

Risk Identification Number	Risk Description	Open/Closed	Risk Type	Risk Category	Risk Owner	Cost Owner	Possible Consequences	Current Controls	Impact & Severity							Initial Risk Score	Pre-mitigated Probability	Mitigating Actions	Impact & Severity						Residual Risk Score	Post mitigated Probability	Residual Risk Values			Risk Allowance = Assessed Value x Risk Multiplier				Comments					
																											Lowest	Most probable	Highest	Risk EMV	Bernoulli	Distribution	Outputs		Lowest	Most Probable	Highest		
									S	C	O	P	E	Max	Likelihood				S	C	O	P	E	Max															
R0024	Potential scope change post target cost	O	Construction	Detailed design	Paul Sullivan	LCC	Increase costs	Robust estimate Construction cost monitoring in line with design development This is a reconciliation of the development items listed previously which were realised in Jan19 update and removed	1	5	1	1	1	5	5	25	80%	Early Contractor Involvement contract to enable greater cost certainty early and development of design with contractor input to reduce future cost increases Live estimate reviewed as design reviewed VE workshops Agreed target cost	1	5	1	1	1	5	2	10	20%	£ 4,000,000.00	£ 5,000,000.00	£ 10,500,000.00	£ 1,500,000.00	0	£ 7,500,000.00	£ -	-	Recent change values to similar schemes 13M	£ 400,000.00	£ 4,662,500.00	£ 8,925,000.00
R0025	Part 1 Claims	O	Construction	Commercial	Margaret Whitmore	LCC	Increase costs	Accurate scheduling of effects Provision of robust estimate	1	5	1	3	1	5	3	16	40%	Ensure that the robust mitigation design is carried out during construction All agreements made with landowners to be fed back to design team for inclusion in construction issue design Key or critical timescales for works to be completed must be confirmed within design to ensure they are programmed accordingly	1	5	1	3	1	5	2	10	20%	£ 125,000.00	£ 250,000.00	£ 500,000.00	£ 58,333.33	0	£ 291,666.67	£ -	-	Part 1 claims cannot be commenced until post 12 months scheme completion - allowance worse case set at 500k	£ 12,500.00	£ 118,750.00	£ 225,000.00
R0026	Impact of national/international incidents - -F&M, bird flu -Influenza -Terrorism -Civil strike	O	Construction	Programme	Phil Wilson	LCC	-Delay to programme -Increase costs	Maintain awareness of national events/ alerts	5	5	3	2	1	5	1	5	5%	Potential mitigation unclear Put in place emergency measures as soon as possible in advance of known risk or realisation of unexpected risk.	5	5	3	2	1	5	1	5	5%	£ 30,000.00	£ 62,500.00	£ 250,000.00	£ 5,708.33	0	£ 114,166.67	£ -	-	Highest as 1 months delay of prelm value, most likely 25%	£ 1,500.00	£ 19,500.00	£ 37,500.00
R0027	LCC Procurement process leading to delays	O	Construction	Commercial	Phil Wilson	LCC	Onerous process generating delays Delay to programme Key timescale requirements don't make it to final contract creating delays	Robust programming of procurement requirements providing sufficient time for process. Ensure documents checked prior to final agreement for key dates/ milestones requirements	3	1	2	1	1	3	4	12	60%	Robust programming of procurement requirements with key timeframes - Long period between final cost determination and work commencement This risk is likely to be wholly mitigated through proposed amendments to the Planning Act which will remove the need for local major schemes, which connect into the Strategic Road Network, to use the Development Consent Order Process. Note: Planning Act amended and scheme does not now meet threshold to be NSIP and require DCO	3	1	2	1	1	3	1	3	5%	£ 20,000.00	£ 50,000.00	£ 150,000.00	£ 3,666.67	0	£ 73,333.33	£ -	-	Assessing the impact v team knowledge of scheme and suitable allowances within the target cost should reduce CIO phase risk. Therefore this is based upon construction phase impact and subsequent design and	£ 1,000.00	£ 19,250.00	£ 37,500.00
R0028	Increase in delivery timescales due to both local and national planning processes	C	Development	Planning	Niamh O'Sullivan	LCC	Delay to programme	Robust planning application and subsequent information progress through LPA	5	4	1	3	1	5	4	20			4	3	1	2	1	4	1	4		£ -	£ -	£ -	£ -	0	£ -	£ -	-	CLOSED	£ -	£ -	£ -
R0029	Resource risk - Lack of clarity in role definition	O	Development	Management	Phil Wilson	LCC	Delay to programme Duplication of efforts/ missing elements of deliverables Adverse impact to resource planning	Robust Programme Management	3	3	2	1	3	3	2	6	20%	Clear scope for every role/ contractor involvement Regular reviews of works Consultant/ Contractor works managed by task order	2	2	3	2	2	3	2	6	20%	£ 5,000.00	£ 37,500.00	£ 150,000.00	£ 12,833.33	0	£ 64,166.67	£ -	-	Based upon most likely = 1 week delay at equiv to 15 Costain FTE, highest being 1 month delay at 15FTE	£ 250.00	£ 11,375.00	£ 22,500.00
R0030	Resource risk - Insufficient communication/coordination across Project Team	C	Development	Management	Phil Wilson	LCC		Duplication of Risk 010							0		Duplication of R0010								0		£ -	£ -	£ -	£ -	0	£ -	£ -	-	Duplication of R0010	£ -	£ -	£ -	
R0031	Legal challenge delay - in excess of 3 months (judicial review)	C	Development	Legal	Phil Wilson	LCC	Delay to DfT approval and Start of Works Reputational damage Resource planning issues Additional cost	3 months in scheme programme Planning act filters challenges	2	3	2	3	3	3	4	12		ECI contract programme indicated legal challenge period Opportunities to sever ECI contract at milestone points; Inc. if challenge protracted and costs escalating	4	3	2	1	1	4	2	8		£ -	£ -	£ -	£ -	0	£ -	£ -	-	Highest = 6 months inflation cost Most likely = 3 months delay in ECI at 15 Costain FTE Reduced the likelihood and value by half due to current legal position	£ -	£ -	£ -
R0032	Marine Licence from Marine Management Organisation may be required for construction works on Savick Brook Potential that separate EIA for bridge may be required.	C	Construction	Construction Methods	Steve Webster	LCC	-Delay to programme -Increase costs	LCC early engagement with MMO to check requirements.	4	1	1	1	1	4	3	12		Request sent to MMO and confirmed that a MMO licence is not required	1	1	1	1	1	1	1	1		£ -	£ -	£ -	£ -	0	£ -	£ -	-	CLOSED	£ -	£ -	£ -
R0033	Canal & River Trust need for s106 agreement under HA 1980 for navigation rights	O	Development	Legal	Jane Turner	LCC	Delay to programme	Early engagement with CRT to agree scope of S106	4	3	4	4	1	4	3	12		Reviews of developing document with CRT to ensure agreements in place and acceptable to both parties prior to formal submission	4	3	4	4	1	4	2	8		£ 10,000.00	£ 50,000.00	£ 250,000.00	£ -	0	£ -	£ -	-	Canal and river trust have not challenged CPO. CLOSED - RE opened as this agreement still needs to be site up agreed and instructed - assessment based upon 1 weeks preliminary delays (250k)	£ 1,000.00	£ 31,750.00	£ 62,500.00
R0034	Third party agreement to include lands in CPO (inc. Canal & River Trust, Duchy of Lancaster land, Network Rail)	C	Development	Legal	Jane Turner	LCC	Delay to programme	Enter early engagement outside CPO with each stakeholder	4	2	4	2	1	4	3	12		Early and regular engagement to confirm planned works and proposals to confirm agreement to works and land requirements as design progresses. Ensure all land requirements are identified early and completely to prevent revisiting of requirements Enter into Third Party Works agreement	4	2	2	1	1	4	1	4		£ -	£ -	£ -	£ -	0	£ -	£ -	-	Early in process to assume delays based on FTE Most prob = 2 weeks delay Highest = 1 month	£ -	£ -	£ -
R0035	Duchy of Lancaster need agreement to include land in CPO	C	Development	Legal	Jane Turner	LCC	Delay to programme	Enter into early engagement	4	1	3	1	1	4	2	8		Early agreement with the Duchy outside of CPO	4	1	3	1	1	4	2	8		£ -	£ -	£ -	£ -	0	£ -	£ -	-	see R0281 awaiting 106 with latest updated planning submission CLOSED	£ -	£ -	£ -
R0036	Network Rail need agreement to include land in CPO (over sailing rights)	O	Development	Legal	Jane Turner	LCC	Delay to programme seeking land agreement Costs associated with delay Reputational impact if disrupt rail users	Early engagement and agree land acquisition outside of CPO	3	2	2	3	1	3	3	9	40%	Early and regular engagement to confirm planned works and proposals to seek agreement to works and land requirements as design progresses Ensure all land requirements are identified early and completely to prevent revisiting of requirements	3	2	2	2	1	3	2	6	20%	£ -	£ 15,000.00	£ 150,000.00	£ 11,000.00	0	£ 55,000.00	£ -	-	Yet to be agreed and challenged within the CPO process at this point. Item remains open until closure of inquiry albeit process expected to be agree - Assessment at this point based upon 1 month delay to programme ECI (15 Staff 1 month allow 150k)	£ -	£ 18,750.00	£ 37,500.00
R0037	Public Open Space - if identified need agreement for exchange land unless exemption is obtained. - Cottam Way roundabout is designated open space and may trigger parliamentary procedures	O	Development	Legal	Jane Turner	LCC	Increase costs Procedures Delay during Inquiry Resource planning impact	Avoidance of public open space Early identification of public open space	3	2	2	3	1	3	4	12	60%	Land swap has been agreed for the area within the housing estate review to be carried out on Cottam roundabout	1	1	2	3	1	3	1	3	5%	£ -	£ 1,000.00	£ 5,000.00	£ 100.00	0	£ 2,000.00	£ -	-	Risk seen as minimal at present with Section 19 application	£ -	£ 625.00	£ 1,250.00
R0038	Cottam Way roundabout is designated open space and scheme may trigger parliamentary procedures	C	Development	Legal	Jane Turner	LCC	Increase costs Procedures Delay during Inquiry Resource planning impact	Combined with R037							0		Combined with R0037								0		£ -	£ -	£ -	£ -	0	£ -	£ -	-	Combined with R0037	£ -	£ -	£ -	
R0039	Taylor Wimpey public open space issue with alignment	C	Development	Legal	Jane Turner	LCC	Delay to programme	Discussions with developer Discussion with Preston City Council as planning authority	3	2	3	3	1	3	3	9		After exchange land may be compensate less	1	2	2	2	1	2	1	2		£ -	£ -	£ -	£ -	0	£ -	£ -	-	Highest based on 6 week delay for JR Most likely 2 week delay Costs based on 6Costain FTE due to timing in programme.	£ -	£ -	£ -
R0040	Delays in arranging Public Inquiry due to Planning Inspector delays	C	Development	Legal	Jane Turner	LCC	Delay to programme Costs associated with Inquiry - legal representation etc.	Early engagement	3	3	2	2	1	3	3	9		Programme timescales based upon Public Inquiry and timescales based upon previous PI performance	3	3	2	2	1	3	1	3		£ -	£ -	£ -	£ -	0	£ -	£ -	-	Inquiry date set for 22nd November 2018 so risk reduced albeit NSIP clash may extend duration of process - 0/2 weeks/2 months - Closed as inquiry underway Nov 18	£ -	£ -	£ -
R0041	Delays in accessing land for surveys	C	Development	Land	Margaret Whitmore	LCC	Risk that ecology survey season is missed and delays to programme Negotiation with landowners for time/ programme sensitive access May delay scheme design development and delivery start dates	Maintain access under notice via S289 Highways Act. Negotiation with landowners for time/ programme sensitive access	3	1	1	1	3	3	3	9		Matt Gibbs has been engaged as an additional resource to assist in access arrangements Regular monitoring - via Jacobs PM Ecology coordinator and LCC Environmental coordinator is required to ensure access arrangements are kept on track with programmed survey requirements Engagement with landowners/ occupiers regarding compensation	3	1	1	1	3	3	2	6		£ -	£ -	£ -	£ -	0	£ -	£ -	-	CLOSED	£ -	£ -	£ -
R0042	Land issues: - Failure to identify correct land interests - failure to identify correct extent of CPO - Potential delay with land assembly - failure to agree inclusion of land for CPO from crown or stat interests - delay in agreeing acquisition of land from statutory/ crown interest not within CPO	C	Development	Land	Margaret Whitmore	LCC	Risk to CPO -Assembly of land	Early appointment of land referencing firm	4	1	1	3	1	4	3	12		Ensure robust land referencing (external specialist supplier Terra Quest have been engaged)	2	1	1	1	1	2	1	2		£ -	£ -	£ -	£ -	0	£ -	£ -	-	This risk is nearly closed out with CPO/PIM process Nov 18. Allowance included for unforeseens	£ -	£ -	£ -
R0043	Failure to identify correct extent of land required under CPO	C	Development	Land	Margaret Whitmore	LCC	Risk to CPO -Assembly of land	Reflect design and construction requirements on land take Review with maintainer to ensure maintenance access sufficient	4	1	1	2	1	4	3	12		Workshops held to review land take ensuring cover construction/ perm works and operational maintenance requirements	4	1	1	2	1	4	2	8		£ -	£ -	£ -	£ -	0	£ -	£ -	-		£ -	£ -	£ -
R0044	Potential delay with land assembly	C	Development	Land	Margaret Whitmore	LCC	Delay to programme	This will be mitigated through early commencement of the order processes and land acquisitions	5	2	1	1	1	5	2	10		Ensure robust land take planning and accurate land referencing	5	2	1	1	1	5	1	5		£ -	£ -	£ -	£ -	0	£ -	£ -	-		£ -	£ -	£ -
R0045	Failure to agree inclusion of land in CPO from statutory/crown interests	C	Development	Land	Margaret Whitmore	LCC	Risk to CPO -Assembly of land Requirement for realignment of route/ redesign/ planning		5	5	1	1	1	5	3	15		Early engagement with Crown Estates to establish land take required Regular engagement to assess progress of agreements and highlight any concerns early	5	5	1	1	1	5	2	10		£ -	£ -	£ -	£ -	0	£ -	£ -	-		£ -	£ -	£ -
R0046	Delays in agreeing land interest acquisition from statutory/crown/charity interests not in CPO	C	Development	Land	Margaret Whitmore	LCC	Delay to programme		5	5	1	1	1	5	3	15		Early engagement with Crown Estates to establish land take required Regular engagement to assess progress of agreements and highlight any concerns early	5	5	1>																		

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																														Lowest	Most probable	Highest		Risk EMV	Bernoulli	Distribution	Outputs	Lowest	Most Probable	Highest						
									S	C	O	P	E	Max	S	C	O	P				E	Max																							
R0053	The ES chapters are being compiled between LCC and Jacobs	C	Development	Planning	Niamh O'Sullivan	LCC	Contradicting information may lead to challenge or failure at planning Conflicting views lead to inconsistencies.	Review all chapters to ensure consistent approach and where possible a single voice.	2	1	2	1	1	2	4	8		Appointment of LCC EIA coordinator to liaise between parties and ensure consistency between each ES chapter	2	1	2	1	1	2	2	4					£	-	0	£	-	£	-	£	-	£	-	£	-			
R0054	Inexperienced Environmental coordinator is not able to provide the level of guidance and leadership required by the individual disciplines to provide a coherent ES	C	Development	Planning	Phil Wilson	LCC	"ES not fit for purpose/doesn't meet stakeholder expectations" "ES will not reflect the overall environmental impact of the scheme" "In consistency between different sections of the ES and lack of a single voice for the ES."	LCC has acknowledged the risk from this	2	1	1	1	3	3	3	9		"Jacobs PM to seek support from Simon Bird on specific issues arising and to offer support to LCC environmental coordinator as requested" "LCC are providing support to the environment"	2	1	1	1	3	3	2	6					£	-	0	£	-	£	-	£	-	£	-	£	-	£	-	
R0055	Scheduling changes relating to one issue having a knock on effect for timing of assessments/surveys	C	Development	Planning	Phil Wilson	LCC	Previously identified resources may not be available within the revised timeslot, resulting in either programme delay or additional budget required for more expensive/additional resources to meet programme	Ensure any expiry dates for survey validity are included within the programme and can then be tracked/monitored.	3	2	2	1	4	4	3	12		"Jacobs PM to track/monitor key financial metrics and to flag up any issues immediately" "Discipline leads (Jacobs) to flag up any potential scheduling/staff changes that may affect budget and programme" "Jacobs Project Team to log time and expenses as soon as possible to ensure financial metrics are kept up to date" "LCC to discuss any potential schedule change or risks to programme with Jacobs PM/coordinator as soon as possible"	3	2	2	1	4	4	2	8					£	-	0	£	-	£	-	£	-	£	-	£	-			
R0056	Design information isn't sufficient/sufficiently detailed to enable an assessment to be made	C	Development	Detailed design	Kim Whalley & John McKeever	LCC	Disciplines are unable to undertake a robust assessment within the programme deadlines	Ensure design leads advise on feasibility of proposed survey extents	4	1	1	1	2	4	3	12		"LCC needs to establish a set of design information suitable for assessment - to form the agreed assessment design" "The Environmental Coordinator should seek a list of information needs from both Jacobs and LCC disciplines and liaise with LCC design team to provide necessary information within agreed assessment"	4	1	1	1	1	4	1	4					£	-	0	£	-	£	-	£	-	NOT SURE WHAT THIS IS ITS A BIT VAGUE	£	-	£	-	£	-
R0057	The design does not demonstrate compliance with Policy Deficiencies in route alignment design process – not informed by environmental assessment	C	Development	Detailed design	Phil Wilson	LCC	"Potential refusal of planning consent or licences" "Judicial review"	Amend alignment to minimise potential impacts identified in EIA								0													£	-	0	£	-	£	-	CLOSED	£	-	£	-	£	-				
R0058	Non-compliance with master plan design code	C	Development	Detailed design	Phil Wilson	LCC	"Potential refusal of planning consent or licences" "Delay to programme" "Judicial review"	Review / revise design when design code is published	3	2	1	1	3	3	3	9		Engage with PCC planning officers	3	2	1	1	3	3	1	3					£	-	0	£	-	£	-	CLOSED	£	-	£	-	£	-		
R0059	Conflict between mitigation requirements and approved Preston master plan	C	Development	Detailed design	Phil Wilson	LCC	Failure to meet "Planning" "Legal requirements"	Make Preston CC aware of any impacts on the developable areas asap	3	2	1	1	3	3	3	9		Continue to liaise with PCC and developers.	3	2	1	1	3	3	1	3					£	-	0	£	-	£	-	CLOSED	£	-	£	-	£	-		
R0060	Design Issues - 100 Series Traffic Management	C	Development	Detailed design	John McKeever	LCC	"Inaccurate pricing - increased risk of change" "Buildability - programme"	Design co-ordination to LCC delivery programme Updates of planned v actual design Design change control Design reviews	1	3	3	1	2	3	3	9		Engagement of ECI contractor to assist with design development and review buildability. Ensure information made available to facilitate pricing	1	3	3	1	2	3	2	6					£	-	0	£	-	£	-	£	-	Re opened - Lowest will be IFC dwgs. Most probable will be For Approval dwgs. Highest Preliminary dwgs. Assessment based upon 2.5/5/7.5% increase on current target cost	£	-	£	-	£	-
R0061	Design Issues - 200 Series Site Clearance	C	Development	Detailed design	John McKeever	LCC	"Inaccurate pricing - Increased risk of change" "Buildability - programme" Need to consider ecological/ environmental timeframes	Design co-ordination to LCC delivery programme Updates of planned v actual design Design change control Design reviews	4	3	3	2	2	4	5	20		Ensure consideration of ecological constraints within the site clearance scheme Engagement of ECI contractor to assist with design development and review buildability. Ensure information made available to facilitate pricing	5	3	3	2	2	5	2	10					£	-	0	£	-	£	-	£	-	Re opened - Lowest will be IFC dwgs. Most probable will be For Approval dwgs. Highest Preliminary dwgs. Assessment based upon 5/10/15% increase on current target cost	£	-	£	-	£	-
R0062	Design Issues - Carriageway	C	Development	Detailed design	John McKeever	LCC	"Inaccurate pricing - increased risk of change" "Buildability - programme"	Design co-ordination to LCC delivery programme Updates of planned v actual design Design change control Design reviews	2	3	3	1	2	3	3	9		Engagement of ECI contractor to assist with design development and review buildability. Ensure information made available to facilitate pricing	1	3	3	1	2	3	1	3					£	-	0	£	-	£	-	£	-	Re opened - Lowest will be IFC dwgs. Most probable will be For Approval dwgs. Highest Preliminary dwgs. Assessment based upon 5/10/15% increase on current target cost	£	-	£	-	£	-
R0063	Design Issues - 300 Series Fencing	C	Development	Detailed design	John McKeever	LCC	"Inaccurate pricing" "Buildability - programme"	Design co-ordination to LCC delivery programme Updates of planned v actual design Design change control Design reviews	3	3	3	3	3	3	3	9		Engagement of ECI contractor to assist with design development and review buildability. Ensure information made available to facilitate pricing	2	3	3	3	2	3	2	6					£	-	0	£	-	£	-	£	-	Re opened - Lowest will be IFC dwgs. Most probable will be For Approval dwgs. Highest Preliminary dwgs. Assessment based upon 5/10/15% increase on current target cost	£	-	£	-	£	-
R0064	Design Issues - 400 Series Safety fencing/Ped guard rail	C	Development	Detailed design	John McKeever	LCC	"Inaccurate pricing" "Buildability - programme"	Design co-ordination to LCC delivery programme Updates of planned v actual design Design change control Design reviews	1	3	3	1	2	3	3	9		Engagement of ECI contractor to assist with design development and review buildability. Ensure information made available to facilitate pricing	1	3	3	1	2	3	2	6					£	-	0	£	-	£	-	£	-	Re opened - Lowest will be IFC dwgs. Most probable will be For Approval dwgs. Highest Preliminary dwgs. Assessment based upon 2.5/5/10% increase on current target cost	£	-	£	-	£	-
R0065	Design Issues - 500 Series Drainage	C	Development	Detailed design	John McKeever	LCC	"Inaccurate pricing" "Buildability"	Design co-ordination to LCC delivery programme Updates of planned v actual design Design change control Design reviews	5	4	3	2	4	5	4	20		Engagement of ECI contractor to assist with design development and review buildability. Ensure information made available to facilitate pricing	3	3	3	1	4	4	3	12					£	-	0	£	-	£	-	£	-	Re opened - Lowest will be IFC dwgs. Most probable will be For Approval dwgs. Highest Preliminary dwgs. Assessment based upon 5/10/15% increase on current target cost	£	-	£	-	£	-
R0066	Design Issues - 600 Series Earthworks	C	Development	Detailed design	John McKeever	LCC	"Inaccurate pricing" "Buildability"	Design co-ordination to LCC delivery programme Updates of planned v actual design Design change control Design reviews	5	4	3	2	4	5	4	20		Engagement of ECI contractor to assist with design development and review buildability. Ensure information made available to facilitate pricing	3	3	3	1	4	4	3	12					£	-	0	£	-	£	-	£	-	Re opened - Lowest will be IFC dwgs. Most probable will be For Approval dwgs. Highest Preliminary dwgs. Assessment based upon 5/10/15% increase on current target cost	£	-	£	-	£	-
R0067	Design Issues - 700 Series Pavement	C	Development	Detailed design	John McKeever	LCC	"Inaccurate pricing" "Buildability"	Design co-ordination to LCC delivery programme Updates of planned v actual design Design change control Design reviews	4	4	3	2	3	4	3	12		Engagement of ECI contractor to assist with design development and review buildability. Ensure information made available to facilitate pricing	2	3	3	1	2	3	2	6					£	-	0	£	-	£	-	£	-	Re opened - Lowest will be IFC dwgs. Most probable will be For Approval dwgs. Highest Preliminary dwgs. Assessment based upon 5/10/15% increase on current target cost	£	-	£	-	£	-
R0068	Design Issues - 1100 Series Kerbs and Paved areas	C	Development	Detailed design	John McKeever	LCC	"Inaccurate pricing" "Buildability"	Design co-ordination to LCC delivery programme Updates of planned v actual design Design change control Design reviews	2	3	3	2	2	3	3	9		Engagement of ECI contractor to assist with design development and review buildability. Ensure information made available to facilitate pricing	2	3	3	1	2	3	2	6					£	-	0	£	-	£	-	£	-	Re opened - Lowest will be IFC dwgs. Most probable will be For Approval dwgs. Highest Preliminary dwgs. Assessment based upon 5/10/15% increase on current target cost	£	-	£	-	£	-
R0069	Design Issues - 1200 Series Signng and lighting	C	Development	Detailed design	John McKeever	LCC	"Inaccurate pricing" "Buildability"	Design co-ordination to LCC delivery programme Updates of planned v actual design Design change control Design reviews	1	3	3	1	2	3	4	12		Engagement of ECI contractor to assist with design development and review buildability. Ensure information made available to facilitate pricing	2	3	3	2	2	4		8					£	-	0	£	-	£	-	£	-	Re opened - Lowest will be IFC dwgs. Most probable will be For Approval dwgs. Highest Preliminary dwgs. Assessment based upon 5/10/15% increase on current target cost	£	-	£	-	£	-
R0070	Design Issues - 1200 Series Street lighting	C	Development	Detailed design	John McKeever	LCC	"Inaccurate pricing" "Buildability"	Design co-ordination to LCC delivery programme Updates of planned v actual design Design change control Design reviews	1	3	3	1	2	3	3	9		Engagement of ECI contractor to assist with design development and review buildability. Ensure information made available to facilitate pricing	1	3	3	1	2	3	1	3					£	-	0	£	-	£	-	£	-	CLOSED INCLUDED IN ABOVE	£	-	£	-	£	-
R0071	Design Issues - 1400 Series Traffic signals	C	Development	Detailed design	John McKeever	LCC	"Inaccurate pricing" "Buildability"	Design co-ordination to LCC delivery programme Updates of planned v actual design Design change control Design reviews	3	4	3	3	3	4	3	12		Engagement of ECI contractor to assist with design development and review buildability. Ensure information made available to facilitate pricing	1	3	3	3	2	3	3	9					£	-	0	£	-	£	-	£	-	Re opened - Lowest will be IFC dwgs. Most probable will be For Approval dwgs. Highest Preliminary dwgs. Assessment based upon 5/10/15% increase on current target cost	£	-	£	-	£	-
R0072	Design Issues - 5000 Series Structures	C	Development	Detailed design	Kim Whalley	LCC	"Inaccurate pricing" "Buildability"	Design co-ordination to LCC delivery programme Updates of planned v actual design Design change control Design reviews	5	4	3	2	3	5	4	20		Engagement of ECI contractor to assist with design development and review buildability. Ensure information made available to facilitate pricing	3	3	3	2	2	3	3	9					£	-	0	£	-	£	-	£	-	Re opened - Lowest will be IFC dwgs. Most probable will be For Approval dwgs. Highest Preliminary dwgs. Assessment based upon 5/10/15% increase on current target cost	£	-	£	-	£	-
R0073	Design Issues - 3000 Series Landscaping	C	Development	Detailed design	John McKeever	LCC	"Inaccurate pricing" "Buildability"	Design co-ordination to LCC delivery programme Updates of planned v actual design Design change control Design reviews	4	4	3	3	4	4	4	16		Engagement of ECI contractor to assist with design development and review buildability. Ensure design information made available to facilitate accurate pricing Highlight seasonal restrictions and ensure these are reflected within programme	3	3	3	2	3	3	3	9					£	-	0	£	-	£	-	£	-	Re opened - Lowest will be IFC dwgs. Most probable will be For Approval dwgs. Highest Preliminary dwgs. Assessment based upon 5/10/15% increase on current target cost	£	-	£	-	£	-
R0074	Design Issues - 1500 Series Mot Comms	C	Development	Detailed design	John McKeever	LCC	"Inaccurate pricing - increased risk of change" "Buildability - programme"	Design co-ordination to LCC delivery programme Updates of planned v actual design Design change control Design reviews	3	3	3	1	4	4	3	12		LCC to instruct 3rd party design with engagement of ECI contractor to assist with design development and review buildability. Ensure information made available to facilitate pricing	2	3	3	2	2	3	2	6					£	-	0	£	-	£	-	£	-	Re opened - Lowest will be IFC dwgs. Most probable will be For Approval dwgs. Highest Preliminary dwgs. Assessment based upon 5/10/15% increase on current target cost	£	-	£	-	£	-
R0075	Design Issues - 2700 Acc Works	C	Development	Detailed design	John McKeever	LCC	"Inaccurate pricing - increased risk of change" "Buildability - programme"	Design co-ordination to LCC delivery programme Updates of planned v actual design Design change control Design reviews	3	3	3	1	4	4	3	12		LCC to instruct 3rd party design with engagement of ECI contractor to assist with design development and review buildability. Ensure information made available to facilitate pricing	2	3	3	2	2	3	2	6					£	-	0	£	-	£	-	£	-	Re opened - Lowest will be IFC dwgs. Most probable will be For Approval dwgs. Highest Preliminary dwgs. Assessment based upon 5/10/15% increase on current target cost	£	-	£	-	£	-
R0076	DMRB revisions - DMRB updates between design finaly and start on site	C	Construction	Detailed design	Kim Whalley & John McKeever	LCC	"Delay to programme" "Increase costs"	Short design timescale, issue should not arise, check Works Info of any clashes with Highways spec and DMRB	2	1	1	1	1	2	2	4		Review of changes Requirement for implementation of PMI to incorporate changes following design freeze or TC agreement	2	1	1	1	2	2	2	4					£	-	0	£	-	£	-	£	-	Worst case 2 weeks delay based on prelims	£	-	£	-	£	-
R0077	Changes in staff at outside bodies, with different perspective on current proposals.	O	Construction	Detailed design	Kim Whalley & John McKeever	LCC	"Lack of agreement in writing" "Redesign and planning issues" "Delay to programme" "Increase costs"	No control possible for this.	2	1	3	1	2	3	3	9	40%	Ensure written record of agreements made Handover meetings for stakeholder personnel changes to confirm agreements in place	2	1	2	1	2	2																						

Risk Identification Number	Risk Description	Open/Closed	Risk Type	Risk Category	Risk Owner	Cost Owner	Possible Consequences	Current Controls	Impact & Severity						Likelihood	Initial Risk Score	Pre-mitigated Probability	Mitigating Actions	Impact & Severity						Likelihood	Residual Risk Score	Post mitigated Probability	Residual Risk Values			Comments				Risk Allowance = Assessed Value x Risk Multiplier													
									S	C	O	P	E	Max					S	C	O	P	E	Max				Lowest	Most probable	Highest	Risk EMV	Bernoulli	Distribution	Outputs	Lowest	Most Probable	Highest											
R0078	Topo survey control anomalies		C	Development	Detailed design	John Hooker	LCC	-Abortive design work -Level discrepancies	Robust supervision of design	2	1	1	1	1	2	3	6		Early site checks of existing Topo to determine accuracy Additional survey works where Topo is missing detail	1	1	1	1	1	1	2	2		£	-	0	£	-	£	-	CLOSED	£	-	£	-	£	-						
R0079	Use of As-Built records from others		O	Development	Detailed design	Kim Whalley & John McKeever	LCC	-In-accuracy or not up to date -Increase costs	Site checks to verify record accuracy for critical elements of design - during preparation phase to enable time for re-survey if required.	3	3	2	1	1	3	3	9	40%	Site checks of as-built records (surveys or trial holes to sample accuracy)	3	4	2	1	1	4	2	8	20%	£	15,000.00	£	20,000.00	£	30,000.00	£	4,333.33	0	£	21,666.67	£	-	Allowance for further surveys if clashes found during site establishment assuming no programme delay	£	1,500.00	£	4,500.00	£	7,500.00
R0080	Design Errors/spec differences - not pickedup in checking process		O	Development	Detailed design	Kim Whalley & John McKeever	LCC	-Increase costs -Delay to programme -Missed opportunity	Robust supervision of design Costain issue TC lists and dist queries post revision of all drawings. Jacobst/LCC issue updated changes with updated drawings to ensure picked up	3	4	1	1	2	4	3	12		Design reviews and site checks for accuracy Design check and review procedure	3	3	1	1	2	3	3	9		£	50,000.00	£	150,000.00	£	300,000.00	£	-	0	£	-	£	-	Errors within the design process if insufficient time allowance to agree target cost and design information	£	5,000.00	£	40,000.00	£	75,000.00
R0081	Stage 2 Safety Audit		O	Development	Detailed design	Kim Whalley & John McKeever	LCC	-Additional design work -Construction cost	Robust supervision of design and carry out intermediate check pre target cost. This has not been carried out due to resource issues.	3	3	2	2	1	3	3	9	40%	Ensure Safety Audit reviews completed at design stage Complete site safety audits at earliest opportunity to ensure time to address remedial actions with minimal programme delay	3	3	2	2	1	3	3	9	40%	£	50,000.00	£	150,000.00	£	400,000.00	£	101,333.33	0	£	253,333.33	£	-	Re working of design to accommodate the audit findings	£	5,000.00	£	52,500.00	£	100,000.00
R0082	HE agreement of design on slip roads		O	Development	Detailed design	John McKeever	LCC	Additional design work - Reworking of slip roads - Installation of retaining wall	Early engagement - Advise LCC - LCC to liaise with HE Departures to be issues promptly	3	4	3	2	1	4	3	12	40%	Ensure early and continued engagement through the design process Seek early approval of design and document agreements made	3	3	3	2	1	3	2	6	20%	£	5,000.00	£	10,000.00	£	50,000.00	£	4,333.33	0	£	21,666.67	£	-	As long as designed in accordance with specification for highways works there will be no objection	£	250.00	£	6,375.00	£	12,500.00
R0083	Feasibility of design & mitigation scheme (can it be built and maintained)		C	Development	Detailed design	John McKeever	LCC	-Delay to programme -Compensation events -Breach of planning requirements	Establish cross disciplinary consultation process	5	5	4	3	2	5	4	20		Ensure robust design with maintainer input and review ECI contractor appointment to review design as it develops to identify ambiguities or issues significantly reducing CE on site Ensure planning requirements communicated to contractor for inclusion in plans and obligations	3	3	4	3	2	4	2	8		£	-	0	£	-	£	-	£	-	CLOSED	£	-	£	-	£	-				
R0084	Insufficient time to allow necessary iterative design process across disciplines / Control of drawings and designs / issue review and refine		C	Development	Detailed design	Phill Wilson	LCC	Conflicting and poor quality design solutions Construction changes Planning amendments Increased time scale to deliver Missed opportunity of VE	Establish cross disciplinary communication consultation process Ensure realistic programmes are issued and delivered Accountability	5	4	2	2	1	5	4	20		Design team co-ordination required and management of the iterative review and approval process ECI contractor design reviews will identify conflicts between design series and TVGs will be used to address these Construction phase change will be minimised by contractor input to buildability of design Seek to avoid planning amendments to mitigate associated delay	5	4	2	2	1	5	2	10		£	100,000.00	£	275,000.00	£	900,000.00	£	-	0	£	-	£	-	This item has been CLOSED but re introduced within the risks for each series. Now reintroduced following the closure of each series being realised into the Cost Plan and this is fr residual issues due to design issue control coordination	£	10,000.00	£	297,500.00	£	585,000.00
R0085	Existing structures - assessment - further work required		O	Development	Detailed design	Kim Whalley	LCC	-Delay to programme -Increase costs	Robust supervision of design	3	3	2	1	1	3	3	9	40%	Undertake assessments of existing structures during design to ensure any additional works required are included	3	3	2	1	1	3	2	6	20%	£	5,000.00	£	20,000.00	£	100,000.00	£	8,333.33	0	£	41,666.67	£	-	If need to do reworks to Goodier bridge or if can't use at all and need a temporary Bailey bridge to construct temporary bridge. (Assumed £100k to account for temp bridge to construct temp bridge, craneage, haulage, temp works, protection slabs etc OR, temp works in Savick to track across if can't use Goodier and associated protection measures)	£	250.00	£	12,625.00	£	25,000.00
R0086	Failure to achieve detailed design completion in advance of construction		O	Construction	Detailed design	Kim Whalley & John McKeever	LCC	-Additional cost of compensation events on site -Miss critical programme windows -Issues with staff mobilisation / retention -Reputational damage of delays	Robust supervision of design Establish clear communication and EWN process and agreement Define clearly what target price is based upon to id change	5	4	3	3	2	5	3	15	40%	Ensure design team are supported with additional resource as required Develop design deliverables programme to monitor progress and highlight any potential delays Utilise consultant/contractor to assist Prioritise design to ensure that required early is completed first	5	4	3	3	2	5	2	10	30%	£	210,000.00	£	425,000.00	£	1,250,000.00	£	160,000.00	0	£	533,333.33	£	-	This item is to allow for any items missed outwith the current series and to reflect reworking of design as well as construction costs	£	21,000.00	£	291,750.00	£	562,500.00
R0087	3rd party design of LCC designed items		O	Development	Detailed design	Kim Whalley & John McKeever	LCC	Design not sufficiently provided by LCC to ensure robust price at target cost stage may result in construction phase change AIPs, poc arches and other items to be designed by suppliers are not submitted for approval in time or at all creating potential lack of acceptance of product, rework requirement.	Specification and design of any 3rd party design will be provided by LCC Programme to be agreed for timely approval Ensure supplier is aware of requirements for approvals for all designed elements - include within subcontract	3	1	1	1	1	3	3	9	40%	Inclusion of approvals required within subcontracts Ensure check timescales are agreed and communicated to supplier. Include checking as milestone in ECI / design programmes to enable progress to be monitored against these dates	3	1	1	1	1	3	3	9	40%	£	50,000.00	£	75,000.00	£	100,000.00	£	146,666.67	0	£	366,666.67	£	-	Based on delay to site construction works therefore based on prelin costs (1 month as most probable, 3 months worst case)	£	5,000.00	£	15,000.00	£	25,000.00
R0088	Buildability not adequately addressed in design		C	Development	Detailed design	Steve Webster	LCC	Redesign Delay to programme Increase costs	Collaborative design process	4	5	3	1	2	5	3	15		ECI contractor appointed to assist with buildability during design development with involvement of supply chain as appropriate Ensure design team & ECI contractor engage to develop design and seek input/engagement	4	3	3	1	2	4	1	4		£	-	0	£	-	£	-	£	-	£	-	Based upon indicative figure at this point	£	-	£	-	£	-		
R0089	Difficulties getting AIP's approved, by HE		C	Development	Detailed design	Kim Whalley	LCC	Delay to programme Increase costs See R017 & R082	Stakeholder Management	3	1	3	1	1	3	3	9		Ensure agree requirements from the earliest opportunity and these are communicated to all parties submitting AIP designs for approval Ensure key timescales are included within the ECI programme and monitored against	3	1	3	1	1	3	2	6		£	-	0	£	-	£	-	£	-	£	-	£	-	£	-	£	-			
R0090	Statutory Undertaker delay		O	Construction	Underground / Overground Services	Simon Crisp	LCC	Time lost/ disruption on site	-Early involvement and agreement with stats -Fixed price (3 months) estimate from SUs in accordance with NRSWA	4	2	2	1	1	4	4	16	60%	Engagement with SU to plan diversion works ahead of construction De-scope SU works as far as practical to ensure minimise scope for impact If key item has initiation risk seek to avoid/minimise/procure early Dedicated SU Co-ordinator to ensure robust assessment of site condition and proposed works Advanced site surveys works, surfback, GPR and trial holes as required	4	2	2	3	1	4	1	4	5%	£	10,000.00	£	25,000.00	£	75,000.00	£	1,833.33	0	£	36,666.67	£	-	Worst case: based upon 3 month BT/Virgin fibre outage notification periods Most probable @10% of this value Highest @ @10% too	£	500.00	£	17,125.00	£	33,750.00
R0091	Stats costs greater than estimates		O	Construction	Underground / Overground Services	Simon Crisp	LCC	Increase costs	Robust investigation and estimating	2	4	4	3	3	4	5	20	80%	Robust estimate review and scope planning during ECI phase to ensure estimates robust. Trial holes and survey works to confirm existing apparatus and that designed diversions are realistic/suitable and appropriate. Where possible avoid, minimise diversions entirely Dedicated SU co-ordinator on site to manage works and co-ordination and review costs	2	4	3	2	2	4	5	20	80%	£	90,000.00	£	360,000.00	£	540,000.00	£	264,000.00	1	£	330,000.00	£	330,000.00	Based upon total current SU budget C3 and C4 budgets @ £1.8m given 2016 Worst case being 20% increase Most likely being 10% lowest 5%	£	45,000.00	£	198,000.00	£	351,000.00
R0092	Statutory bodies changes scope of scheme (EA, NE, Network Rail, Waterways/ Electricity Northwest, UU, est.)		C	Development	Detailed design	Kim Whalley	LCC	Consultations leads to requirements for accommodation/ measures to counteract effects - Scope of works increased thereby -Delay to programme -Increase costs	Regular interface with relevant parties to ensure knowledge and change is live	4	4	3	1	4	4	4	16		Early engagement to confirm requirements/ review design and agree actions Ongoing reviews and engagement Documented agreements	4	4	3	1	4	4	2	8		£	-	0	£	-	£	-	£	-	£	-	Scheme has progressed beyond this point - scope is now fixed by planning process.	£	-	£	-	£	-		
R0093	Significant changes to scheme route from that already assessed, requiring additional work to meet regulatory requirements		C	Development	Planning	Phill Wilson	LCC	Additional work required to accommodate changes	Duplicate of Risk 057								0		Duplicate of R0057							0		£	-	0	£	-	£	-	£	-	Duplication of R0057	£	-	£	-	£	-					
R0094	Minor ongoing changes to route alignment/ land take/ design specifications - due to refinement of engineering issues		C	Development	Environment	Phill Wilson	LCC	Additional work required to accommodate changes	The EIA is based upon the 'agreed assessment design'	2	1	1	2	3	3	3	9		Minor changes will need to be considered and addressed during discussions on mitigation A final 'agreed assessment design' will be used to amend existing chapters for final submission	2	1	1	2	3	3	2	6		£	-	0	£	-	£	-	£	-	£	-	Route alignment and land take now all fixed due to stage within the planning process; EIA and ES have been completed on the extent of lands required. Change to planning not permitted	£	-	£	-	£	-		
R0095	Changes in alignment/design cannot be accommodated		C	Development	Environment	Phill Wilson	LCC	-Do not have ecology survey data to provide a robust evidence base -Required reworking (e.g. of traffic model and into air quality and noise) are such that they can't be accommodated within the programme	-Allow four weeks after comments received on Chapters of the ES to incorporate new alignment before final chapter issued -Some ecology surveys may be undertaken in suboptimal seasons.	3	1	1	1	3	3	3	9		May need to do further surveys/modelling prior to construction Have Ecologist on site during construction of certain parts of the road that have suboptimal surveys	3	1	1	1	1	3	3	9		£	-	0	£	-	£	-	£	-	£	-	ES is completed and has been submitted and planning process completed. There is no further change to alignment / design permissible and all areas of current scope have had suitable assessments completed. CLOSED	£	-	£	-	£	-		
R0096	Ecology - Proximity of Protected Species or Habitats to site		O	Development	Environment	Karl Heath	LCC	The risk that licences and consents from third parties aren't secured to fit with programmed works Essential that LCC supply information to enable applications for licences to progress Essential that Costain submit this in a timely manner Scheme and or opportunity could be delayed/missed	-Scoping exercise completed -Full Environmental Assessment carried out to review risks and mitigation methods -Effective forward planning and early engagement with statutory bodies will help mitigate this risk	4	2	1	1	5	5	3	15	40%	-The scoping exercises are complete -Work on full Environmental Assessment is been carried out Early contractor engagement with EA/NE etc. to secure licences and consents and agree timescales for review and approval - ensure included within programme	4	4	1	1	4	4	3	12	40%	£	150,000.00	£	750,000.00	£	2,500,000.00	£	566,666.67	0	£	1,416,666.67									

Risk Identification Number	Risk Description	Open/Closed	Risk Type	Risk Category	Risk Owner	Cost Owner	Possible Consequences	Current Controls	Impact & Severity						Likelihood	Initial Risk Score	Pre-mitigated Probability	Mitigating Actions	Impact & Severity						Likelihood	Residual Risk Score	Post mitigated Probability	Residual Risk Values			Risk EMV				Comments	Risk Allowance = Assessed Value x Risk Multiplier												
									S	C	O	P	E	Max					S	C	O	P	E	Max				Lowest	Most probable	Highest	Risk EMV	Bernoulli	Distribution	Outputs		Lowest	Most Probable	Highest										
R0102	Change in protected species scope - colonisation by protected species or SPA species not found during surveys.		O	Construction	Environment	John Jones	LCC	Impact on programme and cost Delay to programme Breach of legislation for eg could find badger set and need to protect/trap/remove	Regular surveys taken place Repeat surveys at expiry of survey data validity (will be required in advance of construction)	4	2	1	1	4	4	3	12	40%	Ecologist to advise scheme Review of potential impact of any legislation change Ecological watching brief in immediate advance of construction and during clearance works Clear works planning to enable checks prior to possible disturbance Inclusion of identification of key species in site induction On site licensed ECOW Updated surveys currently being undertaken 2018	4	2	1	1	4	4	3	12	40%	£	50,000.00	£	750,000.00	£	1,500,000.00	£	306,666.67	0	£	766,666.67	£	-	Based upon the potential requirement to get further licences. Most probable based on 3 month delay, works case 6 months delay, dependant upon finding a protected species at a time when trapping cannot start for 6 months due to weather conditions	£	5,000.00	£	190,000.00	£	375,000.00
R0103	Invasive plants/ noxious species (e.g. Indian/Himalayan Balsam)		O	Construction	Environment	Karl Heath	LCC	Waste disposal costs and delay costs EA/NE action, Delays and associated costs, Reputational damage Ongoing maintenance liability	Advance treatment Highlight presence of invasive species, (types, quantity, and location) within the ES LCC to determine/advise of removal process - off site or bury	2	2	1	1	3	3	3	9	40%	Comprehensive site review to identify locations/ species and densities of invasive weeds Pre-treatment where possible in advance of construction Seek site based treatment/ disposal in line with EA RPS Strategies to be agreed with EA in advance of Target Cost to ensure costs and programme impact known	2	2	1	1	3	3	2	6	20%	£	15,000.00	£	50,000.00	£	100,000.00	£	11,000.00	0	£	55,000.00	£	-	Base upon day rate to spray invasives of £962/ for period of 1 month repeated every year for 3 years (57720) PLUS allowance for burial in line with EA guidance. Assumed 3m*3m*3m of invasive with 5m clear surround therefore excavation of 125m3 @15/m plus allowance of 2000 for membrane	£	750.00	£	12,875.00	£	25,000.00
R0104	The Proposed route for PWD currently impinges on the Bartle BHS, which is specifically highlighted within the scoping opinion. There is a risk of challenges further down the line of not addressing issues with Bartle BHS adequately		C	Development	Environment	John Jones	LCC	Could present risks relating to challenge at a later stage	LCC to identify the reason why alternative routes, avoiding the Bartle BHS, were not chosen	5	5	1	1	4	5	3	15		Stakeholder engagement will be required to agree consult on the identification of impacts and potential mitigation measures	5	5	1	1	4	5	1	5			£	-	0	£	-	£	-	Closed	£	-	£	-	£	-					
R0105	Difficulties in producing Speed banding data for the schemes has implications for air and noise assessments		C	Development	Environment	Phil Wilson	LCC	Could present risks relating to challenge at a later stage	Discussions are ongoing towards a robust methodology to accommodate this, which will be discussed with LCC and Chris Hodson at Preston City Council to agree way forward								0							0			£	-	0	£	-	£	-	Closed	£	-	£	-	£	-								
R0106	Requirements to provide multiple iterations to ES chapters risk budget (and programme) The budget assembled by Jacobs made provision for a single iteration of the report following review by LCC. Issues relating to lack of design data plus no design freeze are requiring multiple iterations to ES chapters - for example, traffic		C	Development	Environment	Phil Wilson	LCC	The costs of multiple iterations and technical review will exceed the budget	Agreed assessment design for undertaking the assessment Assessments will take into account minor design changes as part of mitigation considerations - to accommodate within final version of chapter Early warnings regarding budget risks	3	2	1	1	1	3	4	12		Regular co-ordination and highlighting potential changes to come to avoid abortive works/ reworks	3	2	1	1	1	3	2	6			£	-	0	£	-	£	-	Closed	£	-	£	-	£	-					
R0107	Data management - risk relating to access by project team to most up to date information		O	Development	Management	John Jones	LCC	Project team lack the correct information to undertake the design and pricing	Document filing structure and register	3	1	1	1	1	3	3	9	40%	Ensure consistency in which version of design is used - Design Management and control Increased use of SharePoint to share information Logging of the current most up to date versions of information Design Coordination role - forms link between client and	3	1	1	1	1	3	2	6	20%	£	1,000.00	£	20,000.00	£	40,000.00	£	1,000.00	0	£	5,000.00	£	-	£	50.00	£	5,025.00	£	10,000.00	
R0108	Deficiencies in route corridor selection process – lack of environmental assessment		C	Development	Environment	Phil Wilson	LCC	*Potential refusal of planning consent or licences *Judicial review		3	2	1	1	3	3	3	9		Prepare retrospective justification for route corridor selection	3	2	1	1	3	3	2	6			£	-	0	£	-	£	-	Closed	£	-	£	-	£	-					
R0109	Inadequate survey data resulting from late amendments to alignment		C	Development	Environment	Phil Wilson	LCC	Potential refusal of planning consent or delay	Agree design fix dates for EIA purposes	2	1	1	1	3	3	3	9			2	1	1	1	3	3	1	3			£	-	0	£	-	£	-	Closed	£	-	£	-	£	-					
R0110	Inadequacy of survey data		C	Development	Environment	Phil Wilson	LCC	*Potential refusal of planning consent or licences *Judicial review	*Ensure compliance with recognised standards *Include supporting evidence for chosen methodology	4	1	1	1	3	4	2	8	20%	Jacobs PM need to ensure checks are made early in the process	4	1	1	1	3	4	2	8	20%	£	-	£	-	£	-	£	50,000.00	0	£	250,000.00	£	-	Assumed worst case is a JR for specific land plot with a period of 3 months. Most probable unlikely due to extent of works undertaken to date, Closed March 2019	£	-	£	-	£	-
R0111	Failure to detect protected / priority species during survey which is encountered/ discovered at construction		C	Construction	Environment	John Jones	LCC	*Potential refusal of planning consent or licences *Judicial review *Breach of legislation	Fully documented comprehensive survey, repeated as required	4	1	1	1	4	4	3	12	40%	Ensure competent ecologists employed to undertake survey works Robust supervision and management On site presence of Ecological Clerk of Works.	4	1	1	1	4	4	2	8	20%	£	-	£	-	£	-	£	73,333.33	0	£	366,666.67	£	-	Closed March 2019	£	-	£	-	£	-
R0112	Colonisation by protected species or SPA species not found during survey		C	Development	Environment	Phil Wilson	LCC	*Delays to programme *Breach of legislation	Repeat surveys as required to avoid expiry of survey data / pre-works repeat surveys & inspections	5	2	1	1	4	5	4	20		Ecological watching brief in immediate advance of construction and during clearance works Clear works planning to enable checks prior to possible disturbance	5	2	1	1	4	5	2	10			£	-	0	£	-	£	-	Closed	£	-	£	-	£	-					
R0113	Expiry of survey data prior to construction		C	Development	Environment	Phil Wilson	LCC	*Delays to programme *Legal challenge	Repeat surveys as required to avoid expiry of survey data / pre-works repeat surveys & inspections	4	2	1	1	4	4	3	12		Identify survey validity periods and include expiry dates within programme to enable tracking and flagging of potential risk Arrange resurveys as required	4	2	1	1	4	4	3	12		£	-	£	-	£	-	£	-	0	£	-	£	-	Closed new surveys commissioned	£	-	£	-	£	-
R0114	Challenges to location & extent of proposed mitigation land		C	Development	Environment	Margaret Whitmore	LCC	*CPO refusal *Refusal of licences	EIA to include use of biodiversity off-setting metrics and other recognised guidance where applicable & justification for location of mitigation land	5	3	1	2	4	5	4	20		Pre-application to NE to ensure more robust application	5	3	1	2	4	5	3	15			£	-	0	£	-	£	-	-	As we are having updated surveys will objectors be able to challenge the landside area as we do or don't need more land	£	-	£	-	£	-				
R0115	Failure to comply with Habitats Regulations		O	Development	Environment	Karl Heath	LCC	*Potential refusal of planning consent or licences *Judicial review *Breach of legislation	*Pre-application consultation with Natural England *Ensure compliance with Habitats Regulations Tests in relation to protected species *Address need for Hab Regs assessment in relation to European Sites	5	3	1	2	4	5	3	15	40%	Robust preparation of ES chapters and mitigation proposals as per 'Current Controls' measures Early engagement of ecologist to continue through delivery as ECOW	5	3	1	2	4	5	2	10	20%	£	100,000.00	£	250,000.00	£	750,000.00	£	73,333.33	0	£	366,666.67	£	-	3 months delay whilst secure additional licenses	£	10,000.00	£	173,750.00	£	337,500.00
R0116	Refusal of licences / consents from statutory bodies		O	Construction	Environment	Karl Heath	LCC	*Delayed construction or requirement for re-design	Early consultation with regulatory and licencing bodies	5	3	1	2	4	5	4	20	60%	Early engagement to agree mitigation/ management measures in advance of the application submission Ecologist appointed who will facilitate deliver of the scheme and work through ECI to develop licenses with NE through pre-application service	5	3	1	2	4	5	1	5	5%	£	100,000.00	£	250,000.00	£	750,000.00	£	18,333.33	0	£	366,666.67	£	-	July 18 NE have announced that not doing PSS or DSAS for at least 6 months	£	5,000.00	£	246,250.00	£	487,500.00
R0117	Significant amendments to programme to meet licence requirements / potential revisions to mitigation strategy/ further delay/ delays caused by seasonal working (ecology seasons)		O	Construction	Environment	Phil Wilson	LCC	Delay to planned construction start date Inflation and cost increases during delay period Impact on staff availability/ retention PR impact of delayed start	Prepare contingency plans	5	3	3	3	3	5	4	20	60%	Early engagement with EA/NE to confirm requirements and ensure these are reflected within the programme form earliest opportunity Ongoing updates to programme with consideration of the ecological calendar, highlighting impacts and seasonal effects	5	3	3	3	3	5	2	10	20%	£	25,000.00	£	94,573.00	£	283,719.00	£	26,886.13	0	£	134,430.67	£	-		£	2,500.00	£	93,458.68	£	184,417.35
R0118	For PWD/IEWL Jacobs undertook a scoping exercise on the route corridor, which means that statutory consultees have not provided inputs for the actual surveys and methodology required for the EIA of the final scheme alignment		C	Development	Environment	John Jones	LCC	This could give rise to challenges further down the line	LCC environmental coordinator to advise on way forward	5	3	1	1	4	5	2	10		Robust engagement with surveyors, advisors and Statutory Bodies to confirm surveys have been planned and completed correctly and identify if any additional survey works/ assessment would be expected. Decision of cost of delay to complete additional surveys requested versus delay	4	3	1	1	4	4	2	8			£	-	0	£	-	£	-	CLOSED	£	-	£	-	£	-					
R0119	Protection of Archaeological features		C	Construction	Environment	Karl Heath	LCC	Loss of cultural heritage Reputational damage Programme delay	Robust supervision of construction stages	5	3	1	2	3	5	3	15		Ensure robust desk study and preconstruction surveys of any potential risk sites and advanced trial trenches where risk is identified Survey works for known finds should be programmed prior to construction where possible	5	3	1	2	3	5	2	10			£	-	0	£	-	£	-	-	Duplication of 99	£	-	£	-	£	-				
R0120	Unscheduled archaeological finds		C	Construction	Environment	Karl Heath	LCC	Increase in cost	Robust supervision of design	5	4	1	1	2	5	4	20		Robust assessment prior to construction Early survey works Contractor to be advised of potential high risk sites and watching brief in place if risk significant	5	4	1	1	2	5	2	10			£	-	0	£	-	£	-	-	Duplication of 99	£	-	£	-	£	-				
R0121	Risk that the project is not communicated adequately to all stakeholders		C	Development	Public and/or Stakeholder Concerns	Phil Wilson	LCC	Lack of support/confidence from Public	Early communication and establishment of working forums with key stakeholder groups Robust marketing and communications plan	3	1	2	3	1	3	3	9		Ensure Comms Plan and Stakeholder Management processes in place to ensure stakeholders are kept informed with true and accurate message	3	1	2	3	1	3	2	6		£	-	£	-	£	-	£	-	0	£	-	£	-	CLOSED	£	-	£	-	£	-
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Risk Identification Number	Risk Description	Open/Closed	Risk Type	Risk Category	Risk Owner	Cost Owner	Possible Consequences	Current Controls	Impact & Severity							Initial Risk Score	Pre-mitigated Probability	Mitigating Actions	Impact & Severity							Residual Risk Score	Post mitigated Probability	Residual Risk Values			Risk EMV				Comments	Risk Allowance = Assessed Value x Risk Multiplier					
									S	C	O	P	E	Max	Likelihood				S	C	O	P	E	Max	Lowest			Most probable	Highest	Risk EMV	Bernoulli	Distribution	Outputs	Lowest		Most Probable	Highest				
R0129	Weather impact on project; weather exceeds 1:10 year average (rain, snow, wind, drought)	O	Construction	Weather	Paul Sullivan	LCC	Potential to delay the construction works, significant risks associated with the management of excessive water/ runoff etc. Possible impact of additional watering required if drought in landscape establishment period	Review of weather records for the area (or relevant weather station)	4	5	1	1	4	5	4	20	60%	At earliest opportunity install permanent drainage system; suitable and effective temporary drainage systems established prior to permanent Early construction of the ponds to permit water settlement during construction	4	4	1	1	4	4	3	12	40%	£ 500,000.00	£ 1,000,000.00	£ 2,000,000.00	£ 466,666.67	0	£ 1,166,666.67	£ -	-	Establish that correct weather station is allowed for within contract.	£ 50,000.00	£ 675,000.00	£ 1,300,000.00		
R0130	Protestor action	O	Construction	Contractual	Phill Wilson	LCC	Potential damage to works Delay to programme Increase costs	Resolve issues during Phase 1 to ensure we address Acknowledge fears and issues and look to resolve where possible prior to construction	2	2	1	3	1	3	2	6	20%	*Employ countryside intelligence with regard to protester action plans *Utilise Company experience of managing protester actions	2	2	1	3	1	3	2	6	20%	£ -	£ -	£ 62,500.00	£ 4,166.67	0	£ 20,833.33	£ -	-	Allow 1 weeks delay to anticipated preliminary costs	£ -	£ 4,687.50	£ 9,375.00		
R0131	Notable trees - cost of translocation of trunk/ branches - EMP now showing that certain areas may be translocated twice	O	Construction	Environment	John Jones	LCC	Translocation objectives not achieved	Awaiting EMP drawings from LCC ecologist to establish full requirement and calculation.	2	1	1	1	3	3	3	9	40%	Identification of suitable trees/ hedgerows for translocation Where possible undercut in advance of translocation as per best practise guidance Plan translocation to appropriate season & directly from donor to receptor site	2	1	1	3	3	3	2	6	20%	£ 10,680.63	£ 21,361.25	£ 42,722.50	£ 2,650.96	0	£ 13,254.79	£ -	-	Worst case based upon total failure of translocation and requirement to instal new hedge: 1490m to be translocated @rate for new hedge = £15.25 per liner m Plus allowance for additional trees to be removed at £20k	£ 534.03	£ 5,607.33	£ 10,680.63		
R0132	Noise and vibration and dust to local residents	C	Construction	Environment	Karl Heath	Costain	Potential H&S issue for public	mitigation put in place	1	2	1	4	3	4	4	16		Eliminate during the design process as far as possible. Thereafter, best practise measures to be included within H&SEMP: - well maintained plant , regularly serviced - no idling of plant - strict adherence to permitted hours - seed long term stockpiles - seal all stockpiles - don't store materials adj to sensitive sites - damp down areas during prolonged dry spells - seal sites only where necessary	1	2	1	4	3	4	2	8		£ -	-	0	£ -	£ -	£ -	£ -	Construction period risk therefore re opened	£ -	-	£ -	£ -		
R0133	Mud on road	O	Construction	Environment	Karl Heath	Costain	Potential H&S issue for public and site traffic	Suitable wheel washing facilities at site egress points, rumble strips/ jet washes as required See CEMP	2	3	1	4	3	4	4	16	60%	Dedicated access routes for from site Attendance of multiple road sweepers across site all day every day during operational hours Use of hardened run off strips at site exit points with appropriate cleaning facilities.	2	3	1	4	3	4	2	8	20%	£ 5,000.00	£ 10,000.00	£ 50,000.00	£ 4,333.33	0	£ 21,666.67	£ -	-	see above	£ 500.00	£ 11,500.00	£ 22,500.00		
R0134	Access restrictions for Contractors haulage	O	Construction	Access for construction	Steve Webster	Costain	Risk of assumptions changing Reputational damage if site traffic using unsuitable routes Delay and cost impact if loads cannot reach site	Robust supervision of construction stages	2	2	1	3	1	3	4	12	60%	Agreed access routes prior to construction start Identification of designated access points including dedicated access from M55 Communication of approved routes to all delivery drivers/ contractors Communication of routes at induction and enforcement Signage on vehicles to identify PWDR traffic Oversized loads to be routes in consultation with LCC Abnormal Loads specialist, highway authority and	2	3	1	3	1	3	3	9	40%	£ 12,500.00	£ 25,000.00	£ 100,000.00	£ 18,333.33	0	£ 45,833.33	£ -	-	Based upon most likely being cost of a bridge inspection; worst case is requirement to remediate or temporary close road and pack up and over stru to cross for 1 day As well as programme and other output delay. Fox have suggested that they were never allowed to take abnormal loads across the canal bridge	£ 1,250.00	£ 13,125.00	£ 25,000.00		
R0135	Difficult access for large construction plant	C	Construction	Access for construction	Steve Webster	Costain	*Delays to works *Limitations on design options *Increased costs due to creating new access *Land issues	Joint working between Designer and Contractor to reduce risk	1	1	1	2	1	2	4	8		Agreement of routes with Highway Authority, LCC Abnormal Loads specialist and Police in advance of delivery Effective planning methodology	1	1	1	2	1	2	1	2		£ -	£ -	£ -	£ -	£ -	0	£ -	£ -	£ -	Closed as covered in 132	£ -	-	£ -	£ -
R0136	Access for plant with rail and canal restrictions	C	Construction	Access for construction	Steve Webster	Costain	*Delay to programme *Increased cost *Land issues	Joint working between Designer and Contractor to reduce risk	2	1	3	1	1	3	4	12		Early liaison with NR/ CRT to establish requirements, restrictions and agree measures acceptable to all for inclusion in work planning	2	1	3	1	1	3	1	3		£ -	£ -	£ -	£ -	£ -	0	£ -	£ -	£ -	Closed as covered in 134	£ -	-	£ -	£ -
R0137	Piling rig access - existing routes, weight limits	C	Construction	Access for construction	Steve Webster	Costain	*Delays to works *Increased costs due to creating new access *Land issues	Joint working between Designer and Contractor to reduce risk	2	2	1	1	1	2	3	6		confirmation of plant requirements during ECI phase to enable assessment of weights, routes to site/ requirements. Ensure requirements factored into programme and method related charges within TC	2	2	1	1	1	2	2	4		£ -	£ -	£ -	£ -	£ -	0	£ -	£ -	£ -	Closed as covered in 134	£ -	-	£ -	£ -
R0138	Existing drainage system adequacy. Modifying, cleaning and access	O	Construction	Environment	John McKeever	LCC	Additional works to existing drainage	Robust supervision of construction stages	3	3	3	1	3	3	4	12	60%	Existing ditches and drainage outfalls have been surveyed. Review outfall locations and capacity/ cleaning works required during design phase. Ensure scope is defined and agreed with relevant regulatory body (water board/ flood risk team/ EA etc.) Ensure permits in place for works in advance of construction to prevent site delay	3	3	3	1	3	3	3	9	40%	£ 2,500.00	£ 5,000.00	£ 50,000.00	£ 7,666.67	0	£ 19,166.67	£ -	-		£ 250.00	£ 6,375.00	£ 12,500.00		
R0139	Savick Brook viaduct- Proximity to large diameter sewers. Risk of services not being located as shown on service records	C	Construction	Underground / Overground Services	Kim Whalley	LCC	Risk of damage during construction	Work with UU to obtain most accurate information available and check via additional surveys	4	3	3	1	1	4	4	16		Site survey to identify location of sewers (note trial holes completed Mar 16 and locations confirmed to design team to inform design - led to movement of abutment position)	4	3	3	1	1	4	1	4		£ -	-	0	£ -	£ -	£ -	£ -	Duplication of R0177	£ -	-	£ -	£ -		
R0140	Culvert extensions under slip roads	C	Construction	Underground / Overground Services	John McKeever	LCC	Possible delays due to agreements with HE	Early planning and liaison with HE and inclusion within the partnership to ensure engagement and full understanding of their concerns	3	2	3	1	2	3	4	12		Ensure scope of works clearly defined during design to enable inclusion in TC and construction programme to prevent site delay	3	2	3	1	2	3	2	6		£ -	-	0	£ -	£ -	£ -	£ -	should be included in target cost	£ -	-	£ -	£ -		
R0141	Approvals for railway works Duplicate of R0005	C	Construction	Construction Methods	Steve Webster	LCC	Failure of NR to approve RAMS etc. on time leading to construction delays	*Early planning and liaison with NR and inclusion within the partnership to ensure engagement and full understanding of their concerns *Minimise reliance on possessions to complete the works through design and temporary works design *Overbook and accept cost of cancellation	5	3	3	1	1	5	4	20		Include key dates for document production and submission to NR within the works programme to ensure none missed Early agreement of timesframes to book possessions, obtain approvals etc. - timescales to be included within programme. Programme to be developed in sufficient detail during ECI to enable possession booking to be made on date of contract award Milestones to be included on programme in advance of possession for all document approvals (RAMS/ WPP etc.)	5	3	3	1	1	5	2	10		£ -	-	0	£ -	£ -	£ -	£ -	Duplication of R0005	£ -	-	£ -	£ -		
R0142	NR approvals for craneage and steelwork erection included in RA005	C	Construction	Legal	Jane Turner	LCC	Delays in securing approvals can delay scheme progress	Early planning and liaison with NR and inclusion within the partnership to ensure engagement and full understanding of their concerns	5	3	3	1	1	5	4	20		Same mitigation actions as above PLUS Engagement with NR to review proposed construction methodology in advance of RAMS submission	5	3	3	1	1	5	2	10		£ -	-	0	£ -	£ -	£ -	£ -	Duplication of R0005	£ -	-	£ -	£ -		
R0143	Working over the railway - work at height - working in proximity to electric cables	C	Construction	Health and Safety	Steve Webster	Costain	Risk to Safety during construction	Risk Management plan in place as part of any contract awarded for development	3	3	1	1	1	3	3	9		Robust management of health and safety risks during works planning Competent contractors engaged for works over the railway	3	3	1	1	1	3	2	6		£ -	-	0	£ -	£ -	£ -	£ -	see above	£ -	-	£ -	£ -		
R0144	Blackpool Railway Bridge- Working adjacent/over railway	C	Construction	Construction Methods	Steve Webster	Costain	Possible delays due to agreements and possessions with NR	Risk Management plan in place as part of any contract awarded for development	5	3	3	1	1	5	4	20		Include key dates for document production and submission to NR within the works programme to ensure none missed Early agreement of timesframes to book possessions Competent contractor engaged with experience of working with NR	5	3	3	1	1	5	2	10		£ -	-	0	£ -	£ -	£ -	£ -	see above risk R0142	£ -	-	£ -	£ -		
R0145	Managing NR interface - level of resource required, additional or special requirements (PPE, chestnut fencing etc.)	C	Construction	Construction Methods	Steve Webster	Costain	Possible delays due to agreements with NR	Early planning and liaison with NR and inclusion within the partnership to ensure engagement and full understanding of their concerns	2	2	3	1	1	3	4	12		Early engagement with NR to agree requirements and ensure they are included within TC allowances.	2	2	3	1	1	3	2	6		£ -	-	0	£ -	£ -	£ -	£ -	Closed	£ -	-	£ -	£ -		
R0146	Risk of settlement to existing assets (CRT/ NR) resulting from embankment construction	O	Construction	Construction Methods	Kim Whalley	LCC	Risk of damage during construction Construction works stopped if movement outside acceptable limits Closure of third party asset if damage occurs Reputational damage to all parties Repair costs	Design solution to reduce loadings from embankments and bridge *Select form of construction to minimise risk *Monitor during construction	4	4	5	4	1	5	4	20	60%	Ensure design models the potential settlement impact on assets and details any limits and monitoring required to ensure no adverse impact on third party assets Review potential settlements and control measures with third party asset owner early in design process to seek agreement to control/ monitoring requirements Ensure monitoring included within TC.	4	4	5	3	1	5	3	15	40%	£ 100,000.00	£ 500,000.00	£ 2,000,000.00	£ 346,666.67	0	£ 866,666.67	£ -	-	Currently there is an issue with regards to track movement during bridge works as not being acceptable by NR. May need change to design on order to alleviate settlement to lightweight fill or similar other wisconsequences of movement could be significant. - Also since electrification there is a risk of track and overheads moving and reamping track but oh clearance now differing	£ 30,000.00	£ 665,000.00	£ 1,300,000.00		
R0147	Remedial works as a result of track monitoring works during construction	C	Construction	Contractual	Kim Whalley	LCC	Settlement will require remedial work Risk of construction works being stopped if damage occurs and resultant delay	*Select form of construction to minimise risk *Monitor during construction	3	2	3	1	1	3	4	12		Ensure scope of monitoring is known prior to TC preparation to ensure allowances included Agree trigger levels for action to avoid likelihood of damage to assets	3	2	3	1	1	3	2	6		£ -	-	0	£ -	£ -	£ -	£ -	Closed	£ -	-	£ -	£ -		
R0148	Darkinson Lane underpass- To be constructed in close proximity to overhead power cables	C	Construction	Underground / Overground Services	Kim Whalley	LCC	Risk to Safety during construction	Risk Management plan in place as part of any contract awarded for development	1	3	4	1	1	4	4	16		Ensure restrictions for works in proximity to NG/ENWL assets are known and clearly communicated to design/ construction team for consideration in design and works planning Engage with ENWL& NG prior to finalisation of works method to ensure their agreement / satisfaction of protection of their asset	1	3	4	1	1	4	1	4		£ -	-	0	£ -	£ -	£ -	£ -	Being designed out by lowering	£ -	-	£ -	£ -		
R0149	Savick Brook Viaduct- Proximity to overhead power cables	O	Construction	Construction Methods	Steve Webster	Costain	Risk to Safety during construction	Risk Management plan in place as part of any contract awarded for development	4	4	4	1	1	4	4	16	60%	Significant works required in proximity of these ENWL & NG assets. Ensure engagement to agree proposed work methods, proposed plant and understand asset protection measures that must be applied Use of modelling to confirm available clearances/ check proposed plant can work within the restrictions. Inclusion of supply chain in planning works, highlighting potential issues.	4	4	4	1	1	4	3	12	40%	£ 100,000.00	£ 150,000.00	£ 500,000.00	£ 100,000.00	0	£ 250,000.00	£ -	-	Design has been revised in consideration of this and remaining is included within TC. Consideration has to be sought that until all process agreed that this should remain open.	£ 10,000.00	£ 117,500.00	£ 225,000.00		
R0150	Works over watercourses: Savick Brook and Lancaster Canal	C	Construction	Construction Methods	Steve Webster	LCC	Possible delays due to agreements and possessions with CRT	Early planning and liaison with CRT and inclusion within the partnership to ensure engagement and full understanding of their concerns	2	2	4	2	2	4	4	16		Ensure robust environmental protection measures to prevent pollution of watercourse Seek flood alerts for this floodplain and ensure robust plans for the storage of materials/ plant in safe zones to minimise risk Engagement with CRT to establish controls or procedures to work over the waterway and co-ordination of navigation Works planning to consider SHE risks of works over/ adjacent to watercourse and pollution prevention measures required. Avoid planning works in stream between October and May	2	2	4	2	2	4	2	8		£ -	£ -	£ -	£ -	£ -	0	£ -	£ -	£ -	Process programme and discussions taken place to ensure that this will not happen - Closed	£ -	-	£ -	£ -
R0151	Lancaster Canal- Working adjacent/over canal	C	Construction	Health and Safety	Steve Webster	LCC	Possible delays due to agreements and possessions with CRT	Early planning and liaison with CRT and inclusion within the partnership to ensure engagement and full understanding of their concerns	2	2	3	1	1	3	4	12		Liaison with CRT to establish possession availability and notification periods Inclusion of these notification periods within programme Planning of works to reflect risk of working adj to river	2	2	3	1	1	3	2	6		£ -	-	0	£ -	£ -	£ -	£ -		£ -	-	£ -	£		

Risk Identification Number	Risk Description	Open/Closed	Risk Type	Risk Category	Risk Owner	Cost Owner	Possible Consequences	Current Controls	Impact & Severity						Likelihood	Initial Risk Score	Pre-mitigated Probability	Mitigating Actions	Impact & Severity						Likelihood	Residual Risk Score	Post mitigated Probability	Residual Risk Values							Comments	Risk Allowance = Assessed Value x Risk Multiplier												
									S	C	O	P	E	Max					S	C	O	P	E	Max				Lowest	Most probable	Highest	Risk EMV	Bernoulli	Distribution	Outputs		Lowest	Most Probable	Highest										
R0154	Achieving the construction programme in time for the possessions		O	Construction	Construction Methods	Richard Coddron	Costain	Not ready for lift or cannot complete planned activities in the possession and additional possessions required. Sour relations with NR	Monitoring progress regularly and addressing slippage well in advance of possession date for key activities affecting possession - Building in additional contingency possessions in order to minimise impact. Nr preferred date for works is Christmas possession 2020 72 hours - Would probably require at least on disruptive possession as contingency 20hrs	5	3	3	2	1	5	4	20	60%	Ensure robust planning to book possessions at the right time Ensure contingency possessions are booked to account for poor weather/ breakdowns etc. Make Ready Process and Readiness Reviews in countdown to possessions to ensure dates achieved and delays / abortive possession avoided as far as possible Building in additional contingency possessions in order to minimise impact Ensure start on site date allows sufficient time to complete the advance works prior to erection	5	3	3	2	1	5	2	10	20%	£	40,000.00	£	90,000.00	£	243,000.00	£	24,866.67	0	£	124,333.33	£	-	Construction programme now altered to reflect non Xmas possession - Will now be 3 x 20 hr possessions therefore risk allowance her for 2 possession failures and subsequent additional 2 with NR 127% LCC/Costain 113k - Jan19 - NR requesting that we can achieve the erection of beams over railway for Xmas 2020	£	4,000.00	£	80,975.00	£	157,950.00
R0155	M55 Junction2 Bridge		O	Construction	Construction Methods	Sean Ellison	Costain	Possible delays due to agreements and possessions with HE	Early planning and liaison with HE and inclusion within the partnership to ensure engagement and full understanding of their concerns	1	2	3	3	1	3	4	12	60%	Ensure HA timescales for road space bookings are understood and included within construction phase works programme.	1	2	3	3	1	3	2	6	20%	£	2,500.00	£	10,000.00	£	20,000.00	£	2,166.67	0	£	10,833.33	£	-		£	125.00	£	2,562.50	£	5,000.00
R0156	Delays obtaining permission and approvals for TTM designs		O	Construction	Construction Methods	Sean Ellison	Costain	Delays in securing approvals can delay scheme progress	Communication with LCC and HE (depending upon area) and involvement in the development of schemes taking advantage of their local knowledge	3	2	3	2	1	3	4	12	60%	All plans to be provided to HE/ highway authority for approval at earliest opportunity. Timescales for review and acceptance to be agreed and confirmed during ECI phase for inclusion in programme Meetings with HE/Police and others completed in order to satisfy parties requirements.	3	2	3	2	1	3	2	6	20%	£	2,500.00	£	10,000.00	£	20,000.00	£	2,166.67	0	£	10,833.33	£	-	There may be a need for speed control camera etc that would increase the price considerably as yet this is not confirmed	£	125.00	£	2,562.50	£	5,000.00
R0157	Availability of landscape planting stock COMBINED WITH RISK R0156 IN RISK 249		C	Construction	Material, plant & labour resources	John Jones	LCC	Nursery planting (24 month ordering period) Complaints from public if proposed early screening planting isn't in place at start of construction	Project planning to include addressing issue of native plant species possibly not in nurseries	5	3	1	3	3	5	4	20		Specification to be made available at earliest opportunity - including types of plants required, sizes and numbers to enable engagement with supply chain Will require early procurement to secure stock Must have confirmation of early planting requirement to ensure early screening planting available at start of construction (noting 18 month lead in period) Early procurement will enable early seed collection Need to enquire if nursery will collect seed now without a confirmed order	5	3	1	3	3	5	3	15		£	-	0	£	-	£	-	£	-	Combined with R0251	£	-	£	-	£	-				
R0158	Availability of bespoke wildflower seed mixes COMBINED WITH RISK R0155 IN RISK 249		C	Construction	Material, plant & labour resources	John Jones	LCC	The appropriate mix may not be available at the right time for seeding and the design and associated ecological benefits would be compromised	Early ordering of wildflower mixes to ensure available at the required time	5	2	2	1	3	5	3	15		Seed mixes to be specified as soon as possible to enable engagement with supply chain and review of availability/ costs to enable potential delays to be mitigated early	5	2	2	1	3	5	2	10		£	-	0	£	-	£	-	Combined with R0252	£	-	£	-	£	-						
R0159	Definition of road tie-in scope and buildability - applies to all junctions		C	Development	Detailed design	John Hooker	LCC	*Redo design Increase costs	Detailed topo prior or at start of works to verify design levels	2	3	3	2	1	3	3	9		Ensure tie-ins considered within design and surveys confirmed to be accurate at tie in locations	2	3	3	2	1	3	2	6		£	-	0	£	-	£	-	CLOSED	£	-	£	-	£	-						
R0160	Timely submission and processing of Traffic Regulation Orders		O	Construction	Construction Methods	Sean Ellison	Costain	Delay to programme		3	2	1	1	1	3	4	12	60%	Ensure TRO and TTRO scheduled and applied for at earliest opportunity Include dates for submission and timescales within programme	3	2	1	1	1	3	2	6	20%	£	2,500.00	£	10,000.00	£	20,000.00	£	2,166.67	0	£	10,833.33	£	-		£	125.00	£	2,562.50	£	5,000.00
R0161	Site security and risk of theft of plant, tools and equipment		O	Construction	Commercial	Richard Helme	LCC	Cost to replace equipment	Good site management and security practices	1	3	1	1	1	3	3	9	40%	Site security plan - manned compounds and central stores Roving security out of hours Plant and material storage in appropriate locations Secure fencing at main compound sites Site housekeeping policies to be enforced to prevent plant/ tools/ material being left out	1	3	1	1	1	3	2	6	20%	£	20,000.00	£	50,000.00	£	100,000.00	£	4,666.67	0	£	23,333.33	£	-	Provisional allowance	£	1,000.00	£	13,000.00	£	25,000.00
R0162	Breach of planning conditions wrt to landscape and ecology		O	Construction	Planning	Phill Wilson	LCC	* Misrepresentation of contract specification / appendices * Non-compliance with contract specification * Damage by contractor * Failure to comply with legislation e.g. Hab Regs, Wildlife & Countryside Act, NERC Act * Failure to comply with planning policy and conditions * Failure to comply with planning practice guidelines and national	* Selection of Contractor * Use of Environmental Quality systems * Appropriate supervision of contractor * Appropriate environmental planning	3	4	1	2	3	4	2	8	20%	Ensure planning and licence requirements are clearly communicated to contractor for inclusion in planning of works Ensure contract references key constraints/ planning condition/ licence schedules	3	4	1	2	3	4	2	8	20%	£	-	£	5,000.00	£	50,000.00	£	3,666.67	0	£	18,333.33	£	-	Leave as provisional figure albeit most landscape and ecology risk covered within relative associated identified risks	£	-	£	6,250.00	£	12,500.00
R0163	Failure of mitigation measures e.g. roadkill / planting failures / declining species populations		O	Construction	Environment	John Jones	LCC	Failure of LCC to comply with legislation and policy	Monitoring Schemes	1	4	3	3	4	4	4	16	60%	Ensure specification is robust Competent landscaping contractor to be utilised to minimise risk of poor workmanship contributing to failures	1	4	3	3	4	4	1	4	5%	£	-	£	5,000.00	£	50,000.00	£	916.67	0	£	18,333.33	£	-		£	-	£	11,250.00	£	22,500.00
R0164	Quality of cut materials versus specifications		O	Construction	Ground Conditions	Dave Brown	LCC	Need to reorder materials causing *Delay to programme Increase costs	GI review now to assess material treatment requirements - Current assessment of cut material 50/50/20 - 20 being U/A	2	3	1	1	2	3	4	12	60%	Review of site GI to assess quality of materials for reuse Assessment of treatment required for reuse of site won materials during ECI phase to prevent construction phase delay	2	3	1	1	2	3	1	3	5%	£	50,000.00	£	500,000.00	£	2,000,000.00	£	42,500.00	0	£	850,000.00	£	-	Overall earthwork requirements at this point unclear therefore allowance includes for substantial import	£	2,500.00	£	251,250.00	£	500,000.00
R0165	Adequacy of railway possessions / Lost time need for additional contingency possessions		O	Construction	Construction Methods	Steve Webster	Costain	Need additional possessions to complete works - seeking available possession and resources causes delay Risk of losing possession window to poor weather/ resource availability/ plant breakdown etc.		5	3	3	2	1	5	4	20	60%	Ensure robust planning to book possessions at the right time Ensure contingency possessions are booked to account for poor weather/ breakdowns etc. Possession planning reviews, make ready process and Readiness Reviews in countdown to possessions to ensure dates achieved and delays / abortive possession avoided as far as possible	5	3	3	2	1	5	2	10	20%	£	10,000.00	£	20,000.00	£	37,500.00	£	4,500.00	0	£	22,500.00	£	-	Additional 24 hours at £75k per 24 hours Assume that worst case is additional 24 hour added to alternative booked possession to recoup time and 50% risk of requirement as programme will include for contingencies	£	1,000.00	£	12,687.50	£	24,375.00
R0166	Further surveys required pre-construction - topo / noise / vibrations / structural / drainage condition etc.		C	Development	Planning	John Hooker	LCC	Delay to construction start		3	2	1	1	1	3	3	9		Seek to undertake all survey works during design preparation phases and in advance of construction to prevent unnecessary delays	3	2	1	1	1	3	2	6		£	-	0	£	-	£	-	£	-	This is a known requirement and is therefore included within the project budget	£	-	£	-	£	-				
R0167	Bartle Lane Bridge- Danger of bridge strikes during use of PWD as few other over-bridges in region		O	Construction	Access for construction	Steve Webster	Costain	*Minor delays due TM for repairs *Closure of bridge due to major damage	Select headroom to minimise risk	1	1	5	4	1	5	4	20	60%	Existing network constraints Ensure bridge designed to achieve/ exceed minimum clearances as required by DMRB Include signage to alert drivers to height restriction Co-ordinate with abnormal loads specialists to ensure they appropriate restriction on route Comprehensive site investigation Selection of visit to span poor ground	1	1	5	4	1	5	2	10	20%	£	-	£	20,000.00	£	100,000.00	£	8,000.00	0	£	40,000.00	£	-		£	-	£	32,500.00	£	65,000.00
R0168	Savick Brook Viaduct- built over floodplain and risk of alluvial /peat being more extensive than displayed by test results		C	Construction	Ground Conditions	Dave Brown	LCC	Potential delays, additional costs	Choose design options that reduce exposure to risk	3	3	2	1	3	3	4	12		Early consideration of platform requirements and ground improvements required to ensure their competence Plan possible remedial measures required so that if necessary minimise delay seeking solution	3	3	2	1	3	3	3	9		£	-	0	£	-	£	-	CLOSED	£	-	£	-	£	-						
R0169	Can't reasonably maintain the mitigation areas		C	Construction	Handover and Maintenance	Phill Wilson	LCC	Failure to comply with planning and licencing requirements	Include maintenance team in design process to ensure sufficient maintenance access and provision	1	2	4	1	3	4	4	16		Ensure consideration given to maintenance of mitigation areas and that design includes access arrangements etc. Review of areas and access provisions with maintainer during design	1	2	4	1	3	4	2	8		£	-	0	£	-	£	-	£	-	£	-	£	-	£	-	£	-			
R0170	Extraordinary material/fuel price increase/fluctuation/BREXIT etc		O	Construction	Commercial	Paul Sullivan	LCC	Additional costs	Rolling review of market volatility - may be prudent to explore alternatives to secure costs; early procurement, hedging, inflation and price fixity in subcontracts for high risk elements.	1	5	2	1	1	5	4	20	60%	Review of relevant indices in preparation of Target Cost Consideration of inflation mechanisms within subcontracts to mitigate risks (e.g. Caps, priced risk etc.) to be assessed on case by case basis	1	5	2	1	1	5	3	15	40%	£	250,000.00	£	350,000.00	£	1,500,000.00	£	380,000.00	0	£	950,000.00	£	-	Worse case based upon increase to steel price by 20% to structural and reinforcement.	£	75,000.00	£	525,000.00	£	975,000.00
R0171	Volatility in Insurance market resulting in unexpectedly high premiums		C	Construction	Commercial	Paul Sullivan	LCC	Additional costs		1	3	1	1	1	3	4	12		Potential mitigation unclear at present	1	3	1	1	1	3	4	12		£	-	0	£	-	£	-	£	-	£	-	£	-	£	-					
R0172	Stage 3 Safety Audit		O	Construction	Handover and Maintenance	Kim Whalley & John McKeever	LCC	*Additional works *Compensation events Reputational damage of reworks	Ensure Stage 1 and stage 2 audits are as comprehensive as possible as well as ongoing LCC design	2	1	2	2	1	2	4	8	60%	Ensure earlier stage safety audits completed and actions incorporated in design Undertake Safety Audit at earliest opportunity to prevent delays to opening	2	1	2	2	1	2	2	4	20%	£	75,000.00	£	150,000.00	£	300,000.00	£	35,000.00	0	£	175,000.00	£	-	Stage 3 audits can pick up						

Risk Identification Number	Risk Description	Open/Closed	Risk Type	Risk Category	Risk Owner	Cost Owner	Possible Consequences	Current Controls	Impact & Severity						Initial Risk Score	Pre-mitigated Probability	Mitigating Actions	Impact & Severity						Residual Risk Score	Post mitigated Probability	Residual Risk Values			Risk Allowance = Assessed Value x Risk Multiplier				Comments	Risk Allowance = Assessed Value x Risk Multiplier																		
									S	C	O	P	E	Max				S	C	O	P	E	Max			Lowest	Most probable	Highest	Risk EMV	Berneulli	Distribution	Outputs		Lowest	Most Probable	Highest																
R0179	Different goals and priorities for all parties (client, design team, contractor) leading to conflicts/ delays	O	Construction	Management	Phil Wilson	LCC	Conflicting priorities creating delays. If feeling and impacting team relationship.	Regular meetings to review progress, establish priorities for whole team	5	3	1	1	5	5	4	20	60%	Co-ordination of works and clear priorities Programmes outlining each groups' proposed work streams and deliverables to highlight any conflicts/ requirement for better co-ordination. Collaboration - team building events.	5	3	1	1	1	5	1	5	5%	£	5,000.00	£	15,000.00	£	20,000.00	£	666.67	0	£	13,333.33	£	-	The project should be seen as one goal, albeit personalities can have different/difficult objectives	£	250.00	£	6,625.00	£	13,000.00					
R0180	Battle Lane ecology design deemed impractical or unfeasible at planning	C	Development	Environment	John Jones	LCC	Failure of scheme to progress through planning Challenge at Inquiry JR	Ecological advice sought during design process, therefore solution should have merit and defence at planning.	2	2	1	2	4	4	3	12		Proposed scheme was presented at consultation and brought no objections or concerns.	2	2	1	2	4	4	1	4				£	-	0	£	-	£	-	Closed	£	-	£	-	£	-									
R0181	Removal of existing footbridge - noise and dust during demolition	O	Construction	Environment	Karl Heath	LCC	Excessive noise/ dust or vibration generating complaints from the public Action from Enviro Protection teams PR impact to County, Costain and HE		2	2	4	4	4	4	3	12	40%	Method of demolition to consider impacts and take measures to minimise impacts where possible. Use of specialist demo contractor to utilise best practice measures Effective engagement with affected business/ landowner/ user in advance of the works Demo down and sweepers to assist clear up operation Engage specialist contractor to advise demolition sequence	2	2	4	4	4	4	2	8	20%	£	-	£	2,500.00	£	10,000.00	£	833.33	0	£	4,166.67	£	-	Closed March 2019 see R0098	£	-	£	1,250.00	£	2,500.00					
R0182	Removal of existing footbridge - programme impact - co-ordination with HE network works - impact on traffic if overrun	O	Construction	Programme	Steve Webster	LCC	Overrunning work to remove footbridge impacts M55 operation Reputational impact for project Unwillingness of HE to permit future possessions Delay while seeking additional possessions to complete works.	Ensure supply chain involved in programming the works to ensure realistic timeframes are requested.	3	2	4	4	1	4	4	16	60%	Use of as built information to plan demolition works Liaison with HE regarding available work possessions Ensure well planned and contingencies in place or safe partial demo hold points if programme doesn't meet planned outputs	3	2	4	4	1	4	3	12	40%	£	-	£	5,000.00	£	50,000.00	£	7,333.33	0	£	18,333.33	£	-		£	-	£	11,250.00	£	22,500.00					
R0183	Quality issues for off site manufactured items, not discovered until delivery and creating delays/ defects	O	Construction	Construction Methods	Mike Hitchinson	Costain	Delays to activities and follow on works Reworks Additional costs to rectify defects Long term maintenance liability Refusal of client to accept defective item within permanent works	Use of known supply chain tried and tested with good historic performance Update of design info received by LCC to supply chain to prevent clashes errors	4	3	4	1	1	4	3	12	40%	Regular inspection of off site manufactured items Clear and robust design and specification & approval of manufacture drawings prior to production Pre delivery inspection - Vesting - Site/factory visits	4	3	4	1	1	4	1	4	5%	£	10,000.00	£	25,000.00	£	50,000.00	£	1,416.67	0	£	28,333.33	£	-	Provisional figure ast present may need review	£	500.00	£	6,500.00	£	12,500.00					
R0184	Damage to motorway comms infrastructure during construction of Beconnassall Bridge and demolition of existing footbridge	O	Construction	Underground / Overground Services	Sean Ellison	Costain	Disruption to comms infrastructure Service strike Cost and time delay whilst repairs completed Additional restrictions put on working methods.	As built information has been sought from HE and incorporated into design to highlight interface	5	4	4	3	1	5	4	20	60%	Robust site survey of all comms assets prior to construction HE/ NRTS to peg assets, trial holes to be undertaken to confirm position. Agree protection/ diversion requirements early in the design phase to enable these to be included within the design and programme/ costs	5	4	4	3	1	5	2	10	20%	£	5,000.00	£	50,000.00	£	100,000.00	£	10,333.33	0	£	51,666.67	£	-	Check this are we not upgrading this at same time?	£	500.00	£	32,750.00	£	65,000.00					
R0185	Failure to achieve consents for temporary bridge at Savick, precludes access to Savick north for viaduct construction until haul road built from main compound/ Darkinson Lane	C	Construction	Construction Methods	Steve Webster	Costain	unable to access north of Savick Brook until haul route built from Darkinson Lane or main compound area. Significant cost and delay Extends programme due to slower supply rates to piling	Early engagement with landowner and CRT/ UU Assessments being undertaken to ensure meet their requirements for temporary structure	3	5	1	2	3	5	3	15		Ensure agreements in place ahead of CPO publication Continued engagement to address any concerns	3	5	1	2	3	5	2	10		£	-	£	-	£	-	£	-	0	£	-	£	-	Temporary bridge agree over Savick - item closed	£	-	£	-	£	-					
R0186	Failure to adequately protect Hodder Aqueduct during construction - leading to damage/ leak	O	Construction	Underground / Overground Services	Simon Crisp	Costain	Significant disruption to the water network Significant discharge of water on site Fire & or repair costs from UU Delay during repair Disruption to water supply to residents/ business	Engagement with UU to consider what diversion/ protection or controls will be required	5	5	4	3	4	5	4	20	60%	Ensure temporary works design in place prior to mobilisation Consideration of protection requirement to be accounted for in TC Ensure engagement with UU continues to establish a mutually agreeable solution for the protection / diversion of the aqueduct. Site controls: signage of service below; induction; permits etc.	5	5	4	3	4	5	2	10	20%	£	20,000.00	£	50,000.00	£	1,000,000.00	£	71,333.33	0	£	356,666.67	£	-	Allowance for closure and remedial works	£	2,000.00	£	326,000.00	£	650,000.00					
R0187	Multiple programmes don't align (client, contractor, design teams)	C	Development	Programme	Phil Wilson	LCC	Each party working to different timeframes Conflicting goals Failure to supply required deliverables on time lack of co-ordination leading to inefficiency	Co-ordination meetings Regular communication of updated information	5	5	1	1	1	5	5	25		Single project programme (with information supplied by all parties) and controlled by one party but shared with all to facilitate co-ordination and shared targets. Regular team reviews to highlight potential issues	5	5	1	1	1	5	2	10					£	-	0	£	-	£	-		£	-	£	-	£	-								
R0188	Inadequate water management implementation leading to on site flooding/ uncontrolled discharge/ poor quality of discharge	C	Construction	Environment	Sean Ellison	Costain	Delay dealing with flooding Damage to permanent works Disruption to other watercourses EA action Reputational damage	Develop pre-earthworks drainage scheme during design process Develop water management requirements ahead of TC	4	3	3	3	5	5	4	20		Consider temporary water management in design Implement pre earthworks drainage from the outset Ensure best practice control measures implemented and detailed within HASEMP on site flooding/ uncontrolled discharge/ poor quality of discharge High risk areas/ activities to be controlled through specific RAMS Weather/ flood alerts to prepare for heavy downpours Only soil strip where necessary, ensure watercourses protected Identify works likely to require NR supervision within the programme and consult and schedule out with NR in advance of construction to ensure costs captured. Monitoring of site supervision Co-ordination of activities to make efficient use of supervisors time and minimise time on site	4	3	3	3	4	5	3	15		£	-	0	£	-	£	-	£	-		£	-	£	-	£	-	Within target cost comprehensive WMP allowance here for localised and anything greater than planned - Current anticipated cat of this between 700 and 1.2ml	£	-	£	-	£	-	£	-
R0189	Costs of Network Rail supervision significantly greater than anticipated	C	Construction	Commercial	Paul Sullivan	LCC	Significant cost to scheme budget Costs greater than forecast leading to cost overrun Delays if disputed and supervision withdrawn		2	3	3	1	1	3	3	9		Identify works likely to require NR supervision within the programme and consult and schedule out with NR in advance of construction to ensure costs captured. Monitoring of site supervision Co-ordination of activities to make efficient use of supervisors time and minimise time on site	2	3	3	1	1	3	2	6		£	-	0	£	-	£	-	£	-	Combined with R021	£	-	£	-	£	-	£	-	£	-					
R0190	Communication problems across design team split across sites.	C	Development	Management	Kim Whalley & John McKeever	LCC	Design becomes disjointed Different teams working to different information and with different priorities Changes not communicated quickly enough lead to reworks		4	4	2	1	1	4	4	16		Design management processes to be implemented Clear roles and deliverables (inc timescales) assigned to each design team Meetings to co-ordinate team work at regular intervals Robust document (and design) control Design co-ordinator appointed to manage	4	4	2	1	1	4	1	4		£	-	0	£	-	£	-	£	-		£	-	£	-	£	-	Appointed design co-ordinator to manage	£	-	£	-	£	-		
R0191	Material price volatility	C	Construction	Commercial	Paul Sullivan	LCC	Material price volatility affects certainty within the Target Price Strategic decision to price fix items leads to inflated price due to associated risk Scheme affordability		1	5	2	1	1	5	4	20		Consider early purchase of high risk items Vest materials to secure price Alternative funding for early purchase of materials prior to scheme funding release - any potential?	1	5	2	1	1	5	3	15		£	-	£	-	£	-	£	-	0	£	-	£	-	Closed included in ABOVE R0168	£	-	£	-	£	-	£	-			
R0192	Temporary works requirements at Savick greater than anticipated (or proceed)	O	Construction	Construction Methods	Mike Hitchinson	Costain	Ground conditions are worse than anticipated and more platforms/ temporary works required to enable the piling/ structure construction works. Delays whilst design developed and implemented Risk of losing specialist contractor availability Additional costs to scheme	Additional GI being undertaken (including of platform locations where known) to enable assessment of the ground and to inform design of platforms prior to TC agreement and construction	2	2	1	2	2	2	3	6	40%	Specific GI when all platform positions known Trial holes to confirm ground conditions ahead of construction Early development of platform designs. Specific budget for this section of works	2	2	1	2	2	2	4	4	20%	£	25,000.00	£	100,000.00	£	250,000.00	£	2,333.33	0	£	11,666.67	£	-	This risk should be well covered within ECI development stage and finalising methodologies	£	1,250.00	£	19,375.00	£	37,500.00					
R0193	Eurocode Design Standards change during design process	O	Development	Detailed design	Kim Whalley & John McKeever	LCC	Rework required to design Associated costs and delays Non-standard/ non-compliant asset	Design team to keep up to date with changes in design standards.	2	2	2	1	1	2	4	8	60%	Usually an awareness of proposed changes in advance of implementation If significantly progressed with design not forced to make change Designer/ Design Manager & PM assessment	2	2	2	1	1	2	1	2	5%	£	-	£	5,000.00	£	20,000.00	£	416.67	0	£	8,333.33	£	-		£	-	£	2,500.00	£	5,000.00					
R0194	Funding - potential for spending review disrupting the scheme following referendum	C	Development	Commercial	Phil Wilson	LCC	Scheme put on hold - unknown timeframe Review of funding including potential withdrawal/ reduction in available funds Impact on housebuilding and the funding reliant upon new homes Significant delays	Review of spending and housing market City Deal Governance review Political influence / lobbying to protect scheme funding	5	4	1	4	1	5	5	25		Be proactive seeking savings	5	4	1	4	1	5	3	15					£	-	0	£	-	£	-	CLOSED	£	-	£	-	£	-	£	-	£	-				
R0195	Failure to adequately co-ordinate information within various design teams/ external approval bodies and internal design checks and the iterations through the process	C	Development	Detailed design	Mike Hitchinson	LCC	Some teams may be working on superseded information leading to conflicts between design elements/ incorrect information being put forward for approval. Delays if approval not granted and reworks required Delay as teams rework solutions designed on out of date info Reputational damage with third party approval bodies	Document management Design co-ordination within teams Design co-ordination meeting at 6 weekly intervals	2	1	1	1																																								

Risk Identification Number	Risk Description	Owner/Grouped	Risk Type	Risk Category	Risk Owner	Cost Owner	Possible Consequences	Current Controls	Impact & Severity							Likelihood	Initial Risk Score	Pre-mitigated Probability	Mitigating Actions	Impact & Severity						Likelihood	Residual Risk Score	Post mitigated Probability	Residual Risk Values			Residual Risk Values				Comments	Risk Allowance = Assessed Value x Risk Multiplier															
									S	C	O	P	E	Max	S					C	O	P	E	Max	Lowest				Most probable	Highest	Risk EMV	Bernoulli	Distribution	Outputs	Lowest		Most Probable	Highest														
R0206	Delay in making CPO		C	Development	Legal	Jane Turner	LCC	Delay to land acquisition and therefore delay to the scheme	Planning permission applied for Land referencing firm appointed Requirements for CPO identified	4	4	4	3	1	4	4	18		Committee approval to make CPO Appointing land referencing firm Identification of land requirements	3	3	4	3	1	4	3	12					£	-	0	£	-	£	-	Worst case - 1 month at 10 FTE Most likely 2 weeks at 10 FTE DUPLICATE of R0115 - CLOSED THIS HAS PASSED	£	-	£	-	£	-							
R0207	Delay in making Side Roads Order		C	Development	Legal	Jane Turner	LCC	Unable to make CPO No co-ordination between CPO/SRO especially Statement of Reasons	Identification of officer to draw up Side Roads Order	4	4	4	3	1	4	4	18		Appointment engineer to draw up SRO Liaison between Land, Legal and SRO author	3	3	4	3	1	4	3	12	£	-	£	-	£	-	£	-	£	-	CLOSED - Previouslly 50k & 100k	£	-	£	-	£	-								
R0208	Failure to agree with Highways England land acquisition and or occupation requirements		O	Development	Legal	Jane Turner	LCC	Unable to construct scheme	Engineer liaison with HE	3	3	4	2	1	4	3	12	40%	Engineer agreement with the HE Land agreement with the HE Use existing powers under Highways Act 1980	3	4	4	2	1	4	3	12	40%	£	20,000.00	£	100,000.00	£	1,000,000.00	£	149,333.33	0	£	373,333.33	£	-	Reduced this risk to allow for some unforeseen but would expect all land acquisitions to be agreed	£	2,000.00	£	126,000.00	£	250,000.00				
R0209	Ground water issues - known to be high in certain areas and likely to affect construction		O	Construction	Construction Methods	Steve Webster	Costain	Costs associated with dewatering excavations and impact on programme Need to consider within temporary works designs and methods Cuttings at Bartle Lane will require face drainage Risk of artesian pressure affecting piling works.	Piezometers have been installed and provided information used thus far. It does not however allow for permeability test or pumping test so actual ground condition will not be known until entered	3	3	1	1	3	3	4	12	60%	Review and propose new instrumentation Use existing piezo information to inform design Temporary works to consider groundwater information in design and installation	3	3	1	2	3	2	3	8	40%	£	10,000.00	£	50,000.00	£	125,000.00	£	24,666.67	0	£	61,666.67	£	-	Allowance exists within the Risk0188 this allows for any further unforeseen conditions associated with localised dig excavations to structures - Halved this figure with review of R0188 taken account of.	£	500.00	£	15,875.00	£	31,250.00				
R0210	Methane from peat within excavations at Savick		O	Construction	Health and Safety	Steve Webster	Costain	SHE issues - asphyxiation	Highlight peat areas	3	3	1	2	3	3	3	9	40%	Add gas monitoring to existing piezo within the area of concern	3	3	1	2	3	3	1	3	5%	£	2,000.00	£	10,000.00	£	12,500.00	£	408.33	0	£	8,166.67	£	-	Provisional figure at this point	£	100.00	£	1,612.50	£	3,125.00				
R0211	Import of fill material and CBGM		C	Construction	Construction Methods	Sean Ellison	Costain	Delays to supply delays programme Maintaining import rate (affected by weather, traffic incidents, haulage availability) for prolonged period Unable to place material	Material specification	5	5	2	3	3	5	5	25		Select material that can be placed in poor weather - granular Address haulage fleet requirements with supply chain during ECJ Maintain security of supply Robust logistics plan with clear diversion routing in case of traffic incident Consider onsite batching of CBGM to mitigate reliance on local road network.	5	5	2	3	3	5	4	20					£	-	0	£	-	£	-	As earthwork design concluded this can be reviewed	£	-	£	-	£	-							
R0212	Slope angles (steepness) and topsoil depths		C	Development	Detailed design	Dave Brown	LCC	Slippage in wet weather Failure to achieve planting	Co-ordination between landscape and geotechnical design	4	4	1	3	3	4	4	18		Further co-ordination & lessons learnt from Heysham Robust geotechnical and landscape design	4	4	1	3	3	4	3	12					£	-	0	£	-	£	-		£	-	£	-	£	-							
R0213	All ponds may need to be lined		O	Construction	Detailed design	Dave Brown	LCC	Additional cost and time to line ponds.	Need to be considered in drainage design. Geotech team to advise of areas of concern. Currently 5 of 11 ponds have been lined.	1	2	2	1	2	2	3	6	40%	Trial holes and boreholes to understand geotechnical details	1	2	2	1	2	2	2	4	20%	£	5,000.00	£	25,000.00	£	50,000.00	£	5,333.33	0	£	26,666.67	£	-	Re opened as currently assuming no lining will be required	£	250.00	£	3,875.00	£	7,500.00				
R0214	Motorway comms and signage		C	Development	Detailed design	John McKeever	LCC	Lack of agreement of scope Additional delay seeking confirmation of requirements Scope creep while design not confirmed Additional costs incurred Scheme delay if not confirmed prior to construction	Liaison with HE to confirm and agree scope asap	5	5	4	3	2	5	5	25		Collaborative working with the HE/ Area 13 ASC to agree scope and prove existing assets to inform design Defined scope prior to target cost Confirmed lines of communication and recorded	5	5	4	3	2	5	3	15					£	-	0	£	-	£	-	Previously closed left closed and introduced new item see Design Issues comms 1500 series	£	-	£	-	£	-							
R0215	Hodder Aqueduct diversion - scope and timescales		O	Construction	Underground / Overground Services	Simon Crisp	LCC	Failure to adequately address design leads to delays Significant costs associated with diversion Loss of engagement from UU slowing progress Failure of UU contractor to complete the works by May 2020	Ensure communication with UU as frequentes required Regular meetings and updates as to methods etc Review UU contractor progress on site	5	3	4	3	5	5	4	20	60%	Liaison with UU to seek diversion design Early design of protection requirements to permit works in the area ahead of diversion or if protection sufficient	5	3	4	3	5	5	3	15	40%	£	500,000.00	£	800,000.00	£	1,000,000.00	£	351,111.11	0	£	877,777.78	£	-	UU now completed 7 versions of estimate March 2019 - latest one looks to be accepted by LCC - 2019 start complete works in May 2020 -Allowances assuming 2 month 3 month 4 month delay to elements in that area	£	150,000.00	£	400,000.00	£	650,000.00				
R0216	HE requirement for garties to be installed for the lane drop/ lane gain arrangement through the junction		C	Development	Detailed design	Shiona MacDonald	LCC	Insufficient land take Additional scope of works Additional cost Programme impact	Liaison meetings with HE	5	5	4	2	1	5	4	20		confirmation of scope of works HE require asap; to be documented and agreed and included within design Ensure land take sufficient for gantry type required - can reduce land take easier than increase Ensure gantry included within programme if confirmed requirement	5	5	4	2	1	5	3	15					£	-	0	£	-	£	-	Closed	£	-	£	-	£	-							
R0217	Changes to legislation through scheme development / delivery		O	Construction	Contractual	Phil Wilson	LCC	Potential for more or less onerous requirements for mitigation May have impacts upon land take requirements and CPO Brexit impact	Horizon scanning for new or emerging legislation or consultations on existing. React quickly to any changes	5	4	3	3	2	5	2	10	20%	Share knowledge between all parties of any potential legislation changes Joint working group to assess any new/ changed requirements and the implications quickly	5	4	3	3	2	5	1	5	5%	£	5,000.00	£	25,000.00	£	50,000.00	£	1,333.33	0	£	26,666.67	£	-		£	250.00	£	6,375.00	£	12,500.00				
R0218	Allegations of offences against protected species		O	Construction	Environment	Karl Heath	Costain	Delays Investigation Reputational damage during investigations	Ensure robust ES ecology assessment Mitigation or protection measures detailed within ES	2	1	1	2	3	3	3	9	40%	Ensure robust ecological management plans and implementation on site in accordance with legislation/ best practice measures. Regular liaison with NE and site tours to see mitigation/ management measures in place to build confidence in approach	2	1	1	2	3	3	2	6	20%	£	1,000.00	£	2,500.00	£	20,000.00	£	1,566.67	0	£	7,833.33	£	-		£	50.00	£	2,525.00	£	5,000.00				
R0219	Failure to comply with landowner agreements with respect to landscape design and or maintenance		C	Development	Land	argaret Whitmo	LCC	Impact on aftercare costs if scope/ requirement changes	Land owner agreements must be scheduled and distributed across the team (all design leads), land and legal	2	4	3	2	3	4	3	12		Design management process to ensure agreements are communicated to landscape team (as well as all other design leads) to ensure they are reflected within the design.	2	4	3	2	3	4	2	8		£	-	£	-	£	-	£	-	0	£	-	£	-	CLOSED	£	-	£	-	£	-				
R0220	Species disease (such as Ash die back previously)		O	Construction	Handover and Maintenance	John Jones	LCC	May restrict available planting types Significant demand for alternative species may deplete stocks Cost impact of demand exceeding available supply Delays to programme seeking alternative supply/ growing species Alternative species may present maintenance issues unforeseen Cost term impact for aftercare.	Awareness and review of specialist press to highlight potential concerns	5	3	3	2	4	5	3	15	40%	Early engagement with nursery will ensure we are alerted to potential concerns or emerging issues. Nursery awareness of our requirements will assist in quickly sourcing alternative stock to similar number LCC must react quickly to approve alternatives proposed to secure stock before supply desired.	5	3	3	2	4	5	2	10	20%	£	10,000.00	£	42,500.00	£	170,000.00	£	14,833.33	0	£	74,166.67	£	-	We have still to enage specialist in meaningful discussion as awaiting landscaping design	£	1,000.00	£	38,750.00	£	76,500.00				
R0221	Fire and vandalism		O	Construction	Commercial	Paul Sullivan	LCC	Damage to plant/ permanent works Injury to workarea or imposter Cost to rectify/ repair Delays	Monitoring of national intelligence of scheme protest/ objector interest Inclusion of site security and boundary fencing within Target Cost	2	2	1	3	2	3	3	9	40%	Monitoring of national intelligence of scheme protest/ objector interest Inclusion of site security and boundary fencing within Target Cost	2	2	1	3	2	3	2	6	20%	£	10,000.00	£	20,000.00	£	50,000.00	£	5,333.33	0	£	26,666.67	£	-	Provisional allowances	£	500.00	£	6,500.00	£	12,500.00				
R0222	Site housekeeping and appearance of site establishments		O	Construction	Public and/or Stakeholder Concerns	Richard Helme	LCC	Poorly presented site compounds and poor housekeeping will create a bad impression within the local community May generate adverse publicity and bad feeling toward scheme	Site compounds will be professionally presented in line with corporate standards and well maintained.	1	1	2	3	1	3	2	6	20%	Use only approved supplier for compound set ups Ensure sufficient allowance for maintenance of compounds and presentation of site	1	1	2	3	1	3	1	3	5%	£	5,000.00	£	10,000.00	£	20,000.00	£	583.33	0	£	11,666.67	£	-	May not be able to appease everyone for three years	£	250.00	£	1,625.00	£	3,000.00				
R0223	Quality of the storage and transport of plants		O	Construction	Material, plant & labour resources	Paul Sullivan	LCC	Lead in times for size nature and type of planting required. Delays if approval not granted and reworks required. Delay as teams rework solutions designed on out of superseded information	Make LCC aware of the risks associated with lead in times for certain plant types and specifications as well and ensuring design is completed in good time	2	3	3	3	3	3	3	9	40%	Ensure robust schedule of planting requirements and timframes (for early planting) to minimise storage requirements and aim to bring to site as JT Consideration of maintenance period for landscape control and inclusion of establishment limits Specification to be clear and robust Inspection of nursery.	2	3	3	3	3	3	2	6	20%	£	5,000.00	£	10,000.00	£	50,000.00	£	4,333.33	0	£	21,666.67	£	-	This should be within supply chain risk unless considerable late design change by the client	£	250.00	£	6,375.00	£	12,500.00				
R0224	Availability of soils - fill, subsoils and topsoils		C	Construction	Ground Conditions	Dave Brown	LCC	Lack of suitable quality topsoils and subsoils may impact planting success Additional costs to source material from offsite Programme risk of availability of soils co-inciding with site requirement Ensure consideration of nutrient requirements for landscaping and use soils accordingly.	GI investigation in assessing levels of top and subsoil for re-use	3	4	3	2	3	4	4	16		Secure early supply chain engagement to consider how the scheme can be supplied with sufficient materials and within the necessary timescales. Programme robustly - mass haul may be appropriate detailing all material requirements and sources aligned to programme. Meeting with Soil expert to detail re-use of top soil Ensure all surveys undertaken in seasons in advance of construction to identify invasive species and record locations	3	4	3	2	3	4	2	8					£	-	0	£	-	£	-		£	-	£	-	£	-	Currently we have an anticipated excess of topsoil that cannot be reused on site therefore the risk is the mass haulage of such as waste £20k @ 90k t	£	-	£	-	£	-
R0225	Spreading invasive and noxious species		C	Construction	Environment	Karl Heath	LCC	EA/ NE action Delays and associated costs dealing with contamination Reputational damage Ongoing maintenance liability	Highlight presence of invasive species (types, quantity and location) within ES	3	4	3	3	4	4	4	16		Ensure control plans in place for works in these areas - including pre-treatment, exclusion zones etc as necessary LCC to consider pre-treatment in highway land in seasons in advance of construction to mitigate risk or further spread. Agreement with EA of control measures in advance of construction.	3	4	3	3	4	4	3	12					£	-	0	£	-	£	-		£	-	£	-	£	-	DUPLICATE OF R0103	£	-	£	-	£	-
R0226	Changes to hydrology of Bartle BHS - reducing the wetlands and impacting on planting / ecology design		C	Development	Environment	Dave Brown	LCC	Drainage/ earthworks design may adversely impact the hydrology of the area and 'drain' the BHS Failure to protect BHS likely to result in action from NE Delay and associated cost seeking resolution Impact on ecology in the BHS	Design co-ordination	4	4	2	3	4	4	4	16		Ensure Co-ordination of solution between drainage, earthworks and landscape/ ecology team with respect to the design in this area. Use lessons learnt from Heysham where wetland was drained under embankment construction footprint, but remained wet at wetland screen for bio.	4	4	2	3	4	4	2	8					£	-	0	£	-	£	-		£	-	£	-	£	-	Addressed in design	£	-	£	-	£	-
R0227	Savick Brook Viaduct- Working adjacent/over watercourse for Temporary Structures (Culverts/bridges/headwalls)		C	Construction	Health and Safety	Steve Webster	LCC	Possible delays due to agreements and possessions with Environment Agency	Early planning and liaison with Environment Agency and inclusion within the partnership to ensure engagement and full understanding of their concerns	2	2	4	2	2	4	4	16		Ensure robust environmental protection measures to prevent pollution of watercourse Seek first alerts for this floodplain and ensure robust plans for the removal of materials/ plant in site zones in advance of construction to establish possession availability and notification periods	2	2	4	2	2	4	2	8					£	-	0	£	-	£	-		£	-	£	-	£	-	Closed included in other risk item	£	-	£	-	£	-
R0228	Lancaster Canal- Working adjacent/over canal for Temporary structures (Culverts/bridges/headwalls)		C	Construction	Health and Safety	Steve Webster	LCC	Possible delays due to agreements and possessions with CRT	Early planning and liaison with CRT and inclusion within the partnership to ensure engagement and full understanding of their concerns	2	2	3	1	1	3	4	12		Inclusion of these notification periods within programme Review of aspects to reflect risk of workers and equipment Liaison with LA to establish possession availability and notification periods	2	2	3	1	1	3	2	6					£	-	0	£	-	£	-		£	-	£	-	£	-	Closed included in other risk item	£	-	£	-	£	-
R0229	Watercourse works - installing headwalls/culverts into ordinary watercourses		O	Development	Environment	Sean Ellison	LCC	Delay in programme for installation if fail to achieve required consents	Early planning and liaison with Local Authority waterways department	3	2	3	1	2	3	4	12	20%	Inclusion of these notification periods within programme Planning of works to reflect risk of working adj to over watercourse, avoid planning works in stream between October and May Works plans to consider pollution prevention	3	2	3	1	2	3	2	6	20%	£	-	£	6,250.00	£	12,500.00	£	1,250.00	0	£	6,250.00	£	-	Most probable based on 1 week delay at 10% likelihood worst case 2 weeks delay @10% likelihood	£	-	£	1,562.50	£	3,125.00				
R0230	Invasive species identified in areas not previously highlighted as containing any		C	Construction	Environment	John Jones	LCC	Waste disposal costs and delay costs, prosecution	Site surveys conducted.	1	1	2	1	4	4	3	12		Regular site walkovers, training/tats in invasive identification	1	1	2	1	4	4	1	4					£	-	0	£	-	£	-		£	-	£	-	£	-	DUPLICATE OF R0103	£	-	£	-	£	-
R0231	Requirement for discharge licence from the Environment agency for surface/ground and effluent outflows from construction works and/or welfare.		C	Construction	Environment	Karl Heath	LCC	Delay in programme for installation, regulator enforcement action.	Water Management plan to be developed in liaison with the Environment agency throughout TC process	5	5	3	3	4	5	4	20		Early engagement with Environment agency and discussions to feed into the programme and water management plan. Discharge licence, if required, to be applied for no less than 4 months ahead of site start date. Discuss with Environment agency that if a licence is required that the first 3 months operate under the regulatory position statement.	5	5	3	3	4	5	4	20					£	-	0	£	-	£	-		£	-	£	-	£	-	Current EWP is based upon 2 year programme at £1.2m down from £4m - Awaiting EA response and comment on such and work to be done with programme to define durations to certain areas.	£	-	£	-	£	-
R0232	Ecology supervision provision is not adequate for the programmed works		C	Construction	Environment	Karl Heath	LCC	Delay in programme for installation, regulator enforcement action.	Programme to be developed with timings for works in ecologically sensitive areas to establish ecology supervision necessary.	3	2	2	1	3	3	3	9		Ecological supervision to be sourced as required for the demands of the programme.	3	2	2	1	3	3	1	3					£	-	0	£	-	£	-		£	-	£	-	£	-		£	-	£	-	£	-

Risk Identification Number	Risk Description	Open/Closed	Risk Type	Risk Category	Risk Owner	Cost Owner	Possible Consequences	Current Controls	Impact & Severity							Likelihood	Initial Risk Score	Pre-mitigated Probability	Mitigating Actions	Impact & Severity							Residual Risk Score	Post mitigated Probability	Residual Risk Values			Risk Allowance = Assessed Value x Risk Multiplier				Comments														
																													Lowest	Most probable	Highest	Risk EMV	Bernoulli	Distribution	Outputs		Lowest	Most Probable	Highest											
									S	C	O	P	E	Max	S					C	O	P	E	Max																										
R0233	Provision for disposing of road sweeper arisings	O	Construction	Environment	Karl Heath	LCC	Increased costs for offsite disposal	Water Management plan to be developed in liaison with the Environment agency. Plan currently with EA for comment	5	2	1	1	3	5	3	15	40%	Early engagement with Environment agency and discussions to feed into the programme and water management plan. Discharge licence, if required, to be applied for no less than 4 months ahead of site start date. Discuss with Environment agency that if a licence is required that the first 3 months operate under the regulatory position statement.	5	2	1	1	3	5	2	10	20%	£	10,000.00	£	35,000.00	£	60,000.00	£	7,000.00	0	£	35,000.00	£	-	£	1,000.00	£	14,000.00	£	27,000.00				
R0234	Construction of temporary bat flight lines	C	Development	Environment	Sean Ellison	LCC	Breach of planning and licence requirements	Designs for temporary Bat flight lines to be sourced from other scheme and reviewed for inclusion on this project.	1	1	2	1	5	5	2	10		Design to be agreed before site start and made available for installation during site clearance works to ensure removed hedgerows are 'maintained' during construction	1	1	2	1	5	5	1	5		£	-	0	£	-	£	-	£	-	£	-	£	-	£	-	-							
R0235	Import of materials requiring CL:Aire Materials Management plan	C	Construction	Programme	Sean Ellison	LCC	Delay to programme	Materials import to be from virgin sourcing and not from secondary sources	1	1	1	1	1	1	1	1		Constant review of materials and highlight if CL:Aire MMP will be required for any import. 3 months required to put this in place.	1	1	1	1	1	1	1	1		£	-	0	£	-	£	-	£	-	£	-	£	-	£	-	-							
R0236	Import of recycled aggregates	C	Construction	Material, plant & labour resources	Sean Ellison	LCC	Breach of legislation for importing of waste and requirement to remove all for disposal and replace	All recycled materials prior to import must have the correct documentation provided to Costain by the supplier in advance.	1	2	2	2	2	2	3	6		As current controls	1	2	2	2	2	2	1	2		£	-	0	£	-	£	-	£	-	£	-	£	-	£	-	-							
R0237	Environmental - unforeseen - Ground conditions / Asbestos / Anything else	O	Construction	Environment	Paul Sullivan	LCC	Programme delay and associated increased costs. Increased costs to remove asbestos and segregate works area.	Ground/Geo-tech. surveys completed ahead of construction.	1	1	1	1	1	1	5	5	80%	Probability lowered due to survey undertaken and asset information reviewed. May still be found in other areas and costs will vary depending on quant / type discovered.	1	1	1	1	1	1	2	2	20%	£	50,000.00	£	100,000.00	£	500,000.00	£	43,333.33	0	£	216,666.67	£	-	£	-	£	-	£	2,500.00	£	38,750.00	£	75,000.00
R0238	Presence of tar in some of the construction layers of the existing carriageways	O	Construction	Environment	Sean Ellison	LCC	Increased disposal costs as hazardous waste Testing requirements to confirm presence of Tar Time to seek permits to incorporate in works (as CBGM or cold bitumen product)	Site surveys	2	5	2	1	1	5	4	20	60%	Surveys to identify presence of Coal-tar, material to be segregated for either disposal or recycling into CBGM on site under position statements/licence from Environment agency.	2	5	2	1	1	5	2	10	20%	£	50,000.00	£	100,000.00	£	500,000.00	£	43,333.33	0	£	216,666.67	£	-	£	-	£	-	£	5,000.00	£	165,000.00	£	325,000.00
R0239	Additional temporary pollution control measures required brought about from scope changes	C	Construction	Environment	Shiona MacDonald	LCC	Programme delay whilst installing and increase in costs for mitigation/treatment facilities.	To be outlined in Water Management Plan								0												£	-	0	£	-	£	-	£	-	£	-	£	-	-									
R0240	Environmental & ecological requirements not anticipated at Target Price stage	O	Construction	Environment	Karl Heath	LCC	Delay to the programme	Watching brief on site from team, environmental attendance	3	1	2	3	3	3	3	9	40%	Ensure prompt reaction understanding and control of the situation with environmental attendance	3	1	2	2	2	2	2	4	20%	£	20,000.00	£	30,000.00	£	50,000.00	£	6,666.67	0	£	33,333.33	£	-	£	-	£	-	£	1,000.00	£	6,750.00	£	12,500.00
R0241	VE impact on programme	C	Development	Detailed design	hiona MacDonald	LCC	Delay to design process incorporating VE changes Cost to redesign to include/ assess proposed VE change	VE opportunities assessed for potential saving and cost for inclusion before can be incorporated into design	3	1	1	1	1	3	4	12		Ensure all VE opportunities logged Design lead to assess potential saving versus time and cost implication to implement Implement only those demonstrating saving even after reworks of design and not incurring significant programme impact For significant programme impact to achieve saving PW and or allow time against other programme	3	1	1	1	1	3	2	6		£	-	0	£	-	£	-	£	-	£	-	£	-	£	-	-							
R0242	LCC Highways are advised of other conflicting scheme/ network requirements - these aren't always supplied to City Deal team	C	Construction	Programme	Phil Wilson	LCC	Conflicting space demands at construction Conflicting demands and priorities within County Delays whilst conflict resolved		3	1	2	2	1	3	3	9		Co-ordination of works and clear priorities Programmes outlining each groups proposed work streams and deliverables to highlight any conflicts/ requirement for better co-ordination	3	1	2	2	1	3	1	3		£	-	0	£	-	£	-	£	-	£	-	£	-	£	-	-							
R0243	Jacobs design framework commission term ends soon; bid documents for next term to be issued Aug 16. Will they continue on City Deal schemes	C	Development	Detailed design	Phil Wilson	LCC	Delay if new designer brought into team Conflicting approaches to design may create delays, failure to handover or progress Integration of new partner to team may create problems		3	1	1	1	1	3	3	9		Jacobs will continue with what they have started. New commission will depend upon requirements	3	1	1	1	1	3	1	3		£	-	0	£	-	£	-	£	-	£	-	£	-	£	-	-							
R0244	Bat mitigation - off site mitigation yet to be resolved	C	Development	Environment	John Jones	LCC	Failure to identify a suitable site and mitigation measures will result in failure to comply with ES and planning Landowner advantage if know site is required Need to ensure included within CPO or could create ransom costs and delays	Liaison between Land Agent (MW) and Ecologist (JJ) to identify a suitable site and requirements.	2	4	1	1	4	4	4	16		Ensure scope of works identified, location of mitigation site and requirements for it Land to be included within CPO	2	3	1	1	4	4	4	16		£	-	0	£	-	£	-	£	-	£	-	£	-	£	-	-							
R0245	Extents of drainage ditch clearance - certainty included within land take for construction	C	Construction	Land	argaret Whitmo	LCC	Failure to clarify scope of works to clear existing ditches may result in insufficient land take Delays seeking access rights during construction phase Temporary drainage management at additional cost and delay. Land access premiums	Ensure drainage team review requirements in advance of confirmation of CPO and temporary land take requirements	4	3	3	2	3	4	4	16		Drainage design must consider works downstream prior to land take confirmation	4	3	3	2	3	4	3	12		£	-	0	£	-	£	-	£	-	£	-	£	-	£	-	-							
R0246	Availability (and reliability) of suitable equipment to work in the restricted area (principally around pylons at Savick)	C	Construction	Underground / Overground Services	Steve Webster	LCC	Lack of available suitable equipment will delay programme Increased costs associated with delay or supplier premiums. May need to seek alternative design	Currently reviewing design options and availability of suitable equipment								0												£	-	0	£	-	£	-	£	-	£	-	£	-	-									
R0247	Lack of compatibility between required CAD information for HE and current design drawings.	C	Development	Detailed design	Kim Whalley & John McKeever	LCC	Additional cost and time associated with formatting all design and as-built information to correct format.	Design team aware of IAN 184/16								0		Confirm with HE requirements for acceptance due to not being HE scheme. Review of design outputs for compatibility. Ensure as-built outputs are compatible.									£	-	0	£	-	£	-	£	-	£	-	£	-	-										
R0248	Requirement of all public sector projects to be delivered to BIM Level 2 compliance by April 16	C	Development	Management	Phil Wilson	LCC	Failure to comply with Government Policy may impact audit/ funding review findings?	Collaborative working between Client, Designer and Contractor. Information shared between LCC document sharing structure, Jacobs file share system and Costain system (note though not single integrated portal)								0												£	-	0	£	-	£	-	£	-	£	-	£	-	-									
R0249	Consideration of location of new fencing (or other ecology protection fencing) and the requirement for a maintenance easement - ensure additional land rights sought, or fencing within the land take boundary	C	Development	Planning	Jones Jones	LCC	Additional land agreements need to be sought alternative location of new fencing restricting activities delays seeking agreements/ licensing adjustments	Ensure location of new fencing agreed and easement for maintenance identified in the temporary land take rights.								0												£	-	0	£	-	£	-	£	-	£	-	£	-	-									
R0250	Newfencing not maintained - risk to ecological exclusion and licence breach	O	Construction	Environment	Sean Ellison	LCC	Failure to comply with NE license. Re-entry onto site of newf Delays to programme whilst trapping repeated		4	2	1	2	4	4	3	12	40%	Ensure daily inspections of all ecological protection fencing	4	2	1	2	4	4	2	6	20%	£	10,000.00	£	20,000.00	£	500,000.00	£	134,133.33	0	£	670,666.67	£	-	£	-	£	-	£	1,000.00	£	63,000.00	£	125,000.00
R0251	Availability of seed stock for plants, shrubs, grasses, wildflowers	O	Construction	Material, plant & labour resources	Paul Sullivan	LCC	The specified volumes of plants may not be available at time required if seed stock not secured now. Seed stock may have to be sourced from other zones - note ideal Delay to planting and ecology mitigation awaiting suitable stock Redesign of landscaping design required to match available stock Potential additional cost.	We have advised landscaping of this potential problem further to meetings with supply chain and best advice	4	4	4	3	4	4	4	16	60%	Secure seeds from correct zones. Engage with suppliers now to establish stock levels of seeds from correct zone LCC to provide specifications and requirements asap to enable engagement. (Speak to Chris Bennett)	4	3	3	3	4	4	3	12	40%	£	250,000.00	£	500,000.00	£	1,500,000.00	£	300,000.00	0	£	750,000.00	£	-	£	-	£	-	£	25,000.00	£	350,000.00	£	675,000.00
R0252	Construction delays exacerbated by ecological and or landscape constraints.	C	Construction	Environment	hiona MacDonald	LCC	Any delay impacts during construction are magnified or exacerbated by the constraints imposed by ecology and or landscaping	Ensure ecology and landscape constraints are clearly outlined and communicated to contractor	2	2	1	2	2	2	3	6		Ensure that construction phase programme includes ecological seasons and any ecology and landscaping constraints associated with works. Ensure any early warnings of delay lead to consideration of impact and effects of noted constraints in assessment of mitigation	2	2	1	2	2	2	2	4		£	-	0	£	-	£	-	£	-	£	-	£	-	£	-	-							
R0253	Landscape & or ecology subcontractor performance and or competence	O	Construction	Environment	Paul Sullivan	LCC	Refusal of LCC to accept L&E Significant plant death/ early life failures Delays to handover Additional maintenance costs.		2	3	4	2	3	4	3	12	40%	Contractor to ensure competent contractor appointed (references, performance criteria, certifications etc.). Subcontract condition of warranties/ grantees Supervision and management	2	3	4	2	3	4	2	6	20%	£	5,000.00	£	20,000.00	£	30,000.00	£	3,666.67	0	£	18,333.33	£	-	£	-	£	-	£	500.00	£	4,000.00	£	7,500.00
R0254	Changes to legislation - Protected species legislation currently under review	C	Construction	Environment	John Jones	LCC	Protected species mitigation may change due to changes in the legislation. This may impact red line. (GCN under review currently)	Awareness of legislation reviews	2	2	1	1	4	4	3	12		Keep abreast of progress of review and any drafts issued for comment. Ensure earliest possible alert of any changes necessary to comply with legislation.	2	2	1	1	4	4	3	12		£	-	0	£	-	£	-	£	-	£	-	£	-	£	-	-							
R0255	Ground nesting birds	C	Construction	Environment	Karl Heath	LCC	Ground nesting birds difficult to deter, may lead to construction delays.		2	1	1	1	4	4	3	12	40%	Ensure aware of likely ground nesting bird species. Make workforce aware Ensure exclusion zones set up if nests are established Use of bird scarers.	2	1	1	1	4	4	2	6	20%	£	1,733.33	0	£	8,666.67	£	-	£	-	£	-	£	-	£	-	-							
R0256	Failure to adequately consider access for maintenance and aftercare	C	Development	Land	Kim Whalley & John McKeever	LCC	Inability to access areas for inspection of aftercare (for instance landscaping plots or structures). Use of TTM becomes costly and inefficient Additional costs to O&M	Ensure maintenance accesses are considered within design	1	3	4	2	3	4	3	12		Design to include for access for future maintenance Access proposals to be reviewed with the O&M leads for suitability prior to commencement of construction	1	3	4	2	3	4	2	6		£	-	0	£	-	£	-	£	-	£	-	£	-	-									
R0257	Poor financial control and change control	O	Construction	Commercial	Paul Sullivan	LCC	Different parties working to different information. Uncontrolled works being undertaken at the instruction of unauthorised persons leading to abortive costs and reworks Overspend of preparation costs and budget impacts	Only instructions to Jacobs received from specific nominated persons (KW or DB) will be actioned. Other requests for works are redirected to the nominated Council officers for approval. Commission estimates produced in advance of works to highlight estimated costs and facilitate financial control Change control team on site to ensure contract requirements/notifications are understood and met.	2	2	1	1	1	2	2	4	20%	A detailed Commission Estimate including clear scope, assumptions and exclusions to be prepared. Financial controls resource has been allocated and is included within the fee estimate. Finances are to be monitored weekly. The programme duration is identified in the Commission Estimate and any increase to the programme will increase the task and project management costs. Open and collaborative approach to EWN & CE's to be adopted and agreed by both Parties from the outset	2	2	1	1	2	2	2	4	20%	£	20,000.00	£	50,000.00	£	100,000.00	£	11,333.33	0	£	56,666.67	£	-	£	-	£	-	£	1,000.00	£	35,000.00	£	70,000.00

Risk Identification Number	Risk Description	Open/Closed	Risk Type	Risk Category	Risk Owner	Cost Owner	Possible Consequences	Current Controls	Impact & Severity						Likelihood	Initial Risk Score	Pre-mitigated Probability	Mitigating Actions	Impact & Severity						Likelihood	Residual Risk Score	Post mitigated Probability	Residual Risk Values			Risk				Comments	Risk Allowance = Assessed Value x Risk Multiplier																																																																																																																																																																																																																																																																									
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R0258	Delay to programme resulting in withdrawal of funding and/or scheme cancelled		C	Development	Commercial	Phil Wilson	LCC	Withdrawal of funding will result in scheme being out on hold - reputational damage, impact to CityDeal strategic aims, impact to all personnel involved. LCC Senior Management monitoring progress to programme and alerting LCC and LEP of any concerns or issues.	An overall programme linking structures and geotech activities and deliverables has been developed. Activity durations are realistic and inputs from LCC and Costain clearly identified. The instruction to proceed date is clearly shown on the programme. The start on site is linked to funding and Jacobs' programme will be linked to construction start. Overlap with the Costain procurement programme is currently unknown.	4	4	1	3	1	4	4	16		LCC and LEP Governance checking progress against target programmes. Regular reviews at IDSG level and reporting to LEP/LCC governance structures. Single delivery programme (design and construction) being prepared to enable monitoring and reporting against deliverables. The programme will be updated fortnightly by JG (Jacobs) and any issues reported from client to relevant designer/ partner to be addressed. Meeting being arranged between design and LCC and design and contractor to ensure they are aware of inputs required and assumptions. The risk of any inaccuracies in the input of information lies with LCC. LCC shall ensure that any inputs provided to Jacobs are fit for purpose. Internal (Jacobs) interface will be reviewed monthly. RC will communicate with the project team how to communicate programme contingency. The LCC TAA and Third Party review programme is to be agreed with LCC. Control of Third Party and TAA review and approval timescales lies with LCC. Jacobs to ensure that all submissions provided are of a good	3	3	1	3	1	3	2	6						£	-	0	£	-	£	-	£	-	21 days of Costain 15 FTE (21 days is contract determination period)	£	-	£	-	£	-																																																																																																																																																																																																																																																													
R0259	Programme pressures leading to poor quality deliverables		C	Development	Detailed design	Phil Wilson	LCC	Programme delay leads to additional pressure on design teams, resulting in poor quality deliverables and significant comments from Third parties/LCC as well as a high number of site queries or problems requiring additional resources.	Programme to be updated fortnightly and CRAV procedures to always be followed	3	3	1	1	1	3	0	0		Experienced resources allocated. Activity durations provided by design team and are realistic. The programme is to be updated fortnightly and CRAV procedures to be followed.	3	3	1	1	3	3	2	6	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	Based upon ECI phase delays (1 month and 3 month) - CLOSED AS COVERED WITHIN THE RISKS FOR EACH SERIES	£	-	£	-	£	-																																																																																																																																																																																																																																																											
R0260	Lack of overall design programme accountability		C	Development	Programme	Richard Coldron	LCC	Different parties working to different timeframes - lack of inputs to progress design coherently between streams. May lead to reworks, (and resultant additional cost and time) Difficulty planning resources for all parties; may lead to programme delays if personnel unavailable when work is required or rushed solutions.	Collaborative planning sessions. Jacobs & LCC teams provided input and Costain to produce a single overall scheme programme for the ECI phase. Costain detailing design deliverables fortnightly planned V actual.	4	4	2	2	2	4	3	12		Review required by all parties when the programme is available. Further discussion required to discuss design inputs required from third parties and also Costain procurement programme	3	3	1	1	3	3	3	9	£	-	0	£	-	£	-	£	-	£	-	£	-	£	-	£	-	Failure to achieve design programme would put the ECI phase delayed from original issue works information and target cost agreement. Therefore 6 months additional resource	£	-	£	-	£	-																																																																																																																																																																																																																																																										
R0261	Uncertainty of construction programme duration		O	Construction	Programme	Richard Coldron	LCC	Failure to achieve the design programme and issue for Construction drawings prior to TC. Failure to achieve design and governance programme will affect the start on site date This could affect environmental and other issues which in turn could lengthen the overall deliver programme duration as well as	Updated design programme inform all fortnightly to keep team aware of progress. Updated inflationary costs. Awareness of best and worst start dates	4	4	4	4	3	4	4	16	60%	Review programme and resource requirements to best accommodate a softer start and/or finish	4	3	3	3	3	4	3	12	40%	£	187,500.00	£	375,000.00	£	1,500,000.00	£	275,000.00	0	£	687,500.00	£	-	Worse case based upon 6 months additional full prelims	£	18,750.00	£	346,875.00	£	675,000.00																																																																																																																																																																																																																																																													
R0262	Design development delay due to late receipt of design inputs received from others.		O	Development	Detailed design	Kim Whalley & John McKeever	LCC	Delays to design progress. Assumptions made that may later be identified as incorrect leading to rework time and costs. Incoherent designs between design teams	Single collaborative programme being prepared which will then provide a tool for each party to plan works and resources to deliver to specified dates.	4	2	1	1	1	4	3	12	40%	When the programme is fully prepared, reviewed and agreed by all parties, it must be used as a reference tool and management framework, consulted and updated in every meeting with reviews at regular intervals to provide an early warning of losing schedule/ focus enabling mitigation or corrective actions to be put into place.	4	2	1	1	1	4	2	8	20%	£	12,500.00	£	25,000.00	£	125,000.00	£	21,666.67	0	£	108,333.33	£	-	Reduced to allow for some 3rd party delay as a consequence of LCC delay	£	1,250.00	£	16,250.00	£	31,250.00																																																																																																																																																																																																																																																													
R0263	Management of interfaces between design teams		O	Development	Detailed design	Kim Whalley & John McKeever	LCC	Different design teams working to different philosophies and solutions - leading to inconsistent design and reworks	Jacobs commission estimates clearly identify assumptions and approach planned for the designed element. Fee estimates include for start up meetings to ratify the assumptions and any issues. Meetings are all minuted with notes produced and circulated by Jacobs. Costain/LCC for record. Reliance that LCC will inform Jacobs of any required changes to design/ design assumptions and co-ordinate this between design teams (ex. Landscape, structures, alignment etc).	4	3	1	1	2	4	4	16		Regular meetings between all parties to ensure forum for communication of changes and chance for review. Proposed quarterly design meetings to facilitate co-ordination between different design streams and highlight key changes. Appointment of design co-ordinator to facilitate drawing control, design co-ordination and facilitate effective	4	3	1	1	2	4	2	8	£	12,500.00	£	25,000.00	£	125,000.00	£	-	0	£	-	£	-	£	-	£	-	Closed as picked up in each of the series risks	£	1,250.00	£	28,750.00	£	56,250.00																																																																																																																																																																																																																																																										
R0264	Third party interface management		C	Development	Detailed design	Kim Whalley & John McKeever	LCC	Failure to consult with third party may lead to delays and design rework if based upon wrong assumption or lack of awareness of constraint/ restriction	LCC to lead consultations with third parties and SUs. This will ensure consistent message and greater tracking of consultation. Jacobs, Costain and other supply chain to supply information/ attend meetings at LCC request.	4	4	4	3	2	4	2	8		LCC have no direct means knowledge of the programme and relevant stakeholders, therefore unlikely any will be missed. Ahead of construction contractor will undertake an independent stakeholder assessment which can be used as a check. Note Jacobs fee estimates assume no significant input required to satisfy third parties. Ensuring Jacobs are kept fully up to date of consultations and outcomes from third party stakeholder engagement and requirements will minimise the risk of 'surprises' and reworks/ abortive works. Single ECI programme will facilitate tracking of key input requirements from third parties to ensure deliverables dates are achieved. Key inputs from 3rd parties and/or third party checks to be included on this programme for review purposes.	4	4	4	3	2	4	1	4	£	-	0	£	-	£	-	£	-	£	-	Closed	£	-	£	-	£	-																																																																																																																																																																																																																																																																
R0265	Contractor advice changing scope of design works with impacts to programme.		C	Development	Detailed design	Kim Whalley & John McKeever	LCC	Contractor's advice may affect design progress, scope or programme. May lead to delays, increased fee, reworks. ECI contractor may not be the delivery contractor, this may lead to disagreements of decisions made/ advice followed.	Jacobs must not take instruction from anyone other than the designated LCC leads (PW, DB). Single programme highlighting design deliverables dates, input requirements should facilitate timely information exchange.	3	3	2	1	1	3	3	9		Named and designated LCC leads to instruct changes to scope, planned works and commissions only. No changes to scope will be permitted unless clear need or benefit is demonstrated.	3	3	2	1	1	3	1	3	£	-	0	£	-	£	-	£	-	Closed	£	-	£	-	£	-																																																																																																																																																																																																																																																																		
R0266	Progressing design without AIP sign off		C	Development	Detailed design	Kim Whalley & John McKeever	LCC	Design progresses and AIP requires changes leading to re-works, delays and additional costs.	Jacobs assume that if an instruction to proceed is given against a Commission Estimate, the AIP is approved. If AIP is not approved additional resources will have to be allocated to complete the AIP and programme will extend. Risk of proceeding without an AIP sits with LCC.	4	3	3	1	1	4	3	12		LCC to instruct works through Task Orders/ Commissions only at the appropriate time or having assessed the risk and acknowledged it accordingly.	4	3	3	1	1	4	1	4	£	-	0	£	-	£	-	£	-	Closed	£	-	£	-	£	-																																																																																																																																																																																																																																																																		
R0267	Target cost agreed before design is complete		C	Construction	Commercial	Paul Sullivan	LCC	Incorrect construction Change to the cost Change to programme ill feeling	Fully document what has been allowed for and the current position of the works information at that time so change can be clearly identified and allowances reflect such - caveats and assumptions included	3	5	3	2	3	5	3	15	40%	Robust change management process following the agreement of target cost and clear assessment of any proposed changes - those jeopardising cost/ programme with no benefit will not be accepted to incorporation into design. Target cost agreement will be based upon an understanding of the level of detail and confidence in the information available - agreed with LCC/ LEP S&M Management.	3	5	3	2	3	5	2	10	20%	£	100,000.00	£	250,000.00	£	500,000.00	£	-	0	£	-	£	-	£	-	This is linked to R0086 and can be looked at in conjunction	£	10,000.00	£	117,500.00	£	225,000.00																																																																																																																																																																																																																																																											
R0268	Design errors due to technically complex structures		O	Construction	Detailed design	Kim Whalley	LCC	Errors made in design leading to failure to progress through CRAV/ checking processes, third party approvals, TAA etc. Or leading to issues identified during construction. May lead to reworks, delays, additional costs.	Experienced personnel completing design, supported by project principals (both LCC, Jacobs and Costain) All leads have proven record for successful delivery.	3	2	1	1	1	3	3	9	40%	Drafts of developing design to be sent for initial comments prior to final TAA/ third party approval.	3	2	1	1	1	3	2	6	20%	£	25,000.00	£	50,000.00	£	100,000.00	£	11,666.67	0	£	58,333.33	£	-	£	1,250.00	£	13,125.00	£	25,000.00																																																																																																																																																																																																																																																														
R0269	Physical complexity of the site with significant constraints		C	Development	Detailed design	Hiona MacDonna	LCC	Imposes a number of constraints to the final solutions. Failure to identify all constraints could lead to an unworkable design and rework requirements, additional costs and delays.	LLC retain role a Principal Designer to maintain control and co-ordination between design streams. Designers to ensure that design hazard logs and safety boxes on drawings are highlighted and fully completed with relevant information.	4	5	2	2	3	5	3	15		Proposed solutions to be reviewed from a number of perspectives (design, construction, O&M) prior to progression to detail and with key constraint owners (e.g. National Grid, ENVI, for pylons, UH for Hopper etc) to ensure time/ cost not wasted on a proposal unacceptable to them near their asset. Note this has been ongoing, but should continue. All parties to review solutions with safety in mind (both of delivery and maintenance).	4	5	2	2	3	5	2	10	£	-	0	£	-	£	-	£	-	£	-	Accounted for within method related charges in TC allowances Closed	£	-	£	-	£	-																																																																																																																																																																																																																																																																
R0270	Failure to complete final checks of constructed design		O	Development	Detailed design	Kim Whalley & John McKeever	LCC	Lack of site presence of designer may preclude final site checks of the permanent works against the designed solution. May generate additional costs or delays resulting from re-design or reworks on site. May lead to ongoing quality and O&M issues.	Design team presence on site to be discussed with LCC leads.	2	2	4	3	1	4	3	12	40%	Site supervision requirements to be reviewed and agreed prior to start on site. Note: contractor procurement included quality assessment within tender to ensure competent and proven delivery capability	2	2	4	3	1	4	1	4	5%	£	20,000.00	£	50,000.00	£	100,000.00	£	2,833.33	0	£	56,666.67	£	-	Jacobs/LCC	£	1,000.00	£	13,000.00	£	25,000.00																																																																																																																																																																																																																																																													
R0271	Delays in issue of key reports (ex Ground Investigation report). Staff leaving the geotech team limiting the time available by the team to review the information.		C	Development	Detailed design	Kim Whalley & John McKeever	LCC	Delay in progressing detailed design and subsequent knock on delays to other milestone activities.	Designers to remind LCC leads of the deliverable dates in advance and key programme dates. Jacobs propose direct discussion with GI contractor and inform the client of any expected delays.	4	2	2	1	1	4	3	12		Early warnings of any potential delays to be advised to whole team as soon as known, this will enable a review to determine if mitigation can be put in place to maintain the date, or works can be rescheduled to accommodate the delay/ reduce impact of it.	4	2	2	1	1	4	2	8	£	-	0	£	-	£	-	£	-	£	-	Closed	£	-	£	-	£	-																																																																																																																																																																																																																																																																
R0272	Source and type of embankment fill not confirmed - impacts design		C	Development	Detailed design	Hiona MacDonna	LCC	Earthworks design is likely to progress before source of fill and material properties confirmed. Design solutions may change depending upon the agreed source of fill. Potential programme and cost implications of reworks.	Currently revisiting alignment to minimise quantity of imported fill and reduce scheme costs. Treatment opportunities being explored to enable use of site won fill.	2	1	1	1	1	2	3	6		All parties to highlight what information is required for inclusion in the design deliverables requirements and ECI programme. This can then be facilitated.	2	1	1	1	1	2	2	4	£	-	0	£	-	£	-	£	-	£	-	Closed	£	-	£	-	£	-																																																																																																																																																																																																																																																																
R0273	Site ground conditions don't match those predicted from GI		O	Construction	Ground Conditions	Dave Brown	LCC	If significant variation then there may be an impact on the detailed design solution.	Ground investigation information to be reviewed. Further GI if necessary for sensitive areas. Ensure design can accommodate a level of change within conditions. Communicate change between all different elements as and when realised.	4	5	3	1	2	5	3	15	40%	Where there is concern about site conditions and variability additional GI has already been completed. Further could be instructed if deemed necessary. Contractor to achieve asap if any varied condition and all parties work collaboratively to agree effective solutions. Jacobs propose that Jacobs site supervision be in place during delivery to assess ground conditions and verify alignment with design assumptions. LCC ground engineer supervision will be required on site.	4	5	3	1	2	5	2	10	20%	£	500,000.00	£	1,000,000.00	£	1,500,000.00	£	233,333.33	0	£	1,166,666.67	£	-	£	50,000.00	£	362,500.00	£	675,000.00																																																																																																																																																																																																																																																														
R0274	Interim information issued to LCC/ third parties changes as a result of CAT checks		C	Development	Detailed design	Kim Whalley & John McKeever	LCC	Risks to be communicated when information issued.	Deliverables will be issued to LCCs TAA, Costain and third parties for comment at the same time as they are issued to CAT 2 checker	3	2	3	1	1	3	3	9		All parties to alert the LCC leads and relevant parties of any changes as soon as known. Work collaboratively to mitigate the impact.	3	2	3	1	1	3	2	6	£	-	0	£	-	£	-	£	-	Closed	£	-	£	-	£	-																																																																																																																																																																																																																																																																		
R0275	Legal challenge brought against scheme in excess of that factored into the programme		C	Development	Legal	Jane Turner	LCC	Programme delay Additional cost to the scheme resulting from delay and associated inflation Additional costs preparing for and attending Inquiry Lack of available inspector could lead to significant delays in excess of the recommended timeframes.	Scheme anticipates that a challenge will be brought and that an Inquiry will be held. Allowance made within the programme and budget	5	4	1	2	1	5	4	20		Time and cost allowances included within programme and budget respectively for an Inquiry and review. Ongoing negotiation with landowners and consultation to try and avoid challenge.	5	4	1	2	1	5	3	15	£	-	0	£	-	£	-	£	-	£	-	DUPLICATION OF R0031	£	-	£	-	£	-																																																																																																																																																																																																																																																																
R0276	Wayleave agreements and land access		O	Development	Legal	Jane Turner	LCC	Programme delay Additional cost to gain access through agreement with landowner Delays	Where access requirement is known - include within land take (temp) Ensure robust SU planning covering extended land requirements for diversions.	4	4	3	3	1	4	3	12		Ensure all states marked up and responsibility ownership and agreements in place prior to commencement on site top prevent being held to ransom	4	3	2	2	1	4	2	8	£	25,000.00	£	100,000.00	£	200,000.00	£	-	0	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£	-	£

Risk Identification Number	Risk Description	Open/Closed	Risk Type	Risk Category	Risk Owner	Cost Owner	Possible Consequences	Current Controls	Impact & Severity							Likelihood	Initial Risk Score	Pre-mitigated Probability	Mitigating Actions	Impact & Severity						Likelihood	Residual Risk Score	Post Mitigated Probability	Residual Risk Values			Risk Allowance = Assessed Value x Risk Multiplier				Comments													
									S	C	O	P	E	Max	S					C	O	P	E	Max	Lowest				Most probable	Highest	Risk EMV	Bernoulli	Distribution	Outputs	Lowest		Most Probable	Highest											
R0279	Source of suitable backfill material for Beconsall Bridge	C	Construction	Material, plant & labour resources	Steve Webster	LCC	Delay to design programme sourcing suitable backfill material Likely increased cost of the structure of alternative fill material to meet requirements	engagement with supply chain to source suitable material	2	2	2	1	1	2	4	8		Lightweight fill material now specified. Availability confirmed and costs now included within the cost plan	2	2	2	1	1	2	2	4			£	-	£	-	£	-	0	£	-	£	-	CLOSED will be 6N or lightweight fill	£	-	£	-	£	-			
R0280	Savick foul sewer condition: no pre commencement survey will be undertaken so there may be discussions to be had post completion of works re damage proof etc	O	Construction	Contractual	Steve Webster	LCC	Repair costs, liability evidence of such etc	UU should conduct the pre condition surveys and provide before and after documentation. Essential to establish sound liaison with UU	3	4	4	4	4	4	3	12	40%	Ensure all design considers drainage within solution. Ensure all temporary works are suitable designed to accommodate additional working loadings	3	3	3	3	3	3	2	6	20%	£	20,000.00	£	50,000.00	£	500,000.00	£	38,000.00	0	£	190,000.00	£	-	Follow up with UU to establish of they are providing current condition survey information.	£	1,000.00	£	63,000.00	£	125,000.00		
R0281	Condition of the drainage pipe under Lancaster Canal, condition and capacity to take scheme drainage.	C	Development	Detailed design	John McKeever	LCC	Survey required, possible cleaning, if insufficient capacity/ damage, then redesign or upgrade at additional costs.									0										0			£	-	0	£	-	£	-	£	-	This is now being replaced and item is Closed	£	-	£	-	£	-					
R0282	Canal closures only allowed Nov-March, application required Jan previous year. So if miss application window will lead to delay, also if miss working window will lead to up to 1 year delay - Plan to avoid this risk is Bailey ridge construction thereby avoiding need for "window" still required permits tho	O	Construction	Construction Methods	Sean Ellison	LCC	Delay in completion of the works in this area.	Process to be put in place to ensure this application goes in by correct time. Ensure regular discussions and liaison takes place with CRT	5	1	3	1	1	5	3	15	40%	Ensure that the closure applied for even if timeframe of scheme still has variation. Cost of aborted application far less than programme delays.	3	1	3	1	1	3	1	3	5%	£	2,000.00	£	20,000.00	£	20,000.00	£	700.00	0	£	14,000.00	£	-	Timescales at this point should afford us ample opportunity to ensure booking therefore assessment low	£	100.00	£	4,550.00	£	9,000.00		
R0283	Notices of the making of the SRO, CPO and Bridge Schemes miss deadline or are incomplete	C	Development	Legal	Jane Turner	LCC	Delay in the process - if notifications missed, time period for objection must extend. If incomplete may have to be re-drafted and served again. May be challenged at inquiry	Professional land referencing service employed to assist LCC Checks being made by LCC Legal and Estates teams.	5	1	1	4	1	5	3	15		Ensure checks made of Terraquests understanding of requirement and execution on site.	5	1	3	1	1	5	2	10			£	-	0	£	-	£	-	£	-	ITEM PASSED - CLOSED	£	-	£	-	£	-					
R0284	Failure to get s106 agreement signed by the Duchy for the bat barn at Gracemire Farm	C	Development	Legal	Jane Turner	LCC	Failure to secure agreement will prevent the granting of planning permission until a suitable alternative site is secured. Note planning condition that no construction will take place until the bat barn is in place.	Agreement issued and a number of chasing emails and calls sent.	4	4	3	2	4	4	3	12		Frequent checks and chasing to seek agreement and signing of the agreement.	4	3	3	2	4	4	2	8			£	-	0	£	-	£	-	£	-	106 Agreement has been concluded	£	-	£	-	£	-					
R0285	Ecological mitigation periods take longer to complete than expected	O	Construction	Environment	Sean Ellison	LCC	Delay in construction programme owing to areas of the site being out of bounds whilst mitigation continues to clear areas	Early engagement with NE over licence methods to provide certainty over the approach and including timescales with appropriate timing buffers within the construction programme to minimise any impact	4	5	1	1	2	5	4	20	60%	Early warnings of any potential delays to be advised to whole team as soon as known, this will enable a review to determine if mitigation can be put in place to maintain the date, or works can be reschedule to accommodate the delay/ reduce impact of it.	4	5	1	1	2	5	2	10	20%	£	75,000.00	£	100,000.00	£	250,000.00	£	28,333.33	0	£	141,666.67	£	-	GCN trapping period have currently a 15 day overrun period buffer within the programme.	£	7,500.00	£	85,000.00	£	162,500.00		
R0286	EPS licence applications take longer than anticipated (noting that NE suffering significant staff shortage and high demand)	C	Construction	Environment	Karl Heath	LCC	Delay in the approval period for an EPS licence for works affecting protected species	Using the NE Discretionary Advice Service (DAS) and proposed to use the Pre Submission Screening (PSS) system to seek assurance that the intentions will be agreed by NE and reduce risk of licence being refused.	3	3	1	1	1	3	3	9		Licence applications to be submitted in good time to allow for any extra period in the determination.	3	3	1	1	1	3	2	6			£	-	0	£	-	£	-	£	-	Closed combined in 116	£	-	£	-	£	-					
R0287	Bat Barn not completed in time to enable construction works to start to programme.	O	Construction	Environment	Phil Wilson	LCC	Delay to start of construction for the main works	Construction programme designed around a worse case scenario regarding the Bat Barn	5	5	2	1	1	5	3	15	40%	Outline programme for Bat Barn and construction being compiled to ensure that there is adequate time to ensure Bat construction is complete	5	5	2	1	1	5	2	10	20%	£	125,000.00	£	250,000.00	£	500,000.00	£	58,333.33	0	£	291,666.67	£	-	Bat barn currently awaiting sign of at ECI stage September 18 - This assumes a Spring 19 start and build completed in readiness for OCT construction - Worse case 1 month prelates delay	£	12,500.00	£	118,750.00	£	225,000.00		
R0288	Updated environment and ecological surveys change the required mitigation	O	Construction	Detailed design	Jones Jones	LCC	Changes in design and landtake required for mitigation - longer mitigation - different mitigation	Updated surveys conducted 2018, data issued by Jacobs and to be integrated into Environmental construction design.	4	5	1	1	2	5	2	10	20%	Early review of the survey results so that any changes are highlighted at the earliest opportunity.	4	2	1	1	2	4	1	4	5%	£	10,000.00	£	25,000.00	£	250,000.00	£	9,500.00	0	£	190,000.00	£	-	This could be as simple as amending current methodologies or as complex as changing the whole programme dependant upon what is found.	£	500.00	£	31,500.00	£	62,500.00		
R0289	Flood defence permit application periods over run	O	Construction	Environment	Karl Heath	LCC	Delay in construction of culverts/headwalls affecting programme	Early identification of requirements and apply for consents greater than 3months in advance of works due to commence.	3	2	4	1	2	4	3	12	40%	Include red flag dates for submission of application within construction programme.	3	2	4	1	2	4	2	8	20%	£	50,000.00	£	100,000.00	£	150,000.00	£	-	0	£	-	£	-	£	-	Outline list of consents required circulated to LCC. Provisional sums at present	£	5,000.00	£	21,250.00	£	37,500.00
R0290	Delay in closeout of planning conditions.	O	Development	Legal	Jane Turner	LCC	Delay in construction commencing and/or granting of NE licences.	Collaborative planning to ensure that critical conditions are identified	3	3	3	1	2	3	3	9	40%	Have a programme identifying when submission of conditions is required to ensure no impacts.	2	2	1	1	1	2	1	2	5%	£	75,000.00	£	150,000.00	£	300,000.00	£	8,750.00	0	£	175,000.00	£	-	This item is only based on delay of 2 months at ECI with 15 no Costan FTE (£150,000) CONSTRUCTION RISK NEEDS TO BE ADDED	£	3,750.00	£	39,375.00	£	75,000.00		
R0291	Water management plan may require additional flocculation to ensure materials not discharged into watercourse	C	Construction	Environment	Karl Heath	Costain	Additional cost - labour plant materials	Robust water management plan	3	4	3	4	5	5	3	15		Additional flocculation processes applied to the system	3	4	3	4	5	5	2	10		£	100,000.00	£	250,000.00	£	500,000.00	£	-	0	£	-	£	-	£	-	Assumption that Flocculation may be required due to clay content within the ground. This is to be agreed through Target cost.	£	10,000.00	£	117,500.00	£	225,000.00
R0292	Flooding affecting the scheme with particular reference to Savick area	O	Construction	Environment	Steve Webster	Costain	Delay in works and loss of materials	Works to be planned and storage areas to take into consideration flood zone to minimise storage in these areas	1	2	1	2	2	2	3	6	40%	Flood warnings to be registered for and a flood warning response plan to be put in place.	1	2	1	2	2	2	1	2	5%	£	50,000.00	£	125,000.00	£	250,000.00	£	-	0	£	-	£	-	£	-	Permit for storage within floodplaining to be obtained. - Flood warning on Savick Brook to be registered with so site gets advance warning - emergency response plan to include action to be taken in the event of a flood warning/weather warning of rain.	£	2,500.00	£	20,000.00	£	37,500.00
R0293	Great Crested Newt trapping periods extend due to low temperatures (below 5 degrees)	O	Construction	Environment	Karl Heath	LCC	Start of works in areas delayed until end of trapping periods	Re survey areas in 2018 to confirm location of Great Crested Newts	4	3	1	2	2	4	4	10	60%	Temperatures to be recorded during trapping periods. Ensure trapping periods commence as soon as possible. Compartmental trapping to minimise areas of site sterilised by newts.	4	3	1	2	2	4	2	8	20%	£	-	£	-	£	-	£	-	0	£	-	£	-	£	-	Closed March 2019 - included in R0285	£	-	£	-	£	-
R0294	Embankment settlement periods. Currently no direction from designer - base line, measurement, triggers, solution	O	Construction	Ground Conditions	Sean Ellison	LCC	Delays to follow on works whilst settlement of embankment continues	Additional geotechnical investigatory works being completed. Request from Jacobs to fully detail what the anticipated settlement to embankments will be, how to manage the settlement and what to do should they be exceeded	4	2	1	1	1	4	2	8	20%	Programme settlement periods to commence as early in programme as possible with potential use of different fills. Clearly identify anticipated settlement measure methods and corrective action should it be exceeded.	4	2	1	1	1	4	1	4	5%	£	50,000.00	£	200,000.00	£	520,000.00	£	6,166.67	0	£	123,333.33	£	-	Lightweight fill currently being considered for the back of abutments to assist with this process, which would be most probable, highest would be programme delay 1 month	£	2,500.00	£	66,250.00	£	130,000.00		
R0295	Split of acceptable/unacceptable material different to that assumed in formulating target cost and programme	O	Construction	Material, plant & labour resources	John Hooker	LCC	Increase in amount of imported granular fill required	Additional geotechnical investigatory works completed current split is 50/30/20	3	3	1	1	2	3	3	9	40%	Identify potential to lime unsuitable material to reduce moisture content and make unsuitable material suitable for use	3	3	1	1	2	3	2	6	20%	£	30,000.00	£	50,000.00	£	100,000.00	£	12,000.00	0	£	60,000.00	£	-	Once final earthworks design advised this can be rationalised	£	1,500.00	£	13,250.00	£	25,000.00		
R0296	Condition of existing M55 surfacing leads to damage to carriageway when removing existing lining and implementing temporary traffic management. Risk increased due to narrow lane running rather than closed carriageway.	O	Construction	Contractual	Sean Ellison	LCC	Closure of running lanes whilst repairs are completed. Potential need to resurface M55 as part of the project. Resurfacing of 1/4 km of both sides of the M55	Complete pre condition survey of M55 and discuss with HE regarding forward resurfacing programme to identify if this section is due to be resurfaced.	2	3	3	2	1	3	3																																		

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R0305	Jacobs have specified a temporary embankment to be constructed to demonstrate actual settlement rates and speed	C	Development	Detailed design	Kim Whalley	LCC	Programme / Cost / Land take	Challenging the requirement	4	3	2	2	2	4	3	12		Designer to provide calculated settlement based upon there design known ground constions, known material conditions and previous experience	4	3	2	2	4	3	3	9					£	-	0	£	-	£	-	£	-	Do we have the land, how big will the trial be, double handling build and remove, location, black top etc etc	£	-	£	-	£	-																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
R0306	Ground conditions / Unforeseen services complications	O	Construction	Underground / Overground Services	Dave Brown	LCC	Increase chance of services strike Damage to infrastructure Delay to works	Ensure areas programmed sufficiently Additional controls to dig areas and activities Further surveys Vac excavator	4	3	2	2	2	4	3	12		Carry out more detailed surveys Obtain as built records from housebuilders	4	3	2	2	2	3	3	9		£	10,000.00	£	20,000.00	£	40,000.00	£	-	0	£	-	£	-	£	-	Current method of working allows for machine works close to services- Should it be determined unsafe may have to use ex vac for all areas with services allow 1 month at £1k a month	£	1,000.00	£	5,500.00	£	10,000.00																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									