

Risk Allowance
Project: Norwich Western Link
Date: May 2021

The total risk allowance comprises the following elements:

Quantified risk (see Quantified Risk Register)	£34,329,231
Inflationary risk associated with the above	£4,128,825
Increased Fees over and above the forecast Fee provision	£1,475,948
Total Risk Allowance	£39,934,004

Norfolk County Council - NWL Risk Register - Quantitative

Risk Register Name: Norwich Western Link
 Prepared by: Brett Rivett
 Date updated: 20/05/2021
 Next update due:
 Bidder/Contractor: Ferrovial

Risk A Category	Risk B Category	QRA Ref	Date added	Risk Description (lack of, failure to...)	Impact of Risk	Opening Risk Assessment			Risk Mitigation Measures	Mitigation Progress	Current Status			Mitigated Risk Assessment:				Target Resolution Date						
						Likelihood	Impact	Risk Score			Likelihood	Impact	Risk Score	Risk Level	Probability	Minimum	Most Likely		Maximum					
Strategic	A - Funding / Third parties	A04	18/06/2018	There may be a delay in the funding approval (OBC) from DFT due to a general election being called or other factors impacting the sign off of the business cases.	1. Delay to scheme development. 2. Programme delay.	3	4	12	MEDIUM	1. Ensure scheme is high on the political agenda. 2. Council and Business Rate Pool grants funding the scheme so far. 3. Programme to be revised with new anticipated funding announcement date 4. Engagement with DFT to reinforce the need for the scheme	Conditional approval and entry into the LLM funding programme has been confirmed by DFT. OBC being developed for submission to DFT.	3	1	3	LOW	2	1	2	LOW	13.00%	£56,484	£112,968	£338,905	31/07/2021
Strategic	A - Funding / Third parties	A05	18/06/2018	The project may receive a legal challenge based on the planning and environmental processes followed, or if environment factors are encountered during surveys	1. Delay to programme and the associated costs of tackling a legal challenge 2. Prolonged public inquiry 3. Judicial review of the scheme	4	5	20	HIGH	1. Keep stakeholders apprised of progress and engaged with the project. Treat all stakeholders fairly and equitably. Stakeholder management plan. 2. Continue to build robust evidence base and ensure all scheme benefits are identified, following webTAG guidance. 3. Provision of a Robust EAST process. Audit trail and evidence base supporting business case. Legal review and guidance at key milestones - vulnerability assessment	Dialogue with key stakeholders including potential objectors ongoing. Communications of steps the Council is taking to alleviate concerns on certain issues e.g. environment. 2015 Traffic model has been updated for OBC to 2019. This updated model will be used for the completion of statutory process.	4	2	8	MEDIUM	3	2	6	MEDIUM	35.50%	£157,161	£314,323	£471,484	31/08/2022
Strategic	A - Funding / Third parties	A06	18/06/2018	The value of the land required for the project may increase above the anticipated costs (inflation or otherwise)	1. Cost increase. 2. Delays whilst land value negotiations take place.	3	3	9	MEDIUM	Ensure the estimate costs are refreshed at all stages and based on historic costs.	Landowner contact and liaison undertaken as part of shortlist consultation and is ongoing. Land cost estimate will be updated for the OBC	3	1	3	LOW	3	1	3	LOW	35.50%	£133,719	£267,439	£534,878	31/08/2022
Strategic	A - Funding / Third parties	A08	18/07/2018	The project may fail to secure budget for scheme funding profile from NCC and DFT due to changes in policy, change in MP support, or change in local support	1. Delays to programme (risk to overall delivery due to delay / delivery confidence). 2. Delays issue of the notice to proceed to Stage Two and Stage Three.	4	5	20	HIGH	1. Demonstrate need for scheme so that buy-in and funding is secured. 2. Identify and track bid opportunities inclusion for local funding. 3. Consider opportunities for developer funding. 4. Demonstrate lessons from previous schemes and proven track record of delivery.	NWL has been identified as a regional priority scheme by Transport East in July 2019. Conditional approval and LLM programme entry has been confirmed by DFT. Engagement with finance stakeholders ongoing.	2	1	2	LOW	2	1	2	LOW	13.00%	£57,552	£115,104	£172,656	31/08/2022
Strategic	A - Funding / Third parties	A10	18/07/2018	Changes to UK relationship with the European Union affecting trading conditions.	1. Reduced willingness for expertise in EU to tender for project. 2. Price increase in construction materials due to the value of the pound decreasing	3	3	9	MEDIUM	1. External political uncertainty - difficult to gauge at this stage. Monitor situation and consider financial / programme / procurement of any changes in relationship. 2. Estimates will be calculated in a rigorous manner taking into account inflation along with a realistic delivery programme. Consider alternative materials/construction methods.	Monitoring continuing as future trading arrangements are developed.	2	1	2	LOW	2	1	2	LOW	13.00%	£69,556	£139,112	£278,224	31/12/2022
Strategic	A - Funding / Third parties	A13	17/01/2020	Reduction or increase in the permanent land requirements over that shown on reference design drawings. Note: Contemplates changes from land requirements considered for the reference design by comparison to the tender design ... Risk C16 considers risk associated with change from tender design requirements.	1. Reduced and/or increased cost to acquire land required for the project.	1	1	1	LOW	Permanent land requirements to be discussed with bidders during dialogue, objective is to: 1. Reduce the permanent land requirements, 2. Minimise future maintenance liabilities for retained and 3. Reduce the over-all cost burden.	Site boundary to be established to permit optimal solution for earthworks and carriageway construction, with a balanced earthworks model either side of the River Wensum which will inform the temporary and permanent land requirements. Tender designs indicate minor changes to the reference design boundary lines.	4	1	4	LOW	4	1	4	LOW	65.50%	£-74,159	£-18,032	£84,698	30/04/2021
Strategic	A - Funding / Third parties	A14	17/01/2020	Reduction or increase in the temporary land requirements over that shown on reference design drawings. Note: Contemplates changes from land requirements considered for the reference design by comparison to the tender design ... Risk C17 considers risk associated with change from tender design requirements.	1. Reduced and/or increased compensatory payments for temporary land required for the project.	1	1	1	LOW	Temporary land requirements to be discussed with bidders during dialogue, objective is to: 1. Reduce the temporary land requirements, 2. Provide sufficient land to remove constraints that may preclude efficient solutions being considered/ designed, 3. Minimise future maintenance liabilities for retained and 4. Reduce the over-all cost burden.	Site boundary to be established to permit optimal solution for earthworks and carriageway construction, with a balanced earthworks model either side of the River Wensum which will inform the temporary and permanent land requirements. Tender designs indicate minor changes to the reference design boundary lines.	4	1	4	LOW	4	1	4	LOW	65.50%	£-9,499	£55,211	£157,025	30/04/2021
Operational	A - Funding / Third parties	A16	17/01/2020	Reinstatement of temporary land occupied to deliver the project is not acceptable to landowners, as reinstatement fails to meet the standard recorded prior to temporary occupation.	1. Additional cost to reinstate to original condition or to acquire land.	1	1	1	LOW	Earthworks strategy to ensure suitable materials are retained to reinstate temporary land requirements back to their original condition, i.e. suitable quality and volume of topsoil, subsoils, etc.	Consideration being given to this as part of the over-arching earthworks strategy. Earthworks strategy, quantification and mass haul strategy on-going.	1	1	1	LOW	2	1	2	LOW	13.00%	£45,102	£90,205	£180,410	20/03/2025
Operational	A - Funding / Third parties	A17	28/01/2021	Addition of new Third Party Agreements or amendment to the existing Third Party Agreements included in the Scope introduces additional or varied constraints.	1. Additional costs and programme implications.	3	1	3	LOW	1. Early negotiation and conclusion of TPA's 2. Ensure TPA's do not impose additional constraints which will effect the way the Contractor provides the works.	Discussion with landowners and other stakeholders on-going.	2	1	2	LOW	2	1	2	LOW	13.00%	£39,273	£78,547	£157,093	30/06/2021
Strategic	B - Programme / Contract	B03	18/06/2018	Legal work may not be completed on time.	1. Delays to statutory notifications required under planning consent requirements. 2. Reputational damage due to loss of confidence in NCC's capability to deliver	3	3	9	MEDIUM	Engage early with NCC legal team and understand timescale - input to delivery programme, lessons learned from NDR	Same NDR team involved in NWL project. Regular meetings being held and programme shared. Pinsent Masons appointed to progress legal works.	2	1	2	LOW	2	1	2	LOW	13.00%	£54,715	£139,865	£398,209	31/08/2022
Strategic	B - Programme / Contract	B04	18/06/2018	The planning process may impose unexpected conditions on the project.	1. Costs to address the conditions to allow licences to be released. This could include design updates, more land purchase 2. Compression of the programme between the determination of planning and start of works	5	3	15	MEDIUM	1. Work with LPAs from early stage 2. Consider requirements and lessons learnt from other projects including Broadland Northway.	It has been determined that the scheme will follow the Town and Country planning process. Engagement with the LPA and consultees ongoing.	3	3	9	MEDIUM	3	3	9	MEDIUM	35.50%	£460,182	£920,364	£1,840,729	31/08/2022
Strategic	B - Programme / Contract	B05	18/06/2018	The A47 dualling construction programme may change.	1. Delays to construction programme 2. Cost impact to re-sequence work	3	4	12	MEDIUM	Work with Highways England and understand delivery programme for A47 and key interfaces, programme phasing to minimise impact e.g. southern section for later delivery.	Liaison commenced with Highways England and discussions / coordination ongoing. HE delivery plan recently published suggests a start of construction is now Q4 in 2022/23. The DCO was submitted in March 2021	3	3	9	MEDIUM	3	1	3	LOW	35.50%	£28,520	£85,560	£171,121	30/03/2022
Strategic	B - Programme / Contract	B06	18/06/2018	Landowners may object to the scheme or to selling their land.	1. Potential delays or difficulties negotiating during the CPO process. 2. Cost increase to agree a route and mitigation which impacts the BCR. 3. Reputational damage for NCC with local landowners 4. Change of landowner leads to disagreement on proposals	4	4	16	MEDIUM	Work in consultation with landowners from an early stage and use of statutory powers. Delivery programme to allow for inquiry timescales	Landowner meetings / discussions undertaken as part of options consultation and further liaison following the preferred route announcement. Discussions ongoing around the scheme design, including environmental mitigation.	3	1	3	LOW	2	1	2	LOW	13.00%	£28,242	£56,484	£227,373	31/08/2022
Strategic	B - Programme / Contract	B12	02/07/2018	NCC Decisions may not be made in a timely manner due to change of staff, loss of decision making personnel or absence of decision making personnel.	1. Delay to programme while decisions aren't made	2	3	6	MEDIUM	Programme to include key committee dates and milestones - deliverables to be ready in time for review to aid decision making, member steering group to keep members apprised.	Member group and Project Board meetings occur regularly. Council Cabinet generally meets monthly, although this may be impacted by Covid-19.	2	3	6	MEDIUM	2	1	2	LOW	13.00%	£29,620	£59,240	£118,480	31/03/2025
Strategic	B - Programme / Contract	B17	30/03/2020	Stage One - Pandemic - virus strain known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) or the disease known as coronavirus disease 2019 (COVID-19) (including, in both instances any mutation or variant thereof) preventing external meetings being held with stakeholders and public consultation activities from proceeding.	1. Delay to programme	3	3	9	MEDIUM	Online meetings to be held where possible and further exchange of information electronically. Re-programme liaison groups and public consultations	Meetings and consultation events taking place online.	3	3	9	MEDIUM	4	1	4	LOW	65.50%	£50,174	£118,960	£237,920	07/07/2023
Strategic	B - Programme / Contract	B18	12/06/2020	The programme for adoption of the GNLP and LTP are delayed	1. The NWL programme does not align with the plan making process 2. Reference to these policies would need to consider their stage in development	4	3	12	MEDIUM	Engagement with the GNLP, LTP team and Counsel to understand the programme for inclusion of the NWL.	Engagement with the GNLP, LTP and Counsel ongoing. GNLP programme has been brought forward by the GNGB. TNS programme is under review	4	3	12	MEDIUM	1	1	1	LOW	2.50%				03/02/2022

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						Likelihood	Impact	Risk Score			Likelihood	Impact	Risk Score	Probability	Minimum	Most Likely	Maximum						
Strategic	B - Programme / Contract	B19	16/09/2020	Procurement period - Pandemic - virus strain known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) or the disease known as coronavirus disease 2019 (COVID-19) (including, in both instances any mutation or variant thereof).	Delays to the programme and/or increased cost: 1. Staff availability - infections/self-isolation, 2. Reliance on technologies (resilience), 3. Sufficiency of programme and tender deliverables and 4. Increased inflationary pressures due to delay/prolongation.	4	3	12	MEDIUM	1. Compliance with guidance. 2. Allow adequate time in the programme for probable effects.	2	2	4	LOW	2	1	2	LOW	13.00%	£15,294,930	£34,329,231	£65,938,682	30/06/2021
Operational	B - Programme / Contract	B20	16/09/2020	Stage One - Pandemic - virus strain known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) or the disease known as coronavirus disease 2019 (COVID-19) (including, in both instances any mutation or variant thereof) impacts the Client's and Contractor's resource.	Delays to the programme and/or increased cost: 1. Staff availability - infections/self-isolation, 2. Reliance on technologies (resilience), 3. Sufficiency of programme and Stage One deliverables, 4. Local and/or national lockdowns preventing the Contractor obtaining further SI/GI data, 5. Prolonged surveys and or investigations, 6. Consultations and/or inquiry prolonged and 7. Increased inflationary pressures due to delay/prolongation.	3	3	9	MEDIUM	1. Compliance with guidance. 2. Contractor's risk under the contract, unless events directly associated with the pandemic prevent the Contractor's from completing the whole of the works by the planned Completion date or stop the work in totality ... clause 19. 3. Client risk if laws change by comparison to the las known at the contract date.	3	1	3	LOW	3	1	3	LOW	35.50%	£59,373	£140,769	£281,539	07/07/2023
Operational	B - Programme / Contract	B21	16/09/2020	Stage Two - Pandemic - virus strain known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) or the disease known as coronavirus disease 2019 (COVID-19) (including, in both instances any mutation or variant thereof).	Delays to the programme and/or increased cost: 1. Staff availability - infections/self-isolation, 2. Reliance on technologies (resilience), 3. Sufficiency of programme and Stage One deliverables, 4. Local and/or national lockdowns preventing the Contractor obtaining further SI/GI data, 5. Prolonged surveys and or investigations, 6. Consultations and/or inquiry prolonged and 7. Increased inflationary pressures due to delay/prolongation.	2	3	6	MEDIUM	1. Compliance with guidance - Construction Leadership Councils Site Operating Procedures to be introduced. 2. Client risk if events directly associated with the pandemic prevent the Contractor's from completing the whole of the works by the planned Completion date or stop the work in totality or laws change by comparison to the las known at the contract date. 3. Shared risk under the contract if the PWDD exceeds the total of the Prices, prior to the PWDD exceeding the total of the Prices the risk is retained by the Contractor.	2	2	4	LOW	2	2	4	LOW	13.00%	£190,809	£381,799	£763,598	03/10/2025
Operational	B - Programme / Contract	B22	16/09/2020	Inflationary factors impacted by: 1) Increased national infrastructure delivery programme, 2) Pandemic - virus strain known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) or the disease known as coronavirus disease 2019 (COVID-19) (including, in both instances any mutation or variant thereof) and 3) Brexit.	Inflation in excess of historic trends used for the purpose of the forecast, driven by: 1) Supply and demand 2) Increases in aggregate tax, fuel levies, road tax, landfill tax, etc.	3	3	9	MEDIUM	Outside of the Client's and Contractor's control ... can only monitor. Contractor risk under the contract ... other than recovery through X1. Shared risk under the contract if the PWDD exceeds the total of the Prices, prior to the PWDD exceeding the total of the Prices the risk is retained by the Contractor.	3	3	9	MEDIUM	3	3	9	MEDIUM	35.50%	£910,738	£1,821,476	£3,642,951	07/07/2023
Strategic	B - Programme / Contract	B23	29/03/2021	The delivery of the Sustainable Transport Strategy is outside of the main D&B contract	1. Late changes to the D&B Contractors scope of work 2. Potential programme implications subject to STS delivery timescales	3	3	9	MEDIUM	Work with other departments in NCC to determine the best delivery route for the STS. Once confirmed, ensure the work is included in the forward plan.	3	3	9	MEDIUM	3	3	9	MEDIUM	35.50%				20/03/2025
Strategic	B - Programme / Contract	B24	05/03/2021	Award of contract delayed from 01/04/2021 to 25/06/2021.	1. Programme delay resulting in additional costs.	5	3	15	MEDIUM	Programme review to consider mitigation to minimise or eliminate the effects on Stage Two. Carry out activities at risk.	5	3	15	MEDIUM	5	3	15	MEDIUM	90.00%	£319,688	£639,376	£1,278,752	25/06/2021
Strategic	B - Programme / Contract	B25	14/05/2021	Ecological mitigation work programme to be undertaken prior to the starting date for Stage Two cannot be delivered as programmed.	Delay.	1	1	1	LOW		4	2	8	MEDIUM	4	2	8	MEDIUM	65.50%	£487,333	£1,461,998	£2,923,996	08/02/2023
Strategic	C - Scope Change / Change	C01	18/06/2018	Early assumptions made for engineering design found to be insufficient following receipt of further information. Note: Risk considers the adequacy of the Tender Design where the engineering solution deviates from the Reference Design (accepted deviations).	1. Design changes required, 2. Cost increases during design due to increased design requirements (more concrete, greater level of excavation etc) 3. Reputational damage 4. Delivery delays	3	4	12	MEDIUM	1. Undertake sensitivity testing on key design parameters and assumptions. Consider robust/resilient case. 2. Carry out desk study, ground investigation and topographical survey	2	2	4	LOW	2	2	4	LOW	13.00%	£125,986	£271,278	£523,250	30/06/2021
Strategic	C - Scope Change / Change	C03	18/06/2018	Highways England may change the A47 junction design, requiring an update to the NWL alignment.	1. Additional cost, in both design and construction 2. Delay to the design programme 3. Increased land take 4. Increased land costs 5. Significant change may require additional environmental surveys 6. Change in scheme design may have an increased environmental impact	4	3	12	MEDIUM	Regular co-ordination with HE to ensure that the NWL aligns and ties in with the A47 scheme.	2	1	2	LOW	2	1	2	LOW	13.00%	£67,643	£135,287	£270,574	31/12/2021
Strategic	C - Scope Change / Change	C05	18/06/2018	DFT standard departures may not be approved without changes or adjustments. Note: Risk considers the transition from NCC/Contractor design to HE design at interface with A47.	1. Redesign to meet the standards at the tie in point with the A47 (Contractor design at/to the tie will need HE approval (transition)). 2. Increased costs to overall scheme to meet acceptable standards. 3. Delays while negotiating the departures.	2	3	6	MEDIUM	1. Design the interface with HE network at the A47 and the NWL approach to DMRB standards. 2. Confirm the impact of DFT's updates to DMRB standards on the previous outline designs. 3. Carry out preliminary designs to meet requirements of DMRB/national standards wherever possible - and minimise need for Departures.	1	1	1	LOW	1	1	1	LOW	2.50%	£13,008	£26,017	£52,033	31/12/2021
Strategic	C - Scope Change / Change	C06	18/06/2018	There may be a variation between actual site conditions and assumptions used in design, such as the GI and topographical survey.	1. Ground works costs increase 2. Land take may increase, 3. The drainage design may need revision	3	4	12	MEDIUM	Intrusive ground investigation surveys to be undertaken sufficiently soon in programme (including ground water monitoring and infiltration testing). Ensure surveys are robust to minimise unknown changes in conditions	3	4	12	MEDIUM	3	2	6	MEDIUM	35.50%	£291,929	£779,640	£2,338,920	31/12/2025
Strategic	C - Scope Change / Change	C08	18/07/2018	Design departures subject to NCC approval may not be granted. Note: Risk considers the deviations accepted through dialogue and the acceptability as part of the planning process.	1. Approvals not achieved so scheme cannot proceed. 2. Designs require modification to address approval issues.	2	4	8	MEDIUM	1. Engage with NCC technical approval team and seek early advice on any potential departures. 2. Confirm design freeze date with NCC, and seek NCC's early input to design decisions.	2	3	6	MEDIUM	2	3	6	MEDIUM	13.00%	£264,805	£624,707	£1,249,414	30/09/2021
Strategic	C - Scope Change / Change	C10	02/07/2018	The DFT may make updates which affect traffic modelling.	1. The cost of re-modelling or re-working of models based on new data 2. Programme delay whilst outputs are revised 3. Effect on scheme benefits	2	3	6	MEDIUM	Early assessment of any DFT updates.	3	3	9	MEDIUM	1	1	1	LOW	2.50%	£28,175	£74,637	£149,274	30/07/2021
Strategic	C - Scope Change / Change	C13	08/05/2019	The scope of the works to introduce cycle and footway provision is yet to be fixed in relation to the preferred route.	1. Additional scope and costs to provide 2. Delays if stakeholder consultations lead to changes	3	3	9	MEDIUM	1. Carry out further investigation to determine existing trails, links and PROW, and understand desire line. 2. Liaise with NCC and local stakeholders to gauge their views on measures being proposed.	2	2	4	LOW	2	2	4	LOW	13.00%	£51,871	£103,741	£207,482	31/10/2021
Strategic	C - Scope Change / Change	C15	12/08/2020	Changes to technical standards and guidance on which the design/assessment of the scheme are based.	1. Design changes lead to programme delay. 2. Cost increases for additional/improved provisions. 3. Challenge to funding application if compliance cannot be demonstrated.	2	3	6	MEDIUM	Assess any changes in guidance and incorporate into the emerging proposals	2	1	2	LOW	2	1	2	LOW	13.00%	£63,700	£127,400	£254,801	24/06/2022

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Operational	C - Scope Change / Change	C16	25/01/2021	Reduction or increase in the permanent land requirements over that shown on the tender design drawings. Note: Contemplates changes from land requirements considered for the tender design ... consider in conjunction with A13.	1. Cost associated with the requirement to take additional land or reduce the requirements. 2. Delays to scheme due to the requirement to survey and review the additional land. 3. Requirement for further consultation	3	4	12	MEDIUM	Permanent land requirements to be discussed with the Contractor during Stage One, objective is to: 1. Reduce the permanent land requirements, 2. Minimise future maintenance liabilities for retained and 3. Reduce the over-all cost burden.	Tender design solution will confirm any boundary changes envisaged by the Contractor. Tender designs boundary lines subject to detailed design development in Stage One.	2	1	2	LOW	2	1	2	LOW	13.00%	£15,294,930	£34,329,231	£65,938,682	20/10/2021
Operational	C - Scope Change / Change	C17	25/01/2021	Reduction or increase in the temporary land requirements over that shown on the tender design drawings. Note: Contemplates changes from land requirements considered for the tender design ... consider in conjunction with A14.	1. Cost associated with the requirement to take additional land or reduce the requirements. 2. Delays to scheme due to the requirement to survey and review the additional land. 3. Requirement for further consultation	3	4	12	MEDIUM	Temporary land requirements to be discussed with the Contractor during Stage One, objective is to: 1. Reduce the temporary land requirements, 2. Provide sufficient land to remove constraints that are impeding efficient design/delivery, 3. Reduce the over-all cost burden.	Tender design solution will confirm any boundary changes envisaged by the Contractor. Tender designs boundary lines subject to detailed design development in Stage One.	2	1	2	LOW	2	1	2	LOW	13.00%	£23,124	£46,248	£92,495	20/10/2021
Strategic	C - Scope Change / Change	C18	25/01/2021	Design change required to maintain connectivity for walking and cycling. The A47 scheme includes a new walking and cycling route towards Hockering which passes to the north of the Wood Lane junction, across the proposed NWL.	Additional crossing or other design changes to accommodate the re-routing of the new route leading to 1. Additional costs 2. Objection to proposals from stakeholders	5	2	10	MEDIUM	1. Discussions with HE to consider design solution. 2. Consider alternative routing of NNU's on the NWL	Discussions underway with HE.	5	2	10	MEDIUM	2	2	4	LOW	13.00%	£125,098	£250,203	£403,537	03/02/2022
Operational	C - Scope Change / Change	C19	25/01/2021	'Stopping Up' of Weston Road and Breck Road is opposed.	1. Construction of Weston Road and Breck Road Overbridges, including all design costs, construction costs and programme implications.	2	3	6	MEDIUM	Maintain dialogue with key supporters of the change to minimise risk of objection gaining momentum.	Parish feedback and results from the public access consultation support closure of Weston Road and Breck Road.	1	3	3	LOW	1	3	3	LOW	2.50%				16/05/2023
Operational	C - Scope Change / Change	C20	27/01/2021	Early access to land which has not been acquired to carry out ecological mitigation works is not possible.	1. Delay and disruption to the programme for Stage Two Work and Stage Three Work. 2. Increase in Contractors costs	3	3	9	MEDIUM	1. Identification of alternative areas for mitigation works. 2. Advance negotiation with landowners. 3. Increase compensatory payments.	Negotiation with landowners to permit early access being considered.	2	2	4	LOW	2	2	4	LOW	13.00%	£95,098	£190,195	£570,585	19/10/2023
Strategic	C - Scope Change / Change	C21	29/01/2021	Sustainable transport strategy - provisions. Development of the shortlisted wider measures (1, 3, 4, 5 and 7E).	1. Additional design, construction and programme implications.	4	3	12	MEDIUM	As designs develop further, continue to monitor costs and implications of the proposals.	Approval given to progress development. Design development underway.	2	3	6	MEDIUM	2	3	6	MEDIUM	13.00%	£251,972	£406,200	£665,784	03/02/2022
Strategic	C - Scope Change / Change	C22	19/02/2021	Sufficiency of the Contractor's Budget for Stage Two Work	1. Increases the total of the Prices for Stage Two. 2. Programme effects, works not included in the Accepted Programme.	4	3	12	MEDIUM	1. Further work with the preferred bidder to confirm robustness of price and suitable risk allowances	Further dialogue with the preferred bidder ongoing.	4	3	12	MEDIUM	4	3	12	MEDIUM	65.50%	£1,872,469	£4,125,381	£6,333,946	02/10/2025
Operational	C - Scope Change / Change	C23	19/02/2021	Value engineering opportunities.	1. Reduces the total of the Prices for Stage Two. 2. Programme effects, works included in the Accepted Programme omitted.	4	3	12	MEDIUM	Drive through proposed opportunities.	To be developed in Stage One.	3	2	6	MEDIUM	3	2	6	MEDIUM	35.50%	£280,756	£926,645	£1,572,535	
Strategic	D - Weather Events	D01	18/06/2018	Adverse weather conditions e.g. high winds, flooding, extremes of temperature.	1. Delays to surveys and provision of data by the Client or Others.	3	3	9	MEDIUM	Time works to minimise risk, contingency in delivery programme/budget	High water levels in the River Wensum floodplain are preventing completion of the GI, groundwater monitoring, topographical and river surveys.	3	1	3	LOW	3	1	3	LOW	35.50%		£118,745	£178,118	31/08/2022
Operational	D - Weather Events	D02	10/08/2020	Adverse weather conditions greater than 1 in 10 year event.	1. Delay and disruption to Stage One and Stage Two. 2. Client liability (compensation event) if the event is a consequence of rainfall, air temperature or snow. 3. Shared liability if the event is a consequence of other weather events such as wind. 4. Likelihood increased due to occurrence of more adverse weather patterns.	3	3	9	MEDIUM	1. Time works to minimise risk, contingency in delivery programme/budget. 2. Best practice to be adopted, ensuring earthworks are sealed with adequate and appropriate run-off to avoid scouring and pollution. 3. Other protective works to be considered during the development of the method statements. 4. Maintain original programme, i.e. provide the works within the same timescales as set out in the first Accepted Programme, thus not changing the Client's risk profile.	Appropriate working methods to be developed by the Contractor. Delay to the award of contract may delay the 'access date' preventing preparatory works in late 2023, impacting the earthworks season.	3	2	6	MEDIUM	3	2	6	MEDIUM	35.50%	£350,100	£700,200	£2,100,600	31/08/2022
Operational	D - Weather Events	D03	10/08/2020	Adverse weather conditions less than 1 in 10 year event.	1. Delay and disruption to Stage One and Stage Two. 2. Shared liability, regardless of the weather event. 3. Traditional construction methodology more susceptible to delay due to wind speeds.	3	3	9	MEDIUM	1. Time works to minimise risk, contingency in delivery programme/budget. 2. Best practice to be adopted, ensuring earthworks are sealed with adequate and appropriate run-off to avoid scouring and pollution. 3. Other protective works to be considered during the development of the method statements. 4. Risk profile unchanged if tender construction programme can be maintained.	Appropriate working methods to be developed by the Contractor. Delay to the award of contract may delay the 'access date' preventing preparatory works in late 2023, impacting the earthworks season.	4	1	4	LOW	4	1	4	LOW	65.50%	£322,980	£645,959	£1,937,878	31/08/2022
Strategic	E - Design Risk Products / Materials	E04	18/06/2018	Change in structure type, appearance and span arrangement - Viaducts.	1. Redesign works and possible delay 2. Increase in costs 3. May impact on land requirements	2	3	6	MEDIUM	Investigate various structure types, appearance and span arrangements. Consider input from architectural advisers. Allow margin in preliminary sizing of bridge elements so later minor changes in parameters don't require significant redesign. Seek agreement from all stakeholder prior to proceeding with design.	The Tender Design is compliant with the Scope with regards to structure type, appearance and span arrangements. Elements of the viaduct design subject to further refinement during Stage One.	2	3	6	MEDIUM	2	3	6	MEDIUM	13.00%	£199,633	£494,364	£988,727	31/10/2021
Strategic	E - Design Risk Products / Materials	E05	02/07/2018	RSA may require changes in the later design stages.	1. Late design changes impact on programme 2. The cost implication of reviewing and updating designs	3	2	6	MEDIUM	Where possible design to conform to technical standards, within known constraints. Confirm the recommendations of the road safety auditors and adjust designs if required. Programme audits between design stages to allow for updates to be captured at subsequent design stage. Seek early review/ input from Road safety team at NCC.	A RSA1 has been undertaken on the Reference Design and all comments closed out. Assessment of comments against Tender Design ongoing.	3	2	6	MEDIUM	3	1	3	LOW	35.50%	£162,040	£324,081	£648,162	30/09/2021
Strategic	E - Design Risk Products / Materials	E06	02/07/2018	Proceeding with the preliminary design in the absence of GI data.	1. Potential change to foundations if proposed GI does not confirm desktop information. 2. Late design changes once survey information becomes available 3. Cost and programme impact. Conservative assumptions stifle contractor efficiencies	4	3	12	MEDIUM	Assume worst case - piled foundations, undertake intrusive testing early in the design process. Make assumptions where necessary, to be confirmed during further GI.	The geotechnical team have developed the reference design based on partial geotechnical data, with conservative assumptions made. Additional information provided to Contractors to develop their tender designs, assumptions made which will need to be confirmed with further GI in Stage One.	3	2	6	MEDIUM	3	2	6	MEDIUM	35.50%	£332,586	£666,003	£1,332,006	31/10/2021
Strategic	E - Design Risk Products / Materials	E08	08/05/2019	The assumption that the wildlife overbridges will be a standard width may change .	Additional costs for design and construction will be incurred if it is established that wider or more complicated structures are required.	3	3	9	MEDIUM	Confirm number, location and requirement for Wildlife bridges from Ecology team. Design and include proposals in works package to Contractor.	Allowances for ecology structures have been made in Quantified Risk Assessment (QRA) for wider/more extensive structures, in addition to standard structure included in the Reference Design. Bat surveys for 2019 and 2020 have been completed, with further surveys planned in 2021. Following analysis of surveys, the ecology team are investigating whether changes to the Tender Design is required to ensure the bridges are effective. Changes will either be mitigated or incorporated as part of the Planning Design by the Contractor.	4	2	8	MEDIUM	4	2	8	MEDIUM	65.50%	£732,463	£1,660,409	£2,771,129	03/02/2022
Strategic	E - Design Risk Products / Materials	E09	08/05/2019	The scope to address the supplementary measures to the NWL may increase following full investigation and local traffic issues.	1. Additional costs for design and construction to provide supplementary measures 2. Possible delays if further consultation is required.	2	2	4	LOW	1. An allowance has been made as part of the cost plan. Confirm during the OBC risk phase to ensure this is sufficient/ updated in Cost Risk assessment 2. Carry out further investigation to appreciate local traffic issues that could be addressed - weight restriction, vehicle restrictions, traffic calming etc. Liaise with NCC and local stakeholders to gauge their views on measures being proposed.	Allowances made in Quantified Risk Assessment (QRA) for scope increase due to possible supplementary measures on basis of similar measures that were implemented for the NDR (A1270) scheme. Further studies are being undertaken on complementary local schemes.	3	2	6	MEDIUM	1	1	1	LOW	2.50%				31/10/2021

Risk A Category	Risk B Category	QRA Ref	Date added	Risk Description (lack of, failure to...)	Impact of Risk	Opening Risk Assessment			Risk Mitigation Measures	Mitigation Progress	Current Status			Mitigated Risk Assessment:				Target Resolution Date						
						Likelihood	Impact	Risk Score			Risk Level	Likelihood	Impact	Risk Score	Risk Level	Probability	Minimum		Most Likely	Maximum				
Strategic	E - Design Risk Products / Materials	E11	29/11/2019	NMU and land access strategy may fail to gain support of LPA, PROW and landowners.	1. Redesign work and possible programme delay 2. Additional structures required to cross NWL - cost and programme delay 3. Additional compensation to landowners 4. PROW objection - planning and programme delay	4	4	16	MEDIUM	1. Carry out a detailed assessment of the existing PROW routes, including user surveys on affected routes that cross the NWL 2. Engage with PROW team and landowners to understand existing arrangement for land access and use of PROW network. 3. Develop a considered strategy that minimised severance and preserves access. 4. Coordinate with HE for A47 works and access arrangements - Honningham Restricted Byway and Easton Estate.	Proposals were developed with stakeholders and landowners. Local Access consultation showed broad support for the proposals, the design of which is being refined for the planning application.	3	1	3	LOW	3	1	3	LOW	35.50%	£118,763	£184,719	£369,437	31/08/2022
Strategic	E - Design Risk Products / Materials	E12	31/03/2020	Additional structures needed to cross the IDB drains to facilitate maintenance access track for viaduct inspection/maintenance and another structure to facilitate NMU route east of Tud Tributary culvert.	1. Additional scope and costs to design 2. Potential hydrological / ecological constraints 3. EA or NE objection poses risk to planning	3	3	9	MEDIUM	1. Agree requirements with IDB/EA/NE.	Memo issued to Environment team and EA/NE for review. Water(flooding) team/ecology to advise on requirements for design of these structures and to be included in Annex 14 document. Potential locations for these structures are indicated on Structures Location Plan. Engagement with the IDB has commenced. EA/NE have concerns with elements of permanent maintenance proposals in floodplain.	3	1	3	LOW	3	1	3	LOW	35.50%	£237,525	£292,399	£584,798	31/10/2021
Strategic	E - Design Risk Products / Materials	E13	21/05/2020	The highway and junction layouts indicated in the Reference Design are based on 2015 base year traffic survey data. More current traffic survey information is being obtained from 2019 surveys that will be used as basis for updating the traffic model in 2020. There is a risk that the difference in the data may result in geometric design changes.	1. Late design changes impact on programme 2. The cost implication of reviewing and updating designs 3. Change to the Contractors Tender Price	3	3	9	MEDIUM	Undertake a sensitivity check of the existing 2015 base year model. Identify possible capacity issue with current design with possible change scenarios. Expedite modelling based on 2019 base survey data to ensure that information is available for any design reviews prior to the planning submission.	Thresholds for new and existing junctions have been agreed with NCC highways and junction modelling has commenced.	4	2	8	MEDIUM	4	1	4	LOW	65.50%	£301,300	£656,572	£1,313,144	31/10/2021
Operational	F - Environmental	FO1	18/06/2018	During construction protected species not previously identified may be found to be present in location of project.	1. Make area safe for protected species 2. Relocate where applicable 3. Schedule relocation at suitable time 4. Delays to project and associated cost for rehoming and delays	2	4	8	MEDIUM	1. Maintain survey data and ensure it is up to date, time ecology species surveys to maximise shelf life 2. An ecological watching brief could be maintained prior to the start of construction. Integration between Ecology and Environment teams - any new information to be escalated.	Ecology surveys to continue into 2021 taking into account developing 'extent of works' plan. Watching briefs / ecological clerks of works proposed mitigation during site clearance and main works in procurement documentation.	2	2	4	LOW	2	2	4	LOW	13.00%	£69,057	£138,115	£254,721	31/03/2023
Operational	F - Environmental	FO2	18/06/2018	Contamination and/or fly tipping is discovered on the land during the site surveys or identified/occurs during Stage One and Stage Two.	1. Additional cost in the procurement process for testing, treating and removal of material. 2. Disposal of fly tipping and/or treatment of contaminated land.	2	3	6	MEDIUM	Undertake desk based assessment and intrusive investigation of appropriate areas pre-submission of the application to target these areas. If appropriate, align Contaminated land testing with GI's scheduled to reduce costs.	Desk top study completed and ground investigation undertaken, which didn't identify and notable issues. Further ground investigation in Stage One.	3	1	3	LOW	3	1	3	LOW	35.50%	£35,500	£88,750	£177,500	31/07/2021
Strategic	F - Environmental	FO3	18/06/2018	Lack of access to undertake environmental surveys until CPO process completed (Stage Two access date).	1. Incomplete surveys and hence assessments may not be suitable for submission to the determining authority 2. Delay to programme while surveys are undertaken 3. A complete survey season of baseline information required to determine mitigation	4	3	12	MEDIUM	1. Work with landowners to agree access and undertake worst case assessment if suitable to do so. Ensure programme has sufficient time for access and seasonal surveys (including statutory powers notifications). 2. Use of entry notices to gain access	Various meetings being held to negotiate access. Survey schedule has been revised to take into account the delay due to Covid-19. Entry notices to be issued as necessary.	4	1	4	LOW	4	1	4	LOW	65.50%	£142,297	£142,297	£284,593	31/10/2021
Operational	F - Environmental	FO4	18/06/2018	Invasive species may be found to be present in location of project.	1. Additional cost for testing and treating and removal prior to construction commencing	2	2	4	LOW	When full access is granted to the entire route the presence or likely absence of invasive species will be able to be confirmed. Working towards full land access.	The whole site has now been surveyed and no Japanese knotweed or Himalayan balsam have been recorded on site.	2	1	2	LOW	2	1	2	LOW	13.00%	£65,473	£130,945	£243,966	31/10/2021
Operational	F - Environmental	FO5	18/06/2018	Archaeological remains that require significant intrusive investigation may be found to be present.	1. Risk to pre-construction programme and cost from survey requirements pre-application 2. Re-route scheme to avoid known sites of archaeological value. 3. Will also result in increased costs and delays to activities/ programme	3	4	12	MEDIUM	1. Work with Historic England and the archaeological officer of NCC to agree scope of the assessment. Identify a suitable WSI in advance of intrusive works to ensure that archaeological matters are appropriately addressed at all suitable stages. 2. Archaeological desk study, Geotech surveys, trial trenching along preferred route, avoid any nationally significant archaeology. Geophysics post PRA	Desk study and initial walkover survey undertaken. County Archaeologist has confirmed that geophysics and trial trenching is required prior to determination of the planning application. Geophysical surveys have been completed and trial trenching scope being developed.	3	2	6	MEDIUM	3	2	6	MEDIUM	35.50%	£308,635	£552,348	£925,905	31/10/2021
Strategic	F - Environmental	FO6	02/07/2018	Failure to reach agreement with relevant consultees with regard to significant environmental impacts and mitigation. E.g. SAC/SSSI. This could include NE not accepting the design e.g. of the viaduct and/or bat mitigation measures - underpasses/green bridges.	1. Potential objectors to the project that could jeopardise delivery	3	4	12	MEDIUM	Regular meetings and progress updates with NE and the EA so an agreement can be reached. Produce technical notes on specific impacts for agreement with NE/EA.	Currently undertaking surveys and so cannot qualify the significant risks yet. Regular meetings being held with NE and EA. Mitigation and compensation strategy being developed for consultees to provide comment in advance of detailed proposals being developed.	3	1	3	LOW	3	1	3	LOW	35.50%	£153,498	£306,997	£613,993	31/10/2021
Strategic	F - Environmental	FO8	02/07/2018	Noise impacts are deemed to require mitigation.	1. Mitigation required such as acoustic fencing or false cutting; this could lead to additional land take or visual impacts. 2. Cost increases	3	2	6	MEDIUM	Noise assessment in EIA - seek adequate buffer zone from nearest receptors. Incorporate bunding in areas in closest proximity to residential receptors at outline design phase. Flexibility in highway fencing arrangements to incorporate a solid acoustic barrier if required. Modelling to inform noise assessments and mitigation design.	Preliminary noise mitigation report completed, which advises some mitigation inc barriers in limited locations and consideration of low noise surfacing. Design of noise mitigation to be developed in Stage One.	3	1	3	LOW	3	1	3	LOW	35.50%	£130,506	£261,011	£522,023	15/04/2021
Strategic	F - Environmental	FO9	02/07/2018	Significant adverse environmental effects identified in the application.	1. This may be deemed unacceptable the determining authority compared to the scheme benefits 2. Increased mitigation costs 3. Programme delay to refine application	4	4	16	MEDIUM	See F10 with regard to ensuring that the mitigation is not wholly inappropriate. Work with engineers to try and 'design out' significant effects so that they don't arise in the first place. Emphasise scheme benefits.	Considering wide range of options. Significant effects may be unavoidable. This remains the case; an overview of the key concerns from statutory consultees obtained as part of the scoping opinion. Objectors to the scheme have suggested that the presence of protected species in the vicinity of the scheme would lead to significant adverse effects. NCC surveys and assessment are ongoing to inform the ES and planning application.	3	3	9	MEDIUM	1	1	1	LOW	2.50%	£12,950	£25,900	£51,800	03/02/2022
Strategic	F - Environmental	F10	02/07/2018	Unclear guidance and currently unconfirmed scope of mitigation required for environmental impacts. Note: Risk considers the sufficiency of the ecological mitigation plan (TN037).	1. Increase in land take 2. Increase in costs	2	3	6	MEDIUM	Undertake environmental assessment as soon as practicable to do so, such that measures can be incorporated into the design at an early stage. Work with engineers and attend workshops/meetings. Mitigation to be agreed in principle with regulators and key stakeholders as early as practicable. Early discussion with LPA and other regulators / stakeholders during pre-application period.	Key mitigations, as relate to protected species, water bodies, flood risk, and biodiversity net gain are already being discussed with the EA and NE in meetings and by correspondence. Feedback and preliminary agreement on these items and specifics such as Bat Mitigation and Viaduct Technical Notes being sought well in advance of planning application. Further consultation with other stakeholders and regulators to be undertaken in parallel following EIA scoping. Likely significant effects have been formally communicated via the request for EIA Scoping Opinion and added to agenda for pre-application meetings with LPA.	3	2	6	MEDIUM	3	2	6	MEDIUM	35.50%	£77,123	£486,589	£973,177	31/08/2021
Strategic	F - Environmental	F13	02/07/2018	Aboriginal surveys identify ancient or veteran trees that requires mitigation.	1. Land take impacts 2. Design changes to retain ancient/veteran trees where possible, leading to programme delays	4	3	12	MEDIUM	Minimise impact through design	Arboricultural survey completed. A number of veteran and ancient trees have been identified on the private land on and around the alignment, which will be taken into account as the design develops. Compensation for loss of trees will be required and will be considered alongside the BNG process with input from NCC arboricultural officer.	1	1	1	LOW	1	1	1	LOW	2.50%				31/03/2021
Strategic	F - Environmental	F14	18/06/2018	The project may require extra mitigation to avoid listed building effects.	1.Costs associated with the additional landscaping/ change the scheme to avoid impacts	3	4	12	MEDIUM	Work with Historic England and the heritage officer of NCC to agree scope of the assessment. Review listed buildings and map re proximity for each options seeking to select lower risk options.	Historic environment walkover undertaken. Low number of heritage assets potentially affected.	1	1	1	LOW	1	1	1	LOW	2.50%				31/10/2021
Strategic	F - Environmental	F15	18/07/2018	The project may have inadequate pollution control solution and management and control of the volume of runoff during flood events designed into scheme.	Adverse effects on SAC/SSSI	4	5	20	HIGH	Work with EA to ascertain suitable pollution control mechanisms and location/capacity/Design of attenuation ponds. Maintain regular correspondence with Natural England and the Environment Agency with regard to any survey information and emerging assessment conclusions. Work with both consultees to identify mitigation measures.	Meetings held with EA in order to agree principles that will be acceptable. To incorporate scoping opinions received and ongoing consultation with regulators regarding this issue.	1	1	1	LOW	1	1	1	LOW	2.50%	£12,903	£25,807	£51,613	31/10/2021
Strategic	F - Environmental	F17	18/07/2018	The shadow analysis shows that the project impacts the integrity of the River W even at 12m high.	1. Increased scheme height mitigation/design change. 2. Worst case scenario additional compensation will be needed in the River Wensum to reduce the impact. 3. Impact to NCC's reputation in the area	3	2	6	MEDIUM	1. Undertake shadow analysis to fully understand shading impacts. Look at changing the design to ensure shading is not unacceptable in HRA terms. Extra consultation with NE. 2. NE approval in advance of planning application submission	Height of viaduct provisionally agreed at 12m on the assumption that this does not result in unacceptable shading impacts. A technical note has been produced and initial feedback provided by regulators. Final design needs to be confirmed once shading analysis and ecological assessment has been undertaken.	1	2	2	LOW	1	1	1	LOW	2.50%	£12,950	£25,900	£51,800	31/08/2022

Risk A Category	Risk B Category	QRA Ref	Date added	Risk Description (lack of, failure to...)	Impact of Risk	Opening Risk Assessment			Risk Mitigation Measures	Mitigation Progress	Current Status			Mitigated Risk Assessment:				Target Resolution Date					
						Likelihood	Impact	Risk Level			Likelihood	Impact	Risk Level	Probability	Minimum	Most Likely	Maximum						
Strategic	F - Environmental	F20	18/06/2018	Additional flood risk mitigation required.	1. More land take 2. Increased costs	2	3	6	MEDIUM	Design to minimise land take, identify and agree mitigation with EA and land take requirements. Design robust mitigation for 1:100 year + CC (2016 allowances) with level for level flood plain compensation. Early assessment of impacts in hydraulic model to understand likely land take requirements.	3	1	3	LOW	3	1	3	LOW	35.50%	£15,294,930	£34,329,231	£65,938,682	31/08/2021
Strategic	F - Environmental	F24	18/06/2018	River Wensum SAC prevents crossing of R Wensum (Natura 2000 site).	1. Increased land take for mitigation - ponds outside extents of extreme flood with conveyance system. 2. The proposals will need to meet the tests as set out in the habitats directive. Should the tests not be met, then consent for the scheme would be in jeopardy	5	5	25	HIGH	Maintain regular correspondence with Natural England and the Environment Agency with regard to any survey information and emerging assessment conclusions. Work with both consultees to identify mitigation measures that draw upon their specialist knowledge.	1	1	1	LOW	1	1	1	LOW	2.50%				31/08/2022
Strategic	F - Environmental	F26	18/12/2018	Adverse visual impacts created onto the Golf course and other sensitive receptors within view of the viaduct options may require mitigation.	1. Cost to implement greater than expected mitigation of the visual impacts from the viaduct and other sections of the scheme.	3	2	6	MEDIUM	Consider earth bunding for visual screening in the design and maximise length of alignment in cutting.	2	1	2	LOW	2	1	2	LOW	13.00%	£51,094	£102,188	£204,375	31/10/2021
Strategic	F - Environmental	F31	29/01/2019	Long term groundwater monitoring may be requiring prior to construction.	1. Programme delay. 2. Cost implication.	2	4	8	MEDIUM	Consultation with statutory authorities on requirements.	3	1	3	LOW	3	1	3	LOW	35.50%	£40,381	£80,763	£161,525	31/03/2022
Strategic	F - Environmental	F33	04/04/2019	The scheme may not pass the NPPF Sequential Test that requires development to first be directed to lower risk flood zones.	1. Application of Exception Test will be required to justify that location in flood zones provides wider sustainability benefit that outweighs flood risk and does not increase flood risk elsewhere. 2. Sustainability benefits of scheme to be confirmed by planning team. Impact on flood risk to be assessed in the FRA.	1	4	4	LOW	Continue to show how flood risk has been considered in the design and next stages of work, using evidence base information.	1	4	4	LOW	1	1	1	LOW	2.50%		£22,913	£45,826	31/10/2021
Strategic	F - Environmental	F34	06/08/2019	The project may incur costs due to the lack of a design freeze early enough in advance of work on the OBC, Scoping Report and the ES.	1. The risk could be a delay in programme and deliverables due to re-doing of environmental assessment work. 2. Abortive work if it changed halfway through the environmental assessment work for all stages, 3. Continuous request for changes to completed designs	4	4	16	MEDIUM	Agree a definition and deadlines for design freezes of the route with all members of the team (Highways, environment etc) and with the client so it is clear what design everyone is working to. A new version of the design should not be used by any member of the team until next design freeze even if it is being updated by design team in between. To agree scope of allowable design changes and design freeze dates for design and build Contractor to comply with, and allocate clear responsibility for planning and EIA deliverables between WSP and Contractor as early as possible.	3	2	6	MEDIUM	3	2	6	MEDIUM	35.50%	£290,655	£841,000	£1,468,467	31/10/2021
Strategic	F - Environmental	F35	06/08/2019	Additional wildlife structures become required further to the new or additional information becoming available from surveys (i.e. bats and wildlife underpasses, or additional species being identified that require additional wildlife structures).	1. The cost associated with designing and implementing the structures 2. Cost associated with addressing the highways alignment issues raised by the introduction of the new structures. Particularly the road profile which impacts on the land take.	3	4	12	MEDIUM	1. Allow a risk amount in the cost estimates to cover the additional cost of providing the underpass. Maintain wildlife bridge near the viaduct, even if it may not be required, as if it is not required but other wildlife structures become necessary this may balance the cost. 2. Engagement between ecology team and design teams to identify as early as possible any potential additional wildlife structures needed. 3. Use bat data from static detectors to evaluate requirement of bat structures	2	3	6	MEDIUM	2	3	6	MEDIUM	13.00%	£224,886	£449,771	£702,899	31/10/2021
Strategic	F - Environmental	F37	11/09/2019	The project red line boundary may increase due to ecology mitigation or the release of further requirements for constructability.	1. Programme delays to reach agreement with landowners/CPO additional land 2. Cost and programme implications of increasing the project red line.	4	4	16	MEDIUM	Confirm 'potential' compound areas in procurement process. Ensure the worst case scenario is captured and Ecology and other teams have input	3	4	12	MEDIUM	2	1	2	LOW	13.00%	£36,998	£92,495	£184,990	03/02/2022
Strategic	F - Environmental	F38	02/12/2019	Large amount of badger activity identified within northern woodlands (November 2019). Main sett location provided by NCC but no further details as access denied. Impacts to a main badger sett expected and therefore mitigation could involve creation of artificial sett. This will have to be located within the same territory as the existing sett, not within a neighbouring territory. Badger bait marking surveys therefore proposed.	1. Cost and programme and design implications.	4	3	12	MEDIUM	Proposal for badger bait marking surveys in these woodlands. This will allow for the ecology team to map badger territories and identify a potential location for an artificial badger sett.	1	1	1	LOW	1	1	1	LOW	2.50%				01/06/2021
Strategic	F - Environmental	F39	03/12/2019	The exact areas required for biodiversity net gain (BNG) delivery is unknown at this stage.	1. Sufficient off-site land not available or secured. 2. Increased land costs 3. Programme delay for land negotiations and challenge at inquiry	4	4	16	MEDIUM	High level BNG assessment being undertaken based on available survey data and aerial imagery. Update once the BNG assessment is complete following confirmation of RLB and subsequent habitat survey updates.	4	2	8	MEDIUM	4	2	8	MEDIUM	65.50%	£440,488	£880,975	£1,761,950	01/07/2021
Strategic	F - Environmental	F40	02/12/2019	The planning application is "called in" by the Secretary of State for a decision. This is done for particularly controversial or technically challenging planning applications, and is a possibility for NWL.	1. Programme delay and cost increase for scheme development	4	4	16	MEDIUM	Allow for public inquiry in scheme programme and budget	4	2	8	MEDIUM	4	1	4	LOW	65.50%				30/03/2022
Strategic	F - Environmental	F42	02/12/2019	The planning application takes longer than 24 weeks to determine.	1. Programme delay	4	4	16	MEDIUM	Early engagement with LPA ensure sufficient resource available for determination.	4	3	12	MEDIUM	2	1	2	LOW	13.00%	£29,620	£59,240	£118,480	30/03/2022
Strategic	F - Environmental	F43	29/01/2020	The planning application is viewed by NCC (acting as the Local Planning Authority) as being 'contrary to the development plan'.	This would make getting planning permission more difficult. The Scheme would have to be justified based on 'material considerations', which is a higher bar than getting planning permission for a scheme that is in accordance with the development plan. Also increase the risk that the Secretary of State calls the application in.	4	4	16	MEDIUM	Early engagement with the LPA. Ultimately accordance with the development plan is a matter of judgement, and the planning statement be used to seek NCC's feedback on the approach that has been taken to the issue.	3	4	12	MEDIUM	3	3	9	MEDIUM	35.50%	£126,571	£253,142	£506,284	30/03/2022
Strategic	F - Environmental	F44	26/02/2020	Ecology and environment survey data becoming 'out of date' in relation to the planning application date. This is dependant upon the type of flora/fauna and associated habitat.	1. Cost implications of repeating surveys 2. Delay to planning application 3. Design changes as a result of further information	3	4	12	MEDIUM	Plan re-surveying in case of programme slippage.	3	4	12	MEDIUM	2	1	2	LOW	13.00%	£49,739	£62,120	£124,240	03/02/2022
Strategic	F - Environmental	F47	12/08/2020	Objectors disrupt environmental surveys	1. Incomplete surveys and hence assessments may not be suitable for submission to the determining authority 2. Delay to programme while surveys are rescheduled 3. Increase in survey costs 4. Impact on staff physical and mental wellbeing	4	4	16	MEDIUM	Monitor social media and assess whether disruption to surveys is likely. If disruption is likely, take additional measures such as increasing staff numbers, informing the police and other security measures	4	4	16	MEDIUM	3	1	3	LOW	35.50%	£135,826	£126,571	£253,142	03/02/2022
Strategic	F - Environmental	F48	08/09/2020	A47 and NWL could have different results, assessment and conclusions from environmental surveys, e.g. ecology surveys. Different approaches may be taken for the required ecology mitigation e.g. for barbatselle bats	1. Implications for dialogue with statutory and non statutory consultees. Possible confusion over different results and approaches to the management of ecological features	3	3	9	MEDIUM	Regular dialogue with HE Sweco Ecologist and NCC Ecologist to understand A47 emerging ecology results and approaches to mitigation.	3	3	9	MEDIUM	1	3	3	LOW	2.50%				03/02/2022
Strategic	F - Environmental	F49	09/10/2020	Late receipt of data or feedback from stakeholders relating to EIA/ES.	1. Delay to submission of the planning application 2. Costs associated with updating assessments and planning documents 3. Challenge to submission based on new evidence	3	4	12	MEDIUM	Bring forward surveys as much as possible. Ensure comprehensive early engagement with stakeholders and the public to minimise unexpected late changes.	3	4	12	MEDIUM	2	1	2	LOW	13.00%	£49,739	£46,350	£92,700	03/02/2022

Risk A Category	Risk B Category	QRA Ref	Date added	Risk Description (lack of, failure to...)	Impact of Risk	Opening Risk Assessment			Risk Mitigation Measures	Mitigation Progress	Current Status			Mitigated Risk Assessment:				Target Resolution Date								
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Strategic	G - Third Parties / Statutory Undertakers	G01	18/06/18	Utility diversion cost/risk/timescale/access. Note, this risk considers the sufficiency of the allowances in the forecast (based on C3 Estimates), the programme effects and whether further constraints are placed on the statutory undertaker whilst diverting the services.	1. Increased costs as a result of change to design / construction works and Planned STATS maintenance work conflicts with the proposed scheme construction	2	3	6	MEDIUM	Undertake consultations with utility owners to understand proposals at an early stage. Ensure utility information is kept up to date.	3	1	3	LOW	3	1	3	LOW	35.50%	£15,294,930	£34,329,231	£65,938,682	£161,026	£337,642	£675,284	30/10/2021
Strategic	G - Third Parties / Statutory Undertakers	G02	18/06/2018	Conflict of potential route with Orsted and Equinor cable routes.	1. Feasibility/safety issues leading to redesign of scheme - extra costs and delays	2	3	6	MEDIUM	Undertake consultations with Orsted and Equinor to understand proposals for routing the cables at an early stage. Consult with the HSE to understand the critical hazard zones with input from the LPA.	2	2	4	LOW	2	2	4	LOW	13.00%	£138,589	£372,275	£744,550	£138,589	£372,275	£744,550	30/09/2021
Operational	G - Third Parties / Statutory Undertakers	G03	18/06/2018	Utility company diversions not given sufficient planning lead in-time. Note, this risk considers the sufficiency of operations to ensure the statutory undertaker is fully acquainted with the project, has received the required orders / confirmations / consents / etc and has the required resource to carry out the diversionary works in the required timescales.	Materials and resourcing scheduling compromised leading to design and/or build change/disruption.	2	2	4	LOW	Identify utility constraints and liaise with statutory undertakers at an early stage to seek advice on diversion and protection requirements and timescales.	1	1	1	LOW	1	1	1	LOW	2.50%	£9,144	£18,288	£36,576	£9,144	£18,288	£36,576	30/06/2021
Operational	G - Third Parties / Statutory Undertakers	G04	18/06/2018	Unknown buried services may be discovered on site above the levels assumed in the estimate. Note, this risk considers the sufficiency of the searches and identification of existing services the are effected by the project.	1. Increased cost 2. Delays to activities whilst services are addressed	3	3	9	MEDIUM	Undertake asset record searches and consult statutory undertakers	4	1	4	LOW	4	1	4	LOW	65.50%	£383,401	£766,801	£1,533,603	£383,401	£766,801	£1,533,603	30/09/2021
Operational	G - Third Parties / Statutory Undertakers	G07	11/09/2019	The HSE, LPA or National Grid may object to the project on grounds of works within proximity to a high pressure gas installation, and impose restrictions on the proposed land-use within the vicinity of the pipeline. Note, this risk considers any constraints that may be imposed due to the proximity of nationally important services and the potential safety implications.	1. Increased construction costs to manage requirements. 2. Design changes to address concerns 3. Diversion of gas main	2	4	8	MEDIUM	Liaise with the HSE and NG to confirm the gas main consultation zones and agree limitations of work within these zones. Ensure works classified as Level 2 or Level 3 sensitivity are located beyond the Inner and Middle Consultation Zones. Ensure compounds, crossing roads and all works avoid the gas main. Where conflicts arise, confirm if NCC accept a Departure from Standard for the side road designs.	3	2	6	MEDIUM	2	1	2	LOW	13.00%	£47,549	£62,677	£125,355	£47,549	£62,677	£125,355	06/09/2022
Operational	G - Third Parties / Statutory Undertakers	G08	11/09/2019	Highways England ... Contribution to junction up-grade on A47 (over and above what would be required in the absence of the NWL)	1. Increased construction cost on HE scheme, contribution from NCC	3	1	3	LOW	Liaise with Highways England to establish what enhancement is required to accommodate the NWL and the associated contribution	3	1	3	LOW	3	1	3	LOW	35.50%	£355,000	£710,000	£1,420,000	£355,000	£710,000	£1,420,000	30/09/2021
Operational	H - Flooding	H01	18/06/2018	River or ground water levels may rise leading to flooding during construction (weather). Note, this risk considers the effect of flooding on construction activities and the liability for the associated costs should a flooding event occur.	1. Costs to the project for enhanced flood mitigation 2. Delays while mitigations are enacted 3. Cost and time delay if flooding occurs while in construction	3	3	9	MEDIUM	Programme to include sufficient contingency, consider potential protection/interventions and minimise scheme footprint in flood plain. Requirement for contractors to sign up to the flood warning service.	3	3	9	MEDIUM	3	2	6	MEDIUM	35.50%	£160,538	£673,839	£971,217	£160,538	£673,839	£971,217	30/06/2023
Strategic	H - Flooding	H02	18/06/2018	Flood level design to F22 assumptions may change once detailed flood modelling is carried out - this may change the extents of viaduct required.	1. This may change the extent of the required viaduct. 2. Increased design and construction costs, 3. Impact on Programme	3	3	9	MEDIUM	Review flood levels on receipt of flood modelling from EA (35years+CC and 65 years+ CC sensitivity test) versus assumed F22 levels used in current design.	3	3	9	MEDIUM	1	3	3	LOW	2.50%	£106,910	£150,131	£300,261	£106,910	£150,131	£300,261	03/02/2022
Strategic	H - Flooding	H03	25/01/2019	Infiltration and groundwater test results may indicate that discharge via infiltration is not viable.	1. There will be a change to design that requires discharge to watercourses, with subsequent pollution risks to Wensum. 2. It will change the design for the drainage basins	3	4	12	MEDIUM	Tests to be undertaken at an early stage to mitigate impact. A sufficient amount of tests to be undertaken. Alternative discharge options to be explored as early as possible.	2	2	4	LOW	2	2	4	LOW	13.00%							31/08/2021
Strategic	H - Flooding	H04	25/01/2019	The EA and NE may raise concerns with the proposed discharge options of the project.	1. This will result in a change to design that requires additional treatment to be installed. 2. Potential requirement for additional land take may be required.	2	4	8	MEDIUM	Early engagement with the EA. Summary of strategy to be sent to groundwater team at EA to review.	2	4	8	MEDIUM	1	1	1	LOW	2.50%				£40,360	£80,719		31/08/2021
Strategic	H - Flooding	H05	28/01/2019	Infiltration rates on site may be poorer than originally specified/determined resulting in larger infiltration lagoons and land take.	1. Larger land take required to support the infiltration lagoons 2. Survey required of the additional land take	3	3	9	MEDIUM	Tests to be undertaken at an early stage to mitigate impact. A sufficient amount of tests to be undertaken.	3	1	3	LOW	3	1	3	LOW	35.50%				£496,435	£992,871		31/08/2021
Strategic	H - Flooding	H06	29/01/2019	Delays getting approval of the hydraulic model by the EA. The EA's hydraulic models may not be suitable to inform detailed assessment and the design of mitigation.	1. Cost associated with additional modelling required 2. Programme implication associated with further modelling 3. Gaining EA's approval for the updated model	3	3	9	MEDIUM	Early review of available model data. Consultation with EA. If issues noted during detailed assessment and design, raised as soon as possible and remedial actions discussed.	2	3	6	MEDIUM	2	1	2	LOW	13.00%				£70,411	£140,822		31/10/2021
Operational	H - Flooding	H07	29/01/2019	The EA may require additional modelling of the temporary works solutions around the watercourse crossing.	1. Cost impact of additional modelling 2. Programme impact of additional modelling	3	3	9	MEDIUM	Early contractor engagement to understand temporary works requirements. Consultation with EA.	3	1	3	LOW	3	1	3	LOW	35.50%							31/10/2021
Strategic	H - Flooding	H11	08/07/2019	There are low points within cuttings along the alignment – this means that the infiltration lagoons need to be lower than the lowest point. Since the lagoons are lowered this is defined as 'deep infiltration' in the eyes of NCC LLFA and is not a preferred form of discharge (there may also be issues with groundwater at the deeper depths).	1. Solution will not be accepted by the LLFA requiring design changes 2. Increased costs/delivery programme of alternative solutions	3	3	9	MEDIUM	1. Liaise with Highways to try and reduce impact of low points within cuttings once route has been selected 2. Engage and liaise with LLFA with regards to their policy memo.	3	3	9	MEDIUM	1	1	1	LOW	2.50%							03/02/2022
Strategic	H - Flooding	H12	01/11/2019	Changes to the alignment and accommodation of ecology and side road structures may necessitate the need for pumped drainage. This will require a power supply to be procured from the nearest point of connection.	1. Increased Costs 2. Programme delay for power supply	2	3	6	MEDIUM	Liaise with Highways designers to try and reduce likelihood of pumped drainage.	2	3	6	MEDIUM	1	1	1	LOW	2.50%							31/08/2021
Strategic	H - Flooding	H13	09/01/2020	The amount of floodplain compensation required to compensate for the viaduct piers may extend the Scheme red line boundary and land requirements. This may arise following 1D-2D flood modelling and confirmation of the number and location of viaduct piers and within the flood plain.	1. Affect the extent of other assessments (e.g. ecology surveys) required, and subsequently the EIA and planning application programme. 2. Additional land required, increasing costs	2	4	8	MEDIUM	Engage with contractor to determine likely viaduct pier and abutment design at earliest opportunity AND/OR utilise worse case reference structures design.	3	1	3	LOW	3	1	3	LOW	35.50%							31/10/2021
Strategic	F - Environmental	H15	28/10/2020	The Environment Agency are undertaking restoration measures along the River Wensum. The scope and programme for this work is unclear.	1. Inaccurate baseline for flood modelling and geomorphology assessment. 2. Amendments to ES if further information becomes available at a later date, potential programme delays.	2	3	6	MEDIUM	Ongoing consultation and as the design progresses will know more. More updates when data is available.	2	3	6	MEDIUM	1	1	1	LOW	2.50%							31/10/2021
Strategic	J - Resources	J01	18/06/2018	There may be a change to employer/ designer team members.	Lack of continuity of project knowledge within the NCC and WSP teams	3	2	6	MEDIUM	Succession planning identified within action list and team hand over at key milestones.	3	1	3	LOW	3	1	3	LOW	35.50%				£77,123	£154,245		31/12/2025
Strategic	J - Resources	J02	18/06/2018	There may be insufficient resource to maintain current programme. Note, Risk P16 considers the wider issue in respect of the Contractor's resources.	1. Potential to delay the project (increasing cost or damaging reputation) 2. Errors which impact quality of work and undermine the statutory processes.	3	3	9	MEDIUM	Ensure adequate budgets and resources in place to cover required input.	3	1	3	LOW	3	1	3	LOW	35.50%	£129,845	£413,935	£620,902	£129,845	£413,935	£620,902	31/03/2025

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						Likelihood	Impact	Risk Score			Risk Level	Likelihood	Impact	Risk Score	Risk Level	Probability	Minimum		Most Likely	Maximum				
Strategic	J - Resources	J03	02/07/2018	The project may be impacted by the shortage of specialist labour skills.	Shortage of specialist subcontractor or labour skills will have an adverse affect on cost and programme	3	3	9	MEDIUM	1. Use standard construction methods where possible - minimise need for specialist skills. 2. Suppliers to be engaged early in the project and procurement process started as early as possible. 3. Sufficient contingency time to be included in construction/delivery programme.	Design being developed by the Contractor to minimise specialist requirements.	3	1	3	LOW	3	1	3	LOW	35.50%	£15,294,930	£34,329,231	£65,938,682	31/03/2025
Strategic	J - Resources	J04	27/01/2021	Completeness of tasks required for the successful delivery of the project in accordance with the master programme.	Additional tasks introduced, increasing cost and programme implications.	3	1	3	LOW	Ensure task required are given sufficient consideration and resourced.	Critical review carried out by legal provider. Risk assessments for all other risk consider the requirement for consultancy support.	2	1	2	LOW	2	1	2	LOW	13.00%	£47,549	£99,574	£149,361	31/12/2025
Strategic	K - Tender / Contract	K01	18/06/2018	The procurement processes of the project may be challenged.	1. Delays to schedule and delivery timescales while the procurement challenge is addressed 2. Cost implication of addressing the procurement challenge	3	3	9	MEDIUM	Prepare robust tender package, with realistic construction programme, ECI	Procurement process close to completion.	2	1	2	LOW	2	1	2	LOW	13.00%	£21,742	£43,484	£86,968	30/04/2021
Strategic	K - Tender / Contract	K05	18/06/2018	If the scope is not sufficiently precise and comprehensive, it will need to be changed later and the Contractor will be entitled to compensation. Note, this risk merely considers changes to the Scope instructed by the Project Manager, including enhancing to clarify requirements arising from any ambiguities or inconsistencies.	Ambiguity in requirements/site information, access issues, late issue of information, unforeseen ground conditions, STATS and traffic management issues may all give rise to disputes and claims	3	3	9	MEDIUM	Undertake surveys ahead of construction, scope tender precisely to minimise variability.	Constraints discussed during dialogue sessions. Procurement process close to completion	5	2	10	MEDIUM	5	2	10	MEDIUM	90.00%	£678,363	£1,839,566	£2,230,610	31/03/2021
Strategic	L - Approvals	L01	18/06/2018	There may be further changes in legislation or regulation which impact the project.	1. Increased costs to absorb changes during the design 2. Delays to schedule	3	3	9	MEDIUM	Keep apprised of legislation changes, learn lessons from other schemes.	Engaging with legal teams to keep abreast of changes.	2	1	2	LOW	2	1	2	LOW	13.00%		£82,197	£164,395	16/05/2023
Strategic	L - Approvals	L02	18/06/2018	Failing to address objections prior to submission.	The impact of the risk is additional resource requirements addressing and agreeing issues. Risk is also that programme for determination is extended and changes to the scheme may be needed or additional conditions imposed	3	3	9	MEDIUM	Stakeholder management plan, early engagement via multiple forums such as Local Liaison Group, Ecology Liaison Group, Local Access Forum, and public consultation. Additional traffic management discussions to be commenced with local parishes Feb 2021. Pre-application public consultation will be undertaken prior to planning application submission.	Round 2 consultation complete. Stakeholder engagement ongoing. Local Access public consultation held in Summer 2020 prior to pre-app consultation planned for Autumn 2021. Commitments log/SoCoG being developed for key stakeholders.	3	2	6	MEDIUM	2	2	4	LOW	13.00%	£6,074	£9,111	£12,148	30/09/2021
Strategic	L - Approvals	L04	02/07/2018	The project may not give sufficient consideration to planning policy.	The proposed scheme is not compliant with national networks / local planning policy resulting in it not being granted.	2	4	8	MEDIUM	Review of policy at each stage and updates, EIA scoping will assist with identifying relevant policies to consider but local plan emerging in parallel.	OBC aligned with local policy and REB priorities. Awaiting Local Plan 2036 and LTP update	2	4	8	MEDIUM	2	3	6	MEDIUM	13.00%	£12,148	£24,296	£36,443	16/05/2023
Strategic	L - Approvals	L05	02/07/2018	The scheme submitted for consultation or examination may not be sufficiently developed in terms of design.	1. Greater support required at the examination as more questions will be asked by the examining authority 2. Additional mitigation/planning conditions /s106 agreements may be required 3. Increased exposure to a legal challenge (A05)	3	4	12	MEDIUM	Robust design process, peer review and benchmarking, EIA, liaising closely with HE re A47 junction, additional stakeholder and local access public consultation held in Summer 2020. Pre-application consultation will be undertaken prior to planning application submission.	Design progressing to planning programme. Main risk impacts during construction - hence ECI from contractor planned in programme. Following WebTAG staged assessment protocols and DMRB guidance on level of detail at each project stage. Following TCPA/LPA requirements for planning application.	3	3	9	MEDIUM	2	2	4	LOW	13.00%	£31,492	£62,984	£125,968	06/09/2022
Strategic	L - Approvals	L07	02/07/2018	Changes to designations (e.g. ecology within study area).	Resulting in an insufficient assessment and a subsequent challenge to the scheme.	4	3	12	MEDIUM	Work with landowners and their consultants, site surveys for ecology ground truthing and liaison with NCC ecology	Maintain dialogue with Natural England and NCC and monitor any consultations to change designations.	2	1	2	LOW	1	1	1	LOW	2.50%	£1,168	£1,752	£2,336	01/10/2021
Strategic	L - Approvals	L09	02/07/2018	Land interests do not return requested information in time.	Vital interests are therefore excluded and not notified.	2	3	6	MEDIUM	Early engagement with affected parties	Information gathering exercise being undertaken. NPS managing landowner engagement.	1	2	2	LOW	1	2	2	LOW	2.50%	£24,655	£45,597	£136,791	31/08/2021
Strategic	M - Planning / DCO	M03	02/07/2018	Local Plan for 2036 is emerging - key developments in study area not confirmed.	Future model forecast results may change - may affect scheme economics	3	4	12	MEDIUM	Constrained to totals for HH and jobs to Local Plan extent of need for 2036 emerging LP and use tempo to assign spatial distribution. Agree approach with NCC planning officers.	Liaison ongoing with the GNL team to align assumptions. A range of different growth scenarios have been undertaken over and above the Core Growth scenario including Low Growth scenario, High Growth scenario, Optimistic Growth scenario and Pessimistic Growth scenario. Alongside these is a Sensitivity Growth scenario which takes account of lower Office of Budget Responsibility (OBR) and lower future growth.	3	3	9	MEDIUM	2	2	4	LOW	13.00%	£12,148	£24,296	£36,443	03/02/2022
Strategic	M - Planning / DCO	M04	18/06/2018	DfT may not accept traffic modelling used for assessment, economic appraisal or are not forth-coming with technical reviews.	1. Inability to support the findings 2. Extra modelling work 3. Delay associated with additional modelling	3	3	9	MEDIUM	1. Follow webTAG guidance. Produce local model validation report at the OBC stage. 2. Engage with DfT throughout traffic modelling development.	Engagement with DfT ongoing. Modelling reports submitted to DfT for review in advance of the OBC submission and comments being incorporated into the final documents.	2	3	6	MEDIUM	2	2	4	LOW	13.00%	£12,148	£24,296	£36,443	31/07/2021
Strategic	M - Planning / DCO	M05	02/07/2018	The traffic modelling could show the scheme does not have sufficient benefits for a business case resulting from the updated traffic model, HE changes on the A47 or alternative developments emerge as part of the Local Plan 2036.	1. Insufficient BCR to progress scheme. Project costs (including mitigation) may outweigh benefits 2. Model forecasts change	3	5	15	MEDIUM	1. Update traffic modelling and undertake scenario testing. 2. Consider mitigation costs. 3. Regular engagement with Local Plan team. 4. Engagement with HE as schemes develop so they are coordinated.	The 2019 base year model has been successfully calibrated and validated. Sensitivity assessment re COVID-19 impacts etc has been undertaken and will be reported on in the Traffic Forecasting Report and the Economic Assessment Report. Updated Benefit to Cost Ratio (BCR) to be produced for all different growth scenarios, based on the latest cost estimate. As a result of the delay to the OBC submission, any further analysis required is to be discussed with DfT.	3	4	12	MEDIUM	1	1	1	LOW	2.50%	£7,008	£9,344	£11,681	31/07/2021
Strategic	M - Planning / DCO	M07	03/03/2021	NCC are unable to enter into sufficient land agreements for the off-site environmental mitigation	1. Programme delays while agreements are finalised 2. Increases in costs if uptake is low 3. Increased risk of unsuccessful CPO if off-site land is included 4. Changes to the scheme boundary	3	4	12	MEDIUM	1. Early discussion with landowners 2. Develop a comprehensive agreement with legal team/LPA 3. Determine the minimum requirement for planning purposes	Discussion with landowners have commenced and a skeleton agreement is being developed	3	3	9	MEDIUM	1	2	2	LOW	2.50%				03/02/2022
Operational	N - Procurement	N01	18/06/2018	The project may encounter unexploded ordinance while conducting surveys or construction.	1. Removal costs which include further investigations and specialist resource for the removal 2. Stand down while the site is investigated	2	3	6	MEDIUM	Desk study to review historic use of land, review county archive bomb map etc, geophysics surveys and scans prior to construction	Desk study has been completed. No major risks identified.	3	1	3	LOW	3	1	3	LOW	35.50%	£185,313	£370,627	£741,254	31/07/2021
Strategic	N - Procurement	N02	18/06/2018	Potential effects on the Source Protection Zone (SPZ).	May require redesign of drainage solution	3	4	12	MEDIUM	Apply lessons learnt from NDR & Postwick Hub.	HEWRAT to be completed as part of ES. ES will consider this broadly based on available design info, but detailed assessment wrt to piling risk is proposed to be deferred to the Contractor as a planning condition during Stage One.	2	4	8	MEDIUM	2	2	4	LOW	13.00%				31/10/2021
Operational	N - Procurement	N04	29/01/2019	The project may encounter the presence of a layer of not previously identified soft and/or organic soil.	Necessity to carry out ground improvement and a need for strengthened construction platform results in cost escalation.	3	3	9	MEDIUM	Targeted ground investigation to allow advance notice and appropriate design.	Preliminary ground investigation has been completed, with further GI planned for Stage One	1	1	1	LOW	2	1	2	LOW	13.00%				31/01/2022
Operational	N - Procurement	N05	29/01/2019	The project may encounter the presence of solution features in Chalk (e.g. sinkholes and geotech issues).	Necessity to carry out grouting of solution features results in cost escalation	3	3	9	MEDIUM	Targeted ground investigation may not encounter this. Thus allowance should be provided for this to be addressed by the Contractor during the construction	Preliminary ground investigation has been completed on site. Contract documents cover this eventuality.	3	1	3	LOW	3	1	3	LOW	35.50%				31/01/2022
Operational	N - Procurement	N06	29/11/2019	As a result of the alignment changes and access difficulties the GI may not cover the exact locations of the proposed structures and earthworks.	1. Delay to programme while addition GI is undertaken 2. Cost increase/programme increases if poorer ground conditions are encountered in areas that have not been assessed	3	3	9	MEDIUM	Main GI be carried out by the Contractor on the basis of agreed frozen design	Preliminary ground investigation has been completed on site. Contract documents cover this eventuality.	1	1	1	LOW	1	1	1	LOW	2.50%				31/01/2022
Operational	P - Construction	P01	18/06/2018	Protestors to the project may physically stop work.	1. Delays to project while the police remove protestors 2. The project needs to enhance site security	3	3	9	MEDIUM	Public consultation to identify objection risk, work with key stakeholders and landowners and keep informed of scheme benefits. Seek solution which minimises environmental effects, EIA, Stakeholder management plan, local liaison group	Two rounds of non-statutory consultation undertaken and regular LLG and landowner meetings being held. Also engaging with potential objectors / demonstrators. Surveys have been disrupted and this may translate into disruption during the works.	3	1	3	LOW	3	1	3	LOW	35.50%	£267,215	£428,985	£857,970	31/01/2022
Operational	P - Construction	P03	02/07/2018	Supplier may underperform.	1. Delays 2. Renegotiation 3. Increased cost to meet conditions	3	4	12	MEDIUM	1. Use appropriate contract terms and supervision. 2. A suitably experience Project Manager with prior experience of project managing a major project under the NEC will drive performance.	Contract documents designed to limit risk and exposure to NCC.	3	1	3	LOW	3	1	3	LOW	35.50%	£162,508	£285,610	£531,815	31/01/2022

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						Likelihood	Impact	Risk Score			Risk Level	Likelihood	Impact	Risk Score	Risk Level	Probability	Minimum		Most Likely	Maximum				
Operational	P - Construction	P05	18/06/2018	The project may disrupt the river sediment during construction.	1. Objections from the EA 2. Project on hold or activities curtailed while mitigations and plans are put in place 3. Increased costs to address potential claims 4. Reputational impact to NCC	2	5	10	MEDIUM	Robust industry best practice method statements to be in place and adhered to. Construction Environmental Management Plan (CEMP) to be prepared and adhered to.	Constraints included in the contract documents and CEMP to be submitted with the planning application.	2	5	10	MEDIUM	2	1	2	LOW	13.00%	£15,294,930	£34,329,231	£65,938,682	31/12/2025
Operational	P - Construction	P08	18/06/2018	Noise nuisance, Dust and Vibration limits exceeded	Restrictions placed on planned work, increasing costs and programme	2	3	6	MEDIUM	Management plan to be in place and followed. Construction allowances to consider any restrictions.	Constraints included in the contract documents and CEMP to be submitted with the planning application.	2	1	2	LOW	2	1	2	LOW	13.00%	£41,036	£82,072	£164,143	31/01/2022
Operational	P - Construction	P10	02/07/2018	Poor management of temporary works / traffic management / diversions.	Adverse impact of temporary work on the local highway network.	3	4	12	MEDIUM	Industry best practice to be followed in planning and execution.	Requirements defined in procurement scope. To be monitored during construction.	3	1	3	LOW	2	1	2	LOW	13.00%	£29,406	£58,813	£176,438	31/01/2022
Operational	P - Construction	P11	02/07/2018	The project may not provide the agreed construction access routes and site compound for storage / assembly / site office.	1. Difficulties gaining access to sites/site compounds not arranged in time for construction. 2. Cost claims from contractors for extra planning, costs and project delays	2	4	8	MEDIUM	Early discussions with land owners to include access requirements. Contractor to adequately consider available access.	Engagement with landowners ongoing and discussions to include access requirements.	1	1	1	LOW	2	1	2	LOW	13.00%				31/01/2022
Operational	P - Construction	P12	02/07/2018	Water and land pollution risk during piling works.	1. Pollution of river and ground water during piling works. 2. Mitigation and corrective work costs. 3. Reputational impact for NCC	2	4	8	MEDIUM	Industry best practice to be followed in order to minimise risk of pollution including seeking specialist guidance.	Groundwater monitoring undertaken as part of preliminary GI which can then inform assessment work on different piling proposals.	2	1	2	LOW	2	1	2	LOW	13.00%	£47,549	£95,098	£190,195	31/01/2022
Operational	P - Construction	P16	28/02/2019	Supply chain capacity. Note. This risk merely considers the risk associated with the Contractor's resource. Risk ID2 considers the wider issue in respect of the Client's resource.	Other projects in the local area/the country increase demand for supply chain expertise, capacity and raw materials, pushing up costs and/or increasing lead times causing delay.	3	3	9	MEDIUM	Sufficient contingency time to be included in construction/delivery programme. Suppliers to be engaged early in the project and procurement process started as early as possible.	Procurement process close to completion.	4	1	4	LOW	4	1	4	LOW	65.50%	£227,152	£935,492	£1,870,984	31/01/2022
Operational	P - Construction	P17	28/02/2019	Bespoke construction equipment required.	Bridge construction equipment such as incremental launching system, launching gantries, and large cranes may incur additional costs. Not standard/commodity products, so price could be difficult to estimate accurately.	4	4	16	MEDIUM	Sufficient contingency cost to be included in construction/delivery cost estimate, or uncertainty of cost stated/communicated appropriately. Suppliers to be engaged early in the project and procurement process started as early as possible.	Bidders have developed buildable solutions as part of their tender return and priced accordingly	2	2	4	LOW	2	2	4	LOW	13.00%	£162,712	£325,425	£650,850	31/01/2022
Operational	P - Construction	P20	10/08/2020	Temporary works provision in the forecast is found to be insufficient for the Contractor's design and construction methodology, subject to obtaining further GI in Stage One.	Increased temporary works over and above that envisaged in the tender pricing and forecast.	2	3	6	MEDIUM	Sufficient contingency cost to be included in construction/delivery cost estimate, or uncertainty of cost stated/communicated appropriately.	Bidders have developed buildable solutions as part of their tender return and priced accordingly	2	2	4	LOW	2	2	4	LOW	13.00%	£178,090	£225,639	£320,737	31/01/2022
Strategic	Q - Stakeholders	Q01	02/07/2018	There may be a change in NCC's political landscape which affects support for the scheme.	Lack of support / political will reduce support for funding	2	4	8	MEDIUM	Ensure all stakeholders are engaged and monitor political changes.	Extensive stakeholder engagement ongoing.	2	4	8	MEDIUM	2	1	2	LOW	13.00%		£28,937	£57,875	31/01/2022
Strategic	Q - Stakeholders	Q02	02/07/2018	Lack of stakeholder support.	Scheme redesign resulting in additional cost / programme delays	2	4	8	MEDIUM	Ensure all stakeholders are engaged and monitor political changes.	Extensive stakeholder engagement ongoing.	2	1	2	LOW	1	1	1	LOW	2.50%				31/08/2022
Operational	Q - Stakeholders	Q03	02/07/2018	Poor data safety control.	Hard copies of returned land owners information lost or stolen. Reputational impact and commercially unfavourable.	2	3	6	MEDIUM	Define and follow a robust process	Robust process in place	2	2	4	LOW	1	1	1	LOW	2.50%				31/08/2022

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