Preliminary A469 Remedial Options - Scoring Mechanism
TT Project No. 784-A110489-19-2
Author: GR
Checked: BS
Approved: BS
Status: DRAFT (rev.1 post-CCBC Meeting)
Issued: 27th January 2022
Client: Caerphilly County Borough Council

CCBC Scoring:

Large beneficial +++
Moderate beneficial ++
Slight beneficial +
Neutral 0
Slight adverse -
Moderate adverse --
Large adverse ---

Option Number	Design Deliverability	Estimated Construction Cost*	Cost Benefit**	Land Purchase Required	Sustainable Drainage Approval Body	Enviro Impact Assessment Required	Road Closure Required	Traffic Management Requirements	Nuisance	Network Rail Constraints	Ecological Issues***	Stats Diversions Required***	Estimated Construction Timescale (Subject to Buildability Workshop)	Lead In Time for Construction	Specialist Contractors Required**** (availability)	Maintenance Regime	Impact on Future Maintenance	Design Life	Global FOS	Buildability (Subject to Buildability Workshop)	Aesthetic (for Planning)
1: Earthworks	No exceptional issues - good (geotechnical design process & certification)	£6.36m	TBC	Yes	SuDS practicable	Likely > 1 ha (TBC)	Yes - full closure	Road closure notice, signage, regular barriers / fencing (≈£5,000)	Increased dust from large scale digs, high traffic	None	Site of Importance for Nature Conservation, potential for protected species upslope and for bat roosts in trees - ECoW oversight and protective measures likely required (likely to take up larger protected area)	Elec, BT & water diversion required in road - opportunity to divert into new channel in highway construction, unidentified service and surface water duct to eastern end of slope may require diversion depending on earthworks extents	4	Anticipated short lead time	No	Normal embankment & pavement maintenance regime e.g. vegetation management	Anticipated low impact e.g. no road closures	Standard highways design life >120 years (CD 350 Rev 0 Table 7.1)	FOS 1.5	Large scale excavations may require significant supports / temporary works	No new structures, earthworks will blend into surrounding landscape
	+	--	TBC	---	0	-	---	+	--	0	-	--	---	++	+	+	++	0	0	--	+++
2A: Contiguous Piled Retaining Wall	Combines structural and geotechnical desings - AIP approvals & specialist contractor input required	£2.26m	TBC	No	SuDS practicable	No, < 1 ha (≈0.05ha)	No - keep one lane open during works (brief closures possible for plant mob & demob)	Two-way lights, heavy duty crash barrier segregation (≈£45,000)	Reduced noise from boring compared to pile driving, less vibrations acting on slope	None	Site of Importance for Nature Conservation, potential for protected species upslope and for bat roosts in trees - ECoW oversight and protective measures likely required	Unidentified service and surface water duct at eastern end of slope - may require diversion depending on wall position	1	Anticipated long lead time for large dia. pile rig	Yes - lead time TBC	High - Pile caps and associated VRS, bolts etc	In-situ monitoring e.g. inclinometers or load cells likely required, no road closures	Standard highways design life >120 years (CD 350 Rev 0 Table 7.1)	FOS 1.5	Heavy plant requiring craneage, working platform creation required on slope for piling rig	Visible retaining wall / pile cap above ground
	0	++	TBC	+++	0	+	+++	-	++	0	0	++	+++	-	-	--	-	0	0	---	-
2B: Sheet Piled Retaining Wall	Combines structural and geotechnical desings - AIP approvals & specialist contractor input required	£1.51m	TBC	No	SuDS practicable	No, < 1 ha (≈0.05ha)	No - keep one lane open during works (brief closures possible for plant mob & demob)	Two-way lights, heavy duty crash barrier segregation (≈£45,000)	Noise and dust generated by rig driving in sheets, vibrations on slope	None	Site of Importance for Nature Conservation, potential for protected species upslope and for bat roosts in trees - ECoW oversight and protective measures likely required	Unidentified service and surface water duct at eastern end of slope - may require diversion depending on wall position	1	Anticipated long lead time for large section sheet piles and rig	Yes - lead time TBC	High - Pile caps and associated VRS, bolts etc	In-situ monitoring e.g. inclinometers or load cells likely required, no road closures	Standard highways design life >120 years (CD 350 Rev 0 Table 7.1)	FOS 1.5	Heavy plant requiring craneage, working platform creation required on slope for piling rig	Visible retaining wall / pile cap above ground
	0	+++	TBC	+++	0	+	+++	-	--	0	0	++	+++	-	-	--	-	0	0	---	-
3: Soil Nailing	No exceptional issues - good (geotechnical design process & certification, specialist input required)	£9.08m	TBC	Yes	SuDS practicable	No, likely < 1 ha (TBC)	No - keep one lane open during works (brief closures possible for plant mob & demob)	Two-way lights, heavy duty crash barrier segregation (≈£45,000)	Reduced noise from boring compared to pile driving, reduced dust	None	Site of Importance for Nature Conservation, potential for protected species upslope and for bat roosts in trees - ECoW oversight and protective measures likely required (likely to take up larger protected area)	Unidentified service and surface water duct at eastern end of slope - positioning of nail groups may be able to avoid diversion	2	Moderate lead time	Yes - lead time TBC	Moderate - possible exposure of baskets through soil washout or animals	Least impacted by surroundings, no road closures	Standard highways design life >120 years (CD 350 Rev 0 Table 7.1)	FOS 1.5	Lighter plant, working platform creation required on slope for soil nail installation rig	Soil nails to be covered by geogrid basket filled with soil, will mostly blend into surroundings
	0	---	TBC	---	0	+	+++	-	++	0	-	++	+	+	-	+	+++	0	0	+	++
4A: Bored Piled Raft (or Controlled Modulus Columns [CMC] technique)	Design deliverability good but unusual methodology may require additional liaison with other parties (geotechnical design process & certification, specialist input required)	£1.96m	TBC	No	SuDS practicable	No, < 1 ha (≈0.36ha)	Yes - full closure	Road closure notice, signage, regular barriers / fencing (≈£5,000)	Reduced noise from boring methodology compared to pile driving	None	Existing highway adjoined on both sides by ecological issues outlined above - may still affect works e.g. ECoW & protective measures required	Elec, BT & water diversion required in road - opportunity to divert into new channel in highway construction	3	Moderate lead time	Yes - lead time TBC	Normal pavement maintenance regime	Partial road closures likely required for access	Standard highways design life >120 years (CD 350 Rev 0 Table 7.1)	FOS 1.5	Existing highway can form working platform for piling rig	'Hidden' below road - no visual impact
	-	+++	TBC	+++	0	+	---	+	+	0	0	--	--	+	-	++	+	0	0	++	+++
4B: Steel Tubular Piled Raft	Design deliverability good but unusual methodology may require additional liaison with other parties (geotechnical design process & certification, specialist input required)	£3.95m	TBC	No	SuDS practicable	No, < 1 ha (≈0.36ha)	Yes - full closure	Road closure notice, signage, regular barriers / fencing (≈£5,000)	Noise and dust generated by rig driving in pile tubes below existing road, no vibrations on slope	None	Existing highway adjoined on both sides by ecological issues outlined above - may still affect works e.g. ECoW & protective measures required	Elec, BT & water diversion required in road - opportunity to divert into new channel in highway construction	3	Moderate lead time for rig, potentially long lead time for piles	Yes - lead time TBC	Normal pavement maintenance regime	Partial road closures likely required for access	Standard highways design life >120 years (CD 350 Rev 0 Table 7.1)	FOS 1.5	Existing highway can form working platform for piling rig	'Hidden' below road - no visual impact
	-	-	TBC	+++	0	+	---	+	-	0	0	--	--	-	-	++	+	0	0	++	+++
4C: Pre-Cast Concrete Piled Raft	Design deliverability good but unusual methodology may require additional liaison with other parties (geotechnical design process & certification, specialist input required)	£3.80m	TBC	No	SuDS practicable	No, < 1 ha (≈0.36ha)	Yes - full closure	Road closure notice, signage, regular barriers / fencing (≈£5,000)	Noise and dust generated by rig driving in pile tubes below existing road, no vibrations on slope	None	Existing highway adjoined on both sides by ecological issues outlined above - may still affect works e.g. ECoW & protective measures required	Elec, BT & water diversion required in road - opportunity to divert into new channel in highway construction	3	Moderate lead time for rig, potentially long lead time for piles	Yes - lead time TBC	Normal pavement maintenance regime	Partial road closures likely required for access	Standard highways design life >120 years (CD 350 Rev 0 Table 7.1)	FOS 1.5	Existing highway can form working platform for piling rig	'Hidden' below road - no visual impact
	-	-	TBC	+++	0	+	---	+	-	0	0	--	--	-	-	++	+	0	0	++	+++

*Preliminary estimate only, purely for geotechnical stabilisation - see December 2020 presentation slides for details and exclusions e.g. land purchase, highway reinstatement & signage etc
**Not possible with preliminary estimate, CBA calculations to be carried out by specialist at later stage
***Scoring in relation to services and ecology TBC when proposed plan layout(s) developed and detailed Ecology survey findings made available
****If option to be persued, lead time to be confirmed with specialist contractors