

Appendix D

Risk Register

Risks, RAG ratings and mitigation

Version dated 23 August 2011

Risk ID	Context		Risk Description			Response Action Plan	Post	Data for Quantitative Analysis (Cost £000)				Assumptions (for basis of cost and time assessment)
	Risk Category	Risk Status	Risk Owner	Source of Risk (Cause)	Consequence on Project (Effect)	Specific Action	Risk Priority	Probability (%)	Least Cost (£k)	Most Likely Cost (£k)	Max Cost (£k)	
Stage 1A - Risks Arising during Preparation and Submission of Bid to BAFB (and applicable to subsequent stages until closed)												
A01	Management	Open	Colin Medus	Shortage of Council Funding for WP1 prep/design costs	Lack of funding for consultant/specialist support = failure or delay to bid and project	Reports to the North Somerset Executive on major scheme funding to prioritise funding demands within the programme.	L	10%	£12	£50	£150	Risk now very low for LC
A02	Management	Open	Konrad Lansdown	Non-approval of detailed design by the Highways Agency	Re-design of scheme, Delay and increased costs.	Liaise with HA over specific design standards and requirements. Build into design at an early stage.	M	25%	£52	£155	£310	Assumed 1 month, 3 month, 6 month delay respectively. Assumed an extra £2k / £5k / £10k of NSC project management and consultant time respectively.
A03	Management	Open	Alex Fear	Poor performance of Transport Term Consultants (Halcrow and Atkins)	Bids do not meet DfT criteria = delay to bid, threat to RFA funding and project, additional contribution required from council or re-bid required	Halcrow contract manager working one day per week in H&T. Also additional MSBC-experienced Halcrow staff brought into the project team	L	10%	£12	£50	£150	Assumed 1 week, 1 month, 3 month delay respectively. No additional payments to the Term Consultant(s) would be made
A04	Management	Open	Colin Medus	Inadequate project management effort/attention provided to complex project - DELAY and PM COST	Potentially results in slower pace of delivery & poorer quality results, could result in rejection by DfT.	Regular review of project management resources, control and roles/responsibilities	L	10%	£52	£155	£310	Assumed 1 month, 3 month, 6 month delay respectively. Assumed an extra £2k / £5k / £10k of NSC project management time respectively.
A05	Management	Open	Alex Fear	Stakeholder engagement raises issues that need addressing - DELAY and PM COST (excluding statutory, members, public as elsewhere)	Delay as scheme elements are re-structured and additional PM cost	Continue engagement with stakeholders and other suitable fora	L	10%	£51	£152	£303	Assumed 1 month, 3 month, 6 month delay respectively. No indication from current consultation that significant issues will arise, although still a risk ref request for a bus station and other unexpected objections. Objections to Orders covered under 'C06'. Assumed an extra £1k / £2k / £3k of NSC project management time respectively.
A06	Management	Open	Steve Thorne	Bid not accepted by DfT (not a compliant bid or additional queries) - PM COST	Additional PM cost	Continue current approach of following guidance and keeping DfT informed. Work with other West of England Project Managers to ensure all necessary info included in BAFB	L	20%	£10	£25	£50	Assumed an extra £10k / £25k / £50k of NSC project management and consultant time respectively.
A07	Management	Open	Steve Thorne	Change in transport legislation / policy or approach by DfT or other Government Departments	Delay to bids and additional resources to meet changed requirement	Review implications as new requirements become evident. Submit before Apr 09 to avoid mandatory changes	L	10%	£10	£25	£50	Assumed an extra £10k / £25k / £50k of NSC project management and consultant time respectively.
A08	Political	Open	Colin Medus	Lack of Member support for the project - DELAY and PM COST	Delay to bid and project and additional PM cost	Ongoing and regular dialogue with the Executive Member. Workshop with all Members invited.	L	10%	£13	£52	£153	Assumed 1 week / 1 month / 3 month delay respectively. Assumed an extra £1k / £2k / £3k of NSC project management time respectively.
A09	Consultation	Open	Paul Baker	Not obtaining support/consents from public transport stakeholders (i.e. Network Rail, public transport operators) - DELAY and PM COST	Delay to bid and project and additional PM cost	Continue dialogue and seek written support from public transport stakeholders	L	10%	£55	£160	£315	Assumed 1 month, 3 month, 6 month delay respectively. Assumed an extra £5k / £10k / £15k of NSC project management and consultant time respectively.
A10	Consultation	Open	Alex Fear	Not obtaining support/consent from statutory consultees (e.g. HA, EA, EN) - DELAY and PM COST	Delay to bid and project and additional PM cost	Contact all statutory consultees and seek written support for the bids. Continue meetings with HA	M	25%	£52	£155	£310	Assumed 1 month, 3 month, 6 month delay respectively. Assumed an extra £2k / £5k / £10k of NSC project management and consultant time respectively.
A11	Consultation	Open	Jane Owen	Lack of public / media support for project - DELAY and PM COST	Delay to bid and project and additional PM cost	Further bespoke public consultation on Package elements as the project progresses.	L	10%	£17	£60	£165	Assumed 1 week / 1 month / 3 month delay respectively. Assumed an extra £5k / £10k / £15k of NSC project management time respectively.
A12	Political	Open	Colin Medus	Changes of the Package composition and/or individual scheme elements - DELAY and PM COST	Delay to bid and project and additional PM cost	Detail design and costing of Package components.	L	10%	£22	£75	£200	Assumed 1 week / 1 month / 3 month delay respectively. Assumed an extra £10k / £25k / 50k of NSC project management and consultant time respectively.
Stage 1B - Risks Arising after Submission of BAFB (and applicable to subsequent stages until closed)												
B01	Management	Open	Alex Fear	Issues raised during Project Assurance Review - DELAY and PM COST	Threat of project failure or delay	Proactive project management to mitigate potential areas of concern	L	10%	£13	£26	£53	Assumed 1 week / 2 week / 1 month delay respectively. Assumed an extra £1k / £2k / £3k of NSC project management time respectively. 10% only for LC Option
Stage 2 - Risks Arising after BAFB and before Full Approval												
C01	Technical	Open	Alex Fear	Unreliable scheme construction cost estimates (other than inflation)	Additional work on cost estimates = Delay to bids, additional resource, additional contribution required from council or re-bid required	Work up scheme details - to ensure that the estimates are as accurate as possible, use QA review positively.	L	10%	£100	£250	£500	Construction costs estimates now checked independently. Lowered to 10%. Additional construction costs only. No delay or additional PM costs not already covered elsewhere
C02	Variability	Open	Colin Medus	Cost inflation either lower or higher than anticipated	Project cost may exceed Quantified Cost Estimate (QCE) - NSC liability	Ensure robust allowance for possible inflation in cost estimates	H	25%	-£141	£0	£4,055	See notes - test 10
C03	Environmental	Open	Joseph Burnell	Finding protected species on sites (newts, badgers, bats etc) found after detailed enviro surveys as part of the EIA - PM and MITIGATING MEASURE COST only	Objection from statutory environmental bodies, requirement for mitigation measures	Surveys to take place spring 2010	L	25%	£11	£52	£103	No delay cost as surveys taking place Spring 2010. Assumed an extra £1k / £2k / £3k of NSC project management time respectively. Assumed cost of mitigation measures to be £10k / £50k / £100k respectively.
C04	Environmental	Open	Konrad Lansdown	Late installation of Badger exclusion fencing	Objection from statutory environmental bodies, requirement for mitigation measures	Surveys to take place spring 2011	L	25%	£11	£52	£103	
C05	Procurement	Open	Konrad Lansdown	Late agreement between NSC / HA concerning asset ownership / maintenance	Programme delay	none	M	20%	£0	£50	£100	
C06	Technical	Open	Konrad Lansdown	Inadequate existing highway drainage outfalls to facilitate additional highway drainage	Objection from Wessex Water. Additional drainage required. Time delay, additional costs.	Surveys to take place spring 2011	L	10%	£0	£20	£50	Additional project management costs if timescale missed.
C07	Technical	Open	Joseph Burnell	Late vegetation clearance for ecological surveys	Surveys not carried out. Time missed to carry out mitigation measures - Programme delay, cost	none	L	10%	£0	£5	£20	Additional project management costs if timescale missed.

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Stage 1A - Risks Arising during Preparation and Submission of Bid to BAFB (and applicable to subsequent stages until closed)												
C08	Technical	Open	Alex Fear	Problems in land acquisition (all schemes)	Requires negotiation or CPO = delay and cost to project	Need to confirm landowners and map highway boundaries against proposals, and consider modifications if necessary.	L	25%	-£100	£50	£200	Estimate potential worst case land costs. Could also be a reduction in costs
C09	Technical	Open	Rob Thomson	Additional processes over those allowed for (e.g. TRO, side road orders, planning permissions) - DELAY and PM COST	Requires consultation, negotiation, etc - threat of delay and cost to project	Understand all Planning and Consent needs and their interactions and develop strategy for obtaining them	M	10%	£55	£162	£325	Assumed 1 month, 3 month, 6 month delay respectively. Assumed an extra £5k / £12k / 25k of NSC project management and consultant time respectively.
C10	Ground Conditions	Open	Mark Blissett	Drove Roundabout - Worse contaminated land on site than expected. MITIGATING MEASURE ONLY No additional delay or PM cost	Needs removal of spoil at extra cost and extra cost for disposal in Swindon landfill site	Early detailed land contamination survey, and design to reduce cost of land take / removal	L	25%	£10	£50	£113	Mitigating measure of additional treatment / disposal at licensed site over and above that in current base scheme costs [£112.5k in the base cost]
C11	Ground Conditions	Open	Joseph Burnell	Worle Station - Worse contaminated land on site than expected. MITIGATING MEASURE ONLY No additional delay or PM cost	Needs removal of spoil at extra cost and extra cost for disposal in Swindon landfill site	Early detailed land contamination survey, and design to reduce cost of land take / removal	L	10%	£5	£20	£50	Mitigating measure of additional treatment / disposal at licensed site over and above that in current base scheme costs
C12	Technical	Open	Alex Fear	Inaccuracy of base mapping and land boundary/highway boundary information compared to that used for outline designs - delay cost, additional PM costs and cost of new surveys	Resulting in re-design, delays and cost increases to project	Full detailed Topo Surveys to be done as part of detailed design (topo survey already done for ABL)	M	75%	£0	£0	£0	No delay cost as surveys are to take place before detailed design commences. Keep in to ensure the risk is addressed
C13	Technical	Open	Alex Fear	Design item omission - e.g. small retaining walls (exc jct 21) - DELAY, PM and MITIGATING MEASURE COST	Additional design work & issues of variation claim by contractor, including PM cost and cost of the new measures	Detailed checks on design before tender.	M	25%	£19	£75	£200	Assumed 1 week / 1 month / 3 month delay respectively. Assumed an extra £2k / £5k / £10k of NSC project management and consultant time respectively. Also cost of mitigating measures
C14	Technical	Open	Konrad Lansdown	Construction of extended / modified embankments on either SW corner and/or NE of J21 requires special construction - DELAY, PM and MITIGATING MEASURE COST	Additional costs and delays	Consider design & construction issues in more detail.	M	25%	£107	£320	£755	Assumed 1 week, 1 month, 3 months delay respectively. Assumed an extra £5k / £10k / £25k of NSC project management and consultant time respectively. Also cost of mitigating measures
C16	Procurement	Open	Konrad Lansdown	HA requirements for construction procurement for Jct 21 only - ADDITIONAL PM COST	S278/4 agreement may add costs and time delays	Early discussion with HA	L	10%	£1	£2	£3	Officer time only - small. No additional delay cost or mitigating measures if addressed early enough
C17	Environmental	Open	Joseph Burnell	Discovery of noxious weeds - MITIGATING MEASURES (only)	Construction delays, extra costs & public concerns	Survey before construction to identify and eliminate delay & treat problem areas.	L	10%	£1	£2	£4	Based on cost of possible treatments. No delay or additional PM costs if surveys done early enough
C18	Environmental	Open	Alex Fear	Requirement for Archaeological investigation in order to determine the presence, extent and significance of such buried remains - DELAY and MITIGATING MEASURES (only)	Cost of investigations and possible delays	More detailed investigations before construction to determine requirement. Undertake as soon as possible to reduce impact of delay	M	10%	£55	£175	£375	Based on cost of possible surveys (£5k, £25k and 75k) and some delay. Assumed 1 month, 3 month, 6 month delay respectively. No additional PM costs.
C19	Environmental	Open	Konrad Lansdown	Potential for Natural England's rejection of proposed badger mitigation measures	Additional delay and cost due to extra mitigation measures	Negotiate with NE on available options and alternatives	M	10%	£1	£2	£3	
C20	Procurement	Open	Konrad Lansdown	Additional procedures are required by the HA for departures from design standards.	Delay, and additional project management time	Early discussion with HA	M	75%	£20	£55	£110	Assumed 1 month, 3 months, 6 months delay respectively. Assumed an extra £10k / £25k / £50k of NSC project management and consultant time respectively. No cost of mitigating measures.
C21	Technical	Open	Konrad Lansdown	Additional legal agreements may be required between the HA and NSC re Jct 21 works.	Delay, mitigating measures and additional project management time	Early discussion with HA	M	75%	£45	£100	£195	Assumed 3 month, 6 months, 12 months delay respectively. Assumed an extra £10k / £25k / £50k of NSC project management and consultant time respectively. Cost of mitigating measures (additional legal costs £5k, £15k, £25k.
C22	Procurement	Open	Konrad Lansdown	If separate non-ASC procurement need to seek HA approval of tender process and documentation	Additional costs and delays	Early discussion with HA	L	10%	£1	£2	£3	Officer time only - small. No additional delay cost or mitigating measures if addressed early enough
Stage 3 - Risks Arising between Programme Entry and Full Approval (Procurement) - None not already noted above												
D01	Procurement	Open	Alex Fear	Tender Prices come back higher than expected	Cost increase to project	ECH range estimating	M	10%	£100	£250	£500	Allows for reasonable variation in cost
D02	Procurement	Open	Alex Fear	Tender Amendments	Delays to project whilst amendments considered and tender process re-run	Peer Review and robust design	L	10%	£10	£50	£100	
D03	Procurement	Open	Konrad Lansdown	Use of the HA EMAC to carry out J21 works	EMAC may be re-prioritised elsewhere leading to delay on programme	ECI	L	10%	£100	£250	£500	
D04	Procurement	Open	Konrad Lansdown	Unable to claim back VAT for work at J21	Cost increase to project	Follow same approach as used at the recent J19 project which involved same scenario	L	25%	£0	£375	£769	Based on VAT element of cost estimates for J21 work. Range as may apply to works on either (or both) HA land or Local Highway Authority land.
Stage 4 - Risks Arising During Construction												
E03	Environmental	Open	Joseph Burnell	Pollution of watercourses from construction activity	Extra costs, legal action delays to programme	Ensure contractor takes pre-emptive action. Also ensure contractors have responsibility in the contracts	L	10%	£1	£2	£3	Small cost to NSC. No significant delay costs, and mitigating measures to be taken by the contractor
E04	Impact	Open	Alex Fear	Traffic delays during construction of on highway improvements	Construction delays, extra costs & public concerns	Prepare construction traffic management plan & advance publicity.	L	10%	£5	£20	£40	Assume off-peak working on critical sections (jct 21) at extra cost. No significant delay costs or additional PM costs

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Stage 1A - Risks Arising during Preparation and Submission of Bid to BAFB (and applicable to subsequent stages until closed)												
E05	Delivery	Open	Alex Fear	Shortage of materials or skilled labour (2012 - 2015)	Delay to programme	No specific action appropriate, but keep under review	L	10%	£0	£0	£0	Assume zero at present given the current economic situation and likely availability of labour in 2011 onwards (post Olympics construction). Keep in so it can be regularly reviewed
E06	Technical	Open	Mark Blissett	Unidentified utilities encountered during construction	Delay to programme, redesign & extra costs	Full searches on utility companies have been done. Possibly liaison with local utilities staff as well	L	50%	£60	£150	£300	The potential costs of additional diversions considered to be £60k / £150k / £300k. Mainly mitigating measures but includes a small allowance for delay and additional PM costs
E07	Technical	Open	Mark Blissett	Delay in diversion of utilities - DELAY and PM COST	Delay in Programme	Seek early programming	L	10%	£13	£52	£153	Assumed 1 week / 1 month / 3 month delay respectively. Assumed an extra £1k / £2k / £3k of NSC project management time respectively. No cost of mitigating measures
E08	Environmental	Open	Alex Fear	Adverse weather (risk of flooding of works etc)	Delay in Programme	To take into account in contract conditions so the contractor is liable and prepare contingency plans	L	10%	£0	£0	£0	Cost to be taken into account in contract and in costing estimates. No additional PM or delay costs
E09	Technical	Open	Alex Fear	Contractor misses TMA booking for works	Delay to programme, redesign & extra costs	Early programming and discussion with Traffic Manager. Contracts to ensure this cost is taken by the contractor	L	10%	£0	£0	£0	No cost to NSC, cost to be borne by contractor
E10	Delivery	Open	Konrad Lansdown	Less construction work able to take place at M5 Jct 21 in the daytime than anticipated. DELAY, PM and MITIGATING MEASURE COST	Need for more night working	Early planning with the HA and other network stakeholders on permitted dayworking and measures to reduce impact on traffic during weekends, holidays, busy periods. Need for extra payments to contractors for night time working	M	25%	531	912	1223	Assumed 3 months, 6 months, 12 months delay respectively. Assumed an extra £1k / £2k / £3k of NSC project management time respectively. Night time working extra pay premium and need for additional lighting and site management £500k, £850k and £1,100 respectively
E11	Delivery	Open	Alex Fear	Contractor/Supplier bankruptcy.	Delay in Programme	Full searches on Tendering companies to be carried out.	L	10%	£0	£0	£100	
E12	Delivery	Open	Alex Fear	Contractor missing agreed on-site construction periods. - Programme slippage	Delay in Programme	To take into account in contract conditions so the contractor is liable and prepare contingency plans	L	10%	£0	£0	£100	No cost to NSC, cost to be borne by contractor
E13	Technical	Open	Alex Fear	Site shut down by HSE due to Statutory Undertaker's apparatus strike.	Extra costs, legal action delays to programme	Obtain Statutory Undertaker's apparatus records for the Site and attend as appropriate regular site inspections with the relevant Statutory Undertakers.	M	10%	£0	£0	£200	
E14	Technical	Open	Konrad Lansdown	ROB submission	Delay in Programme, additional cost	Early engagement with HA	L	10%	£0	£0	£10	
E15	Technical	Open	Konrad Lansdown	Unforeseen ground conditions from badgers or other sources resulting in additional project management and scheme costs for unplanned mitigation measures such as scheme re-design.	Delay to programme, redesign & extra costs	Commission during the early part of the Detailed Design stage on-site soil/embankment investigations. Badger activity poses a risk to stability	M	10%	£0	£50	£100	
E16	Technical	Open	Konrad Lansdown	Highway embankment slippage.	Delay to programme, redesign & extra costs	Commission during the early part of the Detailed Design stage on-site soil/embankment investigations.	L	10%	£0	£20	£50	
E17	Delivery	Open	Konrad Lansdown	Temporary motorway closure/emergency traffic diversion due to major incident on M5.	Delay in Programme	Prepare/agree an emergency traffic management plan prior to commencement of scheme construction.	L	20%	£0	£10	£25	
E18	Technical	Open	Konrad Lansdown	Emergency repairs to motorway over-bridges by the Highways Agency.	Delay in Programme	Advance roadworks planning and co-ordination with the Highways Agency.	L	10%	£0	£0	£5	
E19	Impact	Open	Alex Fear	Adjacent businesses and/or residential claims	Extra costs, legal action delays to programme	Undertake a business and public liaison exercise during the early part of the detail design stage.	L	10%	£0	£5	£10	
E20	Delivery	Open	Joseph Burnell	Adjoining road network not adopted preventing public rights of way onto car park area.	Delay in Programme, Public concern	Liaise with developer and ensure adjoining network is of an adoptable standard and subject to a relevant S.106 agreement.	L	10%	£0	£0	£5	
E21	Delivery	Open	Konrad Lansdown	Badgers populating site compound during construction	Programme delay and additional costs for repair and mitigation	Liaise with ecologists to determine possible and likely routes for badgers. Include additional mitigation if necessary	L	10%	£0	£5	£10	

DASHBOARD INFORMATION	57	Open	Risk Owner	Role of risk owner	1 15 41 57
	0	Closed	Konrad Lansdown	Project Engineer (NSC)	
			Alex Fear	Programme Director (NSC)	
			Colin Medus	Senior Responsible Owner (NSC)	
			Joseph Burnell	Project Engineer (NSC)	
	57	Total	Mark Blissett	Project Engineer (NSC)	
		Rob Thomson	Project Engineer (NSC)		