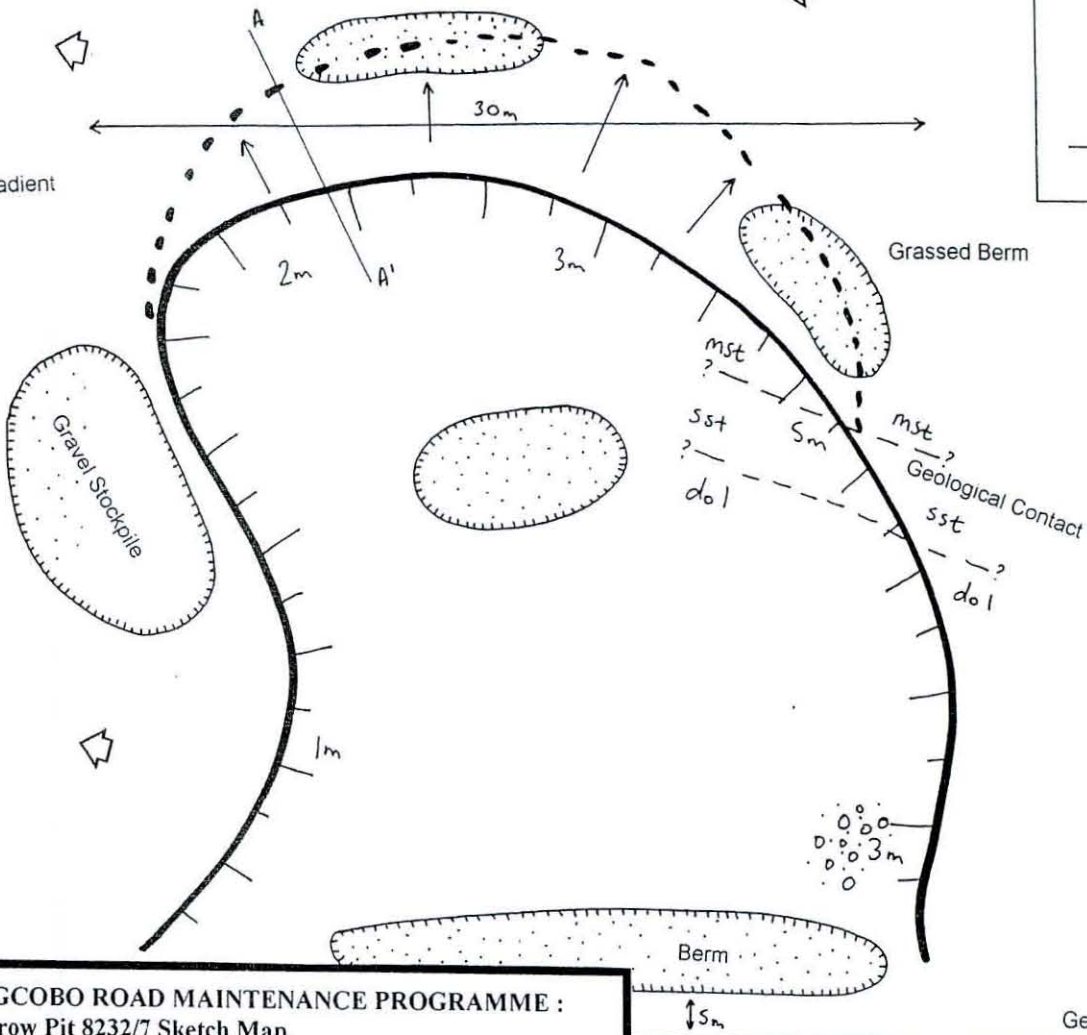




Gentle to Moderate Downslope Gradient

Gentle to Moderate Downslope Gradient

40m



Road DR08232  
Borrow Pit 8232/7  
Stake Value km 18,2 (LHS)  
Dolerite, Sandstone & Mudstone

Gentle to Moderate Downslope Gradient

To km 0,0

**FIGURE 36: ENCOBO ROAD MAINTENANCE PROGRAMME : Borrow Pit 8232/7 Sketch Map.**

NOT TO SCALE SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

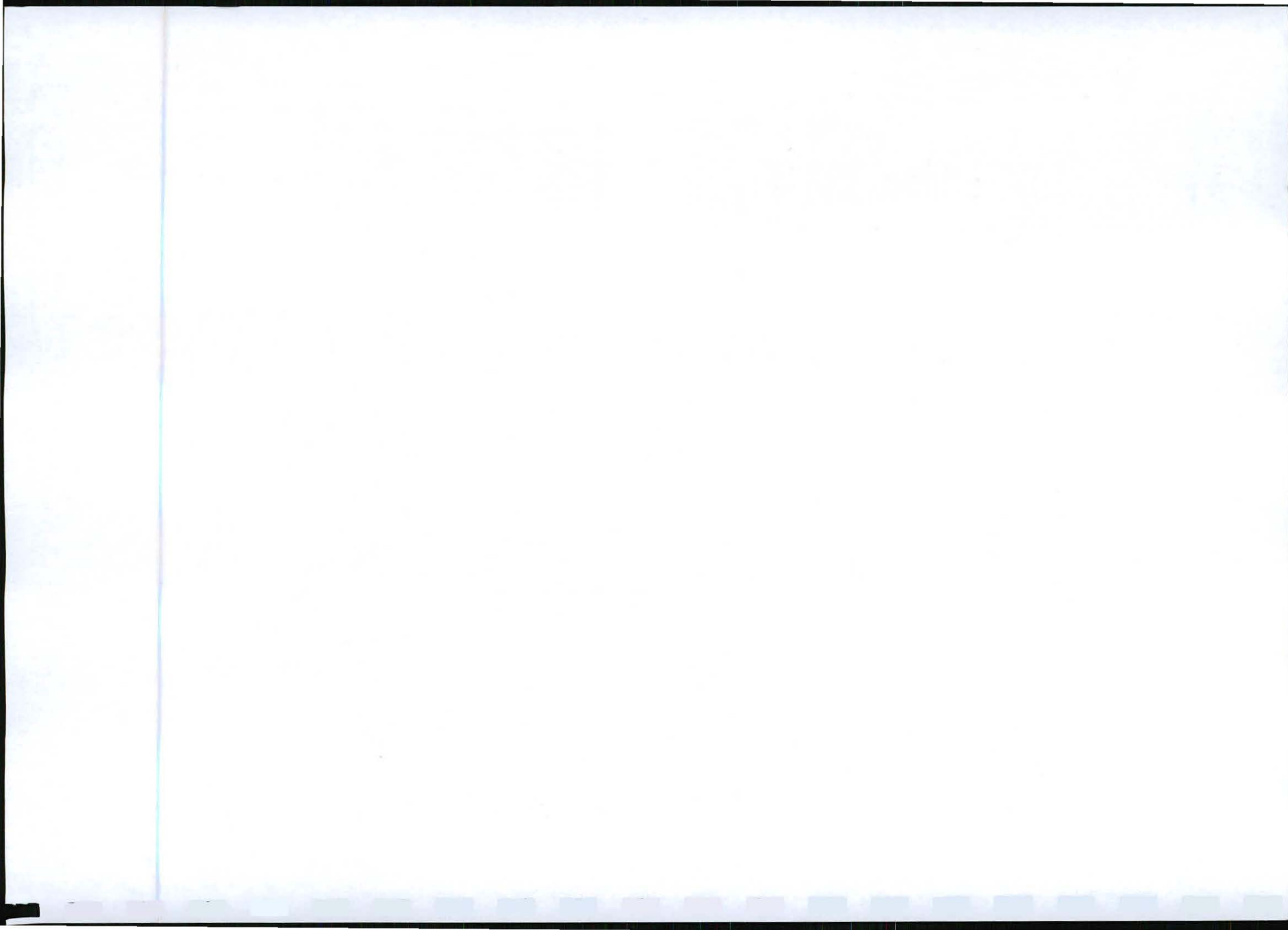
|  |                              |  |                                  |  |                                  |
|--|------------------------------|--|----------------------------------|--|----------------------------------|
|  | Dry Pan                      |  | Proposed New Quarrying Direction |  | Proposed New Excavation Boundary |
|  | Gravel Stockpiles            |  | Existing Borrow Pit Sidewall     |  | Fence                            |
|  | Existing Borrow Pit Boundary |  | Downslope Gradient               |  |                                  |

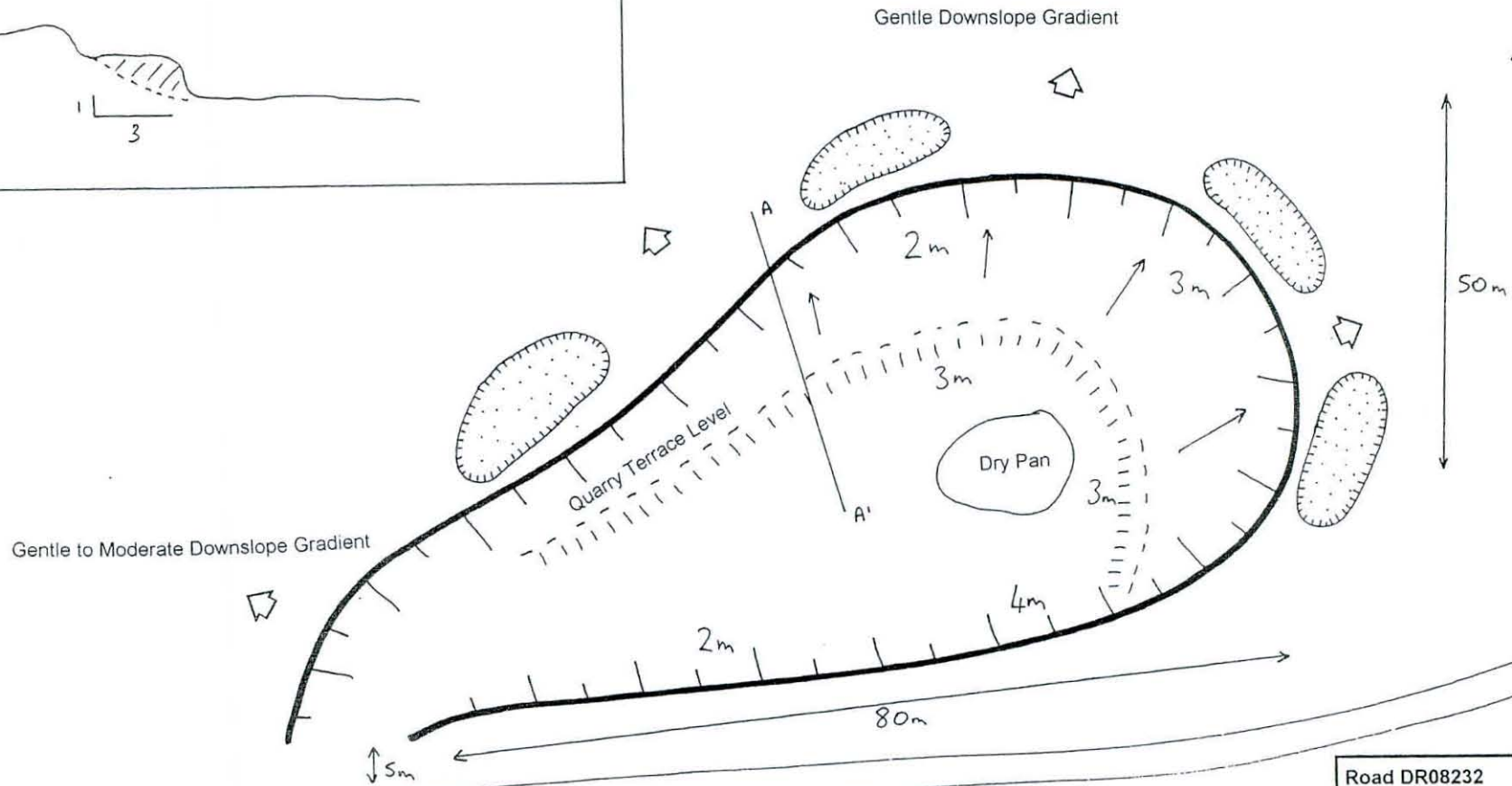
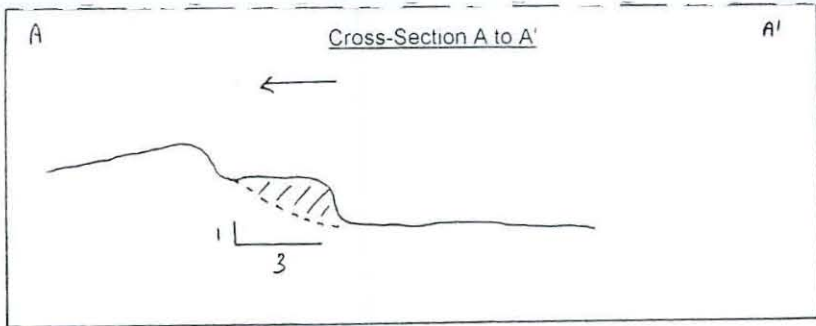
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Road DR08232  
 Borrow Pit 8232/8  
 Stake Value km 20,8 (RHS)  
 Sandstone

**FIGURE 37: ENCOBO ROAD MAINTENANCE PROGRAMME : Borrow Pit 8232/8 Sketch Map.**

NOT TO SCALE SOURCE: Bopite Engineering Geologists CC

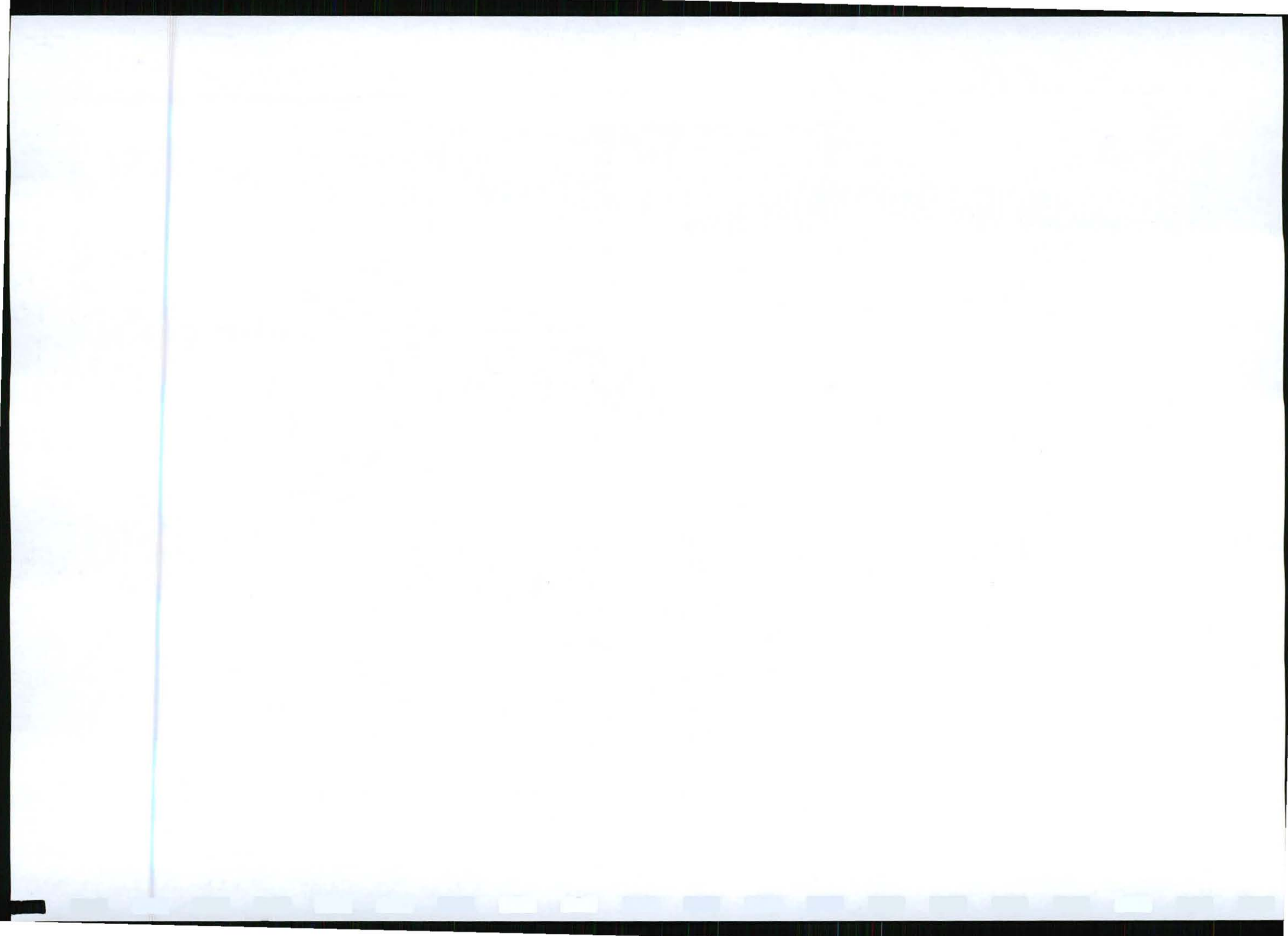
| LEGEND: |                                  |
|---------|----------------------------------|
|         | Gravel/Soil Stockpile            |
|         | Proposed New Quarrying Direction |
|         | Dry Pan                          |
|         | Existing Borrow Pit Boundary     |
|         | Proposed New Excavation Boundary |
|         | Downslope Gradient               |
|         | Existing Borrow Pit Sidewall     |
|         | Quarry Terrace Level             |

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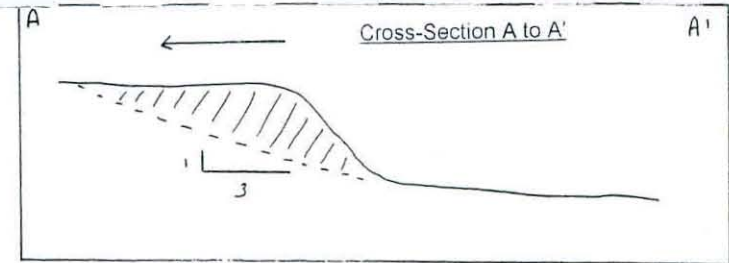
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CK 96 6444023





Gentle to Moderate Downslope Gradient



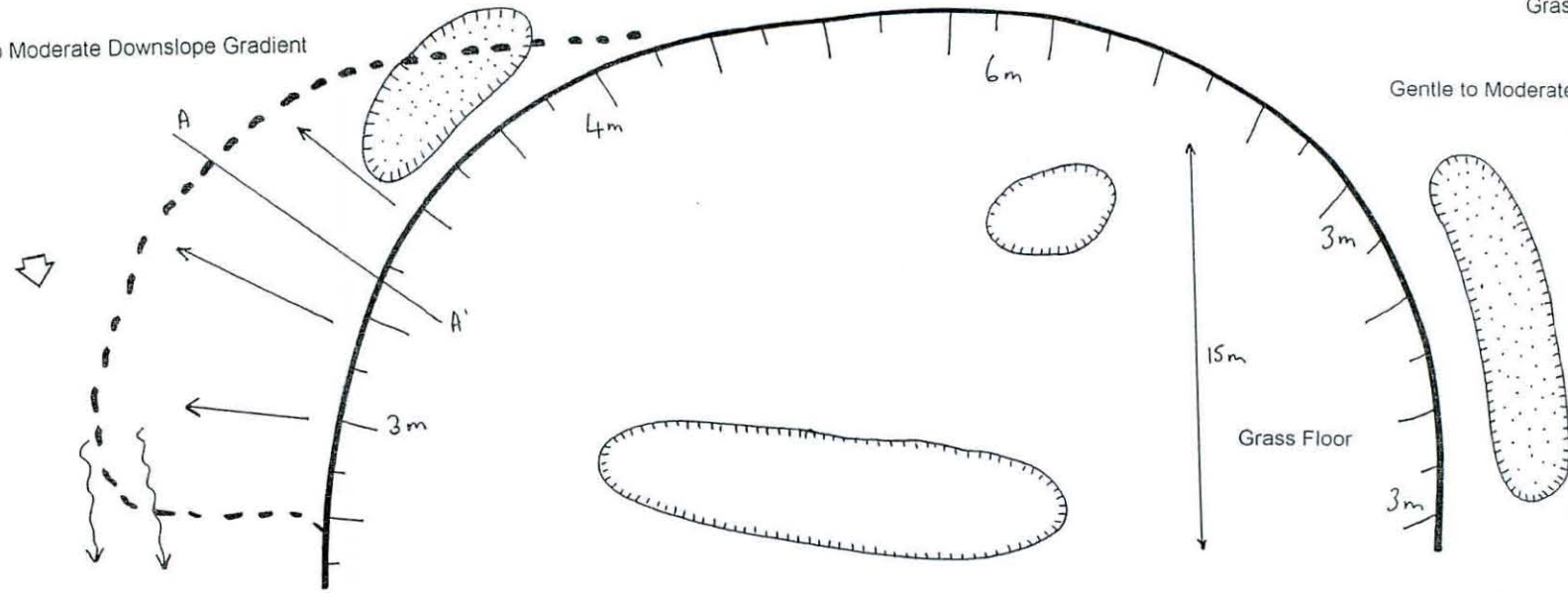
70m

Grassland

Grassland

Gentle to Moderate Downslope Gradient

Gentle to Moderate Downslope Gradient



Road DR08232  
Borrow Pit 8232/9  
Stake Value km 23,8 (RHS)  
Sandstone & Mudstone

Hard Rock Sandstone along Road Edge

Drainage Channel (about 100 metres away) Moderate Downslope Gradient

To km 0,0 →

**FIGURE 38: ENCOBO ROAD MAINTENANCE PROGRAMME : Borrow Pit 8232/9 Sketch Map.**

NOT TO SCALE

SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

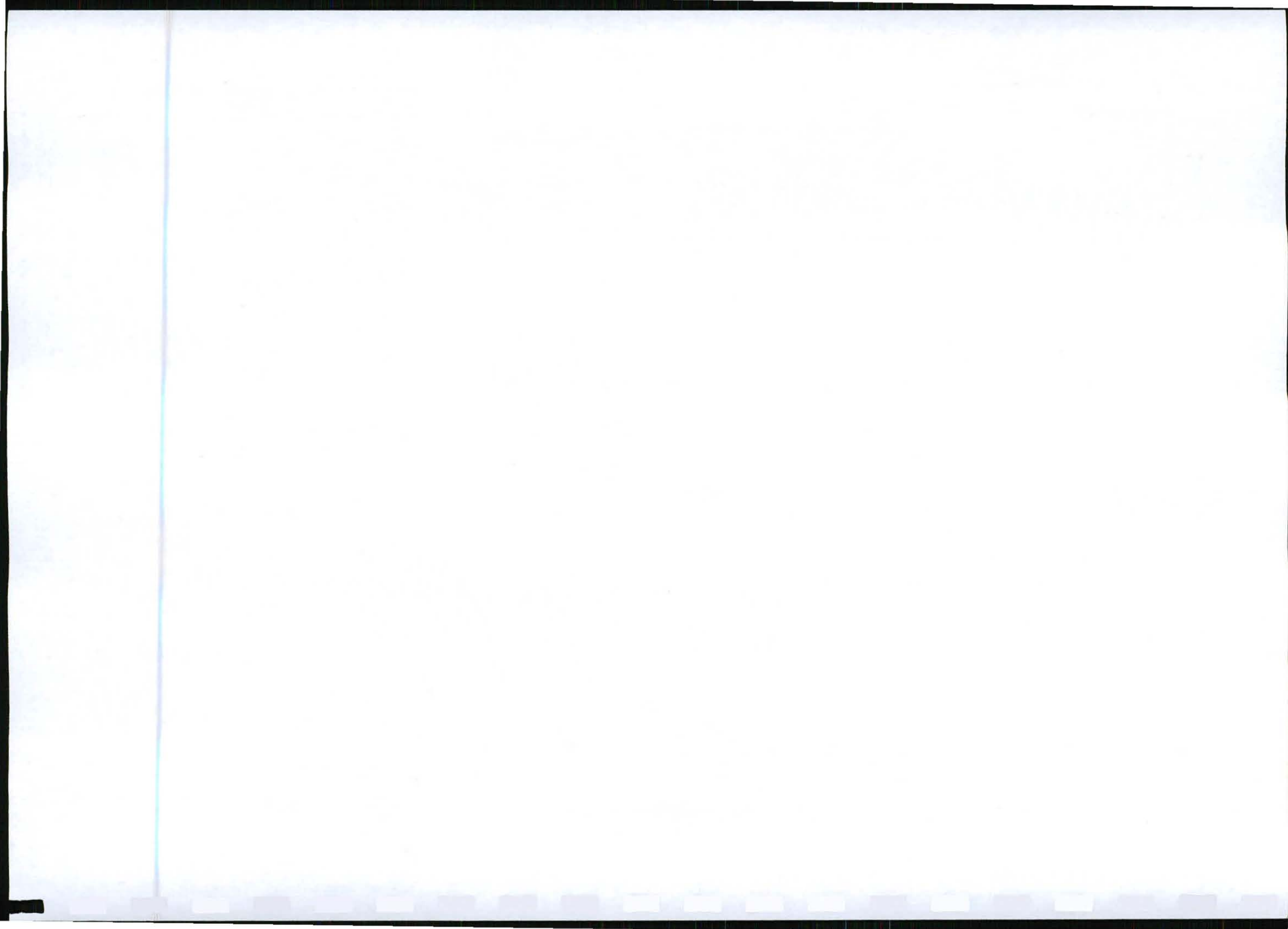
- |  |                                  |  |                                  |
|--|----------------------------------|--|----------------------------------|
|  | Gravel Stockpile                 |  | Downslope Gradient               |
|  | Proposed New Quarrying Direction |  | Existing Borrow Pit Sidewall     |
|  | Grassed Stockpile                |  | Erosion Scours                   |
|  | Existing Borrow Pit Boundary     |  | Proposed New Excavation Boundary |

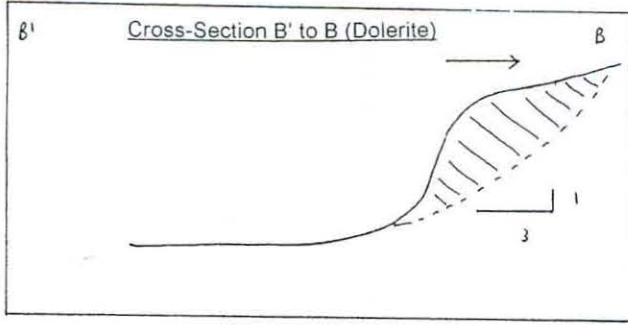
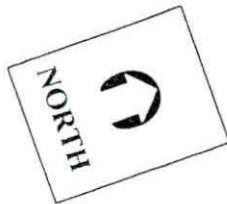
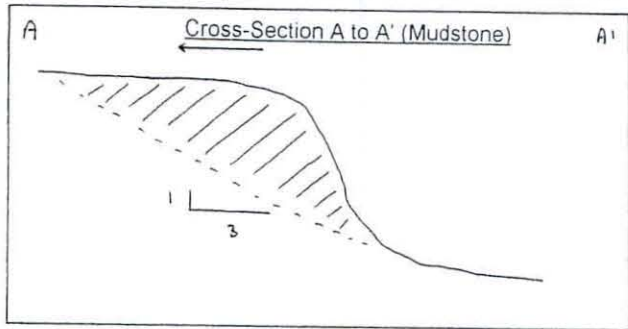
**BOPITE ENGINEERING GEOLOGISTS CC**

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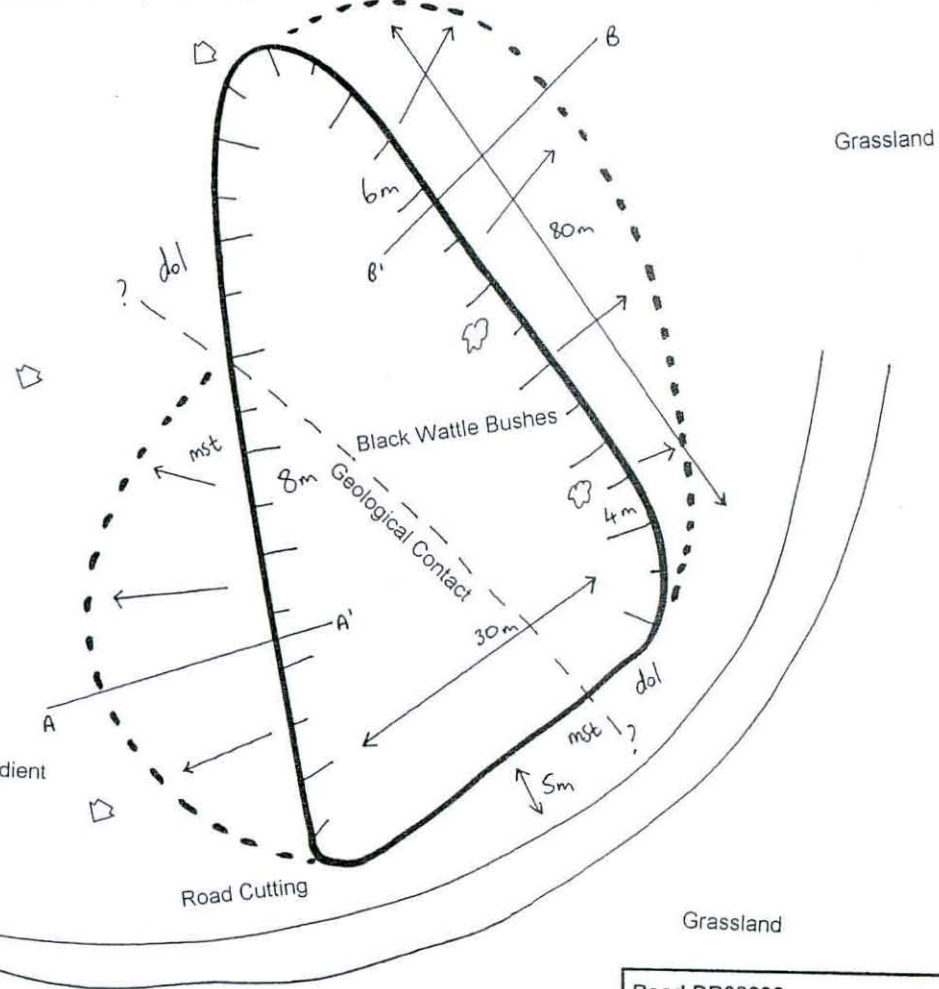
CK 96 6444023

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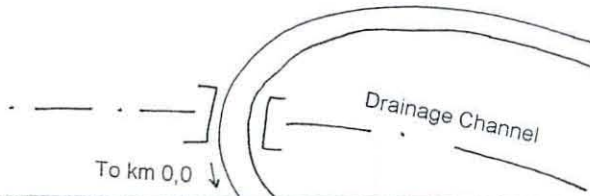




Moderate to Steep Downslope Gradient



Moderate to Steep Downslope Gradient



Road DR08232  
Borrow Pit 8232/11  
Stake Value km 32,3 (LHS)  
Dolerite & Mudstone

**FIGURE 39: ENCOBO ROAD MAINTENANCE PROGRAMME : Borrow Pit 8232/11 Sketch Map.**

NOT TO SCALE SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

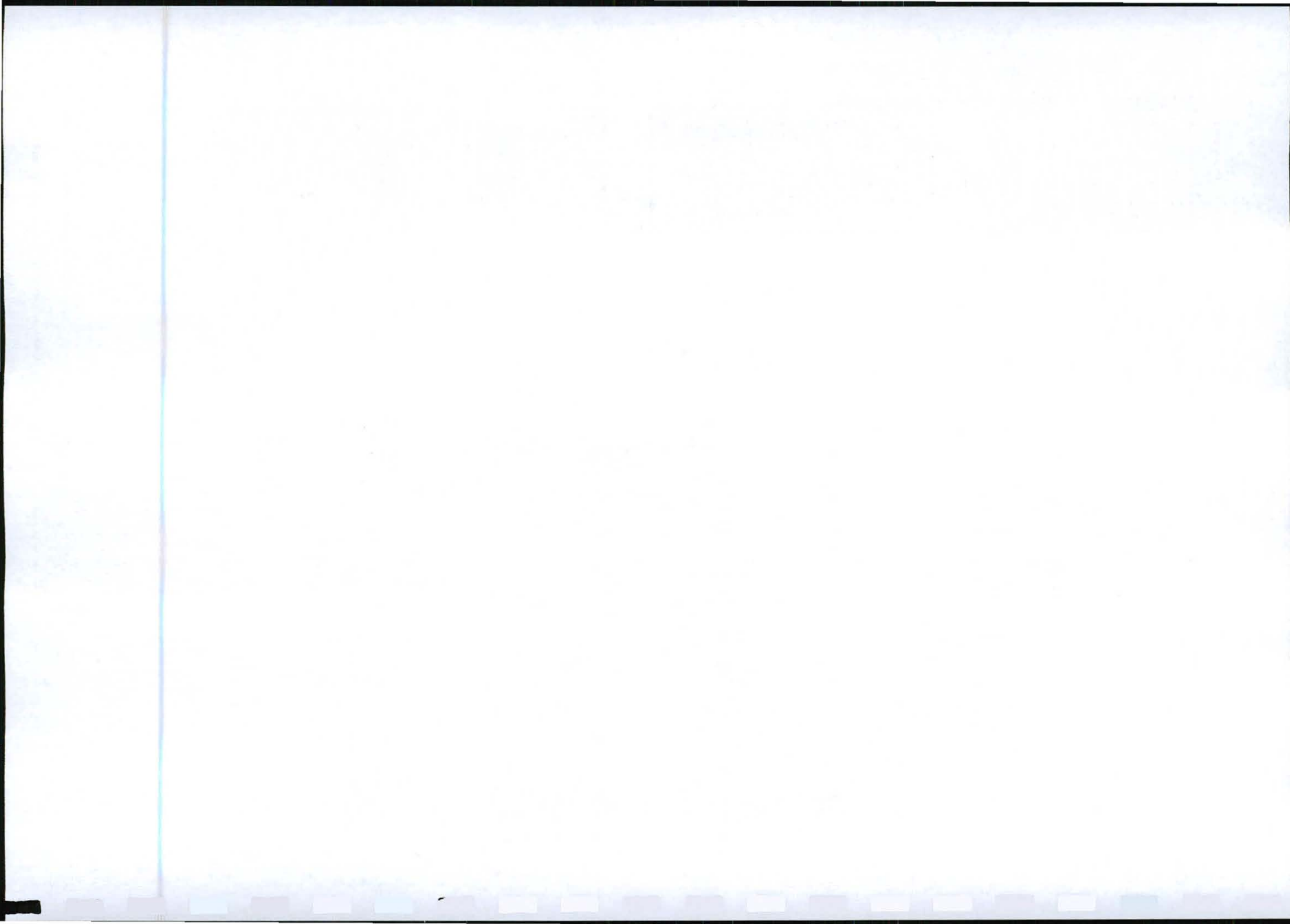
|  |                                  |  |                                  |
|--|----------------------------------|--|----------------------------------|
|  | Drainage Channel                 |  | Downslope Gradient               |
|  | Proposed New Quarrying Direction |  | Existing Borrow Pit Sidewall     |
|  | Geological Contact               |  | Black Wattle Bushes              |
|  | Existing Borrow Pit Boundary     |  | Proposed New Excavation Boundary |

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Dolerite Outcrop

Gentle to Moderate Downslope Gradient

Erosion Scours

80m

dol  
mst

dol  
mst  
Geological Contact

20m

30m

10m

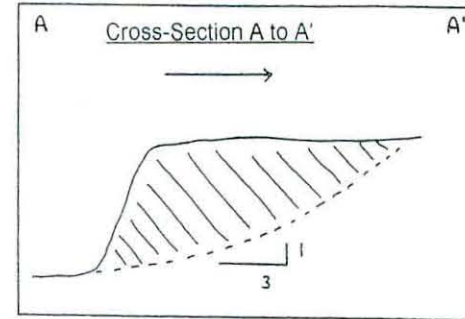
5m

8m

10m

Culvert

Gentle to Moderate Downslope Gradient



Gentle to Moderate Downslope Gradient

Road DR08234  
Borrow Pit 8234/1  
Stake Value km 3,4 (LHS)  
Dolerite & Mudstone

Vegetated Berm

30m

20m

Steep Downslope Gradient

To km 0,0

Drainage Channel

**FIGURE 40: ENGCOBO ROAD MAINTENANCE PROGRAMME :  
Borrow Pit 8234/1 Sketch Map.**

NOT TO SCALE

SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

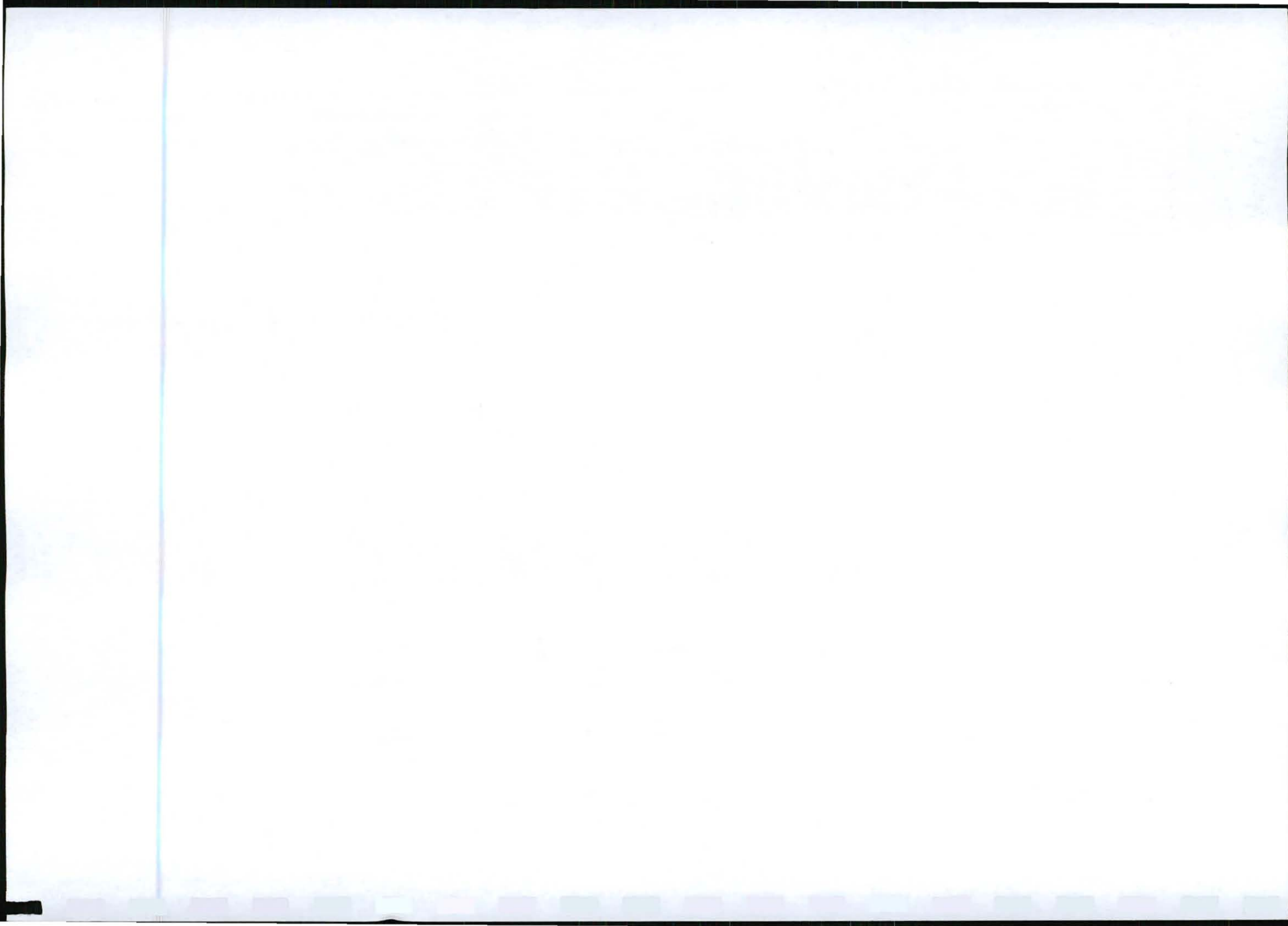
- |  |                                  |  |                                  |
|--|----------------------------------|--|----------------------------------|
|  | Geological Contact               |  | Downslope Gradient               |
|  | Proposed New Quarrying Direction |  | Existing Borrow Pit Sidewall     |
|  | Erosion Scours                   |  | Dolerite Outcrop                 |
|  | Existing Borrow Pit Boundary     |  | Proposed New Excavation Boundary |

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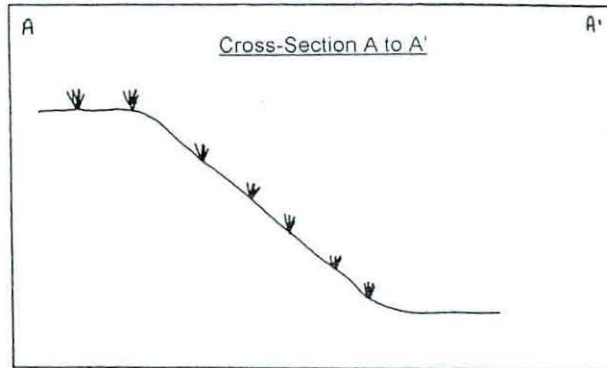




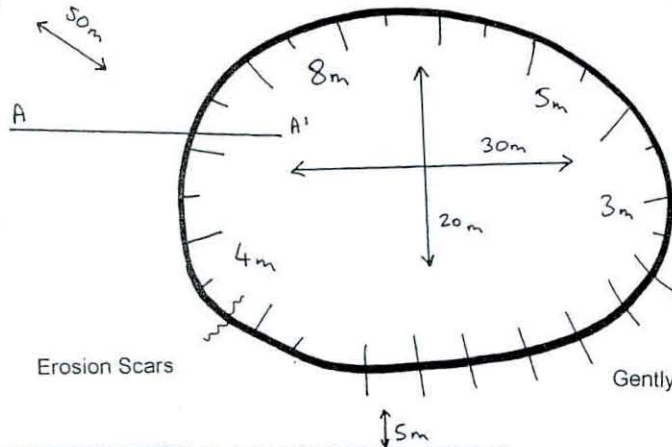
Gentle to Moderate downslope Gradient

Gentle to Moderate downslope Gradient

River (about 300 metres away)



Overhead Powerlines



Erosion Scars

Gently Sloping Quarry Floor

Road DR08234  
Borrow Pit 8234/2  
Stake Value km 6,5 (LHS)  
Mudstone & Sandstone

**FIGURE 41: ENGCOBO ROAD MAINTENANCE PROGRAMME : Borrow Pit 8234/2 Sketch Map.**

NOT TO SCALE

SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

- |  |                              |  |                       |
|--|------------------------------|--|-----------------------|
|  | Overhead Powerlines          |  | Downslope Gradient    |
|  | Existing Borrow Pit Sidewall |  | Cross Section Profile |
|  | Erosion Scour                |  | Gentle Quarry Floor   |
|  | Existing Borrow Pit Boundary |  |                       |

Re-commissioning of Borrow Pit 8234/2 Not Recommended as this Working has been Adequately Rehabilitated during the Past.

To km 0,0

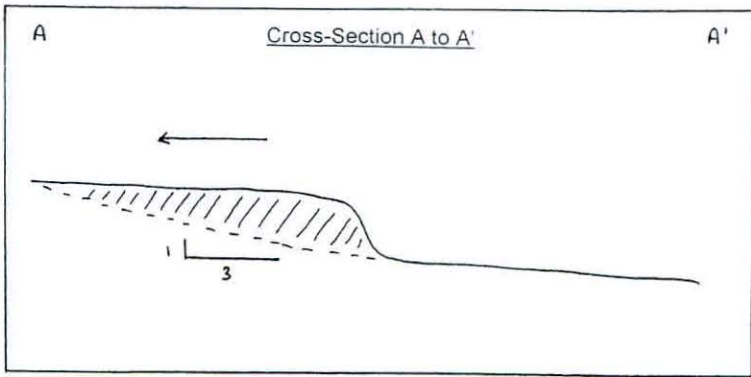
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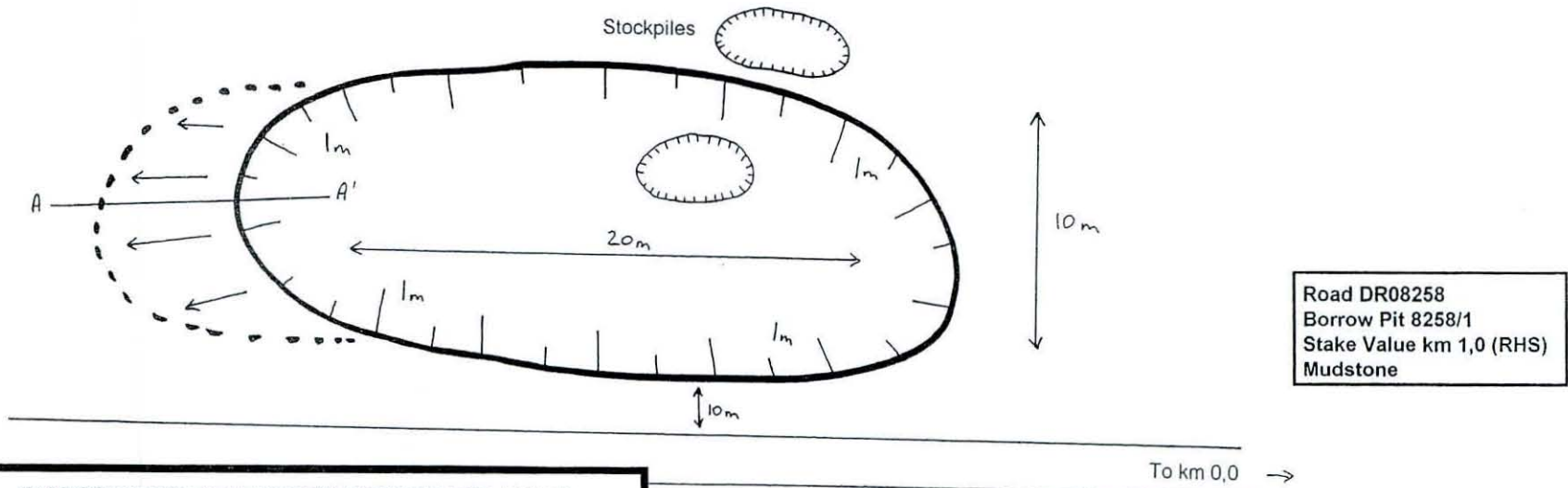
CK 96 6444023

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Moderate Downslope Gradient



Road DR08258  
Borrow Pit 8258/1  
Stake Value km 1,0 (RHS)  
Mudstone

**FIGURE 42: ENGOBO ROAD MAINTENANCE PROGRAMME :  
Borrow Pit 8258/1 Sketch Map.**

NOT TO SCALE

SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

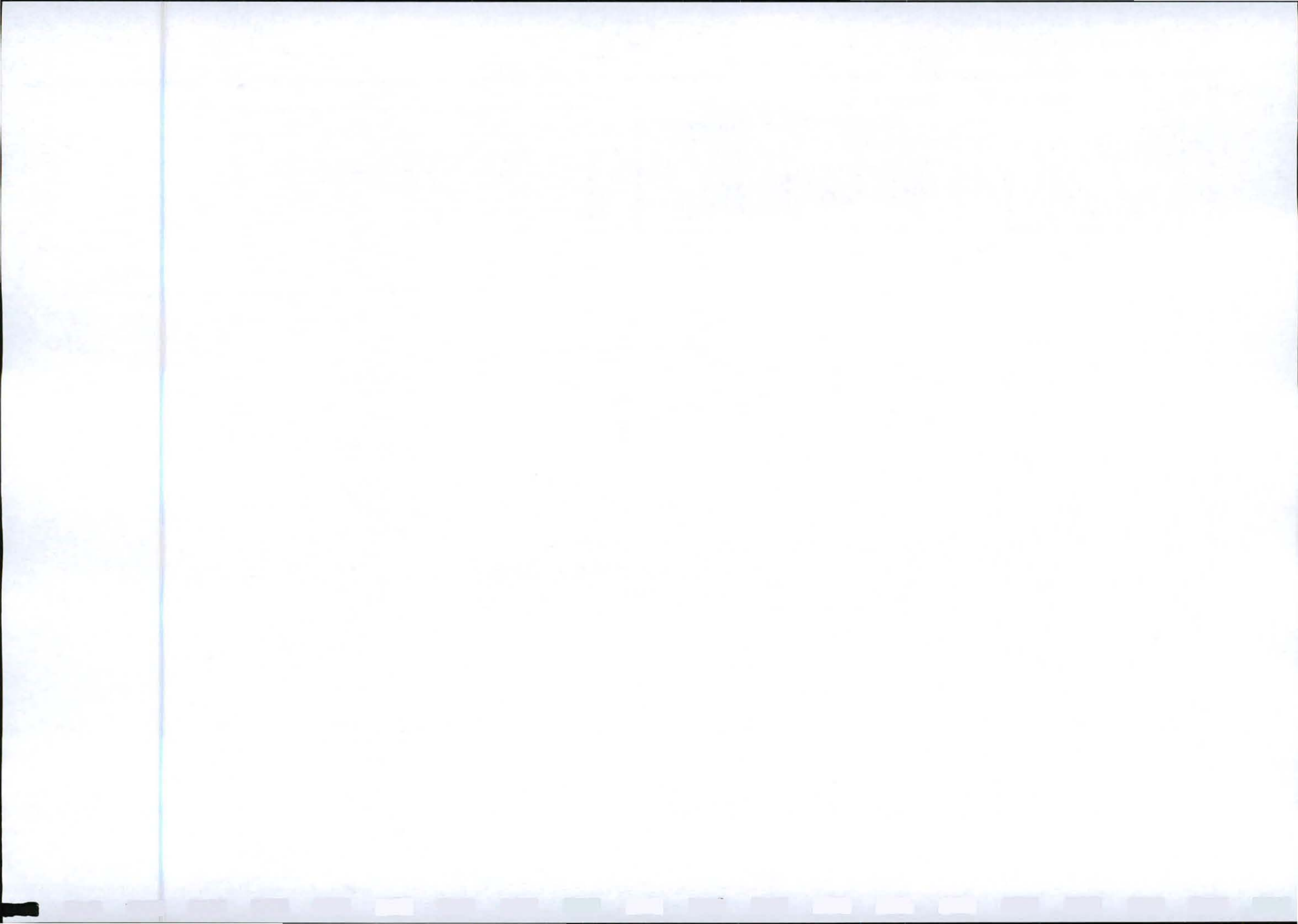
- |  |                                  |  |                                  |
|--|----------------------------------|--|----------------------------------|
|  | Gravel Stockpile                 |  | Downslope Gradient               |
|  | Proposed New Quarrying Direction |  | Existing Borrow Pit Sidewall     |
|  | Existing Borrow Pit Boundary     |  | Proposed New Excavation Boundary |

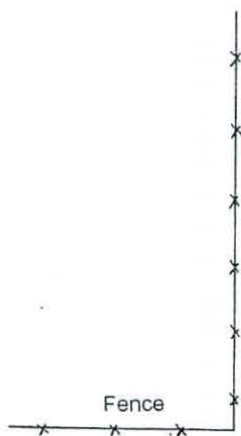
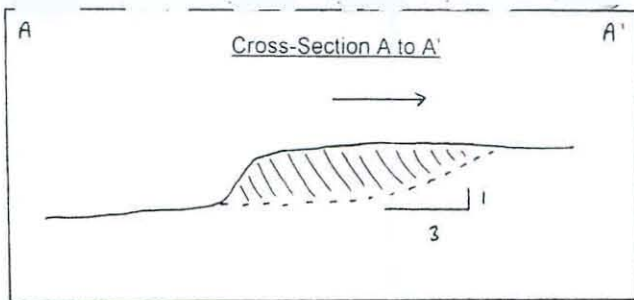
**BOPITE ENGINEERING GEOLOGISTS CC**

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Road DR08259  
Borrow Pit 8259/1  
Stake Value km 2,6 (LHS)  
Mudstone

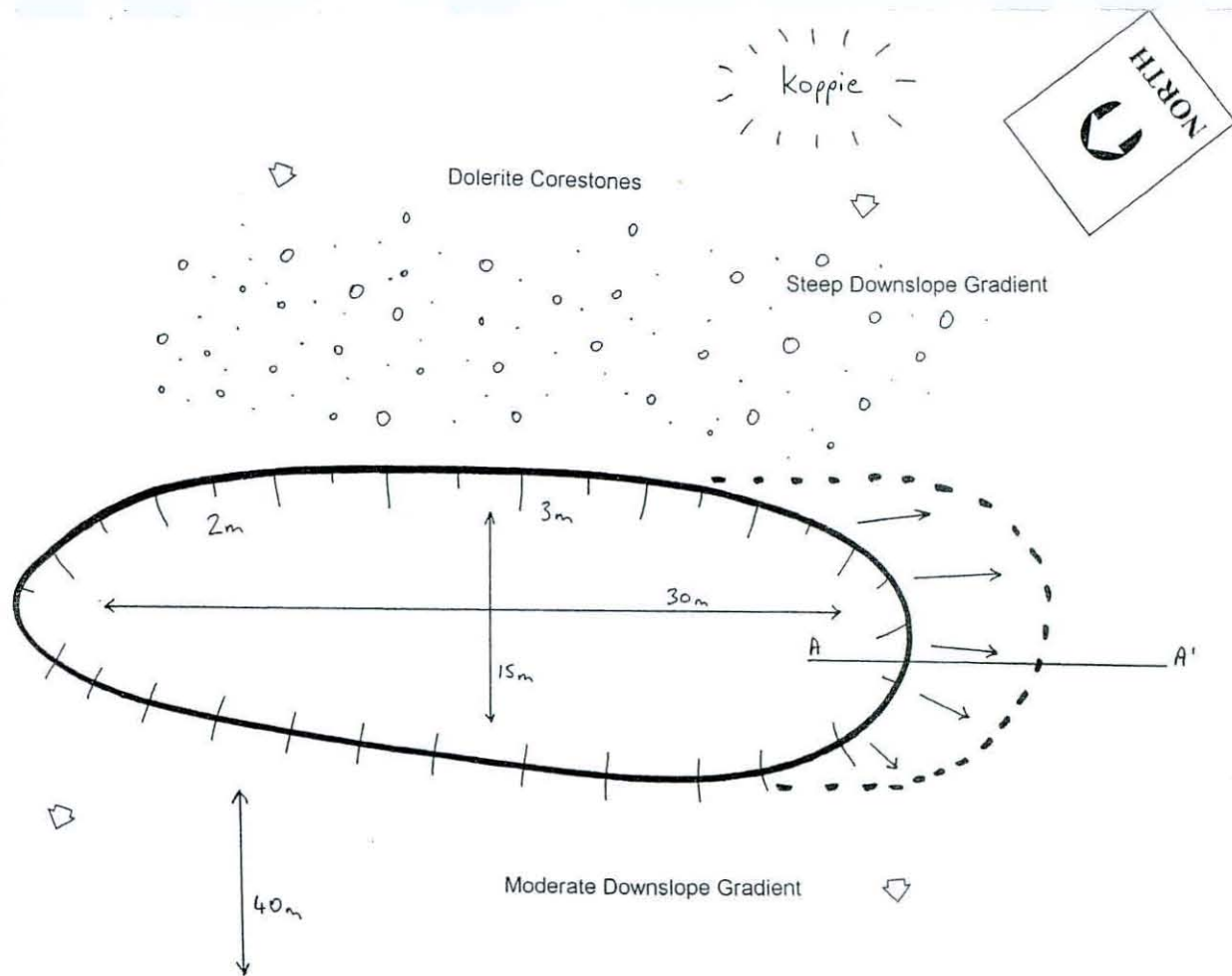


FIGURE 43: ENGCOBO ROAD MAINTENANCE PROGRAMME :  
Borrow Pit 8259/1 Sketch Map.

NOT TO SCALE

SOURCE: Bopite Engineering Geologists CC

LEGEND:

- |  |                                  |  |                                  |
|--|----------------------------------|--|----------------------------------|
|  | Dolerite Corestones              |  | Downslope Gradient               |
|  | Proposed New Quarrying Direction |  | Existing Borrow Pit Sidewall     |
|  | Fence                            |  | Topographical High Point         |
|  | Existing Borrow Pit Boundary     |  | Proposed New Excavation Boundary |

← To km 0,0

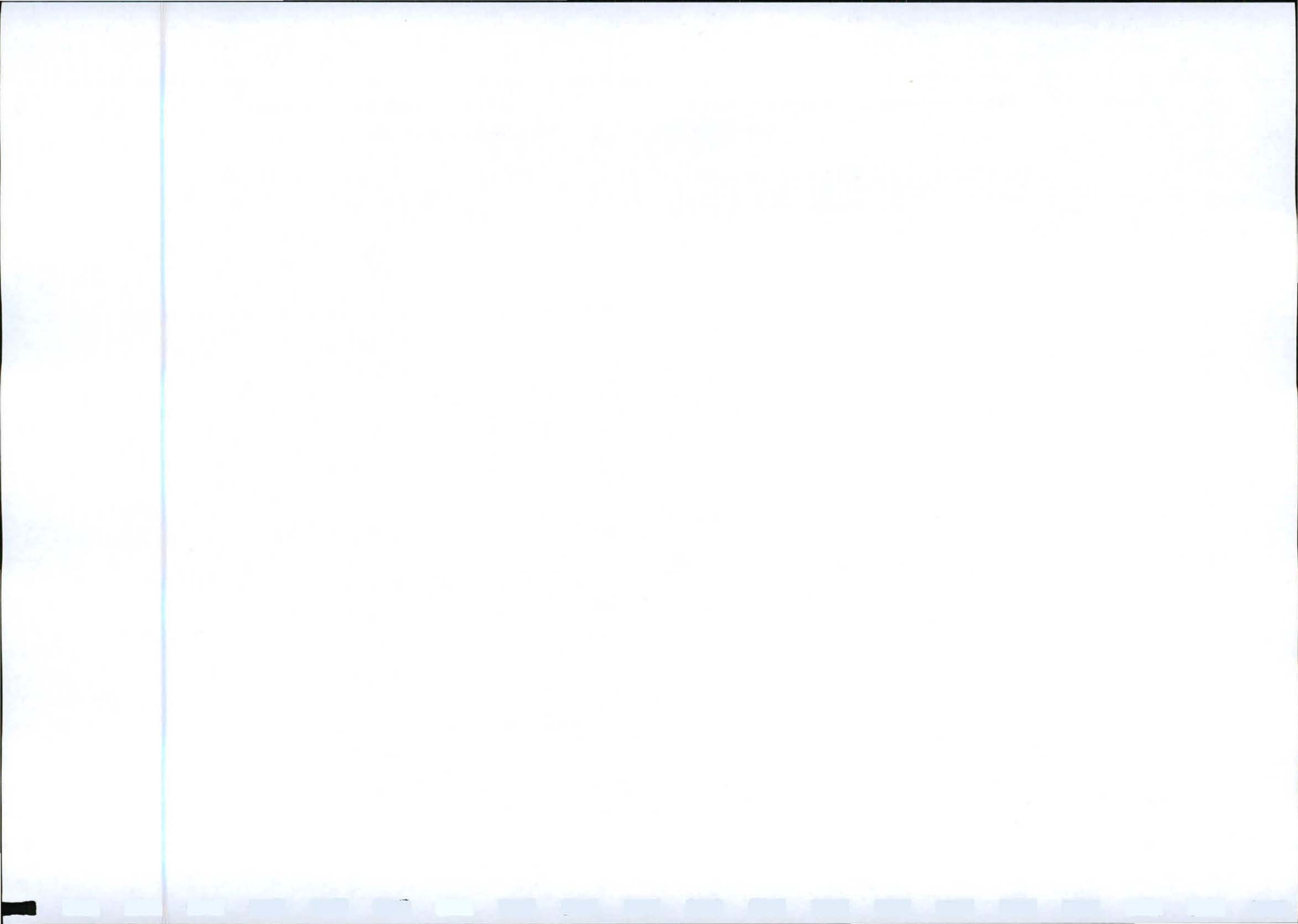
Gentle Downslope Gradient

**BOPITE ENGINEERING GEOLOGISTS CC**

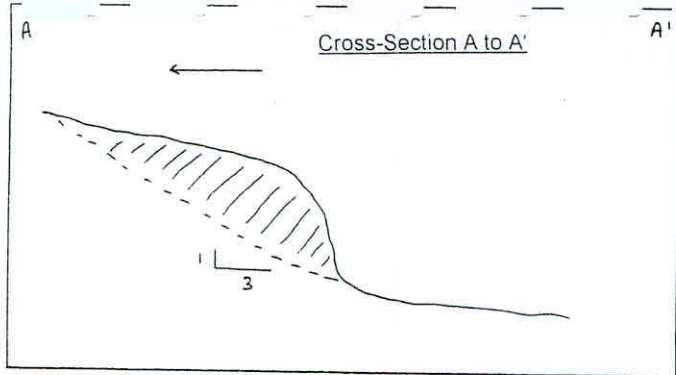
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CELL: 082 5729159







Telecommunication Tower

~500m



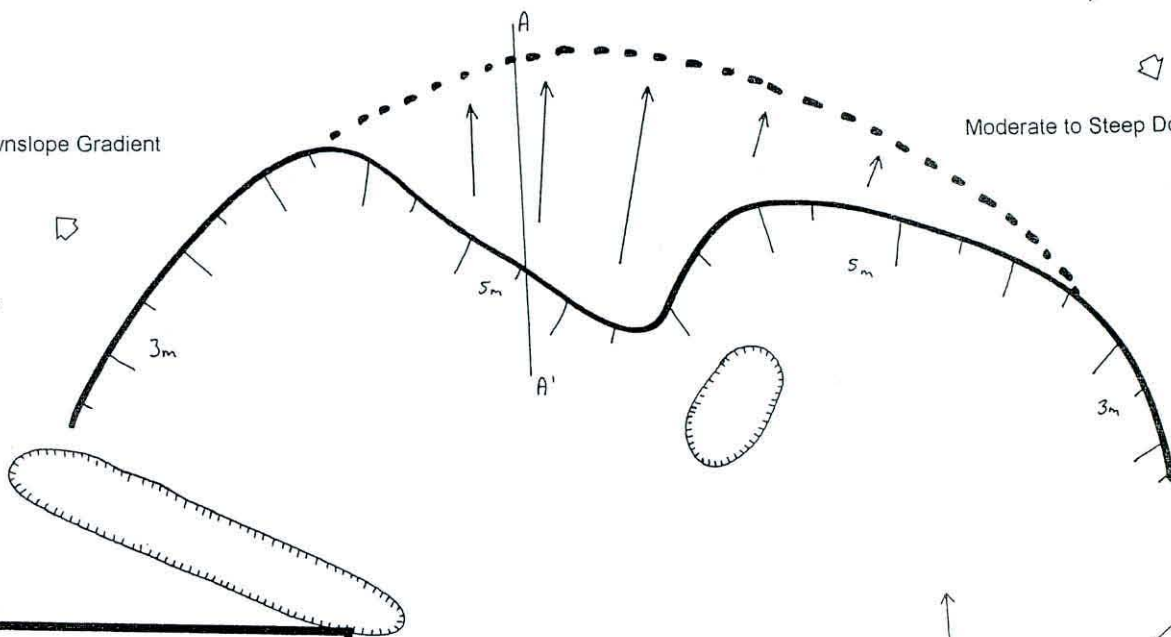
60m

Moderate Downslope Gradient

Moderate to Steep Downslope Gradient

Drainage Channel

~100m



25m

10m

To km 0,0

Road DR08260  
Borrow Pit 8260/1  
Stake Value km 2,6 (LHS)  
Mudstone & Sandstone

**FIGURE 44: ENGCOBO ROAD MAINTENANCE PROGRAMME : Borrow Pit 8260/1 Sketch Map.**

NOT TO SCALE

SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

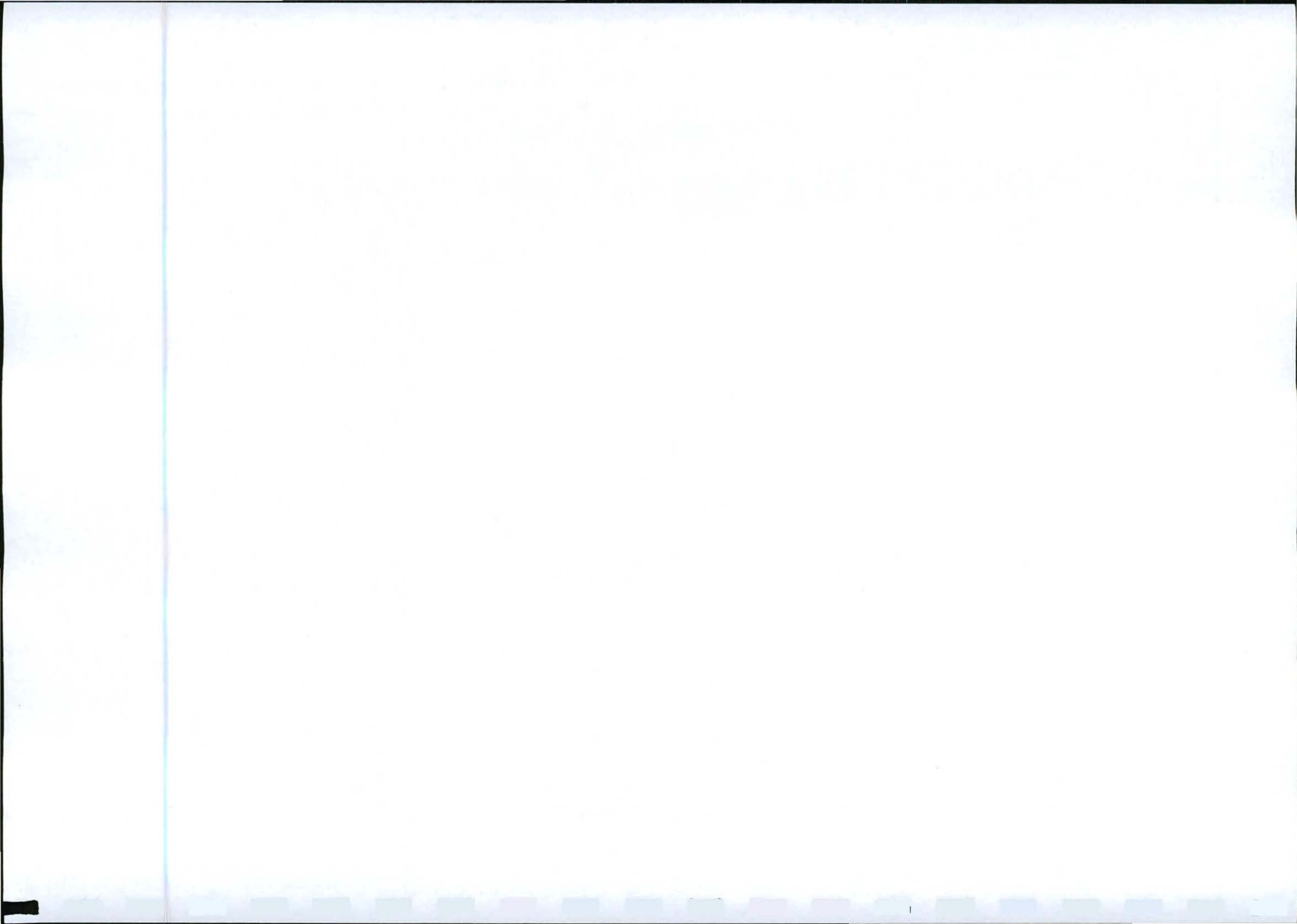
- |  |                                  |  |                                  |
|--|----------------------------------|--|----------------------------------|
|  | Gravel Stockpile                 |  | Proposed New Quarrying Direction |
|  | Proposed New Excavation Boundary |  | Telecommunication Tower          |
|  | Existing Borrow Pit Boundary     |  | Downslope Gradient               |
|  | Existing Borrow Pit Sidewall     |  |                                  |

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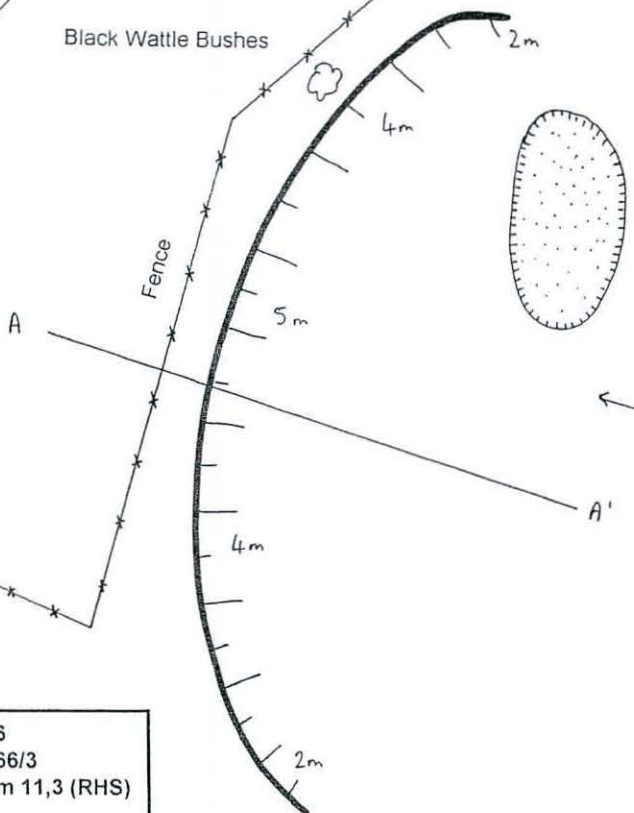
CK 96 6444023

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Black Wattle Bushes

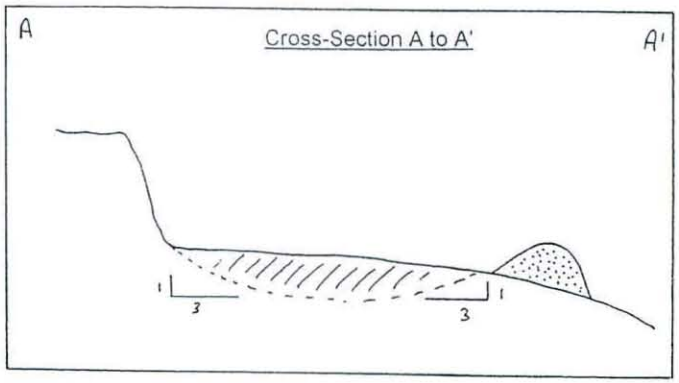


Gravel / Soil Stockpiles

Drainage Channel

100m

Gulley Head



Road DR08266  
Borrow Pit 8266/3  
Stake Value km 11,3 (RHS)  
Mudstone

Blind Rise

To km 0,0 →

**FIGURE 45: ENCOBO ROAD MAINTENANCE PROGRAMME : Borrow Pit 8266/3 Sketch Map.**

NOT TO SCALE

SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

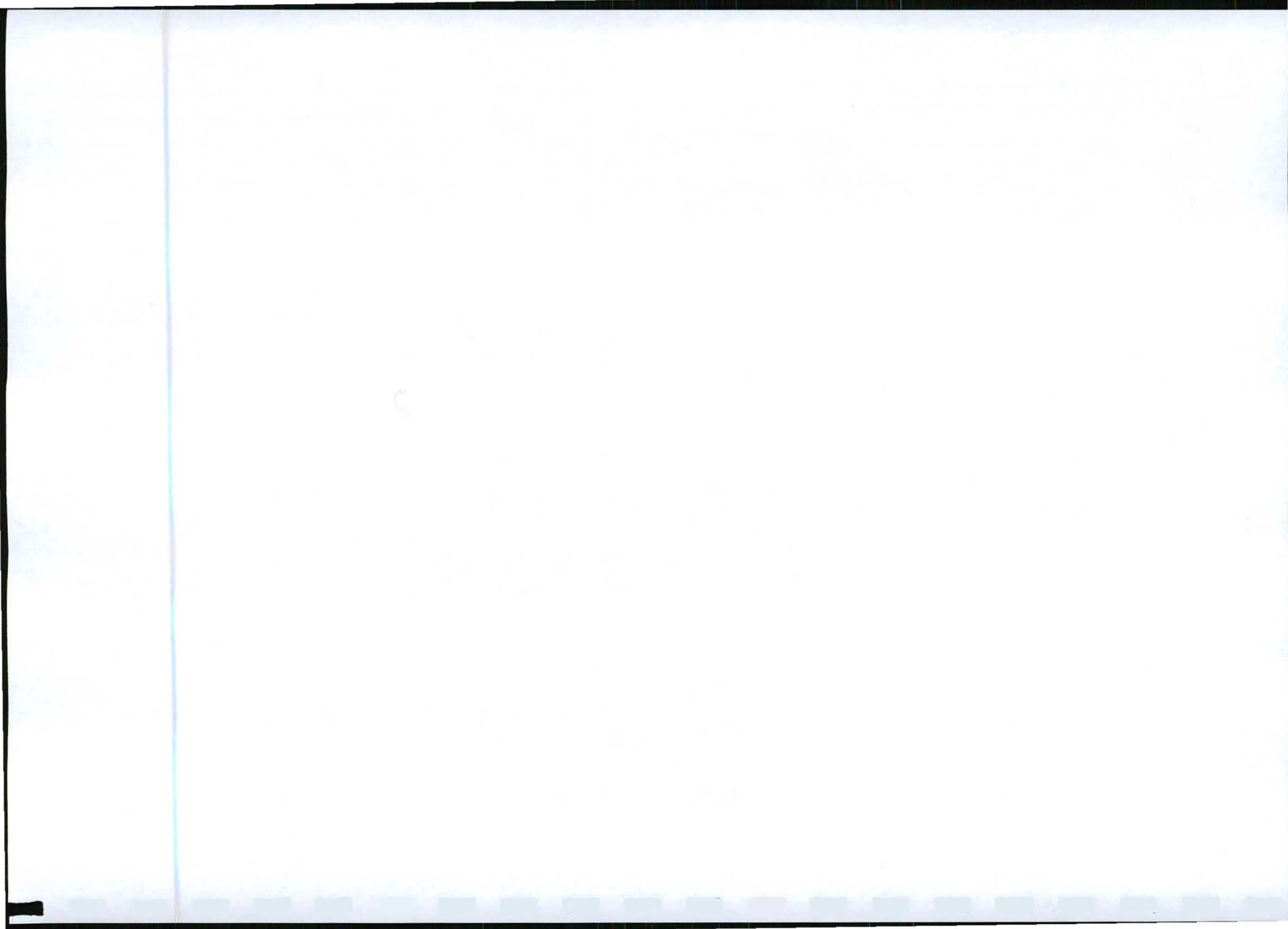
- |  |                              |  |                              |
|--|------------------------------|--|------------------------------|
|  | Gravel/Soil Stockpile        |  | Downslope Gradient           |
|  | Black Wattle Bushes          |  | Existing Borrow Pit Sidewall |
|  | Fence                        |  | Drainage Channel             |
|  | Existing Borrow Pit Boundary |  | Gulley Head                  |

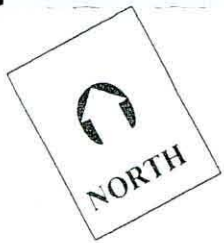
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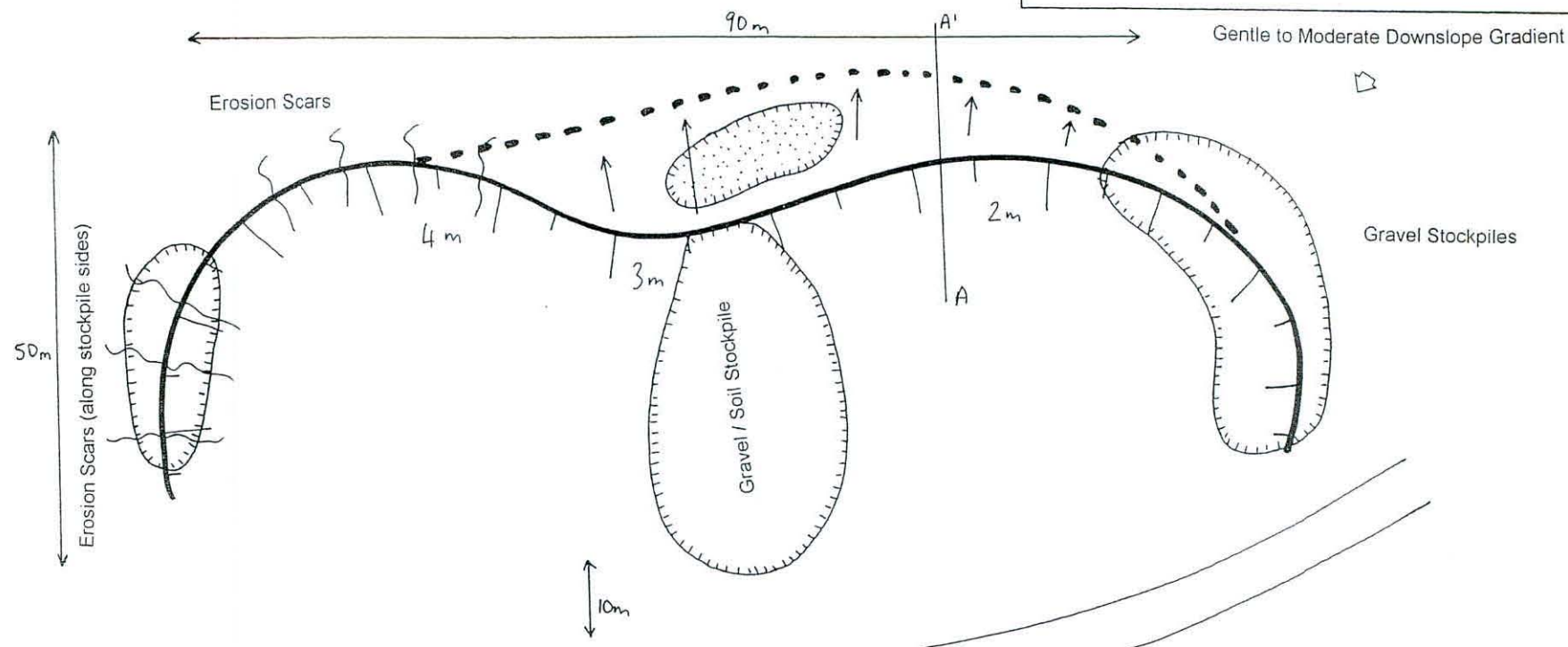
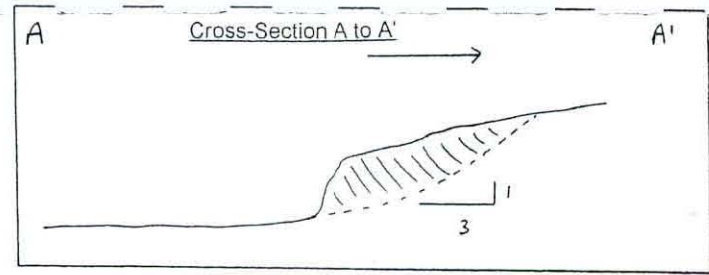
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Gentle to Moderate Downslope Gradient



**FIGURE 46: ENGCOCO ROAD MAINTENANCE PROGRAMME : Borrow Pit 8266/5 Sketch Map.**

NOT TO SCALE

SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

- |  |                                  |  |                                  |
|--|----------------------------------|--|----------------------------------|
|  | Gravel Stockpile                 |  | Downslope Gradient               |
|  | Proposed New Quarrying Direction |  | Existing Borrow Pit Sidewall     |
|  | Erosion Scours                   |  | Proposed New Excavation Boundary |
|  | Existing Borrow Pit Boundary     |  |                                  |

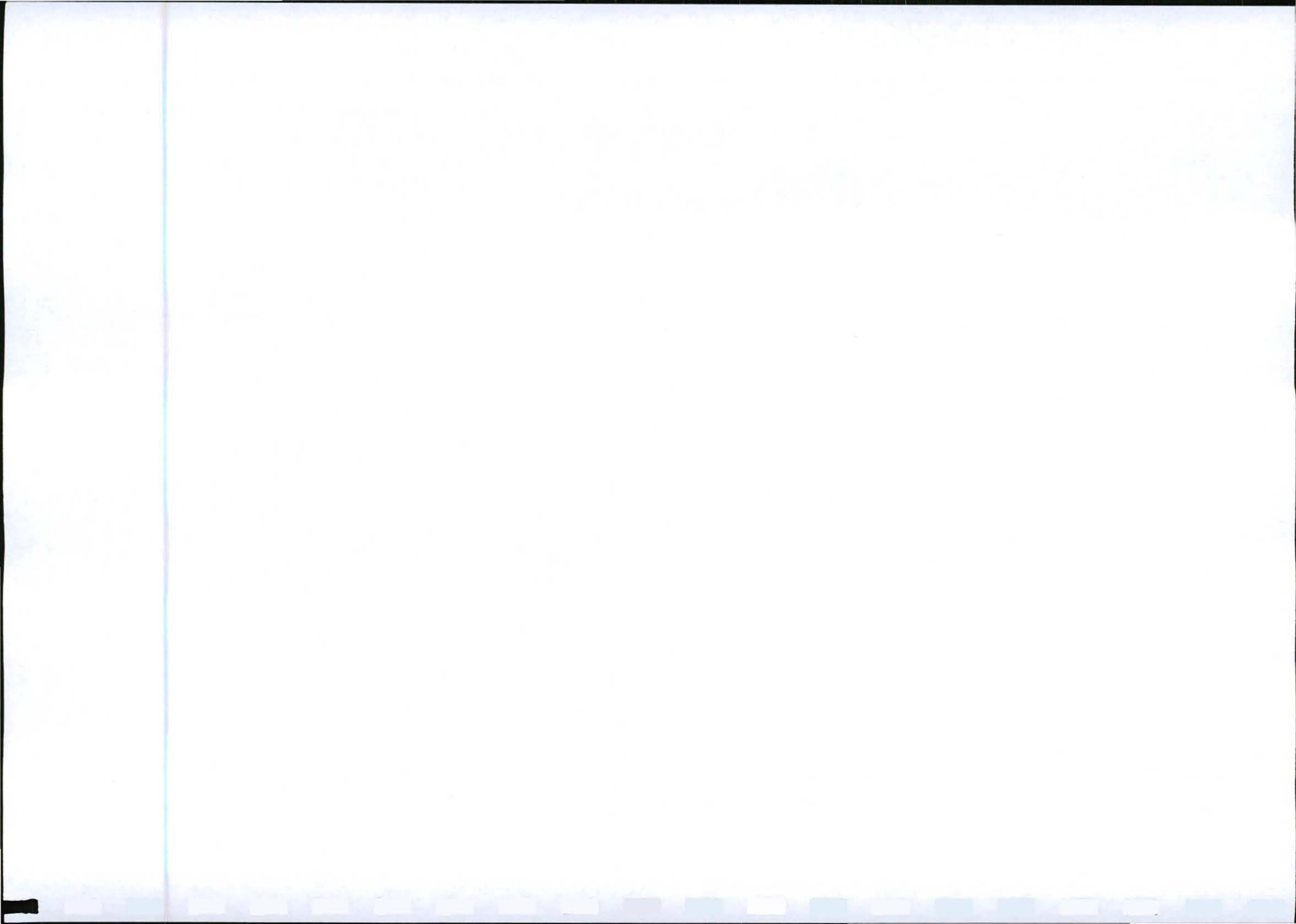
Road DR08266  
Borrow Pit 8266/5  
Stake Value km 18,5 (LHS)  
Mudstone

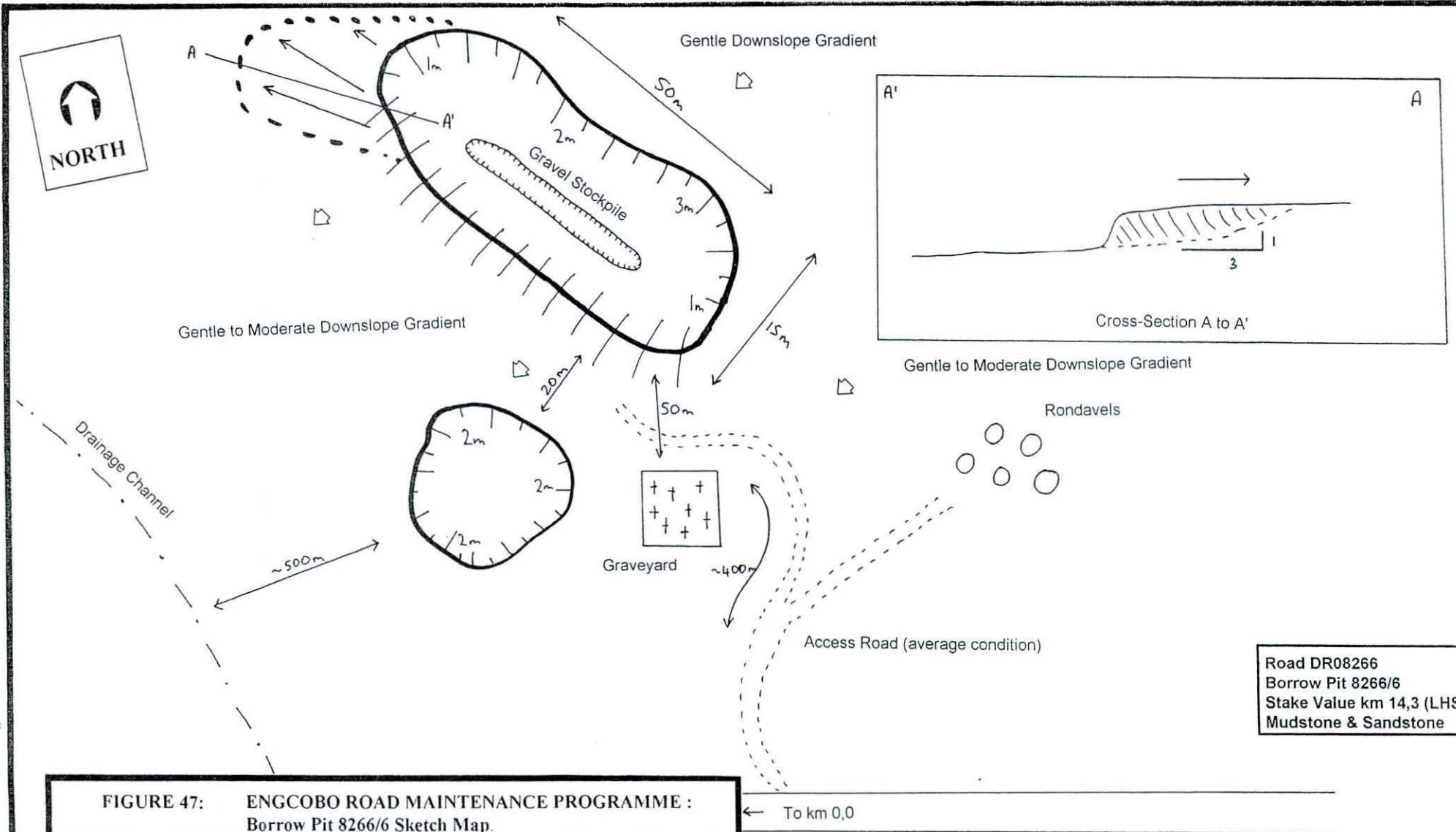
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Road DR08266  
 Borrow Pit 8266/6  
 Stake Value km 14,3 (LHS)  
 Mudstone & Sandstone

**FIGURE 47: ENGCOBO ROAD MAINTENANCE PROGRAMME : Borrow Pit 8266/6 Sketch Map.**

NOT TO SCALE

SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

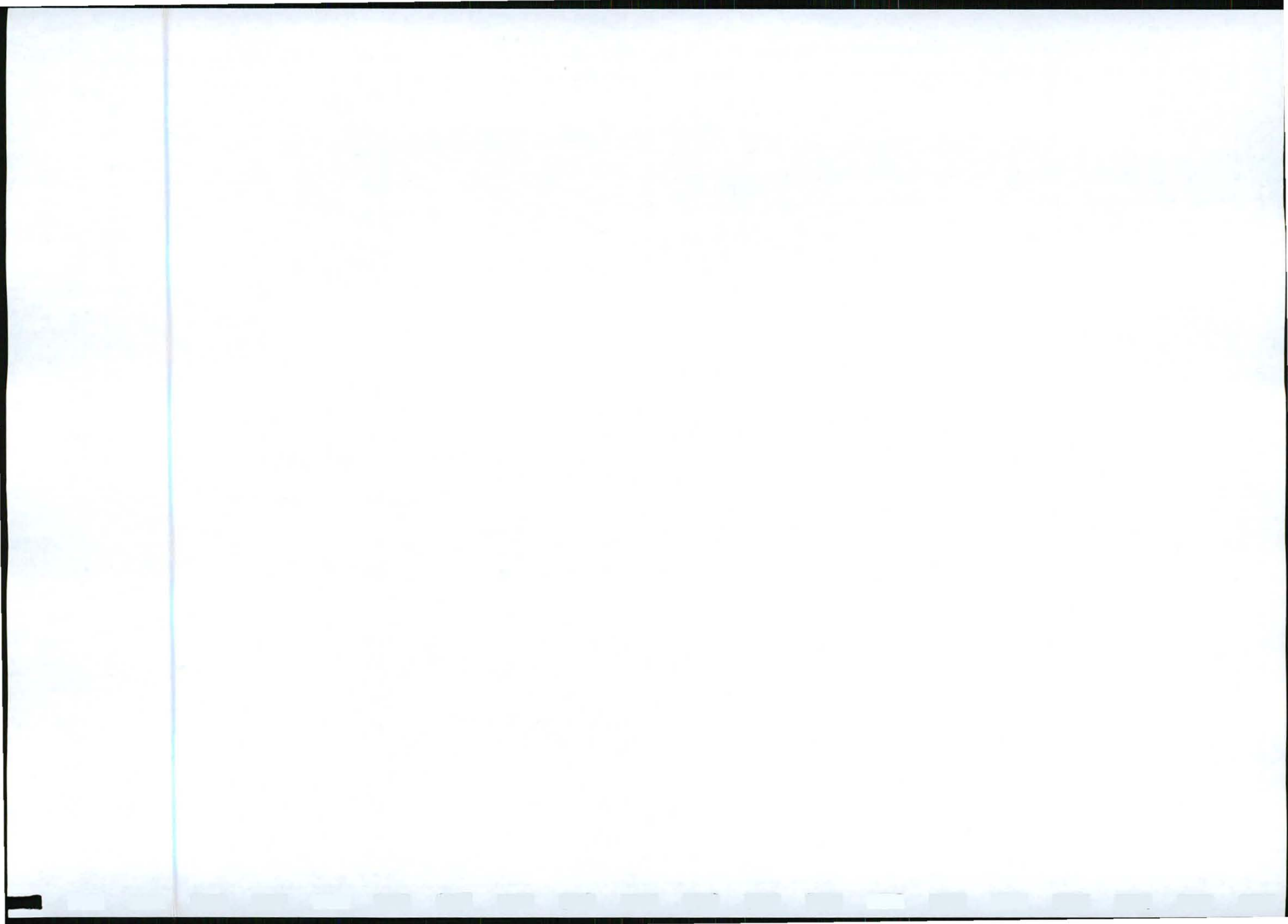
- |  |                                  |  |                                  |
|--|----------------------------------|--|----------------------------------|
|  | Gravel Stockpile                 |  | Downslope Gradient               |
|  | Proposed New Quarrying Direction |  | Existing Borrow Pit Sidewall     |
|  | Graveyard                        |  | Access Road                      |
|  | Existing Borrow Pit Boundary     |  | Proposed New Excavation Boundary |

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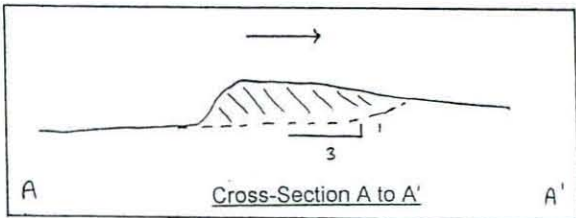
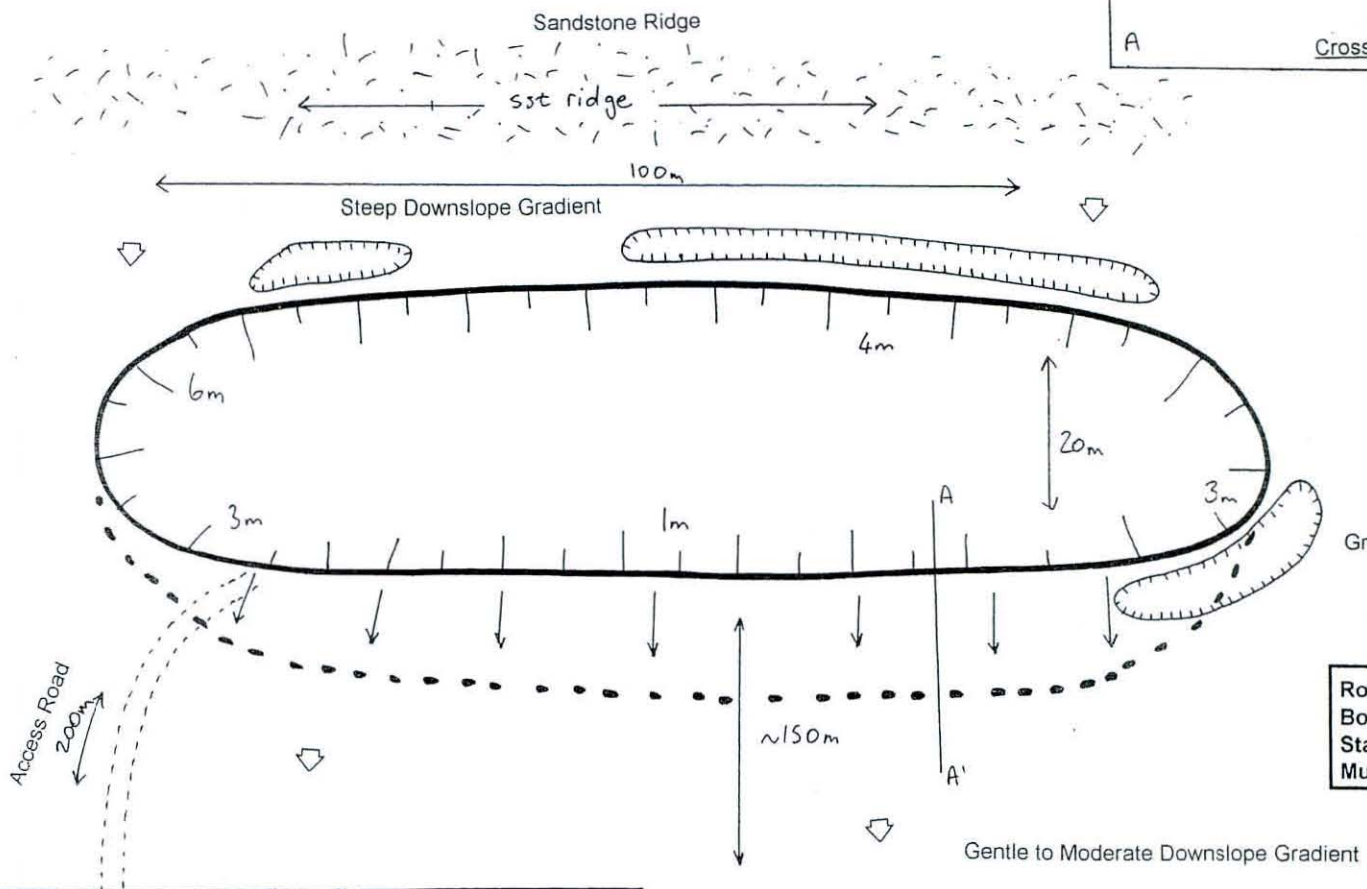
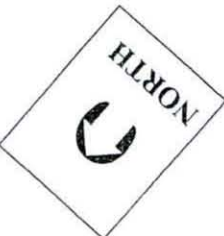
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**FIGURE 48: ENGCOCO ROAD MAINTENANCE PROGRAMME : Borrow Pit 8270/2 Sketch Map.**

NOT TO SCALE

SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

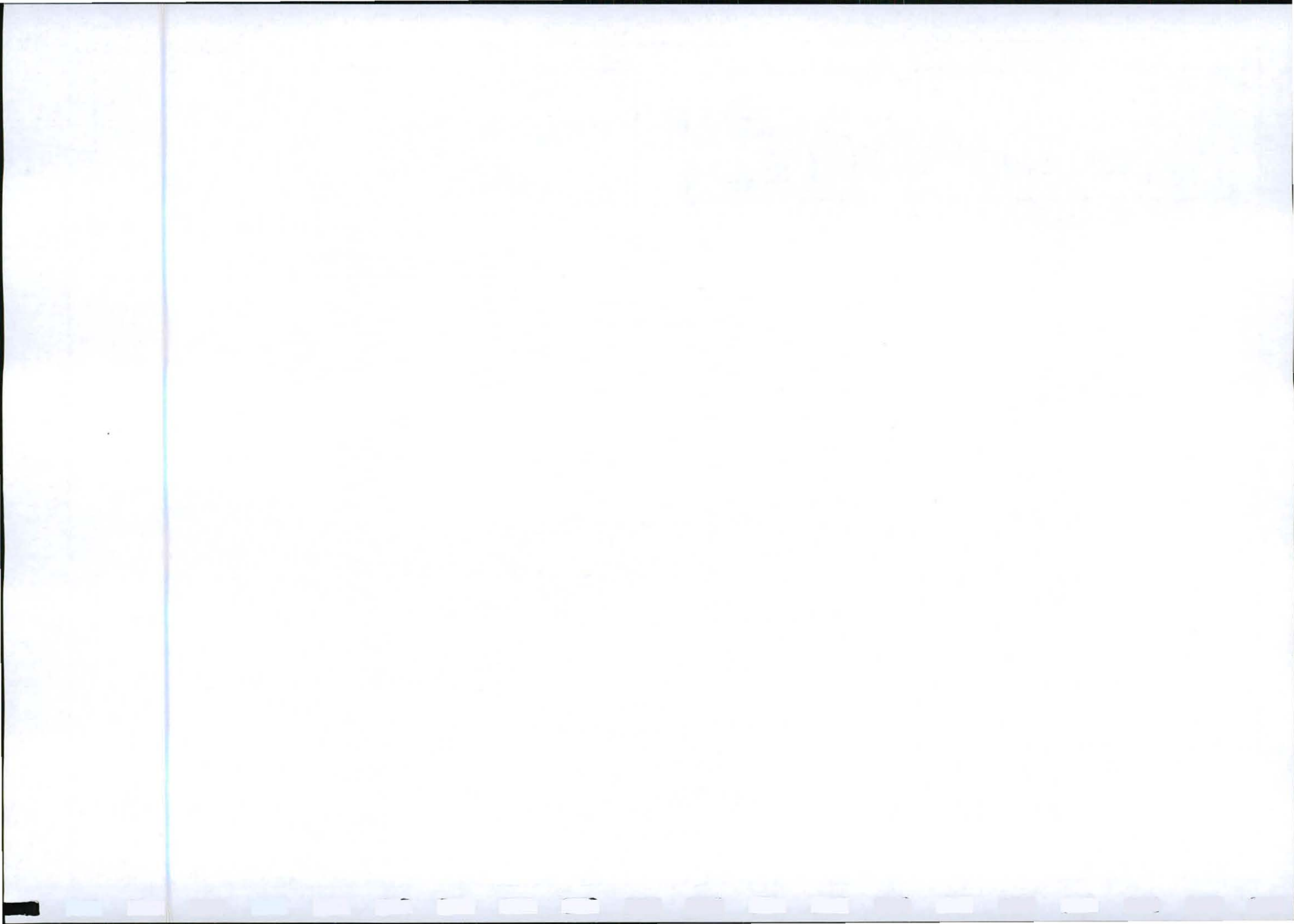
- |  |                                  |  |                                  |
|--|----------------------------------|--|----------------------------------|
|  | Gravel Stockpile                 |  | Downslope Gradient               |
|  | Proposed New Quarrying Direction |  | Existing Borrow Pit Sidewall     |
|  | Sandstone Outcrop                |  | Access Road                      |
|  | Existing Borrow Pit Boundary     |  | Proposed New Excavation Boundary |

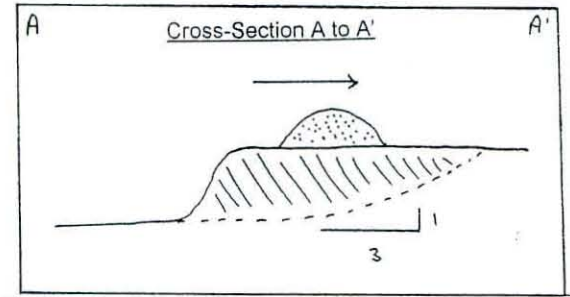
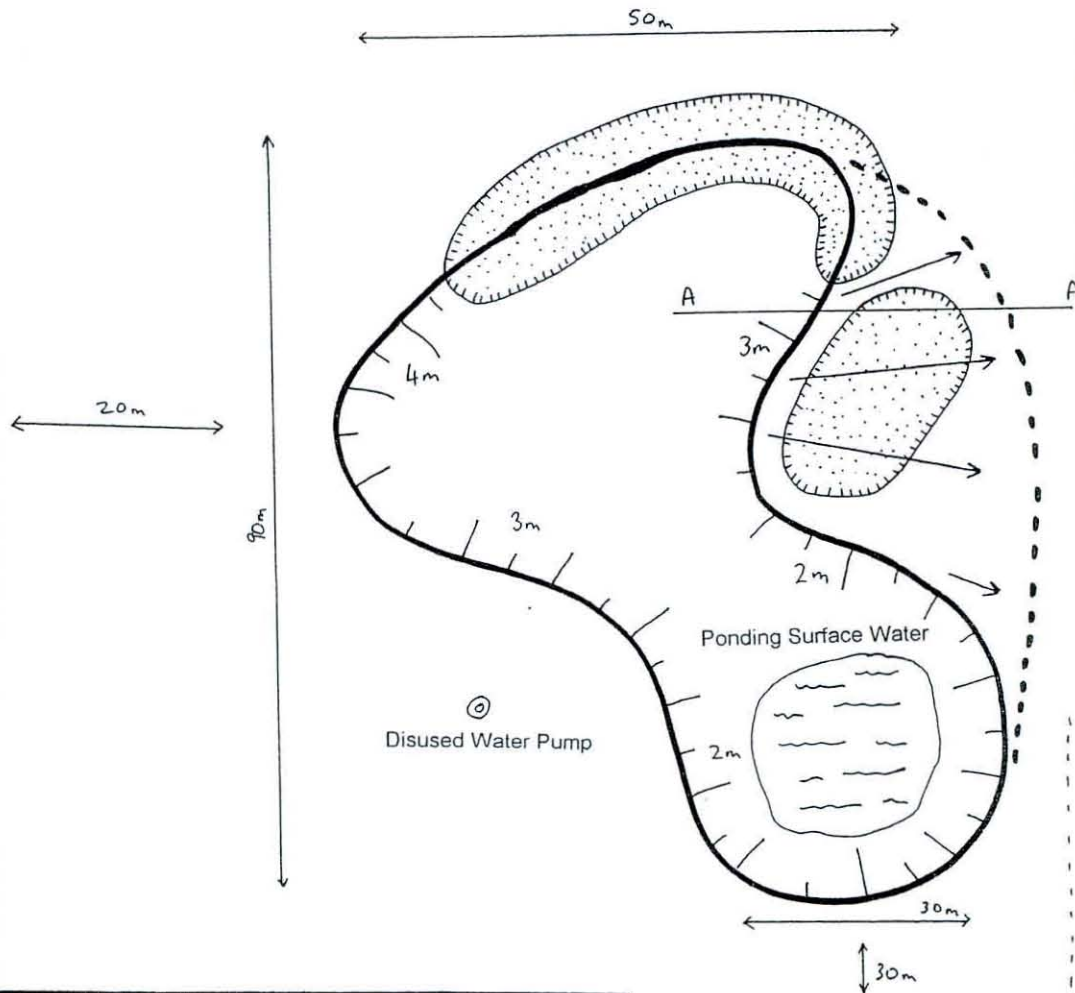
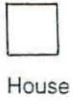
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**FIGURE 49: ENGCOBO ROAD MAINTENANCE PROGRAMME : Borrow Pit 8270/4 Sketch Map.**

NOT TO SCALE

SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

- |  |                                  |  |                                  |
|--|----------------------------------|--|----------------------------------|
|  | Gravel Stockpile                 |  | Downslope Gradient               |
|  | Proposed New Quarrying Direction |  | Existing Borrow Pit Sidewall     |
|  | Doleritic Corestones             |  | Disused Water Pump               |
|  | Existing Borrow Pit Boundary     |  | Proposed New Excavation Boundary |

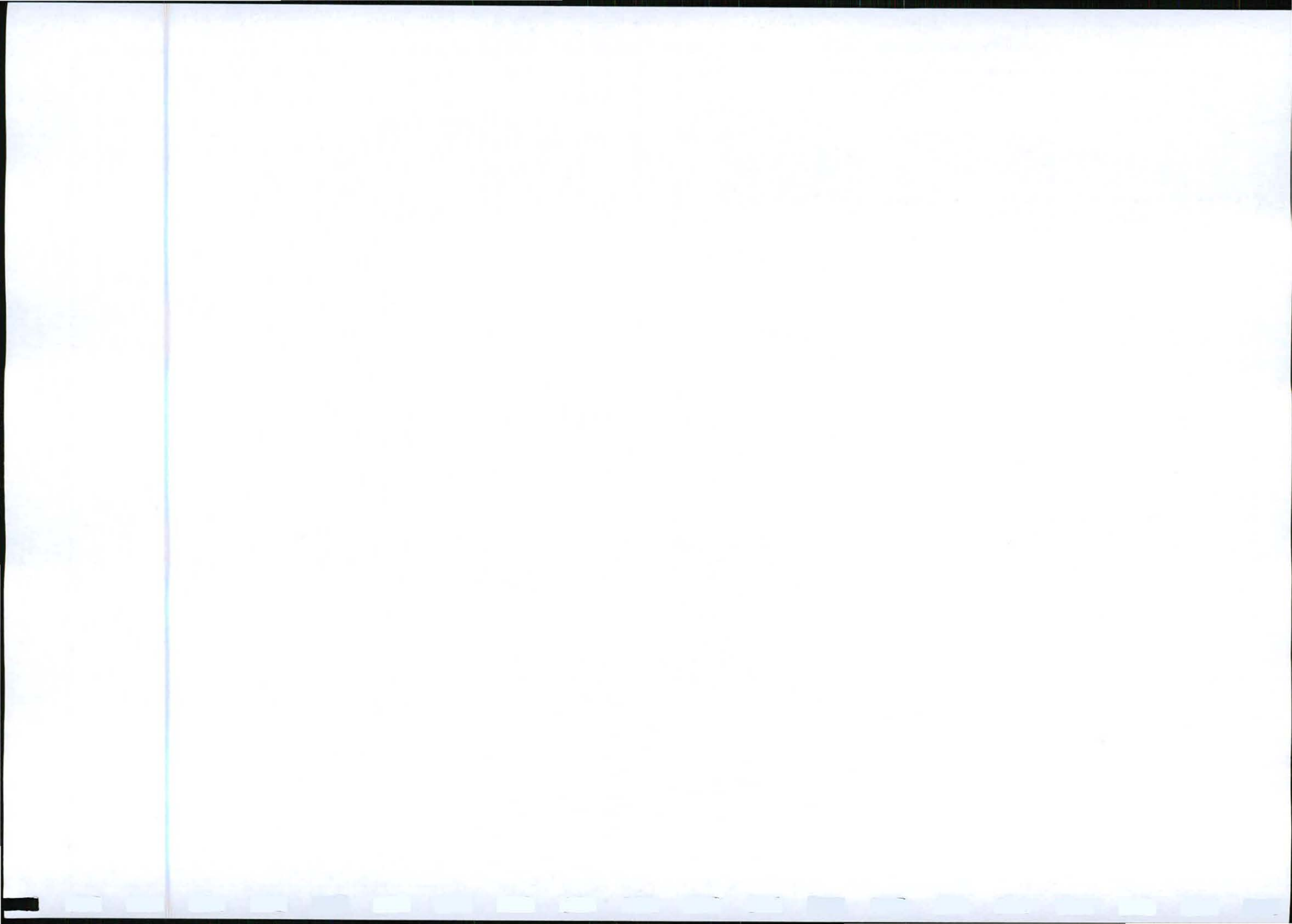
Road DR08270  
Borrow Pit 8270/4  
Stake Value km 9,8 (RHS)  
Mudstone & Sandstone

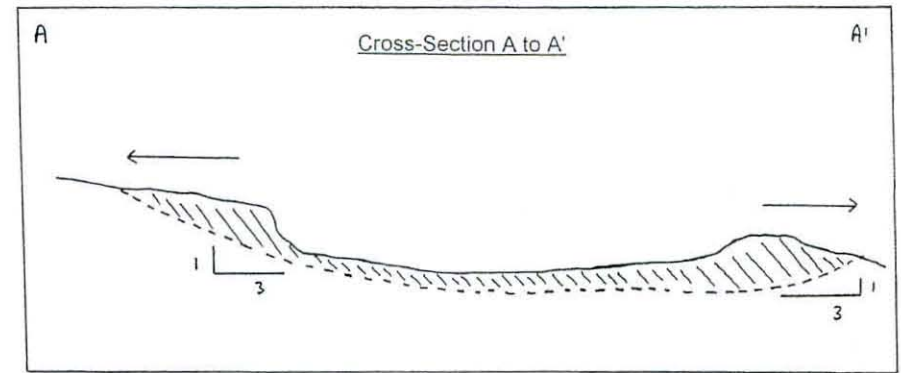
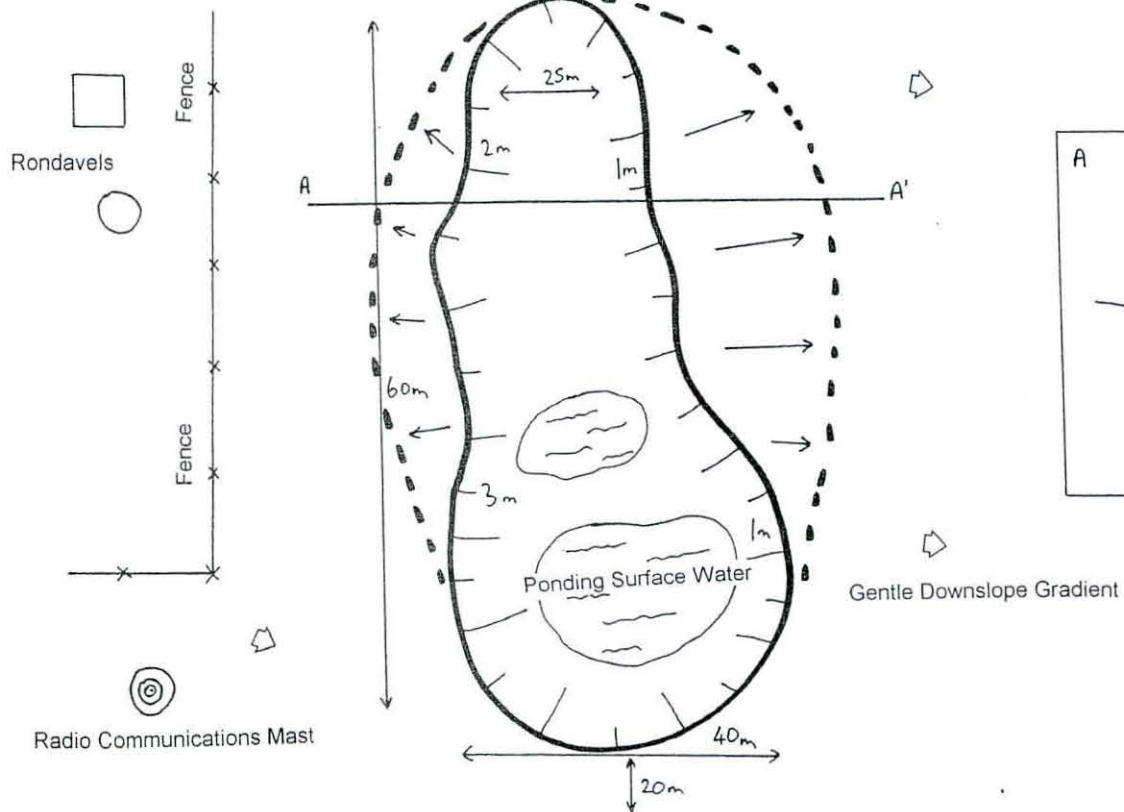
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Road DR08270  
Borrow Pit 8270/5  
Stake Value km 12,2 (RHS)  
Mudstone

To km 0,0 →

**FIGURE 50: ENGCOCO ROAD MAINTENANCE PROGRAMME :  
Borrow Pit 8270/5 Sketch Map.**

NOT TO SCALE

SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

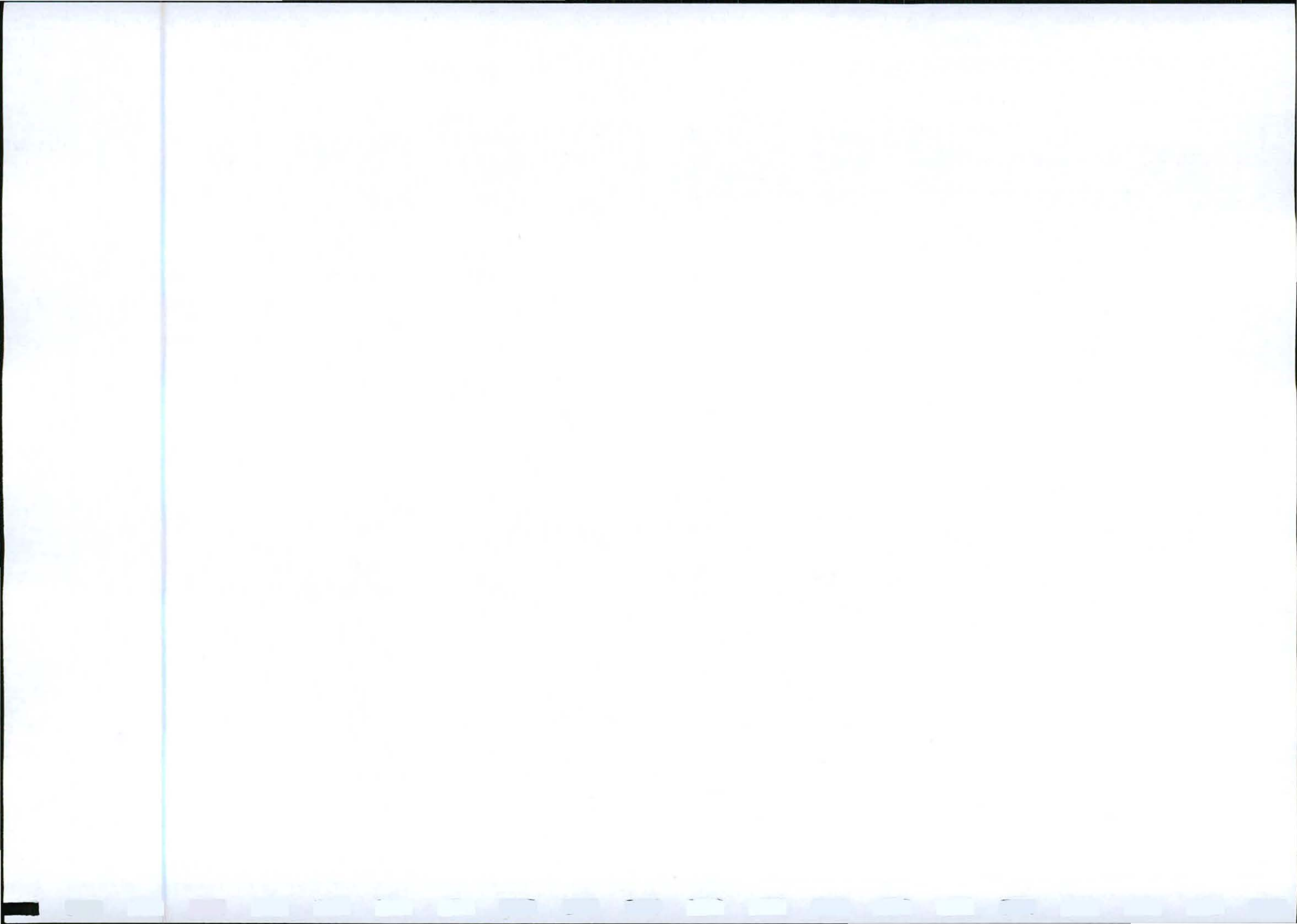
- |  |                                  |  |                                  |
|--|----------------------------------|--|----------------------------------|
|  | Ponding Surface Water            |  | Downslope Gradient               |
|  | Proposed New Quarrying Direction |  | Existing Borrow Pit Sidewall     |
|  | Fence                            |  | Radio Communications Mast        |
|  | Existing Borrow Pit Boundary     |  | Proposed New Excavation Boundary |

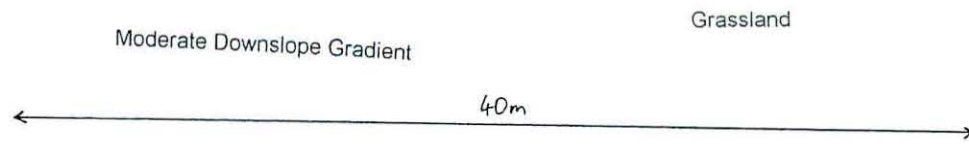
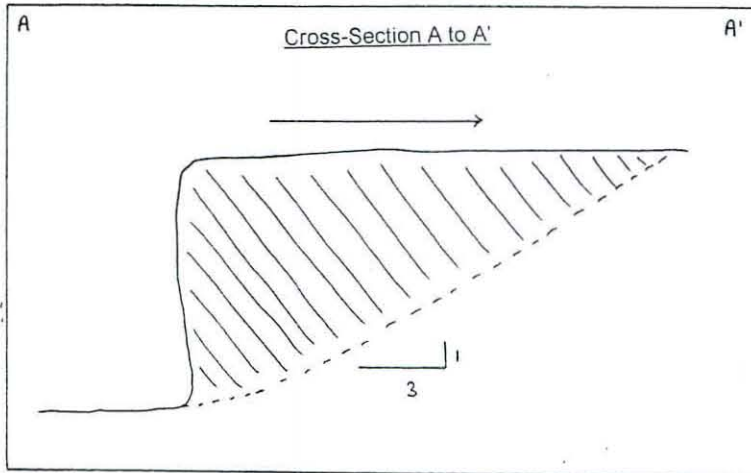
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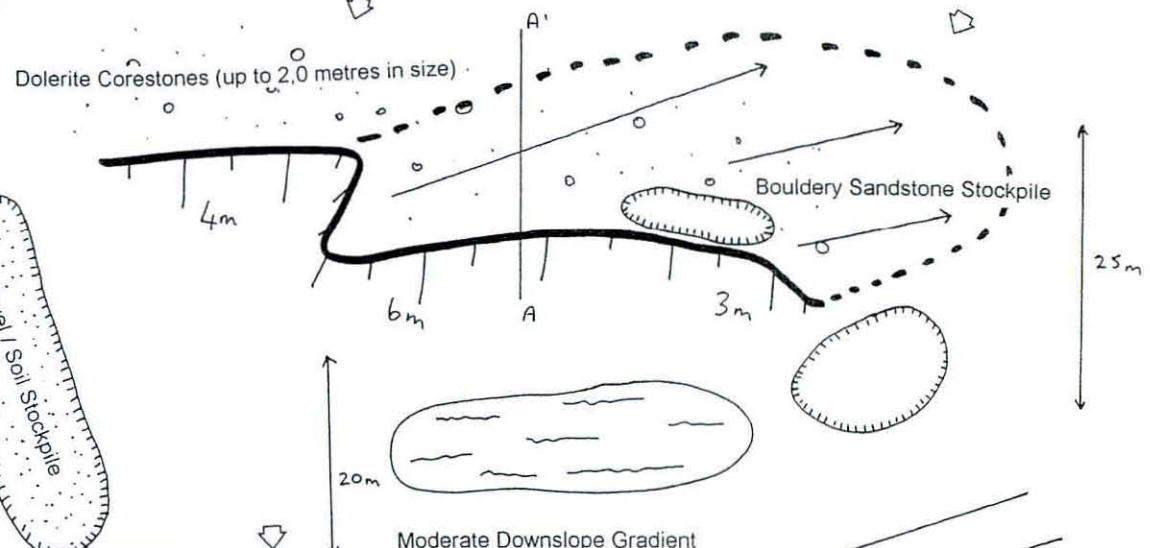
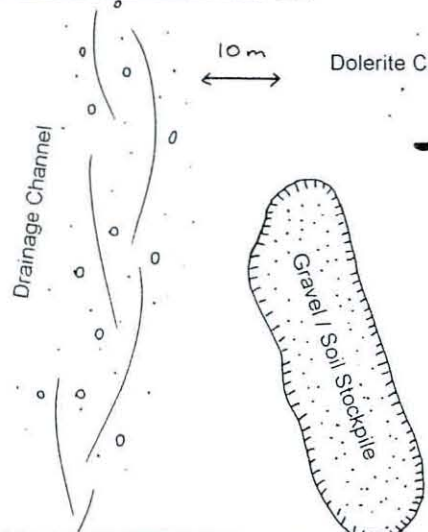
CK 96 6444023

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Grassland



Road DR08272  
Borrow Pit 8272/1  
Stake Value km 5,0 (LHS)  
Mudstone

**FIGURE 51: ENCOBO ROAD MAINTENANCE PROGRAMME :  
Borrow Pit 8272/1 Sketch Map.**

NOT TO SCALE SOURCE: Bopite Engineering Geologists CC

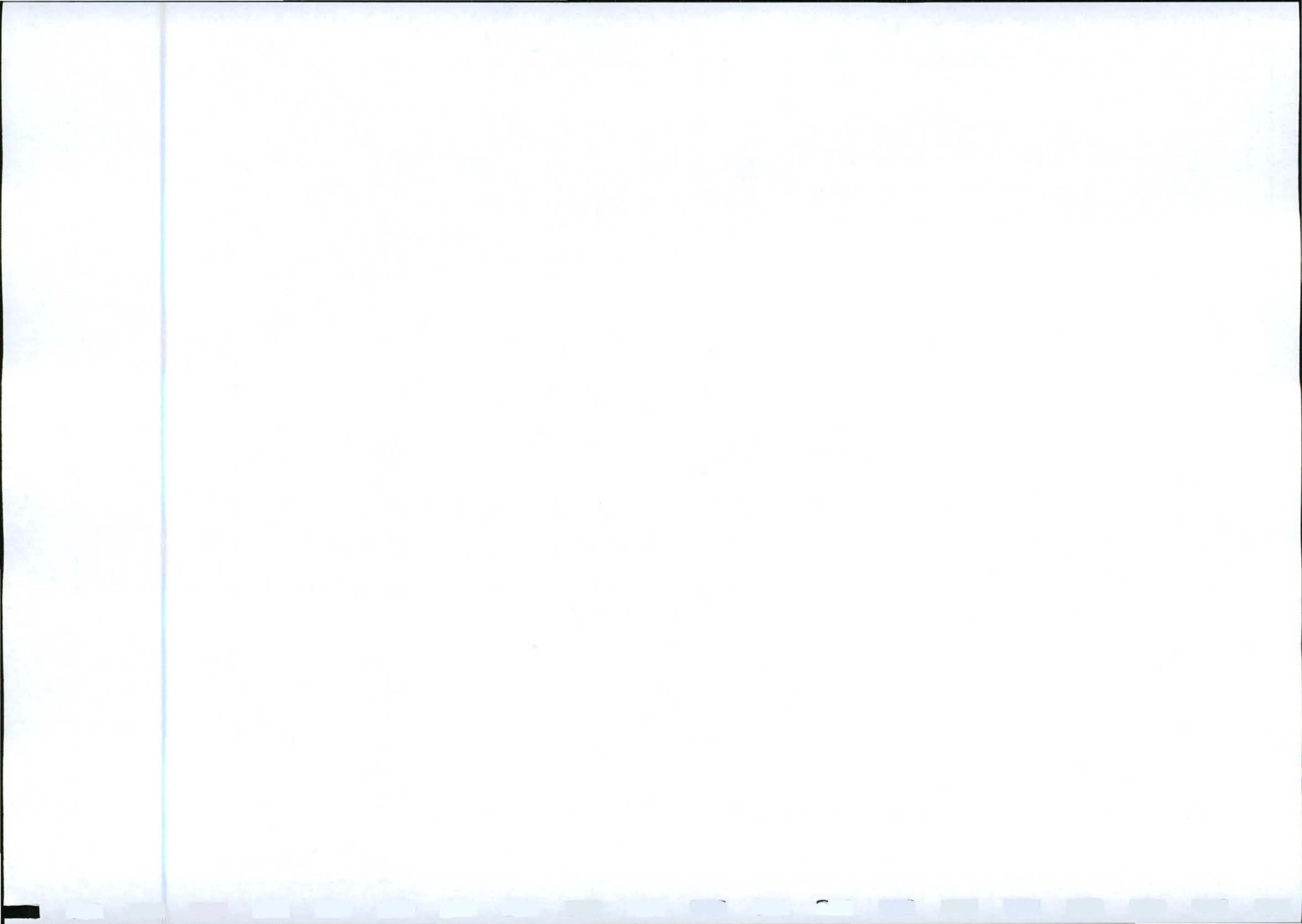
| LEGEND |                                  |
|--------|----------------------------------|
|        | Dolerite Corestones              |
|        | Proposed New Quarrying Direction |
|        | Dry Pan                          |
|        | Existing Borrow Pit Boundary     |
|        | Downslope Gradient               |
|        | Existing Borrow Pit Sidewall     |
|        | Drainage Channel                 |
|        | Proposed New Excavation Boundary |

**BOPITE ENGINEERING GEOLOGISTS CC**

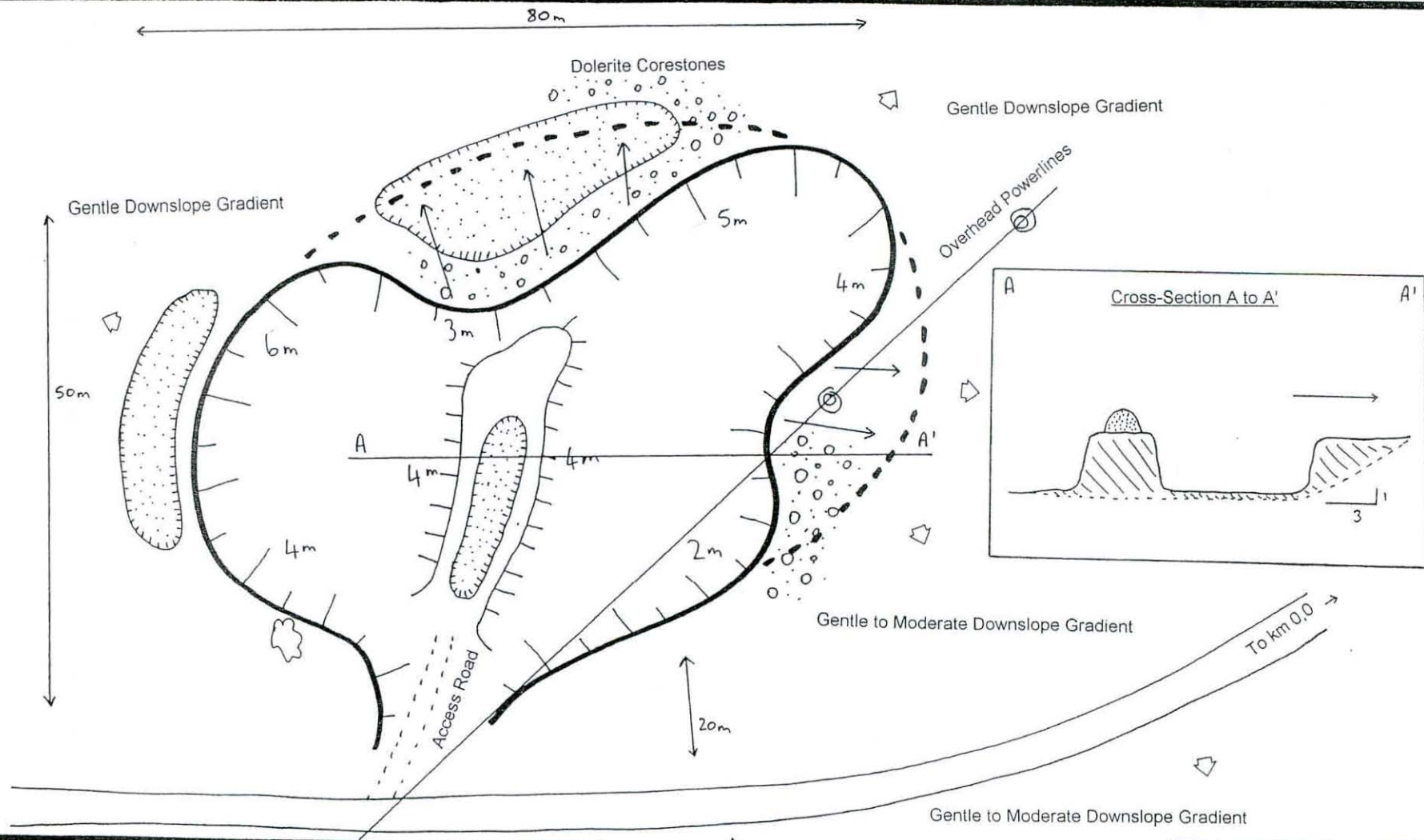
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**FIGURE 52: ENCOBO ROAD MAINTENANCE PROGRAMME : Borrow Pit 8273/1 Sketch Map.**

NOT TO SCALE

SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

- |   |                                  |   |                                  |
|---|----------------------------------|---|----------------------------------|
|  | Dolerite Corestones              |  | Downslope Gradient               |
|  | Proposed New Quarrying Direction |  | Existing Borrow Pit Sidewall     |
|  | Overhead Powerlines              |  | Quarry Terrace Level             |
|  | Existing Borrow Pit Boundary     |  | Proposed New Excavation Boundary |

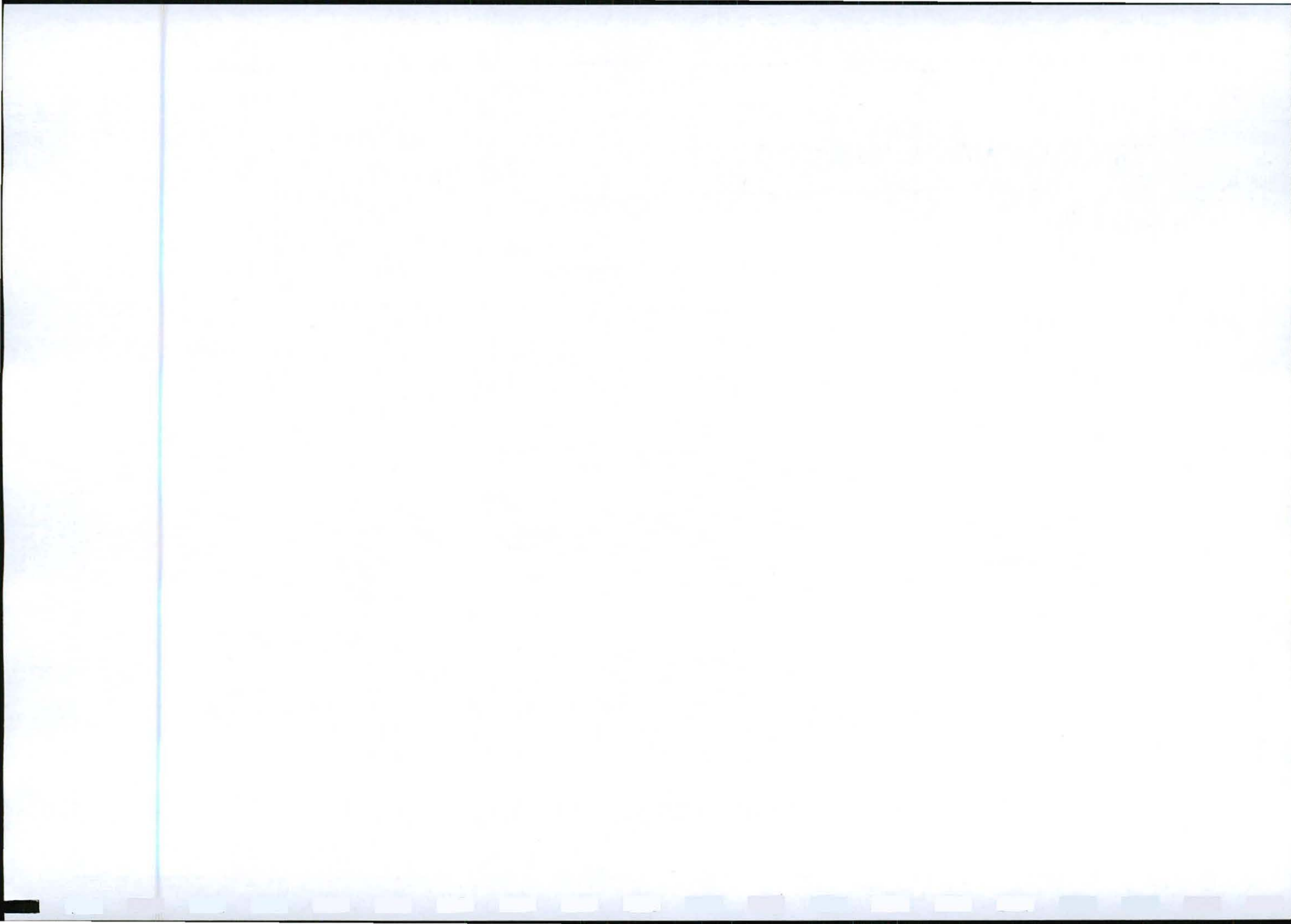
Road DR08273  
Borrow Pit 8273/1  
Stake Value km 0,4 (RHS)  
Dolerite

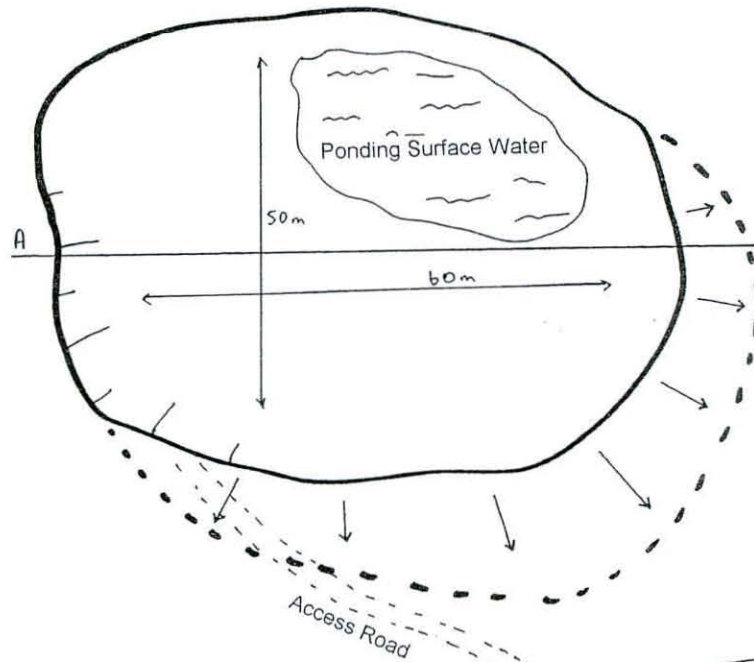
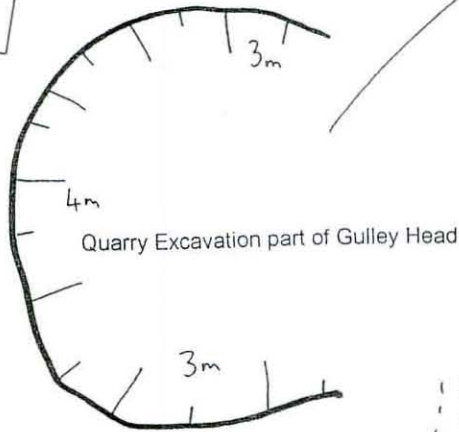
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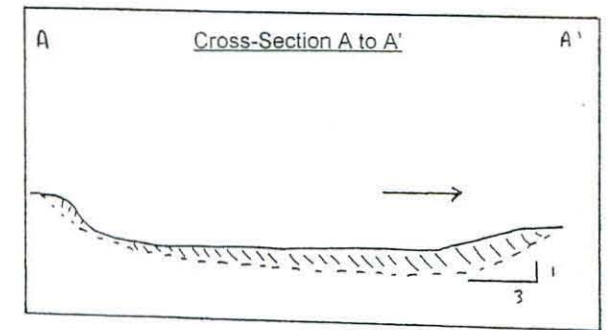
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Drainage Channel



Road DR08273  
Borrow Pit 8273/2  
Stake Value km 6,3 (RHS)  
Mudstone & Sandstone

Overhead Powerlines

To km 0,0

**FIGURE 53: ENCOBO ROAD MAINTENANCE PROGRAMME :  
Borrow Pit 8273/2 Sketch Map.**

NOT TO SCALE

SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

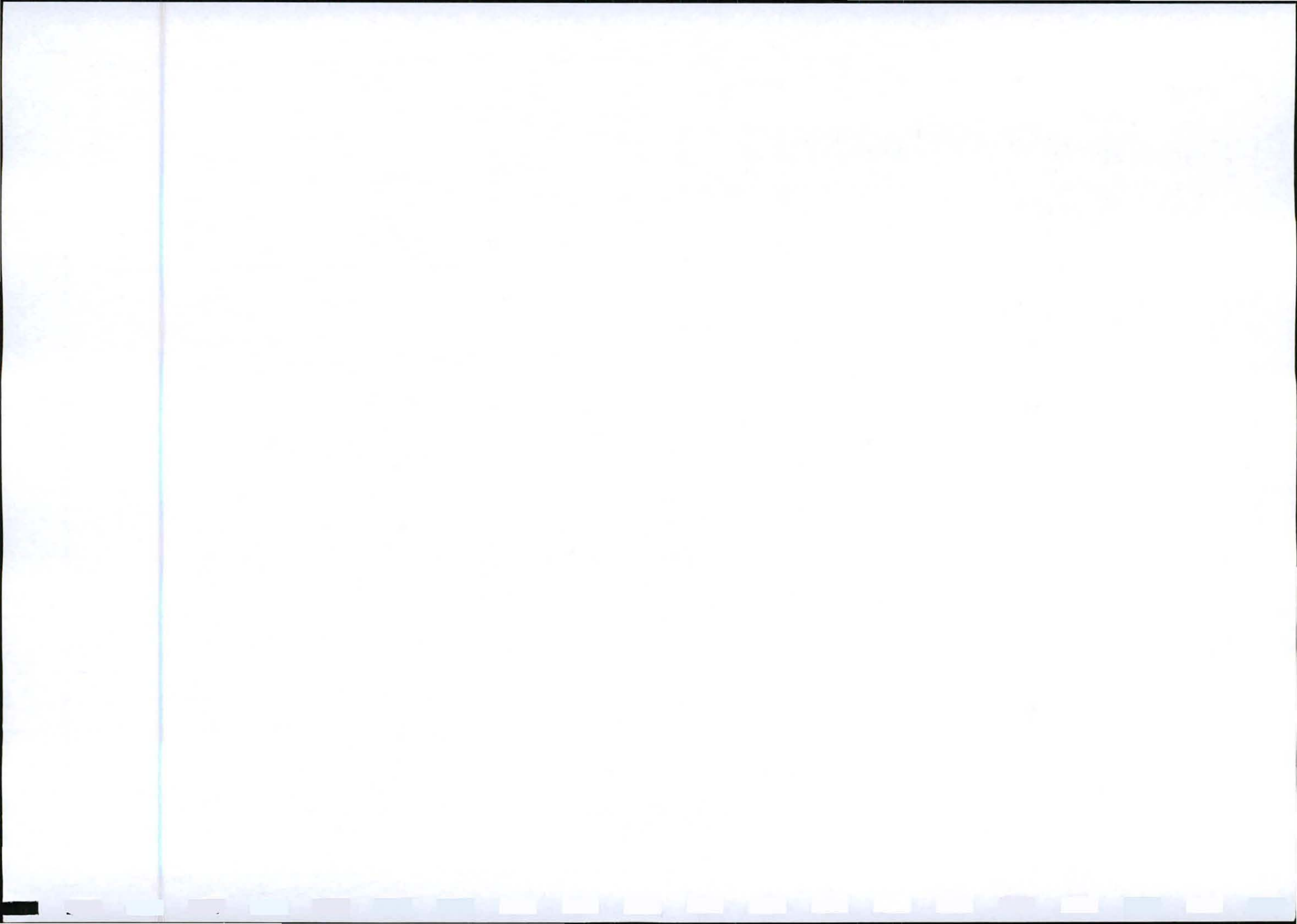
- |  |                                  |  |                                  |
|--|----------------------------------|--|----------------------------------|
|  | Ponding Surface Water            |  | Downslope Gradient               |
|  | Proposed New Quarrying Direction |  | Existing Borrow Pit Sidewall     |
|  | Drainage Channel                 |  | Access Road                      |
|  | Existing Borrow Pit Boundary     |  | Proposed New Excavation Boundary |

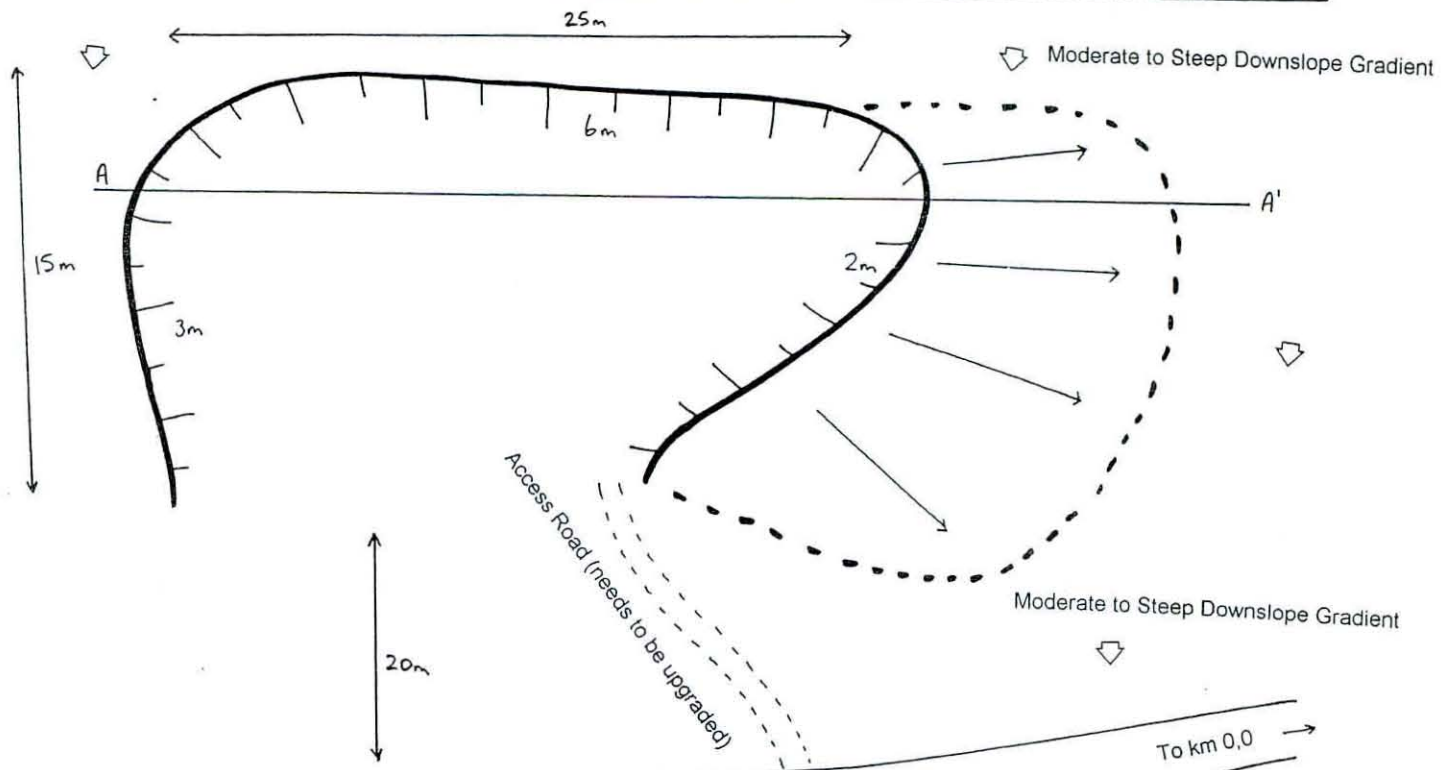
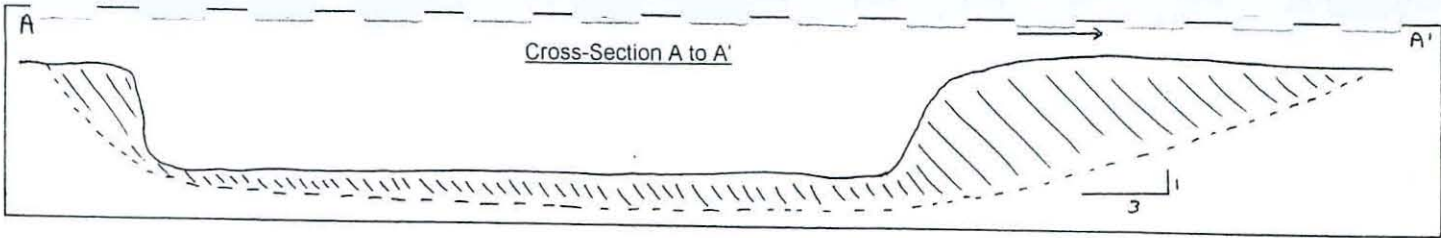
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Road DR08273  
 Borrow Pit 8273/3  
 Stake Value km 10,8 (RHS)  
 Mudstone & Sandstone

**FIGURE 54: ENCOBO ROAD MAINTENANCE PROGRAMME : Borrow Pit 8273/3 Sketch Map.**

NOT TO SCALE SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

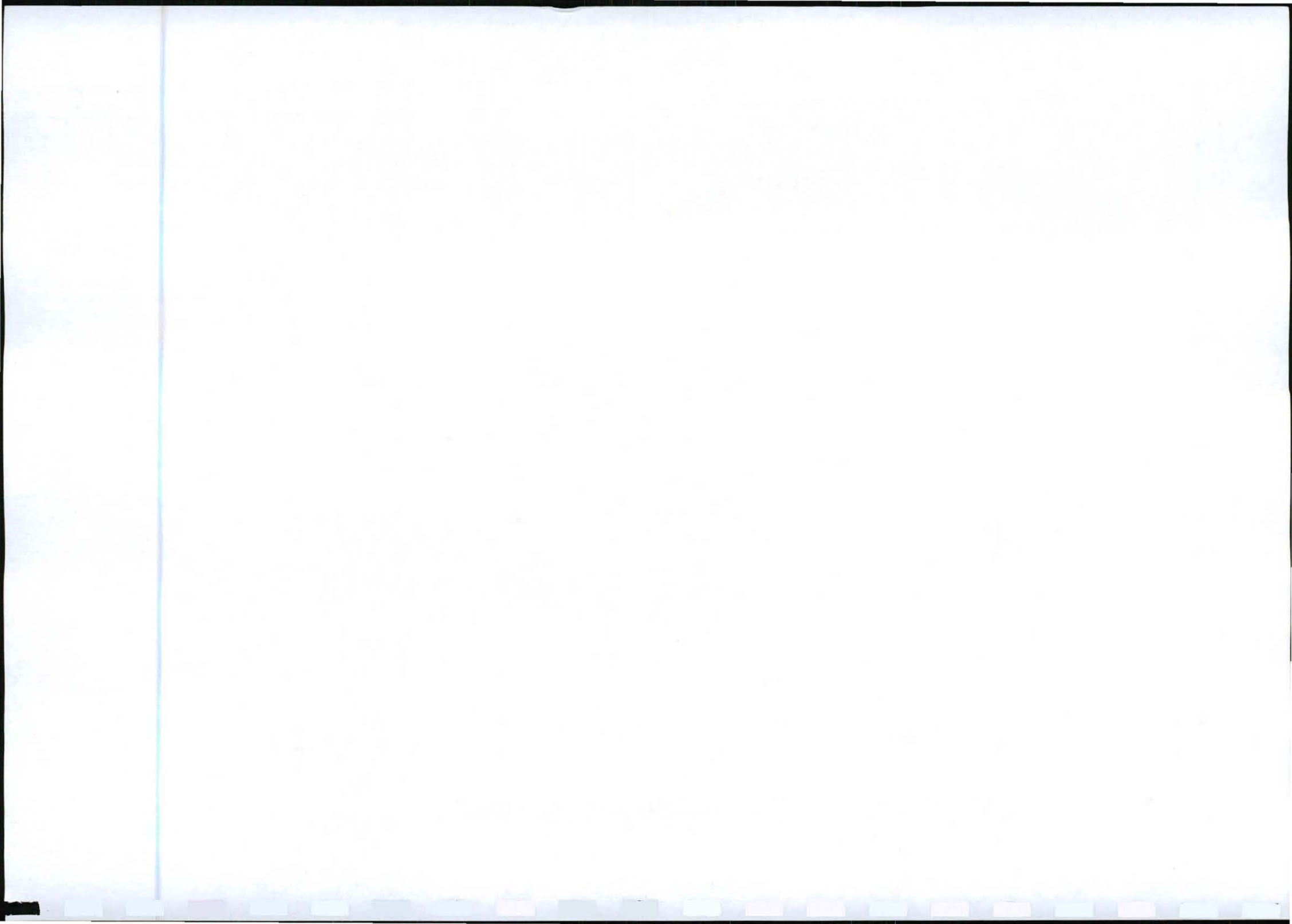
|  |                                  |  |                                  |
|--|----------------------------------|--|----------------------------------|
|  | Access Road                      |  | Downslope Gradient               |
|  | Proposed New Quarrying Direction |  | Existing Borrow Pit Sidewall     |
|  | Existing Borrow Pit Boundary     |  | Proposed New Excavation Boundary |

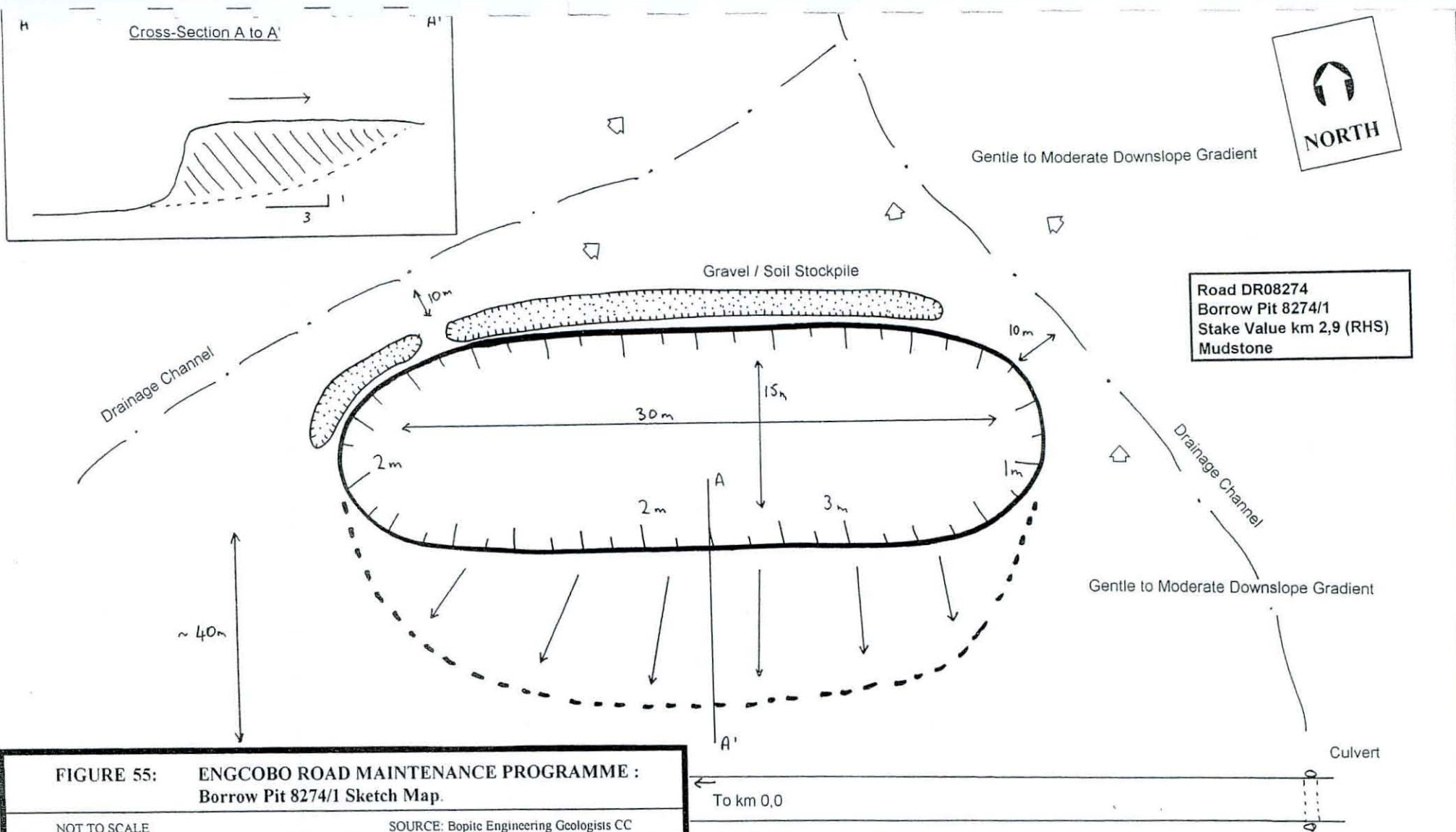
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**FIGURE 55: ENCOBO ROAD MAINTENANCE PROGRAMME : Borrow Pit 8274/1 Sketch Map.**

NOT TO SCALE

SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

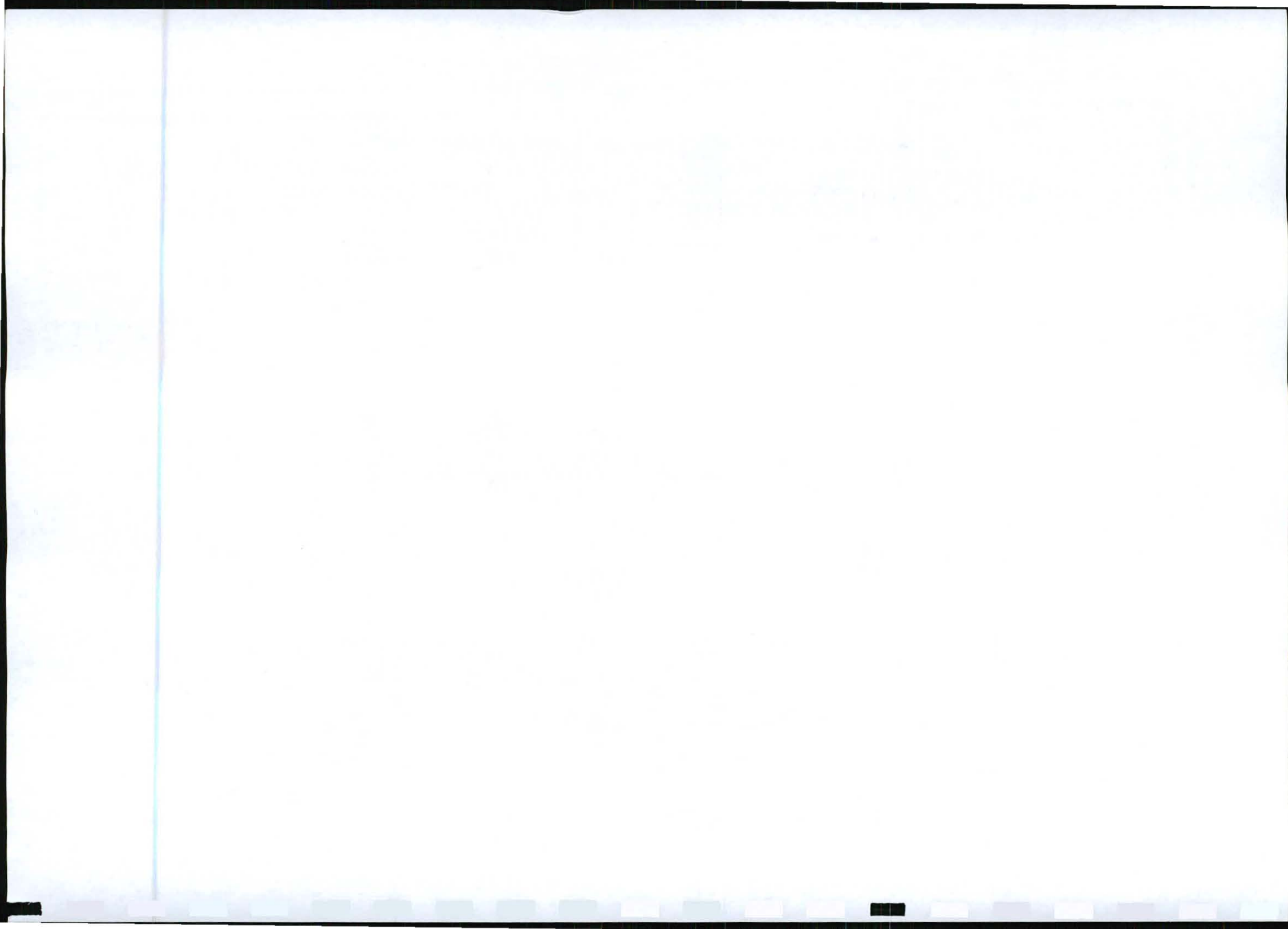
- |  |                                  |  |                                  |
|--|----------------------------------|--|----------------------------------|
|  | Gravel/Soil Stockpile            |  | Downslope Gradient               |
|  | Proposed New Quarrying Direction |  | Existing Borrow Pit Sidewall     |
|  | Drainage Channel                 |  | Culvert                          |
|  | Existing Borrow Pit Boundary     |  | Proposed New Excavation Boundary |

**BOPITE ENGINEERING GEOLOGISTS CC**

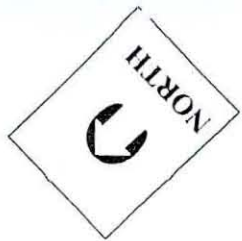
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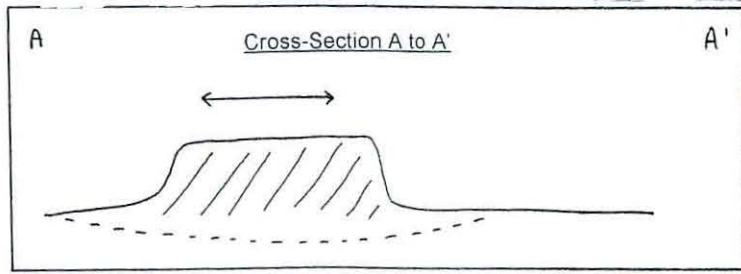
TEL: (041) 7761171  
 FAX: (041) 7761171  
 GELL: 082 5729159







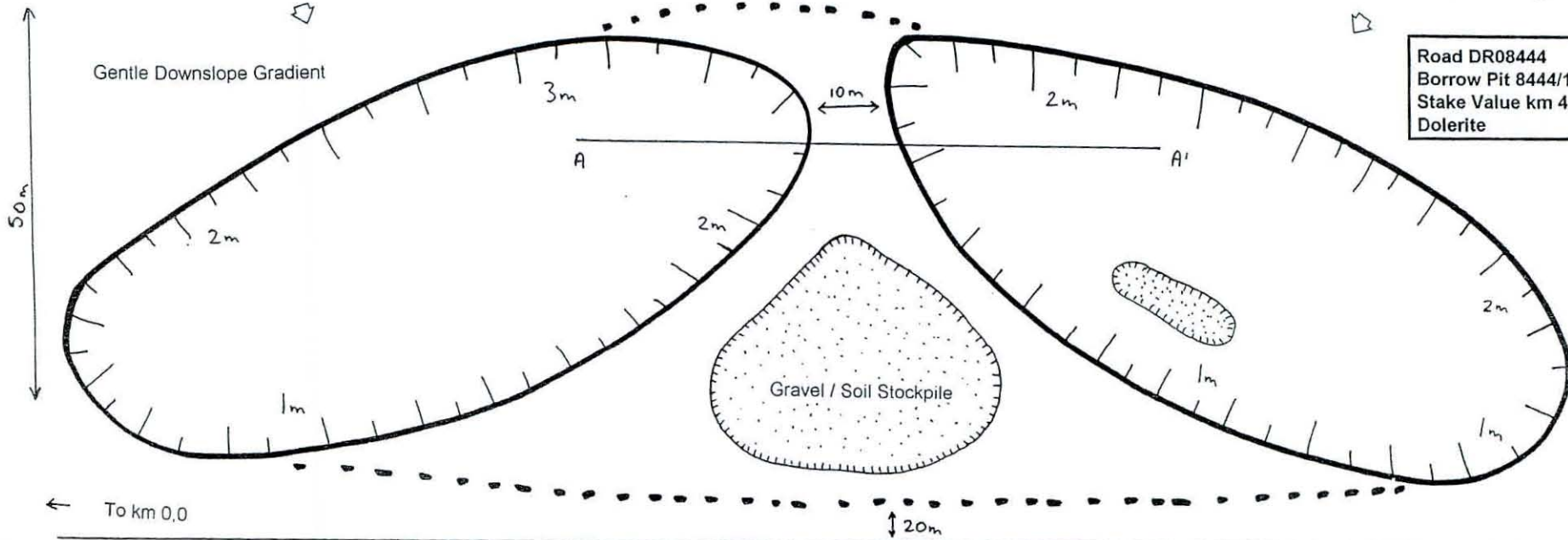
Gentle Downslope Gradient



120m

Gentle Downslope Gradient

Road DR08444  
Borrow Pit 8444/1  
Stake Value km 4,4 (LHS)  
Dolerite



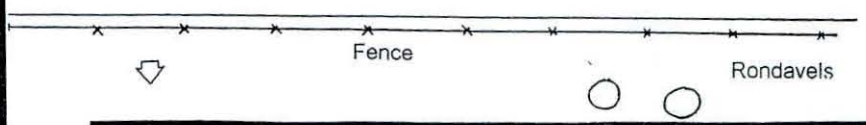
**FIGURE 56: ENGCOBO ROAD MAINTENANCE PROGRAMME : Borrow Pit 8444/1 Sketch Map.**

NOT TO SCALE

SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

- |  |                                  |  |                                  |
|--|----------------------------------|--|----------------------------------|
|  | Gravel/Soil Stockpile            |  | Downslope Gradient               |
|  | Proposed New Quarrying Direction |  | Existing Borrow Pit Sidewall     |
|  | Fence                            |  | Rondavels                        |
|  | Existing Borrow Pit Boundary     |  | Proposed New Excavation Boundary |

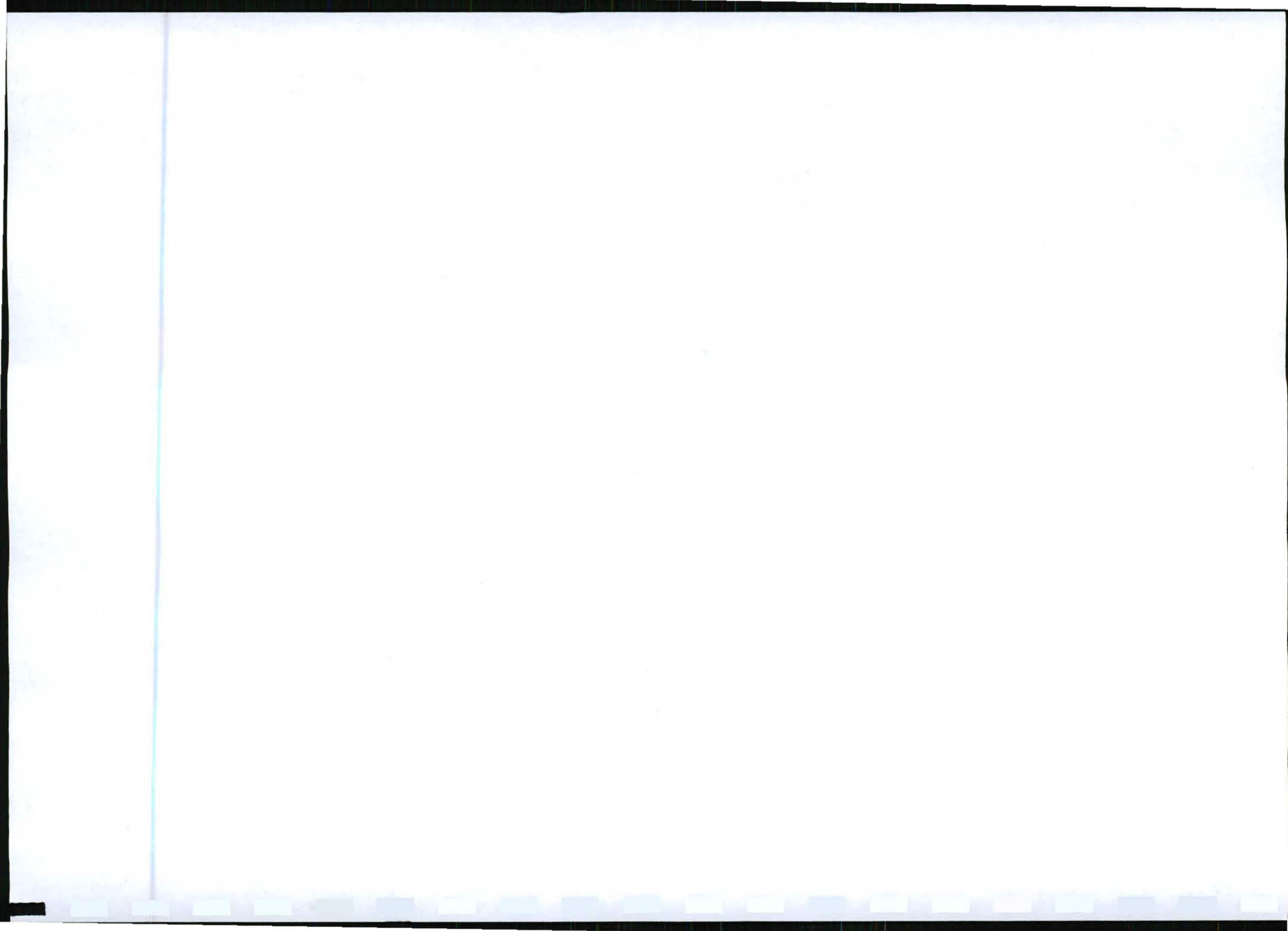


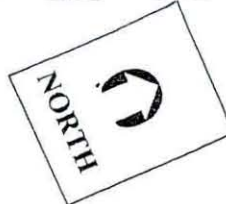
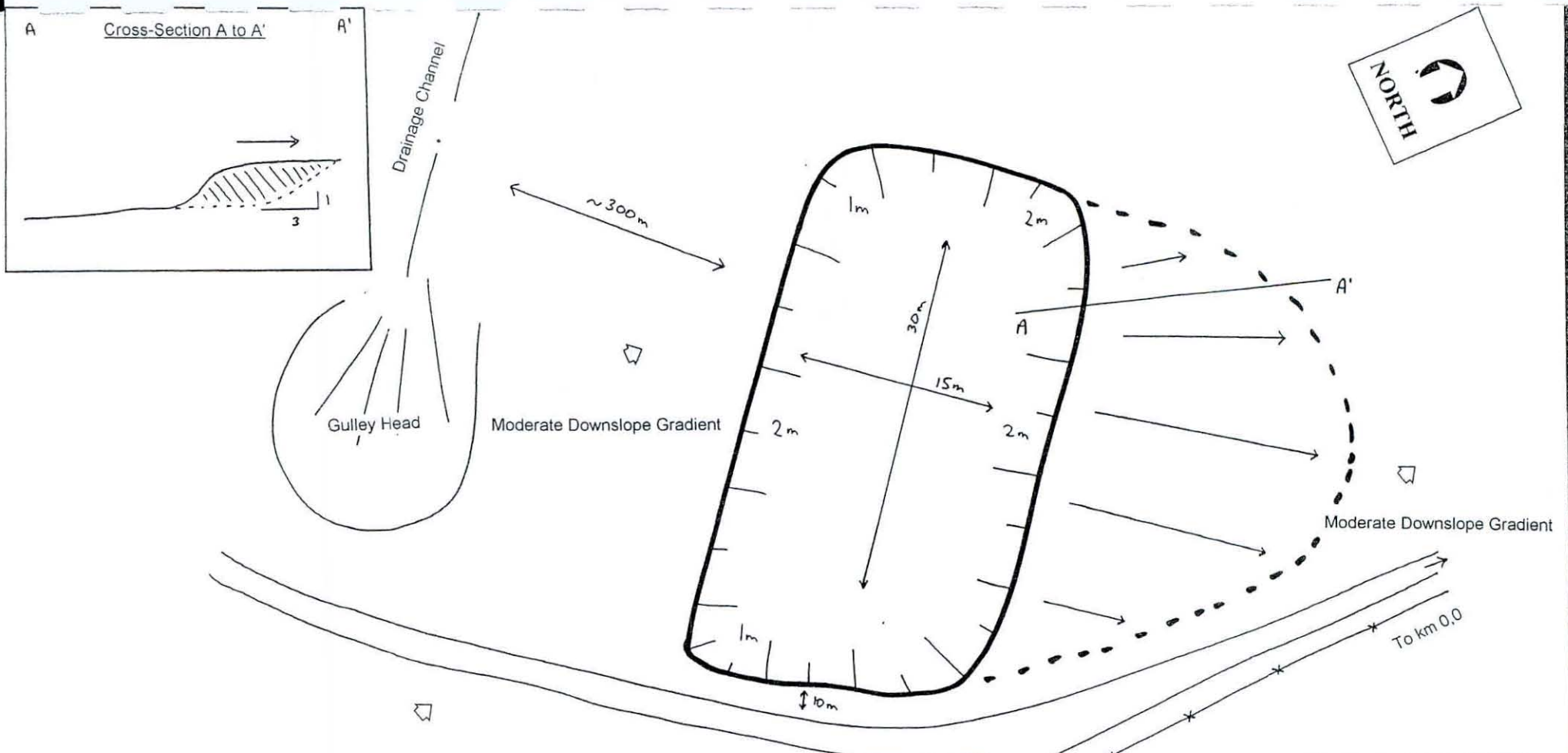
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**FIGURE 57: ENCOBO ROAD MAINTENANCE PROGRAMME : Borrow Pit 8504/1 Sketch Map.**

NOT TO SCALE

SOURCE: Bopite Engineering Geologists CC

**LEGEND:**

- |  |                                  |  |                                  |
|--|----------------------------------|--|----------------------------------|
|  | Gulley Head                      |  | Downslope Gradient               |
|  | Proposed New Quarrying Direction |  | Existing Borrow Pit Sidewall     |
|  | Fence                            |  | Drainage Channel                 |
|  | Existing Borrow Pit Boundary     |  | Proposed New Excavation Boundary |

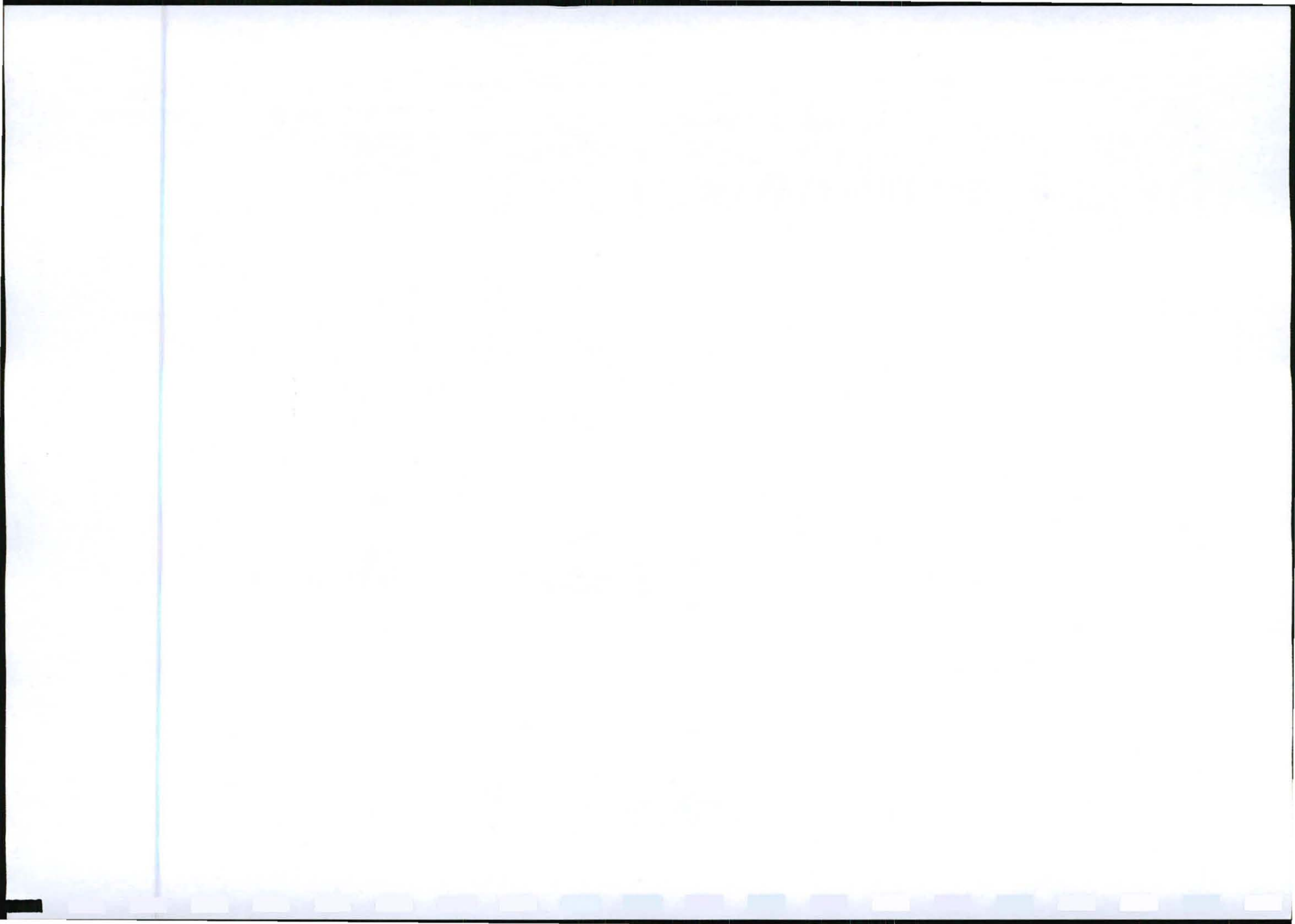
Road DR08504  
Borrow Pit 8504/1  
Stake Value km 6,8 (RHS)  
Mudstone

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**APPENDIX 3:**

**ENGCOBO ROAD  
MAINTENANCE PROGRAMME:**

**Additional Correspondence.**

Application received in terms of the Mineral and Petroleum  
Resources Development Act, 2002 (Act 28 of 2002)  
EASTERN CAPE REGION

**11 AUG 2009**

Print Name: **S. LURWENGI**

Signature: 

DEPARTMENT OF MINERALS AND ENERGY

D/2009/08/11/001  
Ec 30/5/13/210366 MP

