

## Appendix IV: SEA Framework

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	Activities	Options in the alternative	Indicators	Assets	
1	Protect, enhance and manage sites, features and areas of archaeological, historical and cultural heritage importance.	Q1a	Will it preserve buildings of architectural or historic interest and, where necessary, encourage their conservation and renewal?	Number of Grade I and Grade II buildings in close proximity to the highways network	None (English Heritage)
			Number of Grade II and locally listed buildings at risk located in close proximity to the highways network	None (English Heritage)	
		Q1b	Will it preserve or enhance archaeological sites/remains?	Proportion of scheduled monuments at risk from damage, decay or loss	None (English Heritage)
				Number/proportion of highways works informed by archaeological provisions, including surveys	All (English Heritage)
		Q1c	Will it improve and broaden access to, understanding, and enjoyment of the historic environment?	Number of improvements to walking and cycling routes within conservation areas	
Q1d	Will it preserve or enhance the setting of cultural heritage assets?	Number/proportion of highways works seeking to enhance the setting of the historic environment			
2	Protect, enhance and manage the character and appearance of the landscape and townscape, maintaining and strengthening distinctiveness and its special qualities.	Q2a	Will it safeguard and enhance the character of the landscape and local distinctiveness and identity?	Application of detailed characterisation studies to highways works	
		Q2b	Will it safeguard and enhance the character of the townscape and local distinctiveness and identity?	Application of detailed characterisation studies to highways works	
		Q2c	Will it support the integrity of landscape quality in the Isle of Wight AONB?	Application of detailed characterisation studies to highways works	
		Q2d	Will it support the integrity of the two Heritage Coasts on the Isle of Wight?	Application of detailed characterisation studies to highways works	

	Activities	Decision alternatives	Indicators	Assets	
		Q2e	Will it preserve or enhance the setting of cultural heritage assets?	Number/proportion of highways works seeking to enhance the setting of the historic environment	
		Q2f	Will it ensure that highways works are of high quality and support local distinctiveness and a sense of place?	Number/proportion of highways works seeking to enhance the setting of the built environment	
		Q2g	Will it contribute to the Island's green infrastructure networks?	Length of walking and cycling network improved through PFI.	
				Number of native tree species planted as part of highway improvement works.	
		Q2h	Will it reduce light pollution?	Number of street lighting units replaced with low light polluting units	
		Q2i	Will it reduce light pollution?	Area of road network surface replaced with low noise surfacing.	
3	Protect, enhance and manage biodiversity and geodiversity, and the natural processes on which they depend.	Q3a	Will it lead to habitat creation, matching BAP priorities?	Area of new habitat creation reflecting Isle of Wight BAP priorities	Achieving the 2026 Regional biodiversity targets set out in the South East Plan
		Q3b	Will it maintain and enhance sites designated for their biodiversity interest and increase their area?	Number, area and condition of inter / national, regional and locally designated sites in appropriate management within or adjacent to highways network.	Achieving the 2026 Regional biodiversity targets set out in the South East Plan
		Q3c	Will it increase the area of sites designated for their geodiversity interest?	Number of new geological outcrops incorporated within highway improvement schemes.	
		Q3d	Will it maintain and enhance sites designated for their geodiversity interest?	Condition of geological SSSIs situated close to the highways network.	By 2010, to ensure that 95% of SSSIs are in favourable or recovering condition (target to directly reflect the national PSA target)
				Condition of Regionally Important Geological Sites situated close to the highways network.	
		Q3e	Will it link up areas of fragmented habitat?	Extent (and condition) of priority habitats.	
		Q3f	Will it increase awareness of biodiversity and geodiversity assets?	Number of accessibility improvements to LNRs and local sites (including geodiversity sites) through pedestrian and cycle route enhancements.	

	Activities	Decision alternatives	Impacts	Effects	
		Q3g	Will it lead to a loss of ancient woodland?	Permissions granted for any infrastructure improvements that would result in the loss or deterioration of ancient woodland	ero (Natural England)
		Q3h	Will it lead to effects on designated nature conservation sites from atmospheric pollution through acidification, eutrophication or exposure to pollutants?	Background pollution in relation to the critical load or level of habitats present	Critical load or level for habitats present is not exceeded
4	Maintain and improve the water quality of the Isle of Wight's rivers, coasts and groundwater.	Q4a	Will it lead to improved water quality?	of watercourses classified as good or very good biological and chemical quality	All inland and coastal water bodies to reach at least good status by 2015 (Water Framework Directive)
				of planning applications granted contrary to Environment Agency advice in relation to PPS23	ero (Environment agency)
		Q4b	Will it reduce the overall amount of diffuse pollution to water?	change in pollution incidents	
				of planning applications granted contrary to Environment Agency advice in relation to PPS23	ero (Environment agency)
	of projects incorporating sustainable drainage systems				
5	Conserve the Island's natural resources.	Q5a	Will it reduce the pollution risk to groundwater?	Number of abstraction points closed due to pollution incidents	
				Use of herbicides on road verges near to water abstraction points	
		Q5b	Will it increase water consumption?	Average domestic water consumption (l/head/day)	To stabilise and then reduce the per capita consumption of water to 135 litres per day by 2016 (SE Plan)
		Q5c	Will it safeguard the Island's minerals resources for future use?	Area of land with potential for minerals use sterilised	
		Q5d	Will it lead to reduced consumption of materials and resources?	of highways improvements utilising recycled and reused materials	

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		o p t i o n p o s a l			
		Q5e	Will it encourage the use of resource management plans?	Number of resource management plans initiated through the PFI	
6	Protect and enhance the Island's soils resource.	Q6a	Will it lead to loss of the highest quality agricultural land?	Area of Grade 1, 2 and 3a land lost through highways improvements.	
		Q6b	Will it reduce the overall amount of diffuse pollution to soil?	change in pollution incidents	
				of planning applications granted contrary to Environment Agency advice in relation to PPS23	ero (Environment agency)
				of projects incorporating sustainable drainage systems	
		Q6c	Will it maintain and enhance soil quality?	change in pollution incidents	
Q6d	Will it reduce land contamination?	of projects (by number and value) involving remediation of any kind			
7	Reduce air pollution and ensure continued improvements to air quality.	Q7a	Will it lead to improved air quality?	Number of exceedances of air quality objectives	To meet national Air Quality Standards
				Number and area of Air Quality Management Areas	To meet national Air Quality Standards
				No. of days when air pollution is moderate or high for NO <sub>2</sub> , SO <sub>2</sub> , O <sub>3</sub> , CO or	To meet national Air Quality Standards
8	Minimise the Island's contribution to climate change.	Q8a	Will it help limit greenhouse gas emissions from the highways network?	Proportion of electricity required for transport infrastructure produced from renewable resources	Produce 30 of energy from renewables by 2020 (The UK Low Carbon Transition Plan)
				Total energy use from highway network	
				Carbon footprint of highway network	
		Q8b	Will it improve the energy efficiency of street lighting?	Proportion of electricity required for street lighting produced from renewable resources	Produce 30 of energy from renewables by 2020 (The UK Low Carbon Transition Plan)
				Total energy use from street lighting	

	Activities	Decision alternatives	Indicators	Targets	
			Carbon footprint of street lighting		
		Q8c	Will it help limit greenhouse gas emissions originating from transport?	Number of improvements to walking and cycling networks of total emissions originating from transport	80% reduction of carbon dioxide emission by 2050 and a 26% to 32% reduction by 2020 (UK legally binding targets, Climate Change Act 2008)
9	Plan for the anticipated effects of climate change.	Q9a	Will it affect the risk of flooding?	Transport works supporting flood risk mitigation situated within a 1:100 flood risk area (Flood zone 3), including an allowance for climate change	zero (Environment agency)
				Number of applications approved where Environment Agency have sustained an objection on flood risk grounds	zero (Environment agency)
		Q9b	Will it lead to diversion of flows along a watercourse or the erection or construction of any structure, permanent or temporary, in, over or above a watercourse?	Number of schemes involving hydromorphological change which increase flood risk	
		Q9c	Will it reduce the risk of damage to property from storm events?	of projects incorporating sustainable drainage systems	
		Q9d	Will it facilitate landscape change for climate change adaptation (e.g. by protecting key landscape and biodiversity features)?	Amount of new greenspace created through highway network improvements	
				Number of schemes involving hydromorphological change with benefits on the ecological status of watercourses	
Q9e	Will it encourage the development of transport infrastructure prepared for the impacts of climate change?	Proportion of highway improvements with climate change adaptation measures to address the likely localised effects of climate change			
10	Reduce poverty and social exclusion and close the gap between the most deprived areas on the Isle of Wight and the rest of the Island.	Q10a	Will it reduce the need to travel?	Percentage of completed highway improvements located within a defined centre	
		Q10b	Will it encourage walking and cycling through improvements to	Proportion of schemes improving walking and cycle links	

	Activities	Decision alternatives	Indicators	Targets
		<p><b>Q10c</b> Will it encourage the use of public transport by enabling improvements to public transport infrastructure.</p> <p><b>Q10d</b> Will it enable communities to influence the decisions that affect their neighbourhoods and quality of life?</p> <p><b>Q10e</b> Will it improve the satisfaction of people with their neighbourhoods as a place to live?</p> <p><b>Q10f</b> Will it reduce crime and the fear of crime?</p>	<p>Proportion of schemes improving public transport infrastructure on the highways</p> <p>Number of journeys made by bus per annum</p> <p>Percentage of adults surveyed who feel they can influence decisions affecting their own local area</p> <p>Percentage of respondents very or fairly satisfied with their neighbourhood</p> <p>Number/proportion of highways works seeking to enhance the setting of the historic environment</p> <p>Crime Deprivation Index</p>	<p>By 2010 ensure 12% growth in bus and light rail use in England by 2010 (DfT)</p>
11	Safeguard and improve community health, safety and well being.	<p><b>Q11a</b> Will it improve road safety?</p> <p><b>Q11b</b> Will it improve air and noise pollution?</p> <p><b>Q11c</b> Will it encourage healthy and active lifestyles?</p> <p><b>Q11d</b> Does it consider the needs of the Island's growing elderly population?</p>	<p>Number of people killed or seriously injured (KSI) in road accidents</p> <p>Life expectancy at birth</p> <p>Standardised mortality rates</p> <p>Proportion of schemes improving walking and cycle links</p> <p>Percentage of people aged 16-74 who usually travel to work by bicycle or on foot</p> <p>Percentage of older people being supported intensively to live at home</p>	<p>By 2010, increase average life expectancy at birth in England to 78.6 years for men and 82.5 years for women (DoH)</p> <p>By 2010, reduce mortality from cancer by at least 20% in people under 75 (DoH)</p> <p>To increase participation by 1% year-on-year until 2020 to achieve target of 50% of population participants in 30 mins activity, three times a week by 2020 (The Framework for Sport in England)</p> <p>Increasing the proportion of older people being supported to live in their own home by 1% annually (DoH PSA)</p>

## **Appendix V: HLA for All Highways PFI Services**

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Role of activities					Activities						
					A	A	A	A	A	A	A
<b>Core Activities</b>											
Structural Maintenance, including:	0	0	0	0	0	0	0	0	0	0	0
- Carriageways	0	0	0	0	0	0	0	0	0	0	0
- Footways	0	0	0	0	0	0	0	0	0	0	0
- Kerbs	0	0	0	0	0	0	0	0	0	0	0
- Channels	0	0	0	0	0	0	0	0	0	0	0
- Road signs	0	/-	0	0	0	0	0	0	0	0	0
- Highway drainage schemes	0	0	0	/-	0	0	0	0	0	0	0
Routine Maintenance, including:	0	0	0	0	0	0	0	0	0	0	0
- Reactive repairs to carriageways	0	0	0	0	0	0	0	0	0	0	0
- Footways	0	0	0	0	0	0	0	0	0	0	0
- Urban footpaths	0	0	0	0	0	0	0	0	0	0	0
- Kerbs	0	0	0	0	0	0	0	0	0	0	0
- Channels	0	0	0	0	0	0	0	0	0	0	0
- Road signs	0	0	0	0	0	0	0	0	0	0	0
- Road markings	0	0	0	0	0	0	0	0	0	0	0
- Highway drainage	0	0	0	0	0	0	0	0	0	0	0
- Street furniture	0	0	0	0	0	0	0	0	0	0	0
- Barriers	0	0	0	0	0	0	0	0	0	0	0
- Tree replacements	0	0	0	0	0	0	0	0	0	0	0
Cyclical Maintenance, including:	0	0	0	0	0	0	0	0	0	0	0
- Amenity and highway verge cutting (on and off the highway)	0	0	0	0	0	0	0	0	0	0	0
- Weed control	0	0	/-	0	0	0	0	0	0	0	0
- Street cleansing	0	0	0	0	0	0	0	0	0	0	0



Role of utilities		Activities										
		A	A	A	A	A	A	A	A	A	A	
Utilities	- Ditching	0	0	/-	0	0	0	0	0	0	0	0
	- Quartering	0	0	0	0	0	/-	0	0	0	0	0
	- Gully cleansing	0	0	0	0	0	0	0	0	0	0	0
	Emergencies, including: - Winter maintenance	0	0	0	0	0	0	0	0	0	0	0
	- Emergency call-outs to fallen trees	0	0	0	0	0	0	0	0	0	0	0
	- Highway flooding, etc	0	0	0	0	0	0	0	0	0	0	0
	Enforcement, including: - Overhanging vegetation	0	0	0	0	0	0	0	0	0	0	0
	- Obstructions	0	0	0	0	0	0	0	0	0	0	0
	- Illegal footway crossings	0	0	0	0	0	0	0	0	0	0	0
	- Safety camera operation	0	0	0	0	0	0	0	0	0	0	0
	- Traffic Management Act and New Roads and Street Works Act obligations	0	0	0	0	0	0	0	0	0	0	0
	- Abandoned vehicles (excluding legal action through the Courts)	0	0	0	0	0	0	0	0	0	0	0
	Miscellaneous, including: - Dealing with customer reports and complaints	0	0	0	0	0	0	0	0	0	0	0
	- Third party insurance claims	0	0	0	0	0	0	0	0	0	0	0
	- Maintenance of Local Street Gazetteer	0	0	0	0	0	0	0	0	0	0	0
	- Safety camera infrastructure maintenance	0	0	0	0	0	0	0	0	0	0	
	Street Lighting, including: - Capital renewals of street lights and illuminated signs/bollards (on a one-for-one basis)	0	0	0	0	0	0	0		0	0	
	- Reactive maintenance	0	0	0	0	0	0	0	0	0	0	0
	Structures, including: - Bridge and retaining wall capital works (including bridge parapet strengthening)	0	0	0	0	/-	0	0	0	0		
	- Undertaking of structural inspections and assessments	0	0	0	0	0	0	0	0	0	0	0



Role of Initiatives		Activities										
		A	A	A	A	A	A	A	A	A	A	
Role of Initiatives	- Reactive repairs	0	0	0	0	0	0	0	0	0	0	
	Cycleways, including: - Capital and reactive repairs to cycleways, including trimming back of overhanging vegetation	0	0	0	0	0	0			0	0	
	CCTV, including: - Capital and reactive maintenance to infrastructures	0	0	0	0	0	0	0	0	0	0	
	- Operation of control room	0	0	0	0	0	0	0	0	0	0	
	Car Parking, including: - Capital and reactive maintenance to parking meters on street	0	0	0	0	0	0	0	0	0	0	
	<b>on Core Activities</b>											
	Car Parking, including: - Capital and reactive maintenance to off street car park infrastructure	0	0	0	0	0	0	0	0	0	0	0
	Design, including: - LTP Integrated Transport schemes	0	0	0	0	0	0	0	0	0	0	0
	Land Drainage, including: - Provision of advice	0	0	0	0	0	0	0	0	0	0	0
	- Enforcement role	0	0	0	0	0	0	0	0	0	0	0
Development Control, including: - Advice and comments on highway planning elements	0	0	0	0	0	0	0	0	0	0	0	
- Adoptions and street naming and numbering	0	0	0	0	0	0	0	0	0	0	0	
Miscellaneous, including: - Assistance with civil emergencies	0	0	0	0	0	0	0	0	0	0	0	
- Street gazetteer maintenance	0	0	0	0	0	0	0	0	0	0	0	
<b>Capital Assets</b>												
- DR1: Duver Road, St Helens	0	0	-	/-	0	/-	0	0	0			
- LRA1: Lower Road, Adgestone	0	/-	-	/-	0	0	0	0	0			
- WL 1: Westhill Lane, Armouth	0	0	-	0	0	0	0	0	0	0		
- VS1: Newport Road - Upper Ventnor Graben	0	0	-	0	0	0	0	0	0			
- VS2: Gills Cliff Road, Ventnor	0	0	0	0	0	0	0	0	0			
- VS3: Castle Court, Ventnor	0	0	0	0	0	0	0	0	0			

List of Initiatives		Activities										
		A	A	A	A	A	A	A	A	A	A	A
	- VS4: Whitwell Road, Ventnor	0	0	0	0	0	0	0	0	0	0	0
	- VS5A: Undercliff Drive, Ventnor - Area A, above Hunts Road	0	/-	-	/-	0	0	0	0	0	0	0
	- VS5B: Undercliff Drive, Ventnor - Area B, Woodlands	0	/-	-	/-	0	0	0	0	0	0	0
	- VS5C: Undercliff Drive, Ventnor - Area C, caravan park	/-	/-	-	/-	0	0	0	0	0	0	0
	- VS5D: Undercliff Drive, Ventnor - Area D, Mirables	0	/-	-	/-	0	0	0	0	0	0	0
	- VS6: Urban footpath south side of La Falaise Car Park, Ventnor	0	0	0	0	0	0	0	0	0	0	0
	- VS7: Urban footpath south side of Winter Gardens, Ventnor	0	0	0	0	0	0	0	0	0	0	0
	- MS1: Military Road, Brook Chine	/-	/-	-	/-	/-	/-	0	0	0	0	0
	- MS2: Military Road, Shippards Chine	/-	/-	-	/-	/-	/-	0	0	0	0	0
	- BS1: Blackgang, Old Access Road	0	0	0	0	0	0	0	0	0	0	0
	- BS2: Blackgang, The Terrace, Chale	0	0	0	0	0	0	0	0	0	0	0
	- BR: Bouldnor Road, Bournemouth	0	/-	-	/-	0	0	0	0	0	0	0
	-	A	A	A	A	A	A	A	A	A	A	A
Key to the Initial Assessment Matrix												
	Likely strong positive effect											
	Likely positive effect											
	0 Neutral/no effect											
	- Likely adverse effect											
	-- Likely strong adverse effect											
	/- Uncertain effects											

Isle of Wight aims					Achieves									
Achieves					A	A	A	A	A	A	A	A	A	A
Protect, enhance and manage sites, features and areas of archaeological, historical and cultural heritage importance.														
Protect, enhance and manage the character and appearance of the landscape and townscape, maintaining and strengthening distinctiveness and its special qualities.														
Protect, enhance and manage biodiversity and geodiversity, and the natural processes on which they depend.														
Maintain and improve the water quality of the Isle of Wight's rivers, coasts and groundwater.														
Conserve the Island's natural resources.														
Protect and enhance the Island's soils resource.														
Reduce air pollution and ensure continued improvements to air quality.														
Minimise the Island's contribution to climate change.														
Plan for the anticipated effects of climate change.														
Reduce poverty and social exclusion and close the gap between the most deprived areas on the Isle of Wight and the rest of the Island.														
Safeguard and improve community health, safety and well being.														

A	A	A	A	A	A	A	A	A	A	A	A
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## Appendix VI: Analysis of Alternatives - Vinci Ringway

Site Name:	Nearby Environmental Constraints
Duver Road, St Helens	<ul style="list-style-type: none"> <li>- Solent &amp; Southampton Water SPA/Ramsar (c.80m S)</li> <li>- Brading Marshes to St Helen's Ledges SSSI (adjacent S)</li> <li>- Flood Zone 3 (c.100m SE)</li> <li>- Adjacent to Conservation Area</li> <li>- Listed buildings are c. 100m away to the East</li> </ul>
<b>Option 1 (preferred solution)</b>	
<p><b>Solution Type:</b> - complete structural replacement with new piles supporting new slab</p> <ul style="list-style-type: none"> <li>- improved edge capacity, edge restraint</li> <li>- cosmetic (timber clad) facing to remaining void beneath deck</li> <li>- short section of sheet piling to low embankment to the west</li> </ul> <p><b>Land take:</b> none permanent but a section of c.1-2m wide vegetation clearance to south of road required to provide access for works</p> <p><b>Construction Method:</b> vibro piling (?), planning, mechanical pecking, hydraulic piling, auger drilling</p> <p><b>Timings:</b> outside of bird nesting season, but within early overwintering period: Oct-Nov 2012</p> <p><b>Longevity:</b> long term</p> <p><b>Identified Environmental impact and Mitigation:</b> - non-significant loss of vegetation</p> <ul style="list-style-type: none"> <li>- avoidance of mature trees, use of ground protection matting, natural timber cladding to improve appearance, installation of bird boxes and invertebrate habitat</li> <li>- works to be informed by badger, dormouse, and reptile surveys</li> </ul>	
<b>Option 2 (alternative)</b>	
<p><b>Solution Type:</b> spaced bored pile wall across slope, with structural infill to support existing slab (no slab replacement)</p> <p><b>Land take:</b> unclear; greater within SSSI than option 1</p> <p><b>Construction Method:</b> piling with larger rig than option 1</p> <p><b>Timings:</b> not given</p> <p><b>Longevity:</b> not given</p> <p><b>Identified Environmental impact and Mitigation:</b> identifies probable greater impact to SSSI (only) but not considered in detail</p> <p><b>Reason for exclusion:</b> safety, design requirements (wall would need to take full lateral ground thrust from infill), impact to SSSI (only)</p>	
Site Name:	Nearby Environmental Constraints
Lower Road, Adgestone	<ul style="list-style-type: none"> <li>- Alverstone Marshes East SINC (adjacent N&amp;S)</li> <li>- - Isle of Wight AONB (onsite)</li> <li>- - Adjacent to flood zone 3 (flood plain)</li> <li>- - Grade II Listed Building. 220m West</li> </ul>

### Option 1 (preferred solution)

**Solution Type:** - stabilise failed section to south/downslope using soil nailed gabion baskets

- Formalise and make permanent the single lane restriction with signage and edge restraint
- Allow upslope scar to re-vegetate naturally

**Land take:** scrub clearance (un-quantified) to facilitate installation of gabion baskets and soil nails

**Construction Method:** pneumatic drilling rig operated hydraulically from highway

**Timings:** outside of bird nesting season: Dec 18 – Feb 19

**Longevity:** long term

**Identified Environmental impact and Mitigation:** - removal of vegetation

- avoidance of mature trees, use of ground protection matting, installation of bird, bat, red squirrel & dormouse boxes, and invertebrate, reptile & amphibian habitat in gabions
- works to be informed by badger, dormouse, red squirrel and reptile surveys (but not bats)

### Option 2 (alternative)

**Solution Type:** embedded wall with very long piles into Ferruginous Sands

**Land take:** greater than option 1

**Construction Method:** not defined

**Timings:** not defined

**Longevity:** not defined

**Identified Environmental impact and Mitigation:** not defined

**Reason for exclusion:** affordability and value of re-opening 2 lane operation

### Option 3 (alternative)

**Solution Type:** gabion wall

**Land take:** greater than option 1

**Construction Method:** not defined

**Timings:** not defined

**Longevity:** not defined

**Identified Environmental impact and Mitigation:** not defined

**Reason for exclusion:** affordability and value of re-opening 2 lane operation

### Option 4 (alternative)

**Solution Type:** reinforced soil

**Land take:** greater than option 1

**Construction Method:** not defined

**Timings:** not defined

**Longevity:** not defined

**Identified Environmental impact and Mitigation:** not defined

**Reason for exclusion:** affordability and value of re-opening 2 lane operation

### Option 5 (alternative)

**Solution Type:** soil nails

**Land take:** greater than option 1

**Construction Method:** not defined

**Timings:** not defined

**Longevity:** not defined

**Identified Environmental impact and Mitigation:** not defined

**Reason for exclusion:** affordability and value of re-opening 2 lane operation

Site Name:	Nearby Environmental Constraints
Westhill Lane, Yarmouth (Norton)	<ul style="list-style-type: none"> <li>- Fort Victoria SINC (adjacent SW)</li> <li>- Solent Maritime SAC (c50m N)}</li> <li>- Fort Victoria Country Park TPO (bound road)</li> <li>- Grade II Listed Building (c.220m west): Fort Victoria</li> <li>- Flood zone 3 (c.40m N)</li> </ul>

### Option 1 (preferred solution)

**Solution Type:** - resurfacing of affected road, and subsequent pavement interventions where cracking persists

- Localised stabilisation measures on outside (N) of bend – either gabions or soil nails depending on future monitoring
- Adequate surface drainage

**Land take:** scrub clearance (c.1-2m) on north side of carriageway at eastern end of site

**Construction Method:** - initial resurfacing followed by patch repair as required

- Soil nailing (if required) using a hydraulically operated crawler mounted drilling rig
- vibro piling mentioned in envtl impact section (3.3.18) but not construction methods (3.5>>)

**Timings:** outside of bird nesting season: Jan-Feb 17

**Longevity:** short term

**Identified Environmental impact and Mitigation:** - non-significant loss of vegetation

- avoidance of mature trees and roots, use of ground protection matting, installation of bird, bat, red squirrel & dormouse boxes, and invertebrate habitat in gabions (if used)
- works to be informed by great crested newt, badger, dormouse, red squirrel and reptile surveys (but not bats)

### Option 2 (alternative)

**Solution Type:** NONE

**Land take:** n/a

**Construction Method:** n/a

**Timings:** n/a

**Longevity:** n/a

**Identified Environmental impact and Mitigation:** n/a

**Reason for exclusion:** n/a

Site Name:	Nearby Environmental Constraints
Newport Road, Upper Ventnor "Graben"	<ul style="list-style-type: none"> <li>- Ventnor Cemetery SINC (adjacent W)</li> <li>- Isle of Wight Downs SAC (c.180m NE)</li> <li>- Isle of Wight AONB (c.20m W)</li> <li>- Rew Down SSSI and LNR (c.210m SW)</li> <li>- Ventnor Down SSSI (c.280m NE)</li> <li>- Ventnor Conservation Area (c.120m S and E)</li> </ul>

	<ul style="list-style-type: none"> <li>- Grade II Listed Buildings from c.130m S&amp;E</li> <li>- Ground Water Source Protection Zone (on site)</li> </ul>
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**Option 1 (preferred solution)**

**Solution Type:** - pavement reconstruction with deep reinforced lightweight fill 'mattress'

- Planned interventions to reinstate alignment as settlement continues
- Plane & resurface outside graben, with follow-up fissure repairs
- Provide steps to assist descent across graben margin in old playground to east

**Land take:** none (within highway)

**Construction Method:** Break out existing carriageway and footway

- Excavate existing road formation
- Construct mattress system with lightweight material
- Replace carriageway and footway

**Timings:** Jan-Mar 16

**Longevity:** short term

**Identified Environmental impact and Mitigation:** none (no receptors)

**Option 2 (alternative)**

**Solution Type:** continued make-up of levels as at present

**Land take:** not defined

**Construction Method:** not defined

**Timings:** not defined

**Longevity:** not defined

**Identified Environmental impact and Mitigation:** not defined

**Reason for exclusion:** current process has reached limit of applicability; health&safety

**Option 3 (alternative)**

**Solution Type:** structural spanning solution e.g. three-point span on bearings, split-deck expansion span, or bailey bridge

**Land take:** not defined

**Construction Method:** not defined

**Timings:** not defined

**Longevity:** not defined

**Identified Environmental impact and Mitigation:** not defined

**Reason for exclusion:** limited longevity and economically unviable

Site Name:	Nearby Environmental Constraints
Gills Cliff Road, Ventnor	<ul style="list-style-type: none"> <li>- Ventnor Conservation Area (c.50m S and E)</li> <li>- Grade II Listed Building (c.130m E)</li> <li>- Rew Down SSSI (c.140m NW)</li> <li>- Rew Down LNR (c.140m NW)</li> <li>- Isle of Wight AONB (c.140m NW)</li> <li>- The Undercliff SINC (c. 210m W)</li> </ul>

**Option 1 (preferred solution)**

**Solution Type:** - plane and resurface with re-kerbing where necessary

- Repair fissures using geogrid reinforced granular bridging mattress as and when required
- Repair masonry of fissure at St Albans Steps

**Land take:** none (within highway)

**Construction Method:** planing and resurfacing; masonry

**Timings:** Oct 16

**Longevity:** short term

**Identified Environmental impact and Mitigation:** none (no receptors)

### Option 2 (alternative)

**Solution Type:** new pavement

**Land take:** not defined

**Construction Method:** not defined

**Timings:** not defined

**Longevity:** not defined

**Identified Environmental impact and Mitigation:** not defined

**Reason for exclusion:** cost; risk of uncovering previously benign features that now require remediation

#### Site Name:

#### Nearby Environmental Constraints

Castle Court,  
Ventnor

- The Undercliff SINC (adjacent E)
- Rew Down SSSI (c.180m N)
- Rew Down LNR (c.180m N)
- Isle of Wight AONB (c.110m S and c.140m N)
- Tennyson Heritage Coast (c.190m S)
- Registered Park/Garden (c.110m S): Ventnor Botanic Garden
- Rew Down LNR (c.140m N)

### Option 1 (preferred solution)

**Solution Type:** - plane and resurface at affected locations

- Provide new geogrid reinforced compliant pavement in Area A
- Provide new geogrid reinforced compliant pavement in Area B, plus adjustment to vertical alignment to smooth out bump
- Possible local reconstruction of drainage
- Allowance for return visits to correct further movements

**Land take:** none (within highway)

**Construction Method:** planing and resurfacing, geogrids, smoothing-out

**Timings:** Mar 18

**Longevity:** short term

**Identified Environmental impact and Mitigation:** none (no receptors)

### Option 2 (alternative)

**Solution Type:** replacement with rigid pavement

**Land take:** not defined

**Construction Method:** not defined

**Timings:** not defined

**Longevity:** not defined

**Identified Environmental impact and Mitigation:** not defined

**Reason for exclusion:** rigid construction could further concentrate differential movements at the boundaries of the rigid section

Site Name:	Nearby Environmental Constraints
Whitwell Road, Ventnor	<ul style="list-style-type: none"> <li>- Rew Down SSSI (c.30m N)</li> <li>- Rew Down LNR (c.45m N)</li> <li>- Watcombe Bottom SINC (onsite/adjacent W)</li> <li>- Undercliff SINC (onsite/adjacent S)</li> <li>- Isle of Wight AONB (adjacent W)</li> </ul>

**Option 1 (preferred solution)**

**Solution Type:** - Plane and resurface including re-kerbing where necessary

- Repair fissures using geogrid reinforced granular bridging mattress as and when they occur

**Land take:** none (within highway)

**Construction Method:** planing and resurfacing, geogrids

**Timings:** Mar 16

**Longevity:** short term

**Identified Environmental impact and Mitigation:** none (no receptors) – but birds potentially present in adjacent hedgerows and mature woodland

**Option 2 (alternative)**

**Solution Type:** reinforced compliant pavement

**Land take:** not defined

**Construction Method:** not defined

**Timings:** not defined

**Longevity:** not defined

**Identified Environmental impact and Mitigation:** not defined

**Reason for exclusion:** costs, and risk of encountering features that may otherwise not require treatment

Site Name:	Nearby Environmental Constraints
Undercliff Dr, above Hunts Rd (VS5A)	<ul style="list-style-type: none"> <li>- Compton Chine to Steephill Cove SSSI (adjacent N)</li> <li>- The Undercliff SINC (adjacent N at E and S at W)</li> <li>- Isle of Wight AONB (onsite)</li> <li>- South Wight Maritime SAC (c.500m S)</li> <li>- Tree Preservation Order (TPO) Area (either side of the road)</li> <li>- Tennyson Heritage Coast (c.300m S)</li> <li>- Grade II Listed Buildings (c.70m E)</li> </ul>

**Option 1 (preferred solution)**

**Solution Type:** - bored dowel piles along edge of top scarp slope

- Replace parts of existing pavement after stabilisation works
- No new deep drainage; surface drainage to be improved by plane and resurface

**Land take:** within highway and adjacent along southern border

**Construction Method:** planing; piles will be drilled using a hydraulically operated crawler mounted drilling rig, auger drilling and hammer

**Timings:** outside bird-nesting season: Oct 13 – Jan 14

**Longevity:** long term

**Identified Environmental impact and Mitigation:** - loss of vegetation

- avoidance of mature trees, use of ground protection matting, installation of bird, bat, red squirrel & dormouse boxes, and invertebrate/reptile habitat in gabions
- timed to avoid impacts to protected species at St Lawrence Undercliff WT site and mature wood
- works to be informed by badger, dormouse, red squirrel and reptile surveys (but not bats) and protected species licence applications if required

**Option 2 (alternative)**

**Solution Type:** - extension of dewatering wells from site B

**Land take:** not defined

**Construction Method:** not defined

**Timings:** not defined

**Longevity:** not defined

**Identified Environmental impact and Mitigation:** not defined

**Reason for exclusion:** would not benefit local scarp edge stability; value for money

Site Name:	Nearby Environmental Constraints
Undercliff Dr, Woodlands (VS5B)	<ul style="list-style-type: none"> <li>- The Undercliff SINC (adjacent S and c.50m to N)</li> <li>- Isle of Wight AONB (onsite)</li> <li>- Compton Chine to Steephill Cove SSSI (c.50m N)</li> <li>- Tennyson Heritage Coast (c.130m S)</li> <li>- South Wight Maritime SAC (c.420m S)</li> <li>- Tree Preservation Order (TPO) Area (bounds road)</li> </ul>

**Option 1 (preferred solution)**

**Solution Type:** - ground anchors at scarp edge

- Soil nails with flexible facing system on lower south scarp slope
- Adjust road vertical alignment
- Dewatering was considered, but discounted on the basis of cost effectiveness and risks associated with discharge

**Land take:** within highway plus c.2-4m strip to south

**Construction Method:** - stabilisation works are carried out along the line of the existing highway alignment and, if necessary can be carried out using plant positioned on the carriageway

- Ground anchor and soil nailing works: anchor bores will be drilled using a hydraulically operated, crawler mounted, highway based drilling rig – pneumatic hammer
- Plane/reprofile and resurface carriageway

**Timings:** outside of bird nesting season: Oct 14 – Jan 15

**Longevity:** long term

**Identified Environmental impact and Mitigation:** - non-significant vegetation removal

- Post construction re-planting with appropriate mix of species
- timed to avoid impacts to protected species and mature wood
- avoidance of mature trees, use of ground protection matting, installation of bird, bat, red squirrel & dormouse boxes, and invertebrate/reptile habitat in gabions
- works to be informed by badger, dormouse, red squirrel and reptile surveys (but not bats) and protected species licence applications if required

**Option 2 (alternative)**

**Solution Type:** - line of dewatering wells

**Land take:** not given

**Construction Method:** not given

**Timings:** not given

**Longevity:** not given

**Identified Environmental impact and Mitigation:** not given

**Reason for exclusion:** costs; risks/costs associated with disposal of discharge (considered in conjunction with extension to sites C and A – total estimated discharge 640-940m<sup>3</sup> per day for all three sites); limited opportunity for feasible outfall either close to site or at shoreline

### Option 3 (alternative)

**Solution Type:** - dewatering wells in combination with ground anchors

**Land take:** not given

**Construction Method:** not given

**Timings:** not given

**Longevity:** not given

**Identified Environmental impact and Mitigation:** not given

**Reason for exclusion:** see option 2

### Option 4 (alternative)

**Solution Type:** - dewatering wells in combination with ground anchors with lightweight fill construction

**Land take:** not given

**Construction Method:** not given

**Timings:** not given

**Longevity:** not given

**Identified Environmental impact and Mitigation:** not given

**Reason for exclusion:** see option 2

### Option 5 (alternative)

**Solution Type:** - counterfort drainage forward of Site B to control shallow sliding and loss of support of rotational blocks immediately beneath and forward of the site

**Land take:** not given

**Construction Method:** not given

**Timings:** not given

**Longevity:** not given

**Identified Environmental impact and Mitigation:** not given

**Reason for exclusion:** not given

### Site Name:

### Nearby Environmental Constraints

Undercliff Dr,  
 caravan park  
 (VS5C)

- Compton Chine to Steephill Cove SSSI (onsite)
- The Undercliff SINC (onsite)
- Isle of Wight AONB (onsite)
- Tennyson Heritage Coast (adjacent S)
- South Wight Maritime SAC (c.320m S)

### Option 1 (preferred solution)

**Solution Type:** - Ground anchors on seaward scarp slope in front of westbound carriageway tension crack

- Soil Nails with flexible facing system on local scarp slope in association with ground anchors
- New pavement in area damaged by cracking
- Extensive dewatering has been discounted partly because of its ecological impact in causing loss of springs or streams downslope and the effect on local flora and fauna

**Land take:** within highway plus c.2-4m strip to south

**Construction Method:** - stabilisation works to be carried out along line of existing highway alignment

- Ground anchor and soil nailing works, including cast ground beam: anchor bores will be drilled using a hydraulically operated, crawler mounted, highway based drilling rig – pneumatic hammer
- Plane/reprofile and resurface carriageway

**Timings:** outside of bird nesting season: Oct 15 – Jan 16

**Longevity:** long term

**Identified Environmental impact and Mitigation:** non-significant vegetation removal with NE permission.

- Post construction re-planting with appropriate mix of species.
- Works timed to avoid impacts to protected species and mature wood.
- Avoidance of mature trees, use of ground protection matting, installation of bird, bat, red squirrel & dormouse boxes, and invertebrate/reptile habitat in gabions
- Works to be informed by badger, dormouse, red squirrel and reptile surveys (but not bats) and protected species licence applications if required

### Option 2 (alternative)

**Solution Type:** anchored pile wall

**Land take:** not defined

**Construction Method:** not defined

**Timings:** not defined

**Longevity:** not defined

**Identified Environmental impact and Mitigation:** not defined

**Reason for exclusion:** use of piles supported entirely within a landslide complex is problematic as the forces are transmitted back into the unstable slope and these may be detrimental to stability of the supporting slope

### Option 3 (alternative)

**Solution Type:** - pile supported raft with soil nail scarp protection

**Land take:** not defined

**Construction Method:** not defined

**Timings:** not defined

**Longevity:** not defined

**Identified Environmental impact and Mitigation:** not defined

**Reason for exclusion:** structural solution would be costly, and there are tension cracks observed within the road further back which may affect the seaward pile support

### Option 4 (alternative)

**Solution Type:** - groundwater control - dewatering

**Land take:** not defined

**Construction Method:** not defined

**Timings:** not defined

**Longevity:** not defined

**Identified Environmental impact and Mitigation:** not defined

**Reason for exclusion:** costs and risks associated with construction costs and disposal of groundwater (see also VS5B)

**Option 5 (alternative)**

**Solution Type:** ground water control and ground anchored beam with soil nail scarp protection

**Land take:** not defined

**Construction Method:** not defined

**Timings:** not defined

**Longevity:** not defined

**Identified Environmental impact and Mitigation:** not defined

**Reason for exclusion:** costs and risks associated with construction costs and disposal of groundwater (see also VS5B)

**Site Name:**

**Nearby Environmental Constraints**

**Undercliff Dr,  
Mirables (VS5D)**

- Compton Chine to Steephill Cove SSSI (onsite)
- The Undercliff SINC (onsite)
- Isle of Wight AONB (onsite)
- Tennyson Heritage Coast (c.130m S)
- South Wight Maritime SAC (c.320m S)
- Tree Preservation Order (bounds road)

**Option 1 (preferred solution)**

**Solution Type:** - Reprofilng for 50 metres across the differential bump involving excavation and reconstruction of pavement foundation with a geogrid reinforced compliant road foundation

- Future resurfacing interventions to repair small scale crack damage
- Assess dry-stone wall and make good as appropriate maintaining current form and appearance
- Additional drainage measures are not proposed

**Land take:** none – within highway

**Construction Method:** - possible replacement of dry stone wall and reinforcement with gabion

- Plane out and reconstruct

**Timings:** outside of bird nesting season: Jan-Feb 16

**Longevity:** short term

**Identified Environmental impact and Mitigation:** - loss of dry stone wall and associated vegetation / invertebrate and reptile habitat – with NE permissions

- Replacement with similar material and possible reinforcement with gabions – which would provide additional invertebrate and reptile habitat

**Option 2 (alternative)**

**Solution Type:** - deep dewatering

**Land take:** not defined

**Construction Method:** not defined

**Timings:** not defined

**Longevity:** not defined

**Identified Environmental impact and Mitigation:** not defined

**Reason for exclusion:** achieves very limited/negligible improvement

**Option 3 (alternative)**

**Solution Type:** - ground anchors

**Land take:** not defined

**Construction Method:** not defined

**Timings:** not defined

**Longevity:** not defined

**Identified Environmental impact and Mitigation:** not defined

**Reason for exclusion:** ineffective due to the extremely high forces that are expected; the anchors would also have to be located off line forward of Site D

Site Name:	Nearby Environmental Constraints
La Falaise footpath, Ventnor	<ul style="list-style-type: none"> <li>- Ventnor Conservation Area (onsite)</li> <li>- The Undercliff SINC (adjacent S)</li> <li>- South Wight Maritime SAC (c.40m E&amp;S)</li> <li>- Grade II Listed Building (c.160m N)</li> </ul>

**Option 1 (preferred solution)**

**Solution Type:** - location 1: new drainage, new handrail

- Location 2: realignment further from cliff edge, new railings

**Land take:** location 1: none; location 2: c.2m earth cut-in to upslope

**Construction Method:** - install drainage and railing at location 1

- Excavate location 2, resurface

**Timings:** Oct 18

**Longevity:** long term

**Identified Environmental impact and Mitigation:** - non-significant loss of vegetation

- Replanting with locally native scrub
- Timing to reduce impacts to birds and wall lizards

**Option 2 (alternative)**

**Solution Type:** cliff stabilisation

**Land take:** -

**Construction Method:** -

**Timings:** -

**Longevity:** -

**Identified Environmental impact and Mitigation:** -

**Reason for exclusion:** cost

Site Name:	Nearby Environmental Constraints
Winter Gardens footpath, Ventnor	<ul style="list-style-type: none"> <li>- Ventnor Conservation Area (onsite)</li> <li>- Ventnor Eastern Cliffs SINC (adjacent S)</li> <li>- South Wight Maritime SAC (c.70m S)</li> </ul>

	<ul style="list-style-type: none"> <li>- Grade II Listed Building (c.135m NW)</li> <li>- The Cascade Historic Garden (adjacent)</li> </ul>
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**Option 1 (preferred solution)**

**Solution Type:** - pavement renewal where indicated as necessary by inspection and monitoring

**Land take:** none

**Construction Method:** resurfacing; replacement railing if required; additional net and pinning to cliff face if required

**Timings:** Nov 18

**Longevity:** short term

**Identified Environmental impact and Mitigation:** - none significant

- Works timed to avoid impacts to birds and wall lizards

**Option 2 (alternative)**

**Solution Type:** none

**Land take:** -

**Construction Method:** -

**Timings:** -

**Longevity:** -

**Identified Environmental impact and Mitigation:** -

**Reason for exclusion:** -

Site Name:	Nearby Environmental Constraints
Military Road, Brook Chine	<ul style="list-style-type: none"> <li>- South Wight Maritime SAC (adjacent S)</li> <li>- Compton Chine to Steephill Cove SSSI (onsite)</li> <li>- Compton Grange Marsh SINC (200m NW)</li> <li>- Brook Field SINC (c.10m N)</li> <li>- Sudmoor Dyke SINC (adjacent SE)</li> <li>- Isle of Wight AONB (onsite)</li> <li>- Tennyson Heritage Coast (onsite)</li> <li>- Brook Conservation Area (onsite)</li> <li>- Flood zone 3 (c. 20m at either end)</li> </ul>

**Option 1 (Preferred Solution)**

**Solution Type:** A temporary 16 metre clear span 2 way bridge deck installed in path of regressing landslide.

**Land take:** Bridge will be positioned along existing road, therefore land take of bridge will equate to bridge width X 16 metres.

**Construction Method:** The construction will be a temporary modular superstructure comprising of multiple side by side units. The superstructure will be founded on simple abutment beams on piles. The super-structure will be designed to be removable as required by any future plans for the maintenance of the Military Road. The sub-structure will be removed once exposed by coastal regression or development of the incised gully feature in this area.

**Timings:** 16 weeks between November 2013 and February 2014.

**Longevity:** Governed by cliff recession, but thought short-term

**Identified Environmental impact and Mitigation:** Works will be timed outside of the bird-nesting season to limit any ecological impact. The pile foundations will be spaced adequately to ensure that

groundwater flow beneath and around the foundation is not arrested. The piles will be formed using a technique that will minimise impact on fossil rich deposits. As the works area is within a SSSI all works will be completed under a detailed ecological method statement, which includes details on mitigation and working timeframes. Additional ecological surveys will be required along with full biological records, with the findings used to produce a suitable mitigation package.

### Option 2 (alternative)

**Solution Type:** - 12.5 metre clear span pile-supported (4 at each end to a depth of 15m) bridge deck pre-installed in path of regressing landslide, parapet to south side only

- Incorporation of effect of drainage recently installed by Isle of Wight Council

**Land take:** not clearly defined – highway plus surrounds (c.5m)??

**Construction Method:** - piling: hydraulically operated crawler mounted rig - ground movements will be carefully monitored during the piling operation due to the possible instability that may be caused

- Excavate and then construct capping beam/beam seat
- Install precast pre-stressed concrete beams
- Cast reinforced concrete deck on permanent formwork
- Install finishes: Waterproofing, surfacing, drainage, parapets and approach barriers

**Timings:** Nov 13 – Feb 14

**Longevity:** short term

**Identified Environmental impact and Mitigation:** - “no significant impact” to natural processes

- Works within a SSSI
- Additional protected species surveys including flora, invertebrates, reptiles
- Works to avoid bird nesting season
- Native planting
- “considered to meet all relevant legislation including the Habitat Regulations”
- Expectation that structures will need to be removed in 50yrs if still present

**Reason for exclusion:** Potential impact on natural coastal processes occurring / contravenes SMP.

### Option 3 (alternative)

**Solution Type:** 25-metre long anchored pile wall acting in conjunction with the existing newly installed drainage

**Land take:** not defined

**Construction Method:** not defined

**Timings:** not defined

**Longevity:** not defined

**Identified Environmental impact and Mitigation:** not defined

**Reason for exclusion:** not progressed as Natural England did not want the natural process of chine formation interfered with

### Option 4 (alternative)

**Solution Type:** - Stabilising the upper part of the slipping mass, by soil processing or mechanical intervention such as soil nailing

**Land take:** not defined

**Construction Method:** not defined

**Timings:** not defined

**Longevity:** not defined

**Identified Environmental impact and Mitigation:** not defined

**Reason for exclusion:** - requires significant activity on the National Trust owned land, is likely to be viewed as an unacceptable contravention of the Shoreline Management Plan, and would quickly lose viability in the event of suddenly increased erosion or slippage

**Option 5 (alternative)**

**Solution Type:** - managed retreat with road locally realigned inland

**Land take:** not defined

**Construction Method:** not defined

**Timings:** not defined

**Longevity:** not defined

**Identified Environmental impact and Mitigation:**

**Reason for exclusion:** - extent of negotiations with landowner (National Trust inalienable land)

Site Name:	Nearby Environmental Constraints
Military Road, Shippards Chine	<ul style="list-style-type: none"> <li>- South Wight Maritime SAC (onsite / adjacent S)</li> <li>- Compton Chine to Steephill Cove SSSI (onsite)</li> <li>- Isle of Wight AONB (onsite)</li> <li>- Tennyson Heritage Coast (onsite)</li> <li>- Compton Grange SINC (c.45m SE)</li> <li>Flood zone 3 (c. 20m at either end)</li> </ul>

**Option 1 (Preferred Solution)**

**Solution Type:** A temporary 16 metre clear span 2 way bridge deck installed in path of regressing landslide.

**Land take:** Bridge will be positioned parallel to existing road, therefore land take of bridge will equate to bridge width X 16 metres.

**Construction Method:** The construction will be a temporary modular superstructure comprising of multiple side by side units. The superstructure will be founded on simple abutment beams on piles. The super-structure will be designed to be removable as required by any future plans for the maintenance of the Military Road. The sub-structure will be removed once exposed by coastal regression or development of the incised gulley feature in this area.

**Timings:** When required, likely to be 2020, lasting 16 weeks.

**Longevity:** Governed by cliff recession, but thought short-term

**Identified Environmental impact and Mitigation:** Works will be timed outside of the bird-nesting season to limit any ecological impact. The pile foundations will be spaced adequately to ensure that groundwater flow beneath and around the foundation is not arrested. The piles will be formed using a technique that will minimise impact on fossil rich deposits. As the works area is within a SSSI all works will be completed under a detailed ecological method statement, which includes details on mitigation and working timeframes. Additional ecological surveys will be required along with full biological records, with the findings used to produce a suitable mitigation package.

**Option 2 (alternative)**

**Solution Type:** deep cut-off drain on landward side of road

**Land take:**

**Construction Method:** - discharge will be to existing outfall. The cut-off depth will be generally at least 3 metres but less than 5 metres deep due to construction and cost effectiveness

considerations. It will be long enough to intercept flows contributing to the development of the chine

**Timings:** Feb-Mar 14

**Longevity:** short term

**Identified Environmental impact and Mitigation:** - "no significant impact" to natural processes

- Works within a SSSI
- Additional protected species surveys including flora, invertebrates, reptiles
- Works to avoid bird nesting season
- Native planting
- "drainage system around Shippards Chine has already been heavily engineered, and as such the proposed drainage works, as part of this project, around the carriageway are not considered to significantly impact natural processes further"

**Reason for exclusion:** contravenes SMP

Site Name:	Nearby Environmental Constraints
Old Access Road, Blackgang Chine	<ul style="list-style-type: none"> <li>- South Wight Maritime SAC (c.65m SW)</li> <li>- Compton Chine to Steephill Cove SSSI (onsite)</li> <li>- Isle of Wight AONB (onsite)</li> <li>- Tennyson Heritage Coast (onsite)</li> <li>- Listed Building approx. 200 m north</li> </ul>

### Option 1 (preferred solution)

**Solution Type:** - continued maintenance

- Managed retreat
- Drainage investigation and upgrading if beneficial to reduce overspill

**Land take:** none

**Construction Method:** - More robust crash barrier at the end of the site is proposed for safety reasons

- Potential provision of 120m new highway drainage if existing deemed insufficient

**Timings:** Mar 19

**Longevity:** short term

**Identified Environmental impact and Mitigation:** none

### Option 2 (alternative)

**Solution Type:** - local stabilisation

**Land take:** -

**Construction Method:** -

**Timings:** -

**Longevity:** -

**Identified Environmental impact and Mitigation:** -

**Reason for exclusion:** cost and effectiveness

Site Name:	Nearby Environmental Constraints
The Terrace, Chale	<ul style="list-style-type: none"> <li>- South Wight Maritime SAC (adjacent S)</li> <li>- Compton Chine to Steephill Cove SSSI (onsite)</li> <li>- Isle of Wight AONB (onsite)</li> <li>- Tennyson Heritage Coast (onsite)]</li> </ul>

**Option 1 (preferred solution)**

**Solution Type:** - pump replacement and ongoing maintenance of pumped drainage

- Upgrading of barrier

**Land take:** none

**Construction Method:** - installation of new pump and barrier

**Timings:** Apr 14

**Longevity:** short term

**Identified Environmental impact and Mitigation:** - none

**Option 2 (alternative)**

**Solution Type:** none

**Land take:** -

**Construction Method:** -

**Timings:** -

**Longevity:** -

**Identified Environmental impact and Mitigation:** -

**Reason for exclusion:** -

Site Name:	Nearby Environmental Constraints
Bouldnor Road, Yarmouth	<ul style="list-style-type: none"> <li>- Solent &amp; Southampton Water SPA/Ramsar (c. 80mSW)</li> <li>- Yar Estuary SSSI (c. 80mSW)</li> <li>- Isle of Wight AONB (adjacent N&amp;W)</li> <li>- Solent Maritime SAC (c.35m N)</li> <li>- Adjacent to flood risk zone 2 (south of a section of road)</li> <li>- Conservation area (approx. 200m west)</li> <li>- Thorley Meadows SINC (c.230 S)</li> <li>- Thorley Copse SINC (c.280m S)</li> <li>- Listed Buildings (approx. 300m west)</li> </ul>

**Option 1 (preferred solution)**

**Solution Type:** - heavy sheet pile wall over majority of length (excluding wooded area)

- Soil nails to embankment west of wooded area
- Carriageway replacement with reinforced pavement
- Refurbishment and replacement of drainage as required

**Land take:** - c.2m strip on north side of road to install sheet piling

**Construction Method:** - Sheet pile (silent) from car park to end of wooded area

- Follow sheet piling with capping beam construction
- Soil nail grassed slope at west end of site and replace topsoil

Phase 2

- Starting at east end of site, break out footway and put in new kerb lines
- planing/breaking out of eastbound carriageway, installing drainage along the way
- Resurface and tie in under night time full road closures
- Commence planing/breaking out of westbound carriageway, installing drainage along the way
- Resurface and tie in under night time road closures

**Timings:** - piling and soil nailing: Oct 13 – Mar 14

- Carriageway reconstruction: Oct 14 – Dec 14

**Longevity:** long term

**Identified Environmental impact and Mitigation:** - removal of non-significant vegetation

- Disturbance to nesting and overwintering birds
- Works timed over 2yrs to avoid nesting "and overwintering birds"??, use of "silent" vibro piling, avoidance of mature trees, native planting, bird boxes
- Additional survey: invasive plants, seasonal bird assessment
- Disturbance impacts still possible from soil nailing??

### Option 2 (alternative)

**Solution Type:** - Stabilisation of the seaward facing slope with soil nails and counterfort drainage to meet current design standards

**Land take:** not defined

**Construction Method:** not defined

**Timings:** not defined

**Longevity:** not defined

**Identified Environmental impact and Mitigation:** not defined

**Reason for exclusion:** judged to successfully rectify issue, but works extensive, logistically complex (many plant movements), too disruptive to ecology and Japanese knotweed; preferred option is also more economic and less disruptive to adjacent residences

### Option 3 (alternative)

**Solution Type:** - Stabilisation of the seaward facing slope with soil nails to an improvement percentage

**Land take:** not defined

**Construction Method:** not defined

**Timings:** not defined

**Identified Environmental impact and Mitigation:** not defined

**Reason for exclusion:** judged to successfully rectify issue, but works extensive, logistically complex (many plant movements), too disruptive to ecology and Japanese knotweed; preferred option is also more economic and less disruptive to adjacent residences

### Option 4 (alternative) (as Option 1 but different highway construction)

**Solution Type:** - Stabilisation of the seaward facing slope with soil nails to an improvement percentage and provision of an embedded solution to retain the woodland vegetation on the seaward facing slope

**Land take:** not defined

**Construction Method:** not defined

**Timings:** not defined

**Longevity:** not defined

**Identified Environmental impact and Mitigation:** not defined

**Reason for exclusion:** judged to successfully rectify issue, but works extensive, logistically complex (many plant movements), too disruptive to ecology and Japanese knotweed; preferred option is also more economic and less disruptive to adjacent residences

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