Appendix G

Road Drainage and the Water Environment

Summary of Potential Effects on the Water Environment (from HA 216/06 Table 5.2)

Description	Feature	Attributes/	Quality	Importance	Magnitude of	Significance of	Mitigation	Magnitude of	Significance of
of study		Services			impact without	impact without		impact with	impact with
area					mitigation	mitigation		mitigation	mitigation
A77 Maybole	Unnamed	Dilution and	There are no	<u>Medium</u>	<u>Negligible</u>	<u>Neutral</u>	Not Required		
bypass route	watercourse at	removal of waste	known consented	Medium quality	The proposed	In line with			
options	Broomknowes	products	discharges to this	and rarity on a	scheme is likely to	HA216/06			
(northern	tie-in		watercourse within	local scale.	Have negligible	guidelines.			
corridor)			the area of the		effect on the ability				
	BLUE AND RED		proposed works.		of the watercourse				
	ROUTE				to receive other				
	OPTIONS				discharges				
		Biodiversity	Watercourse	<u>High</u>	Moderate Adverse	Moderate/Large	Adherence to best	<u>Negligible</u>	<u>Neutral</u>
			unclassified.	High quality and	The proposed	In line with	practice during		
			Status assumed to	rarity on local	scheme could	HA216/06	construction.		
			be good.	scale.	have an impact on	guidelines.	Flow attenuation		
					water quality and		and pollutant		
					thus biodiversity of		removal through		
					the watercourse.		provision of SUDS		
							measures during		
							operation		

Description of study area	Feature	Attributes/ Services	Quality	Importance	Magnitude of impact without mitigation	Significance of impact without mitigation	Mitigation	Magnitude of impact with mitigation	Significance of impact with mitigation
		Conveyancing of flow	Minor watercourse with no known flood risk.	Low Low quality and rarity on a local scale.	Minor Adverse Local impacts on flows in the watercourse and on potential flood risk	Neutral In line with HA216/06 guidelines.	Appropriate culvert design. Flow attenuation through provision of SUDS measures	<u>Negligible</u>	<u>Neutral</u>
	Unnamed watercourse at Ladycross Wood BLUE ROUTE OPTION	Dilution and removal of waste products	There are no known consented discharges to this watercourse within the area of the proposed works.	Medium Medium quality and rarity on a local scale.	Negligible The proposed scheme is likely to Have negligible effect on the ability of the watercourse to receive other discharges	Neutral In line with HA216/06 guidelines.	Not Required		

Description	Feature	Attributes/	Quality	Importance	Magnitude of	Significance of	Mitigation	Magnitude of	Significance of
of study		Services			impact without	impact without		impact with	impact with
area					mitigation	mitigation		mitigation	mitigation
		Biodiversity	Watercourse	<u>High</u>	Moderate Adverse	Moderate/Large	Adherence to best	<u>Negligible</u>	<u>Neutral</u>
			unclassified.	High quality and	The proposed	In line with	practice during		
			Status assumed to	rarity on local	scheme could	HA216/06	construction.		
			be good.	scale.	have an impact on	guidelines.	Flow attenuation		
					water quality and		and pollutant		
					thus biodiversity of		removal through		
					the watercourse.		provision of SUDS		
							measures during		
							operation		
		Conveyancing of	Minor watercourse	Low	Moderate Adverse	Slight	Appropriate culvert	Minor Adverse	Neutral
		flow	with no known	Low quality and	Realignment of	In line with	design and		
			flood risk.	rarity on a local	channel. Local	HA216/06	sensitive		
				scale.	impacts on	guidelines.	realignment of		
					watercourse,		watercourse. Flow		
					flows and on		attenuation		
					potential flood risk		through provision		
							of SUDS		
							measures		

Description	Feature	Attributes/	Quality	Importance	Magnitude of	Significance of	Mitigation	Magnitude of	Significance of
of study		Services			impact without	impact without		impact with	impact with
area					mitigation	mitigation		mitigation	mitigation
	Brockloch Burn,	Dilution and	There are no	<u>Medium</u>	<u>Negligible</u>	<u>Neutral</u>	Not Required		
	East Brockloch	removal of waste	known consented	Medium quality	The proposed	In line with			
	to Slateford	products	discharges to this	and rarity on a	scheme is likely to	HA216/06			
	Bridge		watercourse within	local scale.	Have negligible	guidelines.			
			the area of the		effect on the ability				
	BLUE ROUTE		proposed works.		of the watercourse				
	OPTION				to receive other				
					discharges				
		Biodiversity	Watercourse	<u>High</u>	Moderate Adverse	Moderate/Large	Adherence to best	<u>Negligible</u>	<u>Neutral</u>
			unclassified.	High quality and	The proposed	In line with	practice during		
			Status assumed to	rarity on local	scheme could	HA216/06	construction.		
			be good.	scale.	have an impact on	guidelines.	Flow attenuation		
					water quality and		and pollutant		
					thus biodiversity of		removal through		
					the watercourse.		provision of SUDS		
							measures during		
							operation		

Description of study area	Feature	Attributes/ Services	Quality	Importance	Magnitude of impact without mitigation	Significance of impact without mitigation	Mitigation	Magnitude of impact with mitigation	Significance of impact with mitigation
		Conveyancing of flow	Minor watercourse with limited extent	Medium Medium quality	Minor Adverse Local impacts on	Slight In line with	Flow attenuation through provision	<u>Negligible</u>	<u>Neutral</u>
		now	at risk of flooding	and rarity on a	flows in the	HA216/06	of SUDS		
				local scale.	watercourse and on potential flood risk	guidelines.	measures		
	Unnamed watercourse flowing into	Dilution and removal of waste products	There are no known consented discharges to this	Medium Medium quality and rarity on a	Negligible The proposed scheme is likely to	Neutral In line with HA216/06	Not Required		
	Black Glen		watercourse within the area of the	local scale.	Have negligible effect on the ability	guidelines.			
	YELLOW AND RED ROUTE		proposed works.		of the watercourse to receive other				
	OPTIONS				discharges				

Description of study area	Feature	Attributes/ Services	Quality	Importance	Magnitude of impact without mitigation	Significance of impact without mitigation	Mitigation	Magnitude of impact with mitigation	Significance of impact with mitigation
		Biodiversity	Watercourse unclassified. Status assumed to be good.	High High quality and rarity on local scale.	Moderate Adverse The proposed scheme could have an impact on water quality and thus biodiversity of the watercourse.	Moderate/Large In line with HA216/06 guidelines.	Adherence to best practice during construction. Flow attenuation and pollutant removal through provision of SUDS measures during operation	<u>Negligible</u>	Neutral
		Conveyancing of flow	Minor watercourse with no known flood risk.	Low Low quality and rarity on a local scale.	Minor Adverse Local impacts on flows in the watercourse and on potential flood risk	Neutral In line with HA216/06 guidelines.	Appropriate culvert design. Flow attenuation through provision of SUDS measures	<u>Negligible</u>	<u>Neutral</u>

Description of study area	Feature	Attributes/ Services	Quality	Importance	Magnitude of impact without mitigation	Significance of impact without mitigation	Mitigation	Magnitude of impact with mitigation	Significance of impact with mitigation
	Unnamed watercourse at Nether Culzean YELLOW AND RED ROUTE OPTIONS	Dilution and removal of waste products	There are no known consented discharges to this watercourse within the area of the proposed works.	Medium Medium quality and rarity on a local scale.	Negligible The proposed scheme is likely to Have negligible effect on the ability of the watercourse to receive other discharges	Neutral In line with HA216/06 guidelines.	Not Required		
		Biodiversity	Watercourse unclassified. Status assumed to be good.	High quality and rarity on local scale.	Moderate Adverse The proposed scheme could have an impact on water quality and thus biodiversity of the watercourse.	Moderate/Large In line with HA216/06 guidelines.	Adherence to best practice during construction. Flow attenuation and pollutant removal through provision of SUDS measures during operation	<u>Negligible</u>	<u>Neutral</u>

Description of study area	Feature	Attributes/ Services	Quality	Importance	Magnitude of impact without mitigation	Significance of impact without mitigation	Mitigation	Magnitude of impact with mitigation	Significance of impact with mitigation
		Conveyancing of flow	Minor watercourse with no known flood risk.	Low Low quality and rarity on a local scale.	Minor Adverse Local impacts on flows in the watercourse and on potential flood risk	Neutral In line with HA216/06 guidelines.	Appropriate culvert design. Flow attenuation through provision of SUDS measures	<u>Negligible</u>	Neutral
	Brockloch Burn at Smithson tie- in ALL ROUTE OPTIONS	Dilution and removal of waste products	There are no known consented discharges to this watercourse within the area of the proposed works.	Medium Medium quality and rarity on a local scale.	Negligible The proposed scheme is likely to Have negligible effect on the ability of the watercourse to receive other discharges	Neutral In line with HA216/06 guidelines.	Not Required		

Description of study area	Feature	Attributes/ Services	Quality	Importance	Magnitude of impact without mitigation	Significance of impact without mitigation	Mitigation	Magnitude of impact with mitigation	Significance of impact with mitigation
		Biodiversity	Watercourse unclassified. Status assumed to be good.	High High quality and rarity on local scale.	Moderate Adverse The proposed scheme could have an impact on water quality and thus biodiversity of the watercourse.	Moderate/Large In line with HA216/06 guidelines.	Adherence to best practice during construction. Flow attenuation and pollutant removal through provision of SUDS measures during operation	<u>Negligible</u>	<u>Neutral</u>
		Conveyancing of flow	Minor watercourse with no known flood risk.	Medium Medium quality and rarity on a local scale.	Minor Adverse Local impacts on flows in the watercourse and on potential flood risk	Slight In line with HA216/06 guidelines.	Appropriate culvert design. Flow attenuation through provision of SUDS measures	<u>Negligible</u>	Neutral



Description of study	Feature	Attributes/ Services	Quality	Importance	Magnitude of impact without	Significance of impact without	Mitigation	Magnitude of impact with	Significance of impact with
or study		Services				·			
area					mitigation	mitigation		mitigation	mitigation
	Groundwater	Base flow to	Groundwater	Low	<u>Minor</u>	<u>Neutral</u>	Not required		
	ALL ROUTE	watercourses	vulnerability	In line with	Potential local	In line with			
	OPTIONS			HA216/06	impact on	HA216/06			
				guidance	groundwater, but	guidelines.			
					non-aquifer. Risk				
					of pollution from				
					accidental				
					spillages low.				

Reference Source(s): Data obtained directly from Scottish Environment Protection Agency, South Ayrshire Council and BGS groundwater vulnerability map of Scotland.

Qualitative Comments: The water environment has high impor

The water environment has high importance in terms of biodiversity, a medium importance in terms of dilution and removal of waste products, a medium or low importance in terms of conveyancing of flow and a low importance in terms of groundwater. It is predicted that, without mitigation, the scheme will have a negligible impact of neutral significance on dilution and removal of waste products and a minor impact of neutral significance on groundwater for all options. There are, however, predicted moderate adverse impacts of moderate to large significance on the biodiversity on all watercourses affected by the three route options. Without mitigation there is also a moderate adverse impact of slight significance on conveyancing of flow predicted for the unnamed watercourse at Ladycross Wood (Blue option), the Brockloch Burn upstream of Slatefored Bridge (Blue option) and the Brockloch Burn at the Smithstone tie-



in (All options). With mitigation all potential impacts can be reduced to negligible with the exception of the unnamed watercourse at Ladycross Wood where a residual minor adverse impact remains as a result of the realignment required for the Blue option.

Overall Assessment Score:

Negligible Impact depending on mitigation measures.