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<b>Report To:</b>	<b>Environment &amp; Regeneration Committee</b>	<b>Date:</b>	<b>31 August 2023</b>
<b>Report By:</b>	<b>Head of Physical Assets</b>	<b>Report No:</b>	<b>ENV045/23/EM</b>
<b>Contact Officer:</b>	<b>Eddie Montgomery</b>	<b>Contact No:</b>	<b>01475 714800</b>
<b>Subject:</b>	<b>Dunrod Road – Closure and Landslip</b>		

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## 1.0 PURPOSE AND SUMMARY

1.1  For Decision  For Information/Noting

1.2 The purpose of this report is to inform Committee of proposed solutions for re-instating access following the landslip on Dunrod Road, Inverkip

1.3 The option recommended by the CMT requires a significant contribution from the 2023/26 Capital Programme contingency and as such the financial implications will require approval by the Policy & Resources Committee.

## 2.0 RECOMMENDATIONS

2.1 It is recommended that the Committee:

- Notes the contents of the Landslide Risk Map regarding the slippage risk over a 460m section of Dunrod Road;
- Support Officers recommendations to proceed with Option 3 to re-align Dunrod Road up the slope towards the Greenock Cut;
- Agree to assign CWSR and Town and Village Centre funds to the project as part of the funding mix;
- Agree that it be remitted to the Policy and Resources Committee seeking approval of £1.5m from the 2023/26 Capital Programme contingency.

**Eddie Montgomery**  
**Head of Physical Assets**

### **3.0 BACKGROUND AND CONTEXT**

- 3.1 Dunrod Road links the A78 west of Spango Valley with the Old Largs Road and provides access to the Clyde Muirshiel Regional Park visitor centre at Cornalees from the western side of the local authority area. It is a single track road with passing places popular with walkers, cyclists and other road users. As well as being used for pleasure uses it has been used extensively by Scottish Water and Scottish Power Energy networks for major infrastructure works as well as providing access to farm and business premises.
- 3.2 Heavy rain in November 2011 caused a major landslide on Dunrod Road approximately 600m west of Shielhill Farm, Inverkip. Half of the road collapsed and moved down the hill. A geotechnical consultant was engaged with remedial works undertaken in October 2012 to stabilise the embankment.
- 3.3 In 2020 due to poor weather conditions and heavy rain the next section of Dunrod Road downhill from the section that was repaired in 2012 showed signs of movement, with cracks appearing in the road surface. Geotechnical consultants were engaged and the cause of the cracking was attributed to water ingress. Remedial works were undertaken to improve the drainage and resurface the road. These works were completed in March 2021.
- 3.4 By the end of 2021 cracks were again starting to appear in the road surface and this may be attributed to the additional large vehicle movements or underground subsidence. The road was monitored on a monthly basis and showed a steady increase in movement. To reduce the stress and load on the road, vehicle movements were restricted to 3 tonnes, however by the end of July 2022 the movement was deemed too severe to allow any more vehicles to pass as cars were grounding over the subsided surface and the embankment was also showing signs of further movement.
- 3.5 Temporary signs and cones were placed to close the road however these measures were being moved and vehicles were still driving over the cracked road. A permanent barrier system was then erected to protect the general public as there was a risk of a road collapse, the signage of which has been subsequently enhanced.
- 3.6 A detailed geotechnical study was undertaken and completed in April 2023 and this included deep boreholes to determine the cause of the failure. The borehole survey results have shown a notable displacement to a depth of 3m, indicating mass movement of the superficial soil and additional investigation works are required prior to determining a solution.
- 3.7 On reviewing the geotechnical study and given the significant costs to repair 80m of road due to the mass movement of soil 3m deep and that other sections of the road down to the bends over the past 10 years have shown signs of movement. Officers engaged the consultant to undertake a desktop study of the entire area above and below the failed section to determine if there were other areas of concern.
- 3.8 The Geohazard Mapping Survey and Desk Study investigated the stability of Dunrod Road over a length of 460m including areas above and below the road. The report concluded that 160m of the existing road is at high risk of slippage and 80m of the high risk area was repaired in 2012. Another 300m should be avoided as it is at medium risk as these areas would require significant mitigation measures. The study also suggested that an alternative route should be investigated in the low-risk zone between the Cut and the top of the slope above the road. A copy of the risk map is contained in Appendix 1.
- 3.9 On completion of the Geohazard Mapping a roads feasibility study was undertaken in May 2023 to determine if an alternative route was possible. The report concluded that there was a feasible alternative route but this would require further investigation works including drainage.

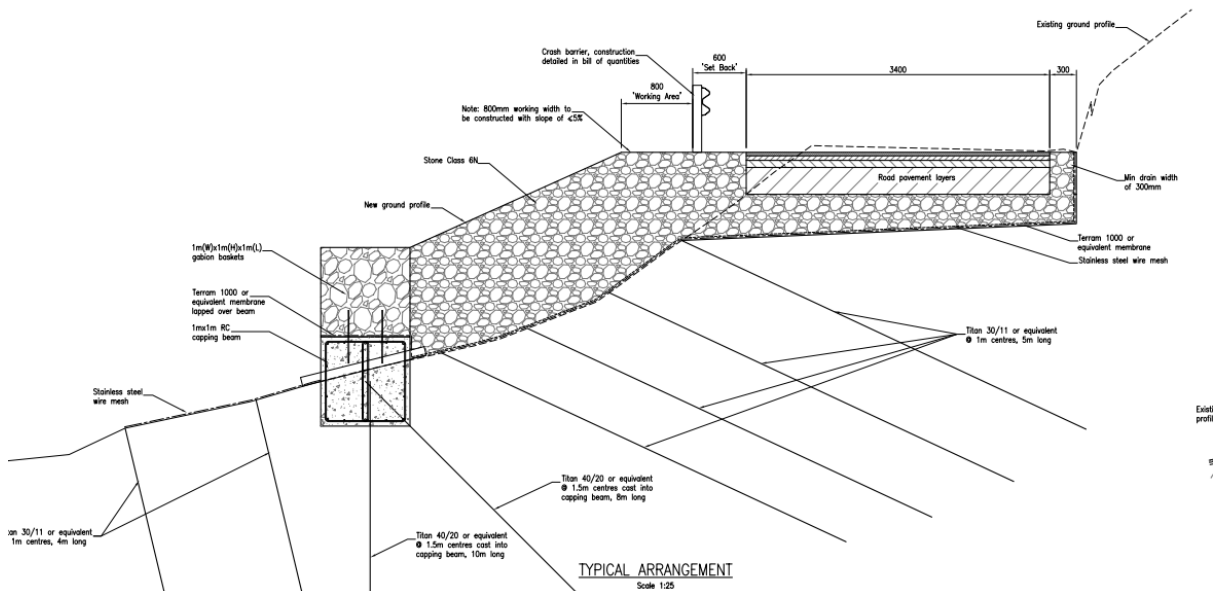
3.10 Engagement has been carried out with a number of affected individuals impacted with the closure. In order to achieve a positive outcome, the adjacent farmer has offered use of the field required to deliver Option 3. All of the proposals require a drainage solution to be delivered which prevents the ongoing water run off issue.

#### 4.0 PROPOSALS

4.1 As the repairing and re-opening of the road has significant cost implications Officers have looked at a range of options to repair and open the road, to either vehicles or pedestrians and cyclists.

##### Option 1 - Repair 380m of road with Soil Nails - £5.0-5.5m

Install Soil-nails to stabilise the weak sections of slope by tying them back into the rock face, along with the installation of a soil-nailed capping beam tied into the soil nails and then gabion baskets. The upfilling of the road make-up would then be constructed and resurfaced over the entire length. Installation of Vehicle Restraint System along the length. This would allow the road to open along the same alignment as the existing. This construction would be the same for the 380m of high and medium risk areas.



Previous typical soil-nailing detail

##### Option 2 - Repair slippage section only with Soil Nails - £1.45-1.65m

Repair the slippage section over a length of 80m by soil nailing the slope back into the rock and the installation of a soil-nailed capping beam and then gabion baskets. The upfilling of the road make-up would then be constructed and resurfaced over the 80m of failure. Installation of Vehicle Restraint System along 80m. This would repair the worst section of road however there is still another 300m of road in the medium risk zone and could start to fail at any time. With this proposal there would be a need to weight restrict the road to reduce the deterioration of the weaker areas. The 3.5t weight limit would still need to stay in place.

### Option 3 - Construct a new road 3.5m wide with passing places - £2.0m

Construction a new road 3.5m wide, 1m verges, with passing places further up the hill towards the cut. The road would cut into the hillside between the cut and the top of the steep slope. The upfilling of the road make-up would then be constructed and resurfaced. The length of newly constructed road would be 650m. A Vehicle Restraint System will be required along parts of the road. This would remove the risk of further slippage and would future proof the road. A weight limit would be advisable for this option as well but may not be as severe as Option 2. It might be a 7t weight limit instead of a 3.5t weight limit.

### Option 4 - Construct a new cycle and walking route and closed to vehicular traffic - £1.8m

Construction of a 2m wide walking, wheeling and cycling route along the same route as Option 3 but a narrower route with footpath construction instead of road construction. The road would remain closed to vehicular traffic but would allow cyclists and pedestrians to access the area. Turning areas and signage would be constructed to allow vehicles to turn.

### Option 5 - Do nothing and leave the road closed - £0.3m

Will require additional signage and turning areas to be constructed at the fences to allow vehicles to turning around safely.

- 4.2 Officers would recommend Option 3 as this opens the road up and reduces the risk of further slippage. To shut the road to vehicular traffic entails an eleven mile diversion route and the other access whilst it is open is not ideal in the long term as there are two sharp hair-pins bends and the road past Whinhill course has been subject to failure in the past as it is a floating road on peat. Therefore, additional permanent traffic on this alternative route would result in the Old Largs Road requiring upgrading works. The next preferred option would be Option 1 as this again opens the road but has more significant cost implications.
- 4.3 Closing the road to vehicular traffic would be the last option due to the length of the diversion route and as the Cornalees Visitor Centre is a prominent leisure facility for the area. Old Largs Road has steep inclines and sharp corners and is susceptible to deterioration with additional traffic over a prolonged period of time. A cycle and walking route would be a compromise, however it is a steep climb from Inverkip to Cornalees and this option would also require consideration of a turning area as per Option 5 due to the vehicular restrictions increasing the overall cost beyond that of Option 3.

## 5.0 IMPLICATIONS

- 5.1 The table below shows whether risks and implications apply if the recommendation(s) is(are) agreed:

SUBJECT	YES	NO
Financial	x	
Legal/Risk	x	
Human Resources		x
Strategic (Partnership Plan/Council Plan)	x	
Equalities, Fairer Scotland Duty & Children/Young People's Rights & Wellbeing	x	
Environmental & Sustainability	x	
Data Protection		x



## 5.2 Finance

One off Costs – based on **Option 3** Construction costs £1.795m + Consultant and Project Management costs of £0.205m = £2.00m.

Cost Centre	Budget Heading	Budget Years	Proposed Spend this Report £000	Virement From	Other Comments
Capital Programme	Contingency	2023/25	1,500		Capital contingency, requires P&R Committee approval.
External Funding	CWSR Grant	2023/25	200		
External Funding	T&VC unallocated sum	2023/25	300		Resources freed up by use of Place Based Funding Grant
			<b>2,000</b>		

Annually Recurring Costs/ (Savings)

Cost Centre	Budget Heading	With Effect from	Annual Net Impact	Virement From (if Applicable)	Other Comments

## 5.3 Legal/Risk

Conveyancing will be required for the land use however it is anticipated that there will be no cost associated with the acquisition of the land. Traffic Regulation Orders may also be required.

## 5.4 Human Resources

None

## 5.5 Strategic

The proposed option would ensure access to a popular outdoor recreational facility for residents and visitors alike.

## 5.6 Equalities, Fairer Scotland Duty & Children/Young People

The project could restrict access to the Cornalees Centre or keep as same. The design is compliant with the Equality Act –suitable for all. An EqIA has yet to be completed, along with a monitoring and evaluation report once the scheme is completed.

### (a) Equalities

This report has been considered under the Corporate Equalities Impact Assessment (EqIA) process with the following outcome:

X	YES – Assessed as relevant, an EqlA is required and will be made available on the Inverclyde Council website: <a href="https://www.inverclyde.gov.uk/council-and-government/equality-impact-assessments">https://www.inverclyde.gov.uk/council-and-government/equality-impact-assessments</a>
	NO – This report does not introduce a new policy, function or strategy or recommend a substantive change to an existing policy, function or strategy. Therefore, assessed as not relevant and no EqlA is required.

(b) Fairer Scotland Duty

If this report affects or proposes any major strategic decision:-

Has there been active consideration of how this report's recommendations reduce inequalities of outcome?

	YES – A written statement showing how this report's recommendations reduce inequalities of outcome caused by socio-economic disadvantage has been completed.
X	NO – Assessed as not relevant under the Fairer Scotland Duty.

(c) Children and Young People

Has a Children's Rights and Wellbeing Impact Assessment been carried out?

	YES – Assessed as relevant and a CRWIA is required.
X	NO – Assessed as not relevant as this report does not involve a new policy, function or strategy or recommends a substantive change to an existing policy, function or strategy which will have an impact on children's rights.

5.7 **Environmental/Sustainability**

The realignment of the road associated with Option 3 involves some minimal tree removal. The reopening of the road will address the current significant traffic diversion route and the associated vehicle emissions impact.

Has a Strategic Environmental Assessment been carried out?

	YES – assessed as relevant and a Strategic Environmental Assessment is required.
X	NO – This report does not propose or seek approval for a plan, policy, programme, strategy or document which is like to have significant environmental effects, if implemented.

6.0 **CONSULTATION**

6.1 The Head of Legal, Democratic, Digital and Customer Services and the Chief Financial Officer have been consulted on this report. The CMT support the recommended option.

## **7.0 BACKGROUND PAPERS**

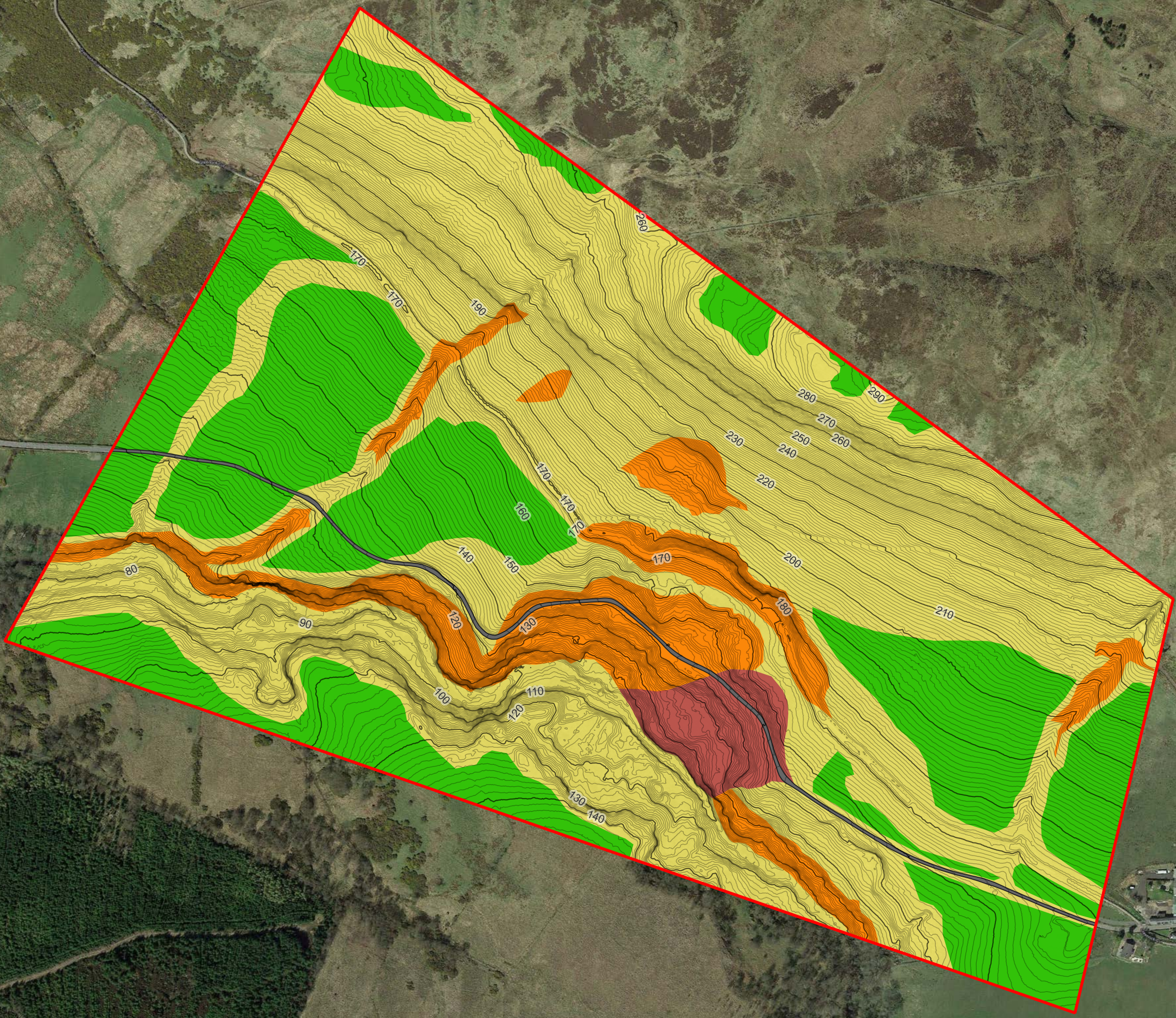
7.1 Dunrod Road Stability Assessment, Geotechnical Interpretative Report and Slope Repair Options – Sweco – 17<sup>th</sup> April 2023.

Dunrod Road, Geohazard Mapping Survey and Desk Study – Sweco - 17<sup>th</sup> May 2023.

Dunrod Road Realignment, Outline Feasibility Summary Report – Sweco – 26<sup>th</sup> May 2023



- Survey Area
- Dunrod Road
- Watercourses
- High Risk
- Medium Risk
- Negligible Risk
- Low Risk
- Contours (1m)
- Contours (10m)



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