

## Appendix E – Risk Register and QRA

**GYTRC Risk Register**

NCC Risk Ref	Risk Description (lack of, failure to...)	Impact of Risk	Opening Risk				Risk Mitigation Measures	Mitigation Progress	Current Status				Mitigated Risk Assessment:				Status			
			Likelihood	Impact	Risk Score	Risk Level			Likelihood	Impact	Risk Score	Risk Level	Likelihood	Impact	Risk Score	Risk Level		Minimum £3,647,428	Most Likely £18,059,879	Maximum £36,384,157
R001	Failure to secure funding decision in time to issue the notice to proceed to the Contractor to commence construction in January 2021 (Stage Two).	Delay to programme. Access and road space constraints may become more prevalent.	3	5	15	MEDIUM	Maintain programme and commence Stage Two at risk, until the funding decision is made by DfT. Increase DfT's confidence by completing the design, construction programme and agreeing the total of the Prices in advance of the FBC submission. Timely development of the FBC. Draft FBC for submission to DfT to be based on the known and forecast position at the time of submission ... up-dated for the final submission.	Programme Entry secured - £98,088,000.00 with grant payments being made. All subject to DCO acceptance and DfT acceptance of the FBC. Local funding contribution(s) under discussion to bridge the gap between the budget and DfT grant, £22,565,400.00 required. Discussions on-going with the JV to advance development of the total of the Prices and programme following completion of the detailed design, which will also benefit the JV to ensure Stage Two and Stage Three is secured. Pricing to support the production of the FBC has been impacted by delays in developing the detailed design (partly due to Covid-19). However, there is sufficient time remaining in the programme to finalise the pricing before submission of the FBC on 25th September 2020. On 22/04/2020 DfT confirmed they require a minimum of 10 weeks (not 7 weeks as assumed in the over-arching and clause 32 programmes) to respond to the FBC, allowing them time to secure treasury and No.10 sign off.	5	3	15	MEDIUM	3	3	9	MEDIUM	£0	£77,401	£223,602	Open
R004	Planning process (DCO) results in unexpected planning condition being imposed.	Delays Renegotiation Increased cost to meet condition	3	2	6	MEDIUM	Continued engagement with key stakeholders throughout the examination period.	Engagement on-going. No significant issues raised at the Preliminary Hearing of the first Open Floor Hearing. Requirement to secure approval of finishes and materials for control tower, plant room and bridge deck requested by the County Planning Authority. Workshops set up with County Planning Authority to mitigate last minute changes to design. Draft DCO updated prior to close of Examination to reflect County Planning Authority requirement. Awaiting SoS decision and publication of final DCO.	3	2	6	MEDIUM	2	2	4	LOW	£0	£17,791	£183,602	Open
R006	DCO statutory process/ High court challenge (Judicial Review)	DCO statutory / High court challenge process goes on longer than expected.	1	1	1	LOW	Ensure planning and legal advice is taken during the preparation of materials for the DCO examination period. Take early advice from PINS.	Planning advisor and legal advisors were part of the technical team supporting the development and production of the DCO application. Initial meeting held with PINS in February 2018 - no major issues identified at that time. Several further meetings were held with PINS with no major issues being raised. Legal advice continue to be taken on submissions to EXA. Examination now closed. Now subject to SoS final decision and no challenges being raised.	1	2	2	LOW	1	2	2	LOW	£0	£17,933	£93,361	Open
R007	Risk arising from land acquisition and access under CPO.	Unwillingness to sell, delays in CPO process.	1	1	1	LOW	Maintain update to date Book of Reference. Include within DCO process and ensure all landowners included as S42 consultee. Negotiations with landowners and/or their agents to identify emerging issue early.	Book of Reference produced. Early engagement with nplaw over timescales and numbers for serving of DCO land entry Notices.	2	2	4	LOW	2	1	2	LOW	£0	£26,078	£78,234	Open
R014	Variation between actual site conditions / topo and assumptions used in design.	Lack of scope definition	2	2	4	LOW	Contractor to carry out further investigation and surveys in accordance with the contract, to supplement the Designated Site Information and other site information provided.	Site investigation specification and historic survey work has been shared. Lankelma Ltd appointed to carry out CPT testing, further investigation and surveys to come - risk remain until concluded. No issues identified at this stage.	1	4	4	LOW	1	4	4	LOW	£9,758	£36,254	£81,770	Open
R030	Adverse weather conditions greater than 1 in 10 year event.	Delay and disruption to the works - rain, wind, frost, etc.	3	3	9	MEDIUM	Best practice to be adopted, ensuring earthworks are sealed with adequate and appropriate run-off to avoid scouring and pollution. Other protective works to be considered during the development of the method statements. 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. Discussions on-going with the JV to mitigate the effects of the examination period starting later than originally envisaged.	4	3	12	MEDIUM	4	3	12	MEDIUM	£639,676	£1,279,351	£2,558,702	Open
R031	Endangered and/or protected species may be found to be present in location of project	Make area safe for endangered species Relocate where applicable Schedule relocation at suitable time Delays to project and associated cost for rehoming and delays. WC2 - Delay to the planned ditch works 04/05/20 to create replacement habitat and displacement date Feb - April 2021. Possible impact on Contractor's programme if enhancement works delayed later than Autumn - Winter 2020 to enable Option 2 Autumn 2021 displacement.	3	2	6	MEDIUM	Carry out further surveys to establish whether water voles are still present. Establish what works are required, in consultation with Natural England and WSP (UK) Ltd. Carry out works required to develop new habitat to permit displacement. Carry out advance works to mitigate effect on the Stage Two programme if necessary, i.e. establishment of new habitat.	Water voles known to be present in WC1 and now found to be present in WC2. Actual works required and programme to be agreed. Water voles need to be displaced by Spring 2021 to mitigate any programme effects. Monitor the situation. Early liaison with WSP to review the latest survey results and the options for enhancement works and Spring 2021 displacement. Keep IDB informed regarding revised scope and programme. WSP instructed to draw up planting drawings for mitigation. Advance payment made to IDB for Autumn 2020 clearance and de silting works.	5	3	15	MEDIUM	4	3	12	MEDIUM	£0	£563,445	£3,138,766	Open
R032	Environmental contamination is uncovered during further Stage One investigations on the land or in the building to be demolished (Asbestos).	Error in the Designated Site Information. Additional cost for testing and treating, removal and/or treatment.	3	5	15	MEDIUM	Carry out as part of the GI survey where possible. Asbestos surveys. Driven piles, opposed to CFA - BAM Farrans solution.	Ongoing site investigations, but the presence of contaminants will not be fully known until works in the ground are commenced. Contractor's driven pile solution reduces the probable cost effects, but at this stage there is too much uncertainty surrounding this matter. Asbestos surveys due to commence mid October 2020 to mitigate the risk of properties being left unoccupied for a long period. In discussion with the JV to advance asbestos surveys on those properties that are unoccupied, which will give us a good indication of the prevailing risk.	3	3	9	MEDIUM	3	3	9	MEDIUM	£190,369	£884,249	£1,768,498	Open

R034	Invasive species may be found to be present in location of project (isolated pockets).	Additional cost for testing and treating and removal	2	2	4	LOW	Undertake early investigations.	Some surveys already commissioned. Others dependant on season. Surveys done and there is nothing to report, this can be left as low. Implications on undertaking surveys due to the coronavirus restrictions being evaluated.	1	3	3	LOW	1	3	3	LOW	£37,528	£75,359	£150,718	Open
R036	Land value may increase, or decrease by comparison to the latest land estimate relied upon for the purpose of the forecast.	Cost variance.	1	2	2	LOW	Monthly review and up-date of the land cost estimates. Inflation allowance include within forecast.	Land cost estimates reviewed and up-dated on a regular basis and reported to the Project Board. NPS estimate based on a most likely outturn for permanent and temporary land requirements which is as per the order limits. A high level of uncertainty surrounding ASCO / Perenco remains, which cannot be firmed up until an alternative solution can be agreed. No change - ASCO / Perenco still unresolved. A preferred solution is has now been agreed in principle with Perenco. Detailed Heads of Terms in the process of being drafted.	3	2	6	MEDIUM	3	2	6	MEDIUM	£-1,496,515	£334,114	£594,802	Open
R038	Kingsgate Community Centre owner may object to the scheme	Potential delays. Cost increase to agree a more acceptable 'look'. Reputational damage	2	1	2	LOW	Regular meetings with Kingsgate Community Centre manager to be set up during the examination period and continue to update SoCG.	SoCG developed with KGCC for deadline 1, some outstanding issues regarding permanent and temporary land acquisition boundaries.. No objection to date but may come if there is no change to the Application boundary. SoCG says we are looking it this issue. A decision on the design changes at William Adams Way would be useful to resolve this and allow discussions with KGCC to proceed. Initial design for William Adams Way from ROD rejected, request issued asking for ditch profile to be re-examined to see if it can reduce impact in land taken on Kings Centre site. Decision regarding this on 9/1/20. Although examination issues now resolved, risk should remain open until Landscape and Ecological Mangement Plan has been discharged LEP due for consultation 19/5/20, need to input into document ahead of consultation. No document received from CVJ to date. New date for submission of LEP by CJV is 12/6/20, target resolution date amended accordingly. LEP submitted and currently being reviewed. LEMP review completed, cahnges required which CJV are assessing. Meeting with Kings Centre can be undertaken once LEMP completed.	1	1	1	LOW	1	1	1	LOW	£2,091	£6,273	£10,455	Open
R040	Port is found to have services e.g. fibre optics in place not previously known	Increased costs Delays	3	3	9	MEDIUM	Consult Peel Ports and Great Yarmouth Borough Council. Undertake GPR, utilities mapping and other investigation works to establish the location of all services.	Peel Ports advised underground sewage systems and suggested that Admiralty Marshall Chart is checked and Borough Council is consulted. Observation trenches being carried out as part of the onsite investigation, including GPR. SJ Geometrics Ltd and Randall Surveys LLP appointed to carry out surveys - risk remains until results known. Previously unidentified power cable feeding the lights on Bollard Quay discovered. No other services identified at this stage.	3	2	6	MEDIUM	3	2	6	MEDIUM	£0	£337,449	£816,899	Open
R043	River levels rise leading to flooding.	Increased costs.	2	2	4	LOW	Shared risk: 1) Greater than 2.74m AOD - Client liability (compensation event) 2) Less than 2.74m AOD - Shared liability, relief event. Contractor responsible for maintaining temporary flood defences.	Discussions on EA flood defence scheme have been held and will continue as stakeholder engagement. BAM Nuttall are a members of the team providing the flood defence works, giving greater intergration.	2	2	4	LOW	2	2	4	LOW	£0	£107,323	£234,146	Open
R045	Change to employer/ designer team members	Lack of continuity of project knowledge within the Client's team introducing inefficiencies.	1	1	1	LOW	Sharing knowledge and record keeping. Continuity planning. Involvement, but not to introduce duplication and/or inefficiency.	Records of key decisions and minutes/file notes. Team structure under constant review to ensure overall resilience. List of experts who will lead project through public examination has been compiled. Continuity plans in place. Early consideration now being given to Stage 2 team.	2	1	2	LOW	2	1	2	LOW	£10,873	£32,618	£54,364	Open
R048	Changes in legislation or regulation	Cost and programme implications, i.e. costs vary and additional legal requirements delay the works.	3	3	9	MEDIUM	Option X2 not selected. Stage One - Option A. Stage Two - Option C (Shared Liability)	Option X2 not being selected as a contract provision means any changes in law are the Contractor's liability. This also means that during Stage One the Contractor is fully liable for the effect on costs but during Stage Two the liability is shared.	1	1	1	LOW	1	1	1	LOW	£10,455	£15,682	£20,909	Open
R049	Specialist materials/equipment may not be readily available.	Works delay & additional cost	2	2	4	LOW	Identify all long lead materials required, on completion of the detailed design. Identify effect on the programme to establish whether advance orders/subcontracts are required to mitigate delays. Raise advance orders/subcontracts for long lead materials - Client risk if this precedes the notice to proceed to Stage Two and Three.	Piles for the cofferdam are known to be long lead materials, but programme effects relating to the DCO process to be fully worked through to understand what mitigation measures are available to keep Stage Two on programme.	3	1	3	LOW	3	1	3	LOW	£148,456	£222,684	£296,912	Open
R050	Sediment and transportation narrowing may alter sediment transport regime.	Increased dredging requirements for port operator leading to potential compensation	5	2	10	MEDIUM	1) Agree specification for the bathymetric surveys, silting and/or scouring assessments and a hydrodynamic monitoring assessment with the Authority (Peel Ports) - Volume 3 - Part C - Annex 19. 2) Carry out baseline surveys and assessments. 3) Determine actions required, future risk profile and who will carry out any resultant dredging/works. 4) Risk assessment to consider most economically advantageous course of action.	Risk meeting held with the JV and respective experts to discuss and agree an appropriate course of action. Actions agreed to determine the most appropriate course of action required to mitigate the risk of sediment build-up and/or scouring. Further meeting required with NCC, JV, RoD and WSP. Sedimentation/Scouring report from WSP anticipated by week ending 01/11/2019 - this will identify any mitigation measures, subject to risk reduction meeting with WSP/JV. WSP report concludes sediment transport would be short term with the bed level predicted to lower by 1.7m by the third year when it will reach equilibrium and that the sediment will be deposited in the corners between the knuckles and the exiting river walls. Project Manager has requested further work to be undertaken by WSP to inform if a short term survey and maintenance regime is adequate mitigation. Work completed and possible maintenance schedule for dredging proposed. Sediment monitoring and baseline survey to be unndertaken. Precautionary dredging licence to also be progressed.	2	2	4	LOW	2	2	4	LOW	£108,728	£217,456	£326,185	Open
R051	Ground conditions are <b>more</b> favourable than expected.	Ground engineering works reduced. Programme benefits.	2	2	4	LOW	Supplemental ground investigation works required to inform the detailed design.	Designated Site information - Client's risk. All other site information is the Contractor's risk. Further SI undertaken, to be progressed. GIR/GDR reports have been/are being submitted by CJV/ROD for Applicant Review.	1	1	1	LOW	1	1	1	LOW	£0	£-20,835	£-55,480	Open

R052	Land may be required for compensation	Increased cost associated with land acquisition.	2	3	6	MEDIUM	Early identification of landowner and tenant requirements	May apply to Allotment Association between loss of existing site and provision of new and MIND for existing facilities which cannot be provided on current remodelled site. NCC/NPS liaison with these parties ongoing. Liasion with potentially affected parties ongoing. Heads of Terms agreed with Allotment Association which acknowledges will be period where no allotment site. Likelihood of acquisition any 'additional' land being required for either MIND or GYGAA now considered highly unlikely	2	1	2	LOW	2	1	2	LOW	-£116,043	£23,209	£232,086	Open
R057	Ground conditions are <u>less</u> favourable than expected.	Ground engineering works increased. Programme delays.	2	2	4	LOW	Supplemental ground investigation works required to inform the detailed design.	Designated Site information - Client's risk. All other site information is the Contractor's risk. Further SI/GI progressed. Forecast based on Site Information obtained in Stage One.	3	1	3	LOW	3	1	3	LOW	£452,005	£1,345,776	£2,193,769	Open
R058	Potential for unexploded ordinance.	Delay in start of the scheme or during construction Analysis and study Removal costs	3	2	6	MEDIUM	UXO Desk Study.	UXO Desk Study completed. JV to carry out on site survey(s).	3	1	3	LOW	3	1	3	LOW	£91,017	£182,033	£364,067	Open
R059	Unforeseen archaeological finds.	Increased cost to protect and remove (where applicable) Programme delays due to suspension of the works.	4	4	16	MEDIUM	Desk Study. Early exploratory works - Borehole, building survey and slip trenching to be carried out by the JV.	Exploratory works pending agreement and instruction. Exploratory works due to commence 1st June 2020 (borehole), other works required by PMI-88 subject to working restrictions imposed by COVID-19.	3	3	9	MEDIUM	2	3	6	MEDIUM	£90,188	£251,063	£411,938	Open
R060	Complaints from stakeholders due to noise, dust and vibration	Change to working hours resulting in delays and/or disruption. Damage to reputation as work can not complete to programme.	3	2	6	MEDIUM	Contractor input into DCO application. Early engagement with EHO to agree noise levels and working hours for the project. Appropriate methods of working to be adopted to comply with DCO and minimise noise pollution. Early engagement with local authority, residents and business affected by the works. Employ best practice in the delivery of the works, complying with agreed methodology and mitigations.	Rising main on the Western side to remain, reducing the volume of driven piles required. Development of method statements to follow detailed design. CEMP under development by the Contractor prior to start of construction.	3	1	3	LOW	3	1	3	LOW	£35,500	£204,225	£306,337	Open
R061	Construction of the bridge may be perceived as causing damage to the environment.	Challenge raised during the Judicial Review and/or protests, leading to costs and programme implications. Reputational damage for the authority.	2	1	2	LOW	Early engagement with statutory bodies and environmental stakeholders.	Little comment on environmental impacts during examination to date. Main risk associated with Flood Risk Model and acceptance of results - see R159. On-going discussion regarding additional flood modelling with EA taking place and will feed into examination Although examination issues now resolved with confirmation of EA's indication that they are satisfied with breaching modelling, risk should remain open until Emergency and Preparedness Response Plan has been discharged EPRP needs input for Resilience Team, which is busy with COVID-19 at present. Need to agree revised period with WSP, with same completion target date before 24/9/20. Drafting of EPRP begun, task order issued to WSP to undertake additional breach modelling by end July 2020. Once completed further engagement with EA will take place. Target date of 5/11/20 remains unchanged. Engagement continuing with EA regarding Breach Modelling Breach modelling 90% complete then further engagement with EA, no other significant environmental issues raised by stakeholders	1	1	1	LOW	1	1	1	LOW	£0	£0	£0	Open
R063	Adverse weather conditions <u>less</u> than 1 in 10 year event.	Delay and disruption to the works - rain, wind, frost, etc.	3	3	9	MEDIUM	Best practice to be adopted, ensuring earthworks are sealed with adequate and appropriate run-off to avoid scouring and pollution. Other protective works to be considered during the development of the method statements. Risk profile unchanged if tender construction programme can be maintained.	Appropriate working methods to be developed by the Contractor. Discussions on-going with the JV to advance development of the total of the Prices and programme following completion of the detailed design, which will also benefit the JV to ensure Stage Two and Stage Three is secured.	4	1	4	LOW	4	1	4	LOW	£293,359	£611,164	£1,222,328	Open
R064	Protestors to the project may physically stop work.	Cost and programme implications. Reputational damage for the authority.	1	2	2	LOW	Early public consultation and engagement	Security strategy to be developed with Contractor. Public feedback very positive to date, risk considered very unlikely.	1	2	2	LOW	1	2	2	LOW	£0	£4,665	£18,661	Open
R066	Suppliers may underperform.	Delays Renegotiation Increased cost to meet condition	2	2	4	LOW	Additional resource requirements to drive Contractor and Others (WSP (UK) Ltd, Pnsent Masons, etc.) performance if performance is inadequate or not as required by contract. Relaxation of any unnecessary activities, being activities that do not provide benefit.	Contractor to ensure delivery of commitments with periodic audits by the Project Manager. Delays to the development of the detailed design relates to Contractor (Subcontractor) performance, Project Manager change and COVID-19.	2	2	4	LOW	2	2	4	LOW	£54,364	£81,546	£108,728	Open
R068	Construction disrupts sediment.	Objections from EA. Project on hold or activities curtailed. Increased costs. Claims	3	3	9	MEDIUM	1) Agree specification for the bathymetric surveys, silting and/or scouring assessments and a hydrodynamic monitoring assessment with the Authority (Peel Ports) - Volume 3 - Part C - Annex 19. 2) Carry out baseline surveys and assessments. 3) Determine actions required, future risk profile and who will carry out any resultant dredging/works. 4) Risk assessment to consider most economically advantageous course of action.	Risk meeting held with the JV and respective experts to discuss and agree an appropriate course of action. Actions agreed to determine the most appropriate course of action required to mitigate the risk of sediment build-up and/or scouring. Further meeting required with NCC, JV, RoD and WSP. Sedimentation/Scouring report from WSP anticipated by week ending 01/11/2019 - this will identify any mitigation measures, subject to risk reduction meeting with WSP/JV. Refer to mitigation progress at R050 above.	2	2	4	LOW	2	2	4	LOW	£108,728	£217,456	£326,185	Open
R071	Requirements for additional traffic management	Changes to TM requirements during construction	2	2	4	LOW	Engage Street Works Co-ordinator Set-up regular meetings during construction to allow early identification and agreement on additional TM	Contract includes details of all constraints and processes for application of TM.	2	1	2	LOW	2	1	2	LOW	£13,000	£19,500	£26,000	Open
R072	Requirements to allow continued access by river vessels and associated issues/delays occurring during river possessions (while lifting deck and or other activities).	Changes to access by river vessels requirement's during construction. Disruption to port operations (obstruction, reduced navigational widths, etc.)	2	2	4	LOW	Early engagement with Peel Ports and port user's. Planned construction works and consultations with Peel Port. QSRA methodology specified and to be adopted for the planning of any possession works, with adequate contingency measure being employed.	Three 72 hour possession agreed in principle with Peel Ports. QSRA approach to be adopted. Ongoing consultation with Peel Port Authority. Construction Liaison Agreement issued to the Contractor.	3	1	3	LOW	3	1	3	LOW	£35,500	£183,250	£313,250	Open

R073	Temporary availability of land for compounds, staging areas, etc	Increased cost associated with compounds being remote	1	1	1	LOW	Temporary areas identified in the DCO, which align to the temporary land available at tender stage.	Order Limits defined in the DCO application which do not materially differ to the temporary land usage set out within the Specimen Design drawings. Since submission of the DCO application, an issue has arisen with the Kingsgate Community Centre such that temporary use of the land may be constrained by 50%. Subject to further discussion and costings from Contractor. Needs to be resolved by end of consultation on Landscape and Ecology Plan LEP due for consultation 19/5/20, need to input into document ahead of consultation. No document received from CVJ to date. New date for submission of LEP by CVJ is 12/6/20, target resolution date amended accordingly. LEMP review completed, changes required which CVJ are assessing. Meeting with Kings Centre can be undertaken once LEMP completed.	5	2	10	MEDIUM	5	2	10	MEDIUM	£75,273	£225,820	£376,367	Open
R076	Failure to maintain good working relationships with key stakeholders.	Objections during statutory process and delay to programme	3	4	12	MEDIUM	Regular update meeting with key landowners to keep them informed of scheme development.	Meetings with Perenco and ASCO on-going to resolve commercial agreement, otherwise, key stakeholders are accepting of the project. Development of SoCG and continued liaison. Ongoing updates and continued liaison being undertaken through development of SoCGs with key stakeholders. Limited objection to proposals to date as part of examination. Construction Liaison Agreement agreed with GYPC (Peel Ports) - risk remains open as relevant throughout Stage One and Stage Two.	1	1	1	LOW	1	1	1	LOW	£0	£4,278	£8,556	Open
R077	Cost escalation due to the impacts of a no deal Brexit, or otherwise.	Risk that exit from the EU leads to additional tariffs and fluctuations in exchange rate that could lead to increased cost.	2	5	10	MEDIUM	Option X2 not selected. Stage One - Option A. Stage Two - Option C (Shared Liability)	Option X2 not being selected as a contract provision means any changes in law resulting from Brexit are the Contractor's liability. This also means that during Stage One the Contractor is fully liable for the effect on costs but during Stage Two the liability is shared.	3	1	3	LOW	3	1	3	LOW	£0	£105,399	£351,331	Open
R095	Drainage opportunities compromised by limitation of existing systems, notably AW shared systems thought to be in wide use locally.	Drainage design solutions may take longer to achieve.	3	2	6	MEDIUM	Early liaison with Anglian Water. Contractor to carry out further surveys to verify drainage solution/design is viable.	CCTV surveys undertaken to confirm the current drainage scenario. Final drainage solution under development. Drainage and culvert surveys completed and information passed to the Contractor, further CCTV surveys completed by the Contractor. Dialogue between WSP and LLFA ongoing to resolve/agree DCO Outline Drainage Strategy. ROD to progress Detailed Drainage Strategy (07/1/2020). Drainage design in progress following revisions to the revised drainage strategy.	3	1	3	LOW	2	1	2	LOW	£0	£81,287	£273,146	Open
R098	Utility company diversions not given sufficient planning lead in-time or unable to deliver in accordance with the Accepted Programme.	Materials and resourcing scheduling compromised leading to design and/or build change/disruption.	3	3	9	MEDIUM	Utility company agreements to be secured. Early involvement to ensure works are fully scoped and programmed, with the Client ensuring advanced payment are made promptly.	C3/C4 enquiries sent out and awaiting responses. Some responses have been received with the diversionary works for BT Openreach being reduced, including a significant reduction in the lead in and works programme. Advanced payment for C4's paid on request from the Contractor. Slit trenching works ongoing to locate statutory undertaker apparatus to enable diversion requirements to be finalised. Progress reported during the EW meetings is good, subject to finalisation of the detailed design and final diversionary requirements.	3	2	6	MEDIUM	3	2	6	MEDIUM	£0	£532,899	£1,065,798	Open
R100	Unable to meet requirements of Community Roots site in terms of reduced land take or providing suitable alternative site	Delay to Programme Objections during examination	4	4	16	MEDIUM	Maintain contact with site managers as detailed design is developed. Regular meetings to be set up during the examination period and continue to update SoCG.	Redesign included in application. No major issues during examination so far. Need to agree accommodation works through SoCG process and there are still issues around finding additional land. NPS discussions with GYGAA seem to indicate that they will not push for temporary allotment site during construction (will be dealt with as a compensation issue) No further progress with Mind regarding their leasing of additional space.	2	1	2	LOW	1	1	1	LOW	£0	£14,422	£47,608	Open
R102	Environment Agency borne constraints related to flooding and tidal issues - technical note relating to the design of the flood wall to be adopted by the Contractor.	Bridge performance and fundamental design accommodations/change	3	3	9	MEDIUM	Secure EA agreements prior to commencement of design.	BAM Nuttall are engaged by Bentley's (the EA Contractor) to deliver the flood defence works and will be full acquainted with the requirements. EA Technical Note, in respect of the flood defence works encompassed by this contract issued to the Contractor. Flood modelling sensitivity testing passed to the EA for acceptance. EA has withdrawn its objection to the DCO.	3	2	6	MEDIUM	3	2	6	MEDIUM	£57,210	£100,000	£142,734	Open
R104	Sufficiency of resource to maintain current programme	Major potential to delay the project (increasing cost or damaging reputation), or for errors to impact quality of work and undermine the statutory processes.	5	4	20	HIGH	Development of detailed resource plans for Client teams, including WSP, PM, etc. Identify key team members and ensure they are available to fully focus on the delivery of the project. Continual review, to provide early identification of resource shortfall by reviewing programme progress against actual and forecast resource requirements.	Resource plans in place - albeit the staff profile used for forecasting purposes is detailed, with key members being identified and appointed to ensure the smooth delivery of the project, risk remains if key members are no longer available. Consideration in respect of the disruptive effects of staff moves has been factored into the staff profile. On-going review of the Client's team structure to see if improvements can be made to improve resilience going forward.	3	2	6	MEDIUM	2	2	4	LOW	£0	£146,302	£292,605	Open
R110	If the Scope is not sufficiently precise and comprehensive, it will need to be changed later and the Contractor will be entitled to compensation (Clause 60.1 (1) of the ECC.	Cost and programme implications.	3	3	9	MEDIUM	Consider the most commercially beneficial route to any change which is required.	Adequacy of the Scope has not been brought into question to date.	3	3	9	MEDIUM	2	3	6	MEDIUM	£121,108	£253,222	£407,348	Open
R116	IDB Discharge Approval - IDB has asked for 1km of one-off maintenance as part of the scheme. We originally specified 250m.	Impact on drainage strategy Delay Impact on other disciplines Increased cost Increased maintenance	5	3	15	MEDIUM	Liaise with the IDB and agreed the SoCG with them.	From discussions with the IDB an informal agreement has been made which will see the scheme fund 250m of existing watercourse cleaning. The IDB have provided a quote to undertake the works which is included in the budget/forecast. This will be formally agreed during ongoing discussions and SoCG. Final SoCG agreed with IDB and submitted to ExA prior to close of Examination. Discharge consent and approvals will still be required.	2	2	4	LOW	2	2	4	LOW	£3,719	£6,500	£16,250	Open
R117	Unforeseen stats found (R040 refers), damaged to stats or increased costs for known stats diversions (R042 refers).	Cost and programme implications.	2	3	6	MEDIUM	Early engagement with statutory undertakers. GPR surveys to be carried out and mapped. Employ safe systems of working around known services and unknown services.	Stats co-ordinator (Jason Rogers) on-board. SJ Geometrics Ltd and Randall Surveys LLP appointed to carry out surveys - risk remains until results known and work below ground are complete. GPR and Cat/Genny surveys are now finished and we have received all information for the Eastern side of the project. The information for the Western side is currently being processed and will be issued to JV in small sections between now and 11/10/2019.	3	3	9	MEDIUM	3	3	9	MEDIUM	£0	£337,449	£816,899	Open

R130	Inflation from the first anniversary of the starting date of the contract, being 14th January 2019.	Increased costs.	4	5	20	HIGH	Early procurement of key materials for Stage Two - will require the notice to proceed to be issued earlier than planned. Advance the programme, i.e. accelerate to mitigate projected risk.	Analysis of the historic indices indicates a reduction in the inflation risk by comparison to the past two years. However, the performance of the indices has been extremely volatile of the past 10 years and a judgement has been made in the forecast.	4	3	12	MEDIUM	3	3	9	MEDIUM	-£119,089	£360,680	£860,668	Open
R131	Accuracy of the Client's Bills of Quantities which is based on the Specimen Design (Budget Event A).	Increased costs and potential delays if the errors are of significance, i.e. greater volume of works required.	3	2	6	MEDIUM	Contractor to provide verification of any variances.	To date, the Contractor has not provided any verification to suggest the quantities in the Client Bills of Quantities are incorrect. Discussions on-going with the JV to advance development of the total of the Prices and programme following completion of the detailed design, which will also benefit the JV to ensure Stage Two and Stage Three is secured. Contractor has provided a quotation in respect of Budget Event A - principle associated with Budget Event A under discussion (difference of opinion). Contractor has presented some evidence to support entitlement, but further required.	4	2	8	MEDIUM	2	2	4	LOW	£0	£146,287	£260,073	Open
R132	Specimen design is found to be inadequate/not to standard - specifically Drainage (Budget Event H).	Costs and programme implications if the errors are of significance, i.e. greater volume of works required.	3	3	9	MEDIUM	Specimen Design would not be altered, as the detailed design would reflect the Contractor's final solution to comply with the Scope. Re-designed drainage solution would be assessed as a change to the Bill of Quantities provided by the Client.	Drainage design on-going. Drainage design complete, showing a significant departure from the specimen design - change all subject to the provision of further details.	4	3	12	MEDIUM	2	2	4	LOW	£0	£146,287	£260,073	Open
R135	Loss of or damage to the fabricated steel bridge members whilst in transit from the fabricators to the Site.	Costs and programme implications whilst the members are either recovered or re-fabricated.	1	5	5	LOW	Transportation by land in small fabricated sections or stock steel fabricated on site, mitigating the risk of large elements being lost or damaged in transit. Ensure the insurance requirements for Stage Two are adequate.	Current plan aligns to the mitigation measures noted. This will not be a compensation event as the event is an insured event (Plant and Materials). Victor Buyck under consideration, providing benefits such as reduced cost, increased quality, potential for simplified and quicker installation but introducing shipping risk from Belgium.	4	4	16	MEDIUM	2	4	8	MEDIUM	£0	£1,203,376	£1,821,314	Open
R140	Third party vessel strikes the cofferdam, knuckle, marine equipment or other temporary works.	Costs and programme implications resulting from injury, damage to the vessel and damage to the works.	2	1	2	LOW	Provide adequate protection and marine lighting. Ensure insurances (CAR) are adequate.	The Contractor is intending to provide a project specific insurance for Stage Two.	1	2	2	LOW	1	2	2	LOW	£3,576	£6,250	£8,921	Open
R141	Contractor insolvency.	Costs and programme implications resulting from the need to procure replacement Contractor.	1	1	1	LOW	PCG's to be provided by both JV parents. Performance Bond required for Stage Two Work. Quarterly finance checks to give early warning of potential issues.	PCG's in place. Performance bonds for Stage Two to be reconsidered at the time the notice to proceed to Stage Two is required to be issued. Finance check to be obtained.	1	1	1	LOW	1	1	1	LOW	£0	£0	£0	Open
R143	Changes to the Scope - not otherwise mentioned above or below (including resolution of any ambiguities and or inconsistencies).	Costs and programme implications.	3	3	9	MEDIUM	Only essential change is to be instructed, which either enhances or reduces cost. All change to be managed in accordance with the agreed change protocol. All compensation events/budget events must be permissible under the contractual provisions.	All permitted changes have been instructed, and included in the forecast. Further change is inevitable.	4	3	12	MEDIUM	4	3	12	MEDIUM	£327,092	£1,030,971	£2,281,034	Open
R144	Bridge power supply requirements, including the construction of a sub-stations and intergration into the works.	Costs and programme implications resulting from the requirement to include in the DCO Application, design and construction.	5	2	10	MEDIUM	Adequacy of the design and required supply (including housing). Note: UKPN's cost will be paid direct with the Contractor being responsible for the design and construction of the transformer housing (this is a compensation/budget event).	UKPN being pursued to firm up estimate for the supply. Contractor instructed to design and incorporate the required transformer housing into the detailed design. Power supply C3 estimate and construction costs estimate for the housing is in the forecast. Adequacy included here: 1) UKPN have indicated their initial estimate for the powers supply is considered to be low.	5	1	5	LOW	2	1	2	LOW	£0	£36,418	£72,837	Open
R145	Negotiations with Peel Ports (Commercial agreement).	Increase in the forecast outturn due to compensatory payment for the loss of berth 31a and 31b and/or increased rental for Bollard Quay.	5	5	25	HIGH	In respect of the commercial agreement dated 29/03/2019 (NCC & GYPC): <b>To satisfy clause 7.1 to 7.5:</b> 1) Historic records of use (Berth 31a and 31b) for the period five years to 30/05/2017 (7.5.1). 2) GYBC to give an undertaking that is will not do any act that prevents Berth 31a and 31b from becoming Fully Operational (7.5.1) 3) Carry out flow modelling with the scheme completed to identify any constraints, including flow modelling with sedimentation and/scour protection mitigation introduced (see R050 and R068) (7.5.2) 4) Construct an access at the southern end of Bollard Quay that is equivalent to the existing arrangements and to the satisfaction of GYPC (7.5.3) 5) Procure rights for GYPC to use the road/access (7.5.3) <b>To satisfy clause 7.6 to 7.8:</b> 1) Obtain an undertaking from GYBC that the rent for Bollard Quay will not increase by comparison to the lease dated 29/11/2018 until the first rent review date in the new lease (7.6) <b>To satisfy clause 12.2:</b> 1) ASCO and GYPC to provide written confirmation if the rent reduction resulting from the demolition of the FTW.	Commercial agreement in place with Peel Ports. Instruction to the Contractor to design and construct a point of access/egress at the Southern end of the quay, including the provision of a flood gate, is being progressed and the effects are include din the forecast. Construction Liason Agreement now in place with Peel Ports and Great Yarmouth Port Authority.	4	2	8	MEDIUM	3	2	6	MEDIUM	£0	£632,344	£843,125	Open
R147	Maintenance liability in respect of Bollard Quay resulting from the future use of the quay not being viable.	Gt Yarmouth Borough Council look to off-load liability as this is a consequence of the scheme effecting the future use of the quay.	1	1	1	LOW	Measures required to mitigate R145 apply equally in this insntance.	As R145.	1	1	1	LOW	1	1	1	LOW	£0	£0	£0	Open
R150	Diversion routes for statutory undertaker apparatus changes by comparison to that assumed under the C4 estimates provided.	Time and cost implication.	3	1	3	LOW	Obtain C4's at the earliest opportunity.	C4 estimate received from BT Openreach significantly reduces the cost of diverting their services, but introduces a requirement for vehicular access onto the roundabout to access their manhole. Up-dates from Virgin Media and othe rincorporated into the forecast, which will all need to be challenged.	3	1	3	LOW	3	1	3	LOW	-£159,750	£263,541	£736,744	Open
R151	Final suite of protective provisions differ from the provisions considered at award.	Costs and programme implications resulting from the introduction of additional constraints.	5	1	5	LOW	Keep any deviation from the protective provision available at the time of tender to an absolute minimum (essential change only). Robust negotiation with third parties to minimise the impact on the contract. Maintain comparison, to highlight changes and probable effects.	Protective provisions, as included into the DCO Application, issued to the Contractor - PMI-35. Future up-dates to be issued at appropriate stages, currently anticipate further update to be issued after the examination has closed, but any significant issue raised beforehand. Finalised protective provisions included in the final DCO application issued to the Contractor under PMI-104. No known departures from Scope but subject to the Contractor's review. Anticipated changes to draft DCO following signing of GYPC/GYPA Construction Liaison Agreement have been issued to Contractor.	3	1	3	LOW	3	1	3	LOW	£0	£115,425	£461,699	Open

R155	Contribution from statutory undertakers - betterment from new services (18% discount), not realised.	Discounted costs for diversions not realised.	3	1	3	LOW	Ensure the Contractor follows procedures to secure discount, i.e. NRSWA. Audit procedures on a periodic basis.	Contractor has been notified of the requirement to comply with NRSWA and is currently compliant.	2	1	2	LOW	2	1	2	LOW	£0	£0	£0	Open
R156	Provision of an indemnity - Peel Ports.	Increased cost of providing insurance.	5	1	5	LOW	Risk to be insured or self-insured? Identify what residual exposure exists and the various stages.	Probable effects would be to uncertain and extensive to self-insure. Gallaghers confirmed that there are no specific insurance products available to cover this liability. However, the insurances required under the contract with the Contractor and the authorities existing programme of insurances will provide a level of protection.	2	1	2	LOW	1	1	1	LOW	£3,576	£6,250	£8,921	Open
R157	Cost estimates for the ASCO/Perenco works are incorrect.	Reduced/Increased cost	1	1	1	LOW	Conclude negotiations with ASCO and Perenco. Alternative solutions to be considered, should negotiations with ASCO and Perenco collapse.	ASCO, Perenco and Borough Council agreements pending. Negotiations with ASCO are proving problematic, alternative solutions to be considered with risk and forecast being up-dated as and when. Alternative site location being investigated. Offer currently being considered by landowner. Alternative proposal by ASCO being considered by NCC. Risk can be closed if an alternative option is agreed, pending trial use of Perencos existing facility at Catfield. Alternative solution using site on South Beach Parade is now Perenco's preferred solution. Whilst the South Beach Parade solution is preferred, until all details and agreements are finalised there remains residual risk of this solution falling through ... additional risk item R170. Forecast based on provisional figures which are still under discussion. From experience to date, risk remains in respect of increases for unknowns from either party (Peel Ports/ASCO/Perenco).	2	1	2	LOW	2	1	2	LOW	£-59,799	£119,598	£199,330	Open
R158	ASCO/Perenco works not completed in time to release all the site to the JV.	Costs and programme implications.	4	1	4	LOW	Conclude negotiations with ASCO and Perenco by 30/09/2019 to maintain programme. Identify measures to mitigate delays resulting from protracted negotiations.	Negotiations with ASCO are proving problematic, alternative solutions to be considered with risk and forecast being up-dated as and when. Protracted negotiations, anticipated resolution mid November 2019, one month further on than anticipated. Alternative site location being investigated. Offer currently being considered by landowner. Alternative proposal by ASCO being considered by NCC. Risk can be closed if an alternative option is agreed, pending trial use of Perencos existing facility at Catfield. Alternative solution using site on South Beach Parade is now Perenco's preferred solution. Agreement of terms will be conditional on Perenco making current site available in advance of programmed start of works - 4th January 2021. Whilst the South Beach Parade solution is preferred, until all details and agreements are finalised there remains residual risk of this solution falling through ... additional risk item R170.	1	1	1	LOW	1	1	1	LOW	£0	£13,987	£27,973	Open
R163	ASCO/Perenco commercial agreement in excess of land estimate included in the forecast.	Increased costs.	1	1	1	LOW	Negotiations with ASCO/Perenco to finalise commercial agreement to provide the most commercially advantageous outcome for NCC, i.e. Perenco no relocating to Grimsby as a direct consequence of the scheme.	Ongoing. Alternative solution using site on South Beach Parade is now Perenco's preferred solution and is less expensive than current allowance in budget. Whilst the South Beach Parade solution is preferred, until all details and agreements are finalised there remains residual risk of this solution falling through ... additional risk item R170.	1	2	2	LOW	1	2	2	LOW	£11,167	£36,300	£40,333	Open
R164	Relaxation of additional environmental constraints imposed, i.e. piling operations constrained from 1st February to 30th April due to migratory fish stocks (Smelt).	Mitigation of the effects of the constraint being introduced during the examination period: 1) Alternative methodology to permit works during the period of constraint, 2) Programme benefits, reducing cost liability and risk.	3	2	6	MEDIUM	Consider alternative working practices to mitigate the risk to migratory fish during the period of constraint. Agreed methodology with the MMO. Agreed changes to methodology do not breach the DCO requirements. Consider cost implications. Instruct change.	To be progressed following the examination period. Timing and sequence of works in Stage Two were primarily effected by the examination period being greater than assumed, which pushed the in-river piling works past the period of constraint. Advancing the works	3	2	6	MEDIUM	3	2	6	MEDIUM	£0	£0	£0	Open
R165	Contractor's errors and/or omissions when compiling the Budget which do not qualify as an event which changes the Budget (or total of the Prices).	Overspend by comparison to the total of the Prices. Contractor refuses to proceed to Stage Two. Termination and reprocurement. Legal proceeding to initial Contractor for breach of contract.	1	1	1	LOW	Departure from contract.		5	2	10	MEDIUM	2	2	4	LOW	£-21,919	£173,108	£442,073	Open
R166	Covid 19 - Stage One Work	Delay and disruption to the works, being a consequence of: 1) Staff becoming infected resulting in self or enforced isolation. 2) National response changes from 'containment'. 3) Delay to the displacement of Water Voles impacting on the programmed works, further environmental surveys for Water Vole displacement carried out in April 2020 & July 2020 which is a requirement to update the Full Water Vole Licence Application to Natural England. 4) Test Pile delayed, effecting final design verification. 5) CPO delay, preventing access to site.	3	2	6	MEDIUM	Staff who become infected must self isolate. Remote working if enforced isolation comes into effect. Delay start of construction or re-sequence the works.  The survey timeframes in greater detail are: <b>Water Voles</b> – two surveys to be undertaken within the Scheme and adjacent watercourses between <b>April and October 2020 (with the first survey between April and July)</b> , furthermore, these surveys must be undertaken prior to submission of the full application for a water vole conservation licence (Paragraph 5.3.4 & Water Vole Draft MS). <b>Bat Roost</b> – pre-construction surveys on buildings / trees, as specified in the Outline CoCP between <b>May and September 2020 (August is preferable)</b> (Paragraph 5.3.5). <b>Great Crested Newts</b> – environmental DNA surveys will take place prior to construction work commencing between <b>mid-April and June 2020/21 (recommended)</b> (Paragraph 5.3.17 & 5.3.18). <b>Air Quality</b> – dust deposition or real-time continuous PM10 monitoring during construction with baseline monitoring taking place <b>at least three months before construction work commences</b> at any time of the year (Paragraph 3.2.2).	Monitoring situation. Home working appears to be working well, but this may alter the longer restrictions apply. Plan for either the Contractor or WSP to carry out the surveys as required. Schedule of effects being presented weekly, no material issues to date.	3	1	3	LOW	3	1	3	LOW	£0	£157,833	£631,333	Open

R167	Covid 19 - Stage Two Work	Delay to: 1) Start of the works and 2) Fabrication being a consequence of continued infection, changes to the national response and international impacts. Prolongation.	4	2	8	MEDIUM	Delay start of construction. Re-sequence the works. Confirm alternative deck methodology proposed by the Contractor is compliant with the DCO. Early placement of order with alternative Subcontractor. Increased resource to mitigate loss of productivity.	Monitoring situation. Alternative deck methodology under review - WSP confirmed no issues, pending Pinsent Mason legal opinion which is due 09/04/2020. Legal opinion concludes that NCC's adoption of the alternative steelwork proposal would not constitute either a material or a non-material change to the proposals set out in the DCO application. The alternative steelwork proposal could be accommodated within the 'flexibility' provided for and permitted within the DCO application. Contractor has not made any proposals in respect of a change from Cleveland Bridge. Pinsent Mason's required further clarification on a number of detailed points. Aiming for final advice w/c 11/05/2020 Constraint imposed by complying with safe working practices may prevent resource levels being increased.	5	3	15	MEDIUM	5	3	15	MEDIUM	£2,686,229	£3,581,638	£5,372,458	Open
R168	Covid 19 - Stage Two Liability.	Increased risk assessment to cover the probable effects in Stage Two. Conditions of contract changed to reflect transfer of risk to the Client (Client liability limited by clause 19 (Prevention)). Contractor refuses to proceed to Stage Two. Termination and re-procurement, including legal pursuance of cost.	5	2	10	MEDIUM	Contractor to put forward proposals setting out risk assessment, changes to the conditions of contract, etc.	Contractor to present proposals.	5	3	15	MEDIUM	5	3	15	MEDIUM	£0	£0	£0	Open
R169	Covid 19 - Stage Two ... Statutory Undertakers (Others) do not work within the times shown on the Accepted Programme.	Programme and associated cost implications.	4	2	8	MEDIUM			4	2	8	MEDIUM	4	2	8	MEDIUM	£0	£0	£0	Open
R170	ASCO/Perenco solution to use South Beach Parade falls through.	Revert to one of the alternative options.	1	3	3	LOW	Revert to one of the alternative options previously discussed.	Monitoring.	1	3	3	LOW	1	3	3	LOW	£0	£69,796	£69,796	Open
R171	Bollards Quay - erosion and voids due to condition of quay wall.	Programme and associated cost implications due to additional works resulting in an increase o the PWDD and the final amount the Client will pay (not a compensation event or event that can chage the Budget for Stage Two), shared risk.	4	1	4	LOW	Designers report required to inform works required.	Further information has been provided by the Contractor but remains subject to a final report from the designers (ROD).	4	1	4	LOW	4	1	4	LOW	£0	£163,750	£327,500	Open
R172	Temporary possession provisions contained within the Neighbourhood Planning Act 2017 become law prior to notice or the SoS changes the changes the temporary possession provisions specifying 28 day notice in the DCO to 3 months.	Increased notice period, from 28 days to 3 months, will delay access to parts of the site which are not owned by the Client, including consideration being given to the fact that the DCO does not come into force until 3 weeks have passed from the SoS decision.	3	1	3	LOW	Seek legal guidance from Pinsent Mason's on the likelihood of the noticing period increasing to 3 months. Seek guidance on risks associated with issuing temporary access notices immediately after consent and before finish of legal challenge period. Ensure temporary access notices and letters are ready for issue immediaetly after consent is given.	Legal advice being sought. Drafting of land plans and temporary access notices commenced.	3	1	3	LOW	1	1	1	LOW	£0	£0	£0	Open
R173	Accepted design clashes with existing services ... late identification by the Contractor.	Time and cost implications resulting from: 1) Redesign 2) Additional diversions 3) Redesign and additional diversions	5	1	5	LOW	Consider design changes, diversion or a combination of mitigations to minimise the effects of know clashes: 1) Suffolk Road ... four clashes between the design drainage solution and BT services. 2) Southtwon Road ... Bollards Quay drainage clashes with existing gas main.	Design changes and diversions being progressed, anticipated resolution late September 2020.	5	1	5	LOW	4	1	4	LOW	£0	£239,075	£723,959	Open
R174	Planned diversionary works (Cadent Gas) exceed the red line boundary.	Time and cost implications resulting from: 1) Revised diversionary works to remain within the red line boundary.	5	1	5	LOW	Contractor to liaise with Cadent Gas to ensure diversionary works do not exceed the red lin eboundary.		5	1	5	LOW	4	1	4	LOW	£0	£147,375	£540,559	Open
R175	Additional strengthening works to the quay wall to meet EA's requirements ... transfer liability for the flood wall to the EA.	Additional works/Scope Change.	5	1	5	LOW	Establish condition of existing Quay Wall. Determine works required by contract. Determine additional works required by the EA to transfer liability.		5	1	5	LOW	5	1	5	LOW	£0	£247,500	£495,000	Open