



Access to Halsnead Garden Village

Quantified Risk Assessment

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1 Risk Register

This report details the full Quantified Risk Assessment for the entire cost plan of the Access to Halsnead Garden Village scheme and full details of all identified risks, including mitigation measures, and how it impacts on cost and delivery timescale of the scheme.

1.1 Risk Priority Matrix

The following table indicates how each of the risks identified for the scheme are assessed in terms of what impact they will have on. The Risk Register takes into account how each risk will impact cost and any delay to the delivery of the scheme.

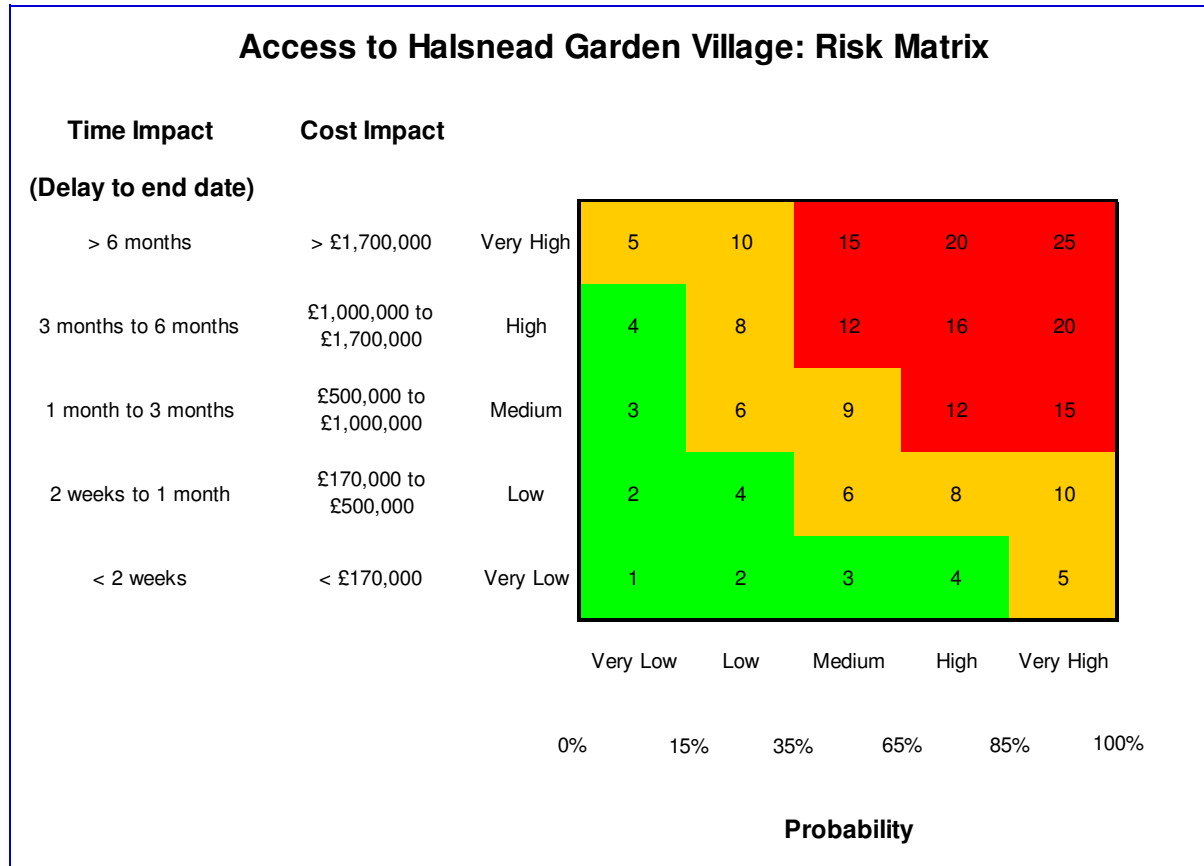
A risk priority matrix provides a basis for assessment of the likelihood and impact of each potential event identified by the project team, to then allow a score to be developed through multiplying the two values together.

The higher the score the risk has, the higher priority the risk will have for mitigation by the project team. The impact categories can vary depending on requirements but usually cover areas such as financial detail, schedule delay, reputation and quality.

	Impact	Likelihood
1	Very Low	Improbable
2	Low, Minor	Remote
3	Moderate, Significant	Occasional
4	High	Probable
5	Very High, Catastrophic	Frequent, Highly Likely

The cost impacts have been developed using the scheme design and constructions costs, prior to application of optimism bias, with the highest cost impact being assigned 10% of total construction costs.

Figure 1 Risk Matrix



Probabilistic Assessment

Minimum	Most Likely	Maximum
£1,700,000.00	£1,850,000.00	£2,000,000.00
£1,000,000.00	£1,350,000.00	£1,700,000.00
£500,000.00	£750,000.00	£1,000,000.00
£170,000.00	£335,000.00	£500,000.00
£0.00	£85,000.00	£170,000.00

Source: Mott MacDonald

Mott MacDonald has used a risk breakdown structure and categories to identify key areas of risk including strategic, funding, infrastructure, and environment risk and utilises cross project learning to ensure emergent risks and lessons learned are applied where possible. The following sections in this report provide details of this breakdown including scores derived from the risk priority matrix outlined above.

1.2 Strategic Risk

					Risk Priority Ranking		
					Risk Matrix Priority Scores (following mitigation)		
Risk Type	Project Risk Ref	RISK EVENT	CONSEQUENCES	MITIGATION	Probability	Impact	Risk Matrix Priority Ranking
Political Risk	Political Risk	Change of local political administration.	Results in scheme becoming lower priority for other elected members resulting in it not going ahead.	Scheme developed in full consultation with the LCR CA and their appointed independent assessors and a full three stage business case approach applied to scheme development. Knowsley Council were invited to progress the scheme and seek funding by the CA. Scheme will support delivery of the formally adopted Halsnead Garden Village Masterplan SPD by unlocking the development land allocated for housing and economic growth.	10	Very low	1
	Legislative Risk	Changes in legislation increase costs of development.	Direct impact on capital and revenue budgets for scheme.	Maintain awareness of Government policy and liaison with DfT.	10	Very low	1
	Policy Risk	Changes of national / local policy direction not involving legislation.	Scheme components become redundant and / or additional measures are required to support local and national ambitions.	Funding for the scheme has been devolved from central government to the LCR LEP for locally based decision making as to whether the scheme should progress, so changes in national policy will have a lesser impact than changes in Local policy. Local policy is well established through the LTP, the LCR growth Strategy and a Transport Plan for Growth, the latter two documents developed in the last 2 years. The development site has also only recently been awarded Garden Village status by the government and therefore no related policy changes are envisaged	10	Very low	1

Management Risk	Staff Risk	Changes in the team responsible for delivery; delays in appointment of new team members.	Delay to overall delivery of the scheme and cost implications.	Maintain team continuity. Project Board, Project Management Team and staff positions within this have already been identified under a new Major Development Team initiative, thus further imminent change unlikely.	20	Very low	2
	Internal Communication Risk	Poor communication and coordination between Knowsley Council and professional services agent responsible for scheme design and delivery.	Programme delay, political frustration and additional scheme costs.	A Project Board will be set up under the Major Development Team to oversee the delivery of the scheme and an operational board will be set up to report to the Board on the day to day delivery, and include a communications role. There is an established and positive communications strategy with key stakeholders, which was developed as part of the SPD process.	20	Very low	2
	External Communication Risk	Poor communication with the public on scheme plans and delivery.	Adverse public reaction to disruptions.	Maintain communications links with key stakeholder, such as landowners, developers and communities living within the vicinity of the site works. The Masterplan SPD for Halsnead Garden Village is currently out for public consultation so the proposals for development and associated infrastructure that will enable it to come forward is already in the public domain.	20	Low	4
	Construction Programme Risk	The construction of the physical assets is not completed on time and to specification.	Funding is clawed back because of failure to meet delivery targets established by the LCR CA. Additional costs required to deliver completed scheme with no opportunity to secure additional external funding. The benefits of the scheme are delayed.	Due diligence during procurement process. Ongoing monitoring of progress against delivery milestones and stringent project management during delivery with clear procedures in place for reporting and addressing any slippage.	20	Medium	6
	Stakeholder Risk	Lack of support from key stakeholders, Highways England and local community.	Scheme lacks support from the local community who were not consulted during scheme development, resulting in unfavourable public criticism of elected members	There is an established and positive communications strategy with key stakeholders, which was developed as part of the SPD process, and the proposals reflect ambitions for mitigation of development impact.	20	Medium	6

	Regulation Risk	The required statutory/regulatory applications do not receive support and are not approved.	Part of the scheme may be delayed or not delivered.	Early dialogue has been undertaken with relevant regulators (Environment Agency, United Utilities, Local Planning Authority, etc.) and will continue as part of the detailed design process. It is also of note that the majority of the scheme components are permitted development.	10	Very low	1
	Procurement Risk	Procurement of services may not be successful or may be delayed or challenged.	Delivery of scheme is delayed and jeopardised.	Engagement with experienced procurement and legal services teams together with due diligence during appointment process.	10	High	4
	Planning Risk	Failure to progress to statutory process and achieve appropriate approvals (planning)	Hinders scheme progression delaying overall delivery.	The planning and statutory process requirements have been identified through the SPD development process and key parties remain engaged to ensure there is adequate allowance in the programme.	20	Medium	6

1.3 Funding Risk

					Risk Priority Ranking		
					Risk Matrix Priority Scores (following mitigation)		
Risk Type	Project Risk Ref	RISK EVENT	CONSEQUENCES	MITIGATION	Probability	Impact	Risk Matrix Priority Ranking
Funding Risk	Inflation Risk	Actual inflation differs from assumed inflation rates.	Additional costs required to deliver completed scheme.	Keep forecasts under review and adjust to account for any predicted rate of change and reflect change in the scheme delivery programme.	10	High	4

	Cost Risk	Increase in scheme costs e.g. cost of materials and infrastructure.	The level of funding available is insufficient to meet the proposed scheme delivery costs and scheme cannot be delivered in full, impacting the benefits and BCR upon which the scheme was awarded funding. LCR CA could claw back funds for non-compliance.	The Project Board will monitor cost and delivery throughout the project.	30	High	8
	Funding Claim Risk	Delay in award of funding.	Reduction in planning and preparation lead in times. Delay to delivery and potential cost implications.	Project Board will monitor funding. Consequences of any delays in award of funding to be communicated to the LCR CA/LEP who are responsible for funding award. The LCR CA/LEP also have established procedures to streamline the funding award process.	10	Low	2
	Cost Estimate Risk	Inaccurate scheme cost estimate	Delays to procurement and funding approvals	Progress scheme in sufficient detail to enable robust cost to be produced. Apply suitable risk allowances and contingencies to option development stage cost estimate	20	Medium	6

1.4 Infrastructure Risk

					Risk Priority Ranking		
					Risk Matrix Priority Scores (following mitigation)		
Risk Type	Project Risk Ref	RISK EVENT	CONSEQUENCES	MITIGATION	Probability	Impact	Risk Matrix Priority Ranking
Management Risk	Provider Risk	Poor contractor performance and / or contractor becomes insolvent within the contract period.	Additional revenue required to support delivery of the scheme.	Due diligence during the procurement process.	20	High	8
	Internal Interface Risk	Conflict with contractors undertaking site access junction works and off site junction improvement works	Works to both site access junctions and off site junction improvement works may impact on each other.	Site access junction works and off site junction improvements to be programmed separately.	20	Medium	6
	External Interface Risk	Delays in completion of site access junctions and off-site junction improvements.	Delay to the development of the site, loss of confidence from stakeholders /partners	Project Manage works, hold regular progress meetings to ensure work is progressing according to programme. Hold update meetings with stakeholders/partners.	20	High	8
		Site access junction and off-site junction improvement works affecting traffic flow around the site and wider area.	Severe traffic delays, complaints from the public and local residents.	Ensure works are programmed with least impact on the local and wider road network. Ongoing liaison with public and residents.	10	Low	2
Engineering Risk	Engineering Risk	Physical issues at the site where the scheme is to be delivered.	Time delays, with a potential resultant increase in scheme costs e.g. geotechnical issues.	Baseline reports completed and further detailed site surveys to identify any issues.	20	Low	4
	Structural Constraints	Unforeseen structural constraints (i.e. M57 bridge support setback, widening of existing structures).	Causing delay to the scheme design and overall delivery.	Request asset information from HE / LHA and recommend structural surveying / investigation works to be undertaken in support of the detailed design.	20	Medium	6

1.5 Environmental Risk

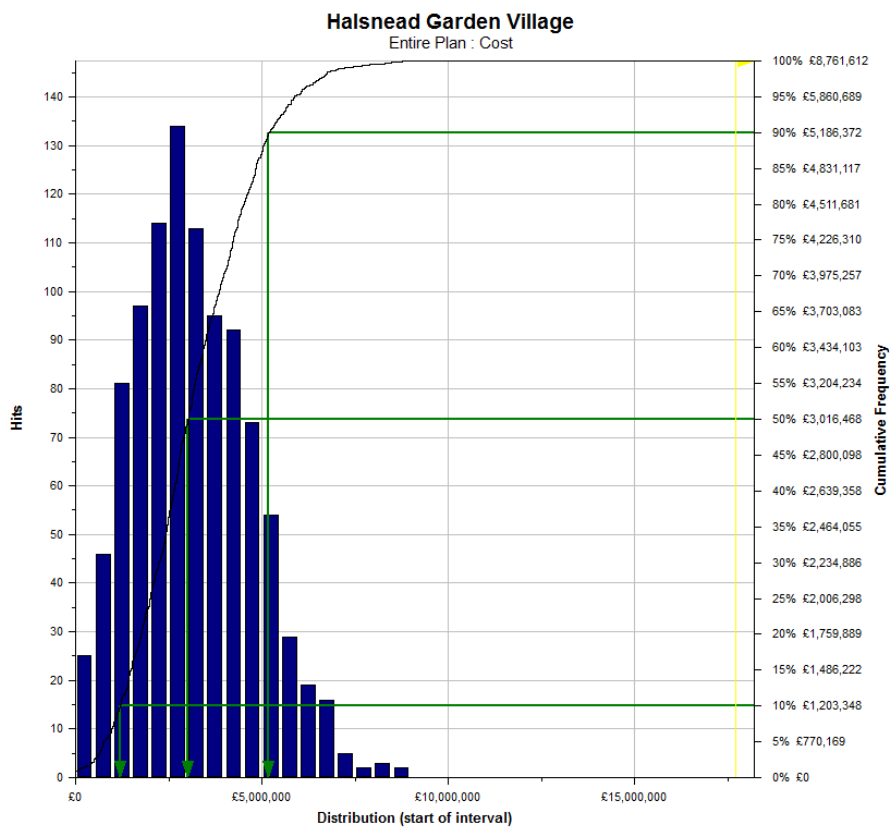
					Risk Priority Ranking		
					Risk Matrix Priority Scores (following mitigation)		
Risk Type	Project Risk Ref	RISK EVENT	CONSEQUENCES	MITIGATION	Probability	Impact	Risk Matrix Priority Ranking
Environmental Risk	Flood Risk	Risk of flooding. There are 8 areas of Flood Zone 3 within/within 500m of the site boundary.	Areas within site boundary may be damaged in the event of a flood.	Early engagement has been undertaken with the Environment Agency. A Flood Risk Assessment will be undertaken to identify any issues and potential mitigation measures	20	High	8
	Agricultural land risk	There is 1 area of Grade 2 and 1 area of Grade 3 agricultural land within the site/within 500m of the site boundary, however this is believed to be Halsnead Park and Blundells Hill Golf Club.	Damage to land	Consult with stakeholders during the design stage, although the identified sites of risk are remote from the proposed works area.	10	Low	2
	Noise Important Areas (NIA) risk	There is 1 NIA within/within 500m of the site boundary	Negative feedback from local residents/ businesses	Detailed site surveys to identify baseline conditions and any issues.	20	Low	4
	Authorised Landfill/Historic Landfill	Risk of encountering / disturbing contaminated material. Cronton Quarry is located within 500m of the site boundary. Coalgate Lane Landfill Site is located within 500m of the site boundary.	Increased risk of creating a potential pollutant pathway with adverse effects to sensitive environmental receptors or site workers.	Detailed site surveys to identify any potential works which may relate to encountering / disturbing this material.	10	Medium	3
	Ancient Woodland	Risk of causing adverse impacts to ancient woodland, two areas located within/within 500m of the site boundary.	Damage to woodland, may result in implications for planning.	Avoid any areas of ancient woodland, adapt the design to mitigate any potential impact.	10	Low	2

Land Issues	Land issues impacting on the design and construction activities	Hindering progression of the scheme	Planning and statutory process requirements identified through the SPD process. Key parties have also been positively engaged and support the proposals. Ensure there is adequate allowance in the programme.	20	Medium	6
Environmental Constraints	Unforeseen environmental constraints	May cause delay and cost impact to the scheme as a result	Baseline environmental scoping and surveys undertaken and shall be reviewed through detailed design process.	20	Medium	6

2 Quantified Risk Register

The quantitative risk analysis conducted uses the Monte Carlo method, a statistical sampling method used within the Quantitative Schedule Risk Analysis (QSRA) and Quantitative Cost Risk Analysis (QCRA) process and involves running many iterations, in this case 1,000, to randomly select a value between the defined range of minimum and maximum values. The QSRA has taken into consideration uncertainty around activity durations as well as factoring in the impact of discrete risk events to provide a range of potential outcomes with varying levels of probability. These are referred to as Probabilistic (P) Dates. In general, the focus is on the P10, P50 and P90 outputs showing you increasing levels of certainty on the completion date of a project with the impact of uncertainty and risk factored into durations.

For QCRA the same sampling method is undertaken with a random financial value between the Minimum, Most Likely and Maximum Costs providing you with probabilistic costs where uncertainty exists around potential project costs.



Data	
Cost of:	
Entire Plan	
Analysis	
Iterations:	1000
Statistics	
Minimum:	£0
Maximum:	£8,761,612
Mean:	£3,163,783
Bar Width:	£500,000
Highlighters	
Deterministic (£17,705,000)	100%
10%	£1,203,348
50%	£3,016,468
90%	£5,186,372

