

NORTH LONDON WASTE AUTHORITY

REPORT TITLE: RISK MANAGEMENT PLAN

REPORT OF: PROGRAMME DIRECTOR

FOR SUBMISSION TO: PROGRAMME COMMITTEE MEMBERS

DATE: 11 MAY 2021

SUMMARY OF REPORT:

This report provides an update on risk management within the North London Heat and Power Project.

RECOMMENDATIONS:

Members of the Programme Committee are recommended to note the contents of the report.



SIGNED: Programme Director

DATE: 27 APRIL 2021

1. INTRODUCTION AND PURPOSE

- 1.1. The identification and management of risks has been and will continue to be a critical part of successful delivery of the North London Heat and Power Project programme. In January 2020, Members were presented with the NLHPP functional strategy for risk, which set out the key challenges that were to be overcome in the long-term and the proposed approaches to this.
- 1.2. In parallel with the NLWA Annual Risk Review, which was presented to members at the April Authority meeting, a review of the NLHPP functional strategy has recently taken place. This has confirmed that the approaches identified remain valid at this stage of the programme and the document has therefore received only minor updates to reflect the general progression over the course of the year.
- 1.3. The purpose of this report is to provide an update to Members on the successful management of risk to date and the focus in the year ahead. It is designed to indicate the level of management attention and skill that has been (and will continue to be) applied to the area and highlight the integration of risk management into all aspects of the programme's delivery.
- 1.4. A key component in delivering the strategy was the development and implementation of a Risk and Issue Management Plan (RMP), which sets out how the aims of the strategy will be delivered. This includes the detailed working practices, methods and tools to be deployed. In parallel to the review of the strategy, the RMP has recently been reviewed and updated, and this document is now presented as an appendix to this report for information.

2. SUCCESS TO DATE

- 2.1. The NLHPP team's approach to managing risk has been successful to date. This is supported by the key performance metrics: the out-turn cost forecast remains within the agreed baseline; the works are forecast to be delivered on schedule, and the financial contingency allowed for at the outset remains substantially available.
- 2.2. This position reflects the consistent focus that has been applied across the programme in attending to risks and driving the appropriate mitigations and response plans. The agreed risk strategy continues to guide the work, while the RMP provides a robust methodology which all members of the NLHPP team are familiar and engaged with.
- 2.3. By way of demonstration, some substantial risks identified at the outset of the programme are highlighted below, with a short description of how the risk management activities have avoided, minimised, or treated the impact of these.
 - 2.3.1. **Disruption to Site Operations during NLHPP construction activities (and vice versa)** – this was assessed very early as a high priority risk. Initial

mitigations planned and delivered included the establishment of a “site working group” to coordinate on-site works collaboratively between LEL, NLHPP and the various contractors, the introduction of specific construction focussed resources and integration of LEL staff into project teams and programme governance meetings. More recently, as construction works were scheduled to ramp-up, a logistics and traffic management workstream was launched to understand, prepare for and oversee the increased workload and movements on site. To date, the risk has been successfully managed, with no uncontrolled disruption to operational activities.

- 2.3.2. **Unsuccessful procurement events** – this encompasses a number of individual risks associated with the procuring of contractors in particular – maintaining adherence to regulations, receiving interest and suitable tenders from the market and ensuring that the successful contractor fully understood the works and obligations to be delivered. This has now been achieved with all the enabling works and EcoPark South contracts, reflecting the risk-based approach taken. The mitigations included establishing clear governance and working practices, identifying and delivering training to all those involved in tender document preparation, a strong focus on external engagement to attract interest and a thorough evaluation process – which included identifying weaker areas in successful tenderers’ plans for attention during delivery.
- 2.3.3. **Uncertainty in ground conditions and the location and condition of underground services and assets** – From the earliest stage of the programme, this was identified as having the potential to impact significantly on safety, costs and timely delivery. Mitigations commenced early with survey work to assess both the nature of the ground and the locations of assets/obstructions with it. A contractor (Galldris) was procured to provide early understanding of the site rather than waiting for surveys to form part of the construction contractor’s remit. Good document management was a part of the risk plan with records being updated each time new information came to light. This has progressed into the use of a digital GIS (geographical information system) tool, enabling the survey results to be accessibly presented on 3D models of the EcoPark. Enhanced engagement with LEL’s operational staff and their asset databases also contributed to the lowering of the risk profile. This risk will remain open until no further ground works are required, with the practices in place continuing.
- 2.3.4. **Delivery to schedule** – more broadly the delivery of the ERF “first fire on waste” by the target date is potentially impacted by a number of risks that relate to failing to achieve activities along the critical path. Items identified

through the risk process, include governance activities (e.g. ensuring Member recommendation papers were suitably timed to support contract awards), advisor deliverables (e.g. design materials, decision papers) and review of contractor safety documents that predicate site activities. At its heart, the management of this risk was delivered through the implementation and maintenance of an integrated schedule led by the Programme Office. This in turn drove the development of project and workstream timelines, that allowed clear deadlines to be identified and dependencies between outputs to be recognised. Regular review and communication of the schedule position has allowed all team members to be aware of current status and upcoming actions and therefore maintain forward momentum. A further mitigation that has developed in this area is the tailored management of interfaces between projects, with LEL and with external parties (such as service suppliers or Energetik). Combined, these steps have helped retain the NLHPP on track to deliver in line with the baseline dates, while also contributing to numerous other mitigations that allow day-to-day activities to progress successfully.

3. FUTURE FOCUS

- 3.1. The management of risk doesn't stop, and while robust work has been done to date, this will be maintained to ensure the programme successfully meets all of its objectives. Section 5 of this report highlights some of the continuous improvement activities which form part of the current RMP.
- 3.2. Some of the key risks in the future, that will be receiving attention in the year ahead, are outlined below.
 - 3.2.1. **Mobilising the successful ERF contractor** – risks associated with this activity have been identified throughout the various functions of the programme. In moving from procurement to contract delivery, the project team will need to adapt and ensure the appropriate resources are in place to oversee the design development and ultimately construction. Organisational charts and competency reviews are being developed in this space. Integrating the contractor's team is also a key action, and the collaboration workstream are developing a mobilisation plan that supports the onboarding and relationship building necessary. Alongside this, the team will need to either establish, or "scale up" processes and systems to support and/or monitor the works. The Programme Office, commercial and technical assurance teams are all examining their practices for suitability - by way of example, a review of the contract administration systems is underway to ascertain the most effective for the iChemE contract form.

3.2.2. **Contributing to the NLWA’s transition programme and asset management plan** – The NLHPP programme has a key role in delivering fully commissioned assets to the handover stage and contributing to transition and operational plans. The risks identified in this area relate to resources – the potential for gaps in NLHPP and LEL resources needed to deliver commissioning activities in a safe and timely manner – and the identification of activities needed to ensure effective transitional periods between RRF and ERF construction completion dates. As part of the risk mitigations, project contractors will need to be fully informed about the requirements for handover and their role in the management of the process.

3.2.3. **Health, Safety & Wellbeing (HSW)** – Operating the programme in a safe manner will continue to carry clear risks until completion. It remains that a severe incident could result in a delay to works on site or enforcement action by authorities, while more broadly, the programme’s progress could be impacted through a lack of attention on the wellbeing of the team. Actions identified for the former include a continuous improvement approach to the safety activities already in place and the implementation of new HSW engagement tools on site. For the latter, a series of wellbeing initiatives will be launched, and there is a continued focus on Equality, Diversity & Inclusion (EDI) activities. Across all aspects, the NLHPP leadership team will play a vital part of the risk management, maintaining a positive safety culture through their own actions, in completing leadership safety visits to the EcoPark and acting upon the safety data and observation reports that continue to be developed. COVID-19 remains an active risk to safe delivery, and the programme’s management activities continue to support pro-active monitoring and assurance of safe, distanced working on site.

3.3. Other new and existing risks, as well as their mitigation plans, will continue to be brought to Members awareness as part of the regular status reports. The financial measures and performance associated with risk management will form part of a future report to Members on the subject of cost management performance.

4. COMPONENTS OF THE RISK MANAGEMENT PLAN

4.1. Supporting the past and future delivery of risk management is the RMP, which is appended to this briefing note. This sets out the key aspects of how the programme incorporates risk management into all delivery activities. Summaries of the key components are provided below to allow Members to navigate the content.

4.2. **Principles & Approach** – Three principles are described which are intended to guide the thinking throughout all the activities associated with the RMP. These relate to:

- 4.2.1. integration – of risk management into all activities
 - 4.2.2. innovation - continually looking to advance the use of risk management tools for the benefit of the programme.
 - 4.2.3. being systematic and structured – to ensure data is consistently captured, measured and used.
- 4.3. **Risk Culture & Engagement** – The RMP has, at its heart, a focus on embedding the culture of risk-based project management. All parties involved in the programme are expected to play their role in identifying and communicating risks relevant to their role. To aid establishment of this, the RMP sets out various contributions; training and awareness for all team members, a thorough review process including all relevant parties as well as broad provision of access to tools, supporting materials and risk data.
- 4.4. **Risk Structure** – This sets out how risk activities and information flow through the various layers of the delivery organisation. This considers the relationship between project and programme as well as how discipline specific activities (e.g. design or construction) come together.
- 4.5. **Management Methodology** – This is the core of the RMP and sets out the process cycle of identify, assess, control and review – the key steps in developing our understanding of risks. Each is described in detail, with the different methods available, the consistent metrics for assessing and prioritising risks, and importantly the options available to mitigate them. It also presents the means of holding the risk data, the risk register, which is currently transitioning from an excel based approach to the digital PIM (Programme Insight Manager) tool, which is being implemented as the NLHPP’s central “datahub”.
- 4.6. **Quantification** – A key aspect of the assessment of our risks is in quantifying their potential impact on cost and schedule. The RMP describes the means by which these are calculated, and how they contribute to the cost and schedule status.
- 4.7. **Responsibilities** – While all parties involved in the programme have a role to play in the management of risk, the RMP sets out key roles in establishing and delivering the activities within the plan.
- 4.8. **Reporting and Assurance** – The communication of current risk status and associated mitigation actions, trends and movements is a vital part of ensuring awareness and performance delivery. The RMP describes the reporting cycle (which includes the updates to Members contained in the regular papers), and additionally sets out the assurance and compliance steps taken to ensure that risk information is accurate, reliable and consistently assessed.

- 4.9. **Issue Management** – The RMP also presents the approach to managing issues (which includes risks that have occurred) and our means of assessing, monitoring, and escalating the information.

5. CURRENT STATUS AND CONTINUOUS IMPROVEMENT

- 5.1. The risk management plan remains an active document, which is updated as needed to support the phases of the programme. While the majority of the plan is implemented and has been running successfully for a considerable period, new opportunities arise, and current development activities include:

5.1.1. Integration of risk information into the newly developed NLHPP Intranet that will allow all team members to access guidance and tools to help them develop their risk understanding.

5.1.2. Introduction of new compliance measures, enabled by the PIM facility, to check for information gaps and inconsistencies in risk data.

5.1.3. Enhanced reporting opportunities also enabled by the PIM tool. This will allow efficient development of new digital dashboards and easier preparation of bespoke/ad-hoc reports for new purposes across the programme.

6. EQUALITIES IMPLICATIONS

- 6.1. There are no impacts on equality to be noted arising from the content of this report.

7. COMMENTS OF THE LEGAL ADVISER

- 7.1. The Legal Adviser has been consulted in the preparation of this report and comments have been incorporated.

8. COMMENTS OF THE FINANCIAL ADVISER

- 8.1. The Financial Adviser has been consulted in the preparation of this report and comments have been incorporated.

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APPENDIX A RISK AND ISSUE MANAGEMENT PLAN



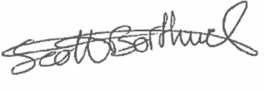


NLHPP – Risk & Issue Management Plan

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Engagement Confirmation			
Function	Role	Support	Notes
Programme Director		A	
SRO			
SHE&W		I	
LEL		I	
Technical Advisor		I	
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Engagement Confirmation			
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Programme Office		C	Consulted and comments incorporated.
Project Delivery		C	
Legal & Governance		C	

References	
Reference	Document
NP-NLW-XXXX-XXX-PP-PM-090008	NLHPP Programme Manual Overview
NP-NLW-XXXX-XXX-PC-PM-090050	Risk Management Strategy
NP-MLW-XXXX-XXX-PC-PM-090061	Cost Management Plan
NP-NLW-XXXX-XXX-PC-PM-090072	Project Controls Management Plan
NP-NLW-XXXX-XXX-PC-PM-090178	Forecast Management Plan
NP-ARP-XXXX-XXX-PC-ZZ-090002	Terms of Reference – All Meetings

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1 Introduction

The North London Heat & Power Project (NLHPP) is a £1.2 billion, ten-year programme with many complex interfaces, local and national stakeholders, and high value contracts that all need to be managed effectively, whilst minimising disruption to the existing operational site. As such, risk is omnipresent and an effective Risk Management Plan (RMP) is vital to achieving the Project's aims and objectives.

The principal aim of this RMP is to support successful delivery of the Project by defining the processes required to manage risk and ensuring that all project team members, contractors, and advisors are engaged and actively supporting activities that manage risk.

2 Purpose

This document defines how risks shall be managed across NLHPP. Specifically, it details:

- The risk management system including methodology.
- Roles and responsibilities for the Risk Management process.
- Communication and reporting, including the monthly meeting sequence, reporting requirements and frequency of updates
- Risk management tools configuration and maintenance

Requirements for this plan flow down from the Risk Management Strategy and overarching NLHPP Programme Manual.

This RMP will be reviewed and updated annually to reflect changes in requirements. Any deviations or exceptions are to be agreed with the Programme Office Lead and documented within the Document Control section.

3 Method of Management

3.1 Objectives

This risk management plan has the following key objectives:

- Define and implement an approach that ensures that meaningful information is generated to support decision making acknowledging uncertainty and awareness of the key risks.
- Provide confidence and assurance to stakeholders that risks to NLHPP are being comprehensively identified, are both understood and under control, and that the risk management process is effective.
- Provide a basis to promote a risk management culture across NLHPP where all parties are engaged and involved in risk identification and management on a constant and consistent basis.
- Promote a top-down and bottom-up approach that is effective in project and non-project areas (design, interfaces, cross-cutting disciplines) that can also consider the most significant risks facing the organisation.

3.2 Principles & Approach

The key principles to deliver these objectives are;

1. **Integral to organisational processes**

- Aligned to our other management processes and systems
- Risk management is embedded into day-to-day business activities
- All project participants are engaged with the process
- Uncertainty (qualitative & quantitative) is considered during decision making

2. **Think differently and innovate**

- Innovative – adopt the latest techniques in risk implementation, collaboration, analysis, and reporting.
- Enables personnel to improve risk management expertise and build the risk management culture across the organisation
- Facilitates continual improvement of the risk management system

3. **Systematic, structured, and timely**

- Uses the best available information
- Information is refreshed regularly, reporting and escalation is timely
- Transparent, accessible, and inclusive
- Considers all relevant systems and sources of risk

3.3 Risk Definitions

Several key definitions apply.

Risk: A significant, unplanned, and uncertain event that, should it occur, will have an effect, positive or negative, on the objectives of an activity. Overall a risk is assessed by combining its probability and the magnitude of its impact on objectives

Threat: A risk with a negative impact on objectives

Opportunity: A risk with a positive impact to objectives

Issue: An unplanned event or situation that has already occurred, is occurring or will happen, which is certain to affect the achievement of objectives.

Uncertainty: Arises from any situation where the outcome cannot be precisely predicted. Uncertainty includes both the variability of estimates, typically captured as a three-point estimate, and the potential occurrence of specific threats and opportunities.

From this point forward the word 'risk' will cover both threats and opportunities.

3.4 Risk Management Levels

Risk can reside and be cost-effectively managed at different levels within the NLHPP organisational structure:

Project Risks: have specific impacts on a single project and are generally more effectively managed at project level, managed by the project team.

Programme-Wide Risks: Typically systemic risks arising directly at programme level or risks common to more than one project. May also relate to escalated project risks, or to project interdependencies or related project risks that may combine or aggregate to have a greater effect at programme level. Managed collaboratively by NLHPP Leadership Team.

The most critical of these risks feed upwards into the NLWA Strategic Risk Register. Strategic risks arise from the context in which the NLHPP programme sits, its purpose, critical processes, strengths, and weaknesses. As such, these risks affect the business as a whole and do not necessarily arise from programmes or projects. Business risks may also arise from external sources or risks related to delivery of programme benefits.

Within NLHPP, risk classifications shall be used to differentiate risks based on their impact, support plans and risk allocation i.e. the risk-bearing organisation. The classifications are presented graphically in Figure 1 and defined in Table 1.

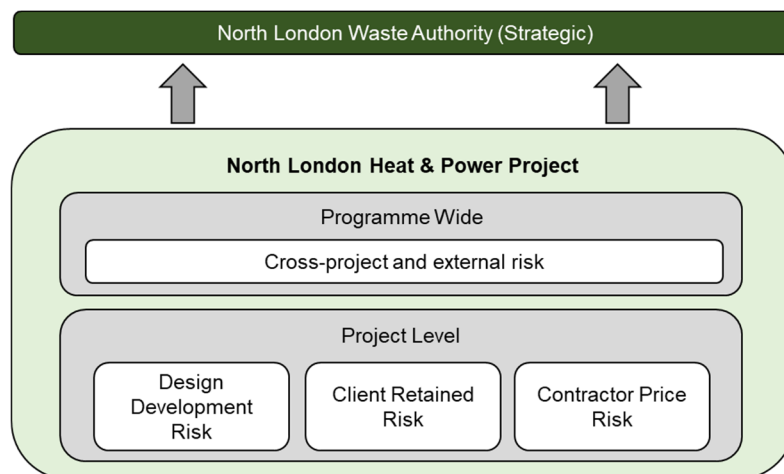


Figure 1: Risk Classification

Risk Classification	Definition	Example
Cross-project and external Risk	Risk that impacts more than one project or is better managed across the programme.	Extreme weather spans multiple projects and is out of a project manager's control.
Design Development Risk	A design assumption that may be invalidated following receipt of greater information.	The extent of bridge repair works may be assumed low; however, an inspection may invalidate this assumption.
Client Retained Risk	Project Risk that is retained by the client.	A third party may be delayed in completing their work element which impacts the principal contractor.
Contractor Price Risk	Project Risk that is transferred to the contractor.	A contractor may damage existing assets which will be their risk.

Table 1: Risk Classification Descriptions

3.5 Risk Management Structure

The NLHPP risk management approach ensures that Risk Management capability will extend across project delivery and supporting disciplines and governance functional areas. Figure 2 depicts the information flow and scope of Risk Management across NLHPP. Integrating Risk Management across the programme organisation will aid in driving collaboration between functions to highlight and mitigate risk.

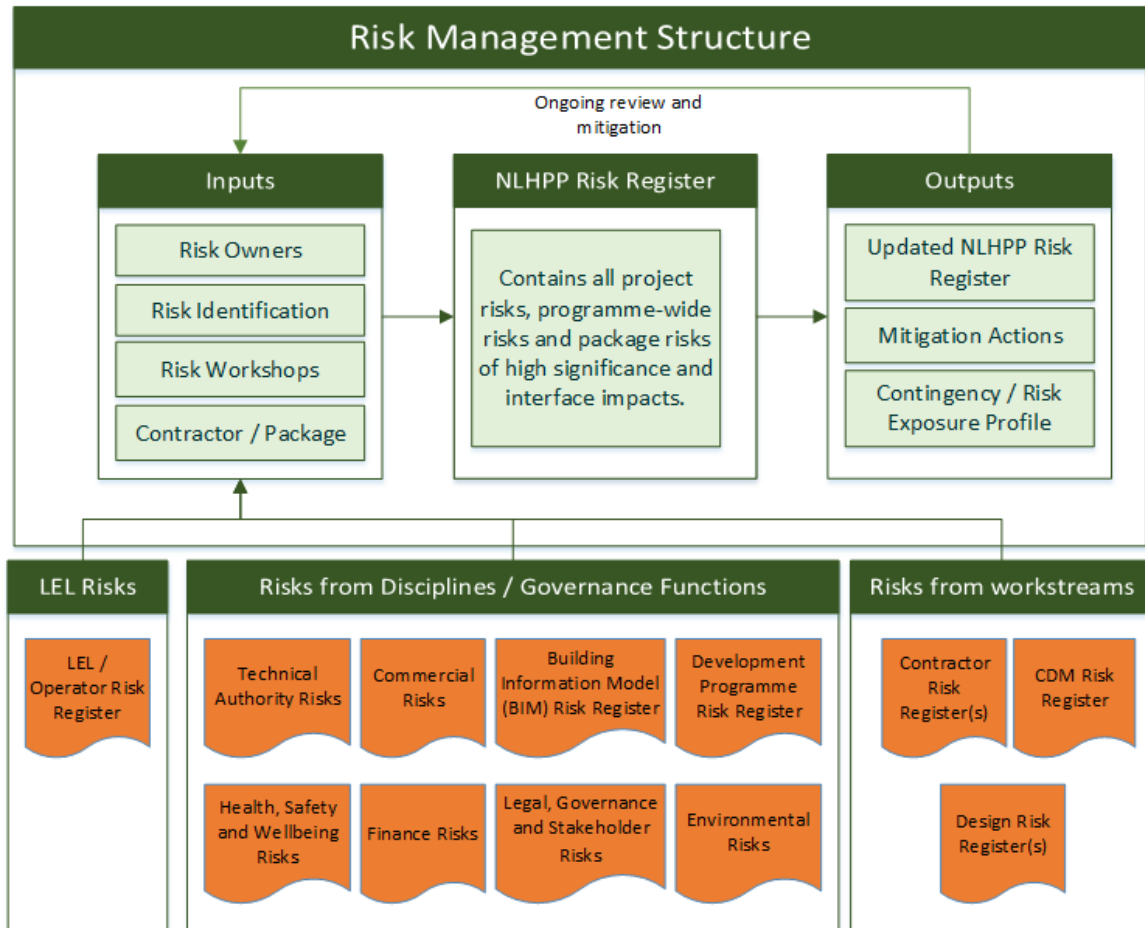


Figure 2 - Risk Management Structure

3.6 Risk Management Governance

Risks will be discussed during several formal reviews that form part of the wider NLHPP governance and performance reporting cycle. An overview of the reviews that form part of the risk governance arrangements for risk reporting are summarised in Figure 2, and the rhythm shown for the Risk Reporting Cycle is depicted in Appendix A.

It is the responsibility of the Project Manager to review their risks internally with risk owners within their teams at regular checkpoints to support reporting and senior reviews. For more guidance on how to conduct risk reviews, please refer to the Risk Process Guidance in section 4

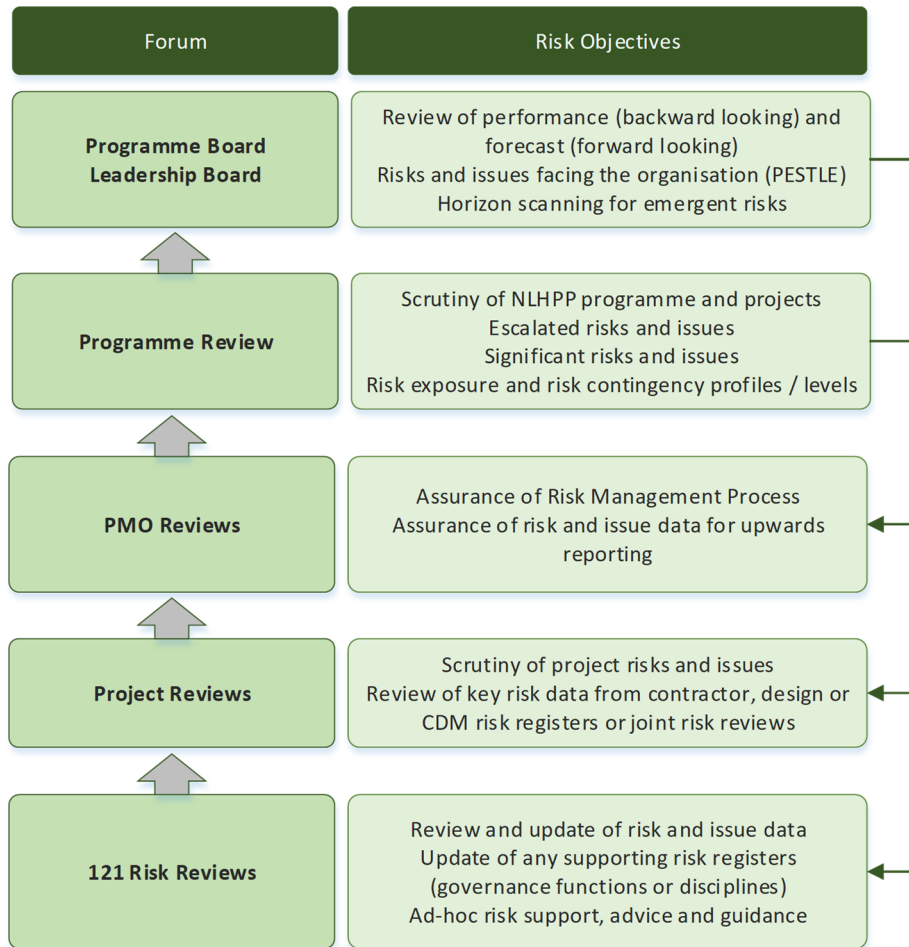


Figure 3 - Risk Governance Forums

3.7 Roles & Responsibilities

The key roles within the Risk Management process are listed in Table 2.

Role	Responsibility	Description
Programme Director	Accountable for delivering executive element of work and managing the risks associated with it. Responsible for ensuring the implementation and consistent adoption of risk management practices across NLHPP.	The Programme Director is ultimately accountable for delivery of risk management on the Project, ensuring that a suitable RMP is in place and being worked to. The Programme Director will also escalate risks, where appropriate, to senior parties better able to manage these risks
NLHPP Leadership Team	Responsible for monitoring overall risk of the project	The Leadership Team is responsible for reviewing risk reports and supporting the Programme Director.
Authority Members	Responsible for sanctioning risk allowances/contingencies within the NLHPP baseline. Responsible for decisions on strategic level risks	The Members will be asked to make decisions on strategic risks which have an impact on the delivery strategy, overall timeline, or budget of the project.
Project Manager(s)	Accountable for delivering element of project work and managing the risks associated with it. Responsible for the overall delivery/execution of the risk management process in that area.	The Project Manager will provide quality assurance on the Risk Register and process through challenge to input data/information. They will set expectations for risk management performance and maintain an up to date risk and issue register in their area.
Risk Manager	Responsible for the design and implementation of the risk and issue management processes, and any associated training and guidance. Provides assurance to the Programme Director over the effectiveness of the Risk Management Process across NLHPP.	The Risk Manager delivers the risk management process and facilitates reviews and updates of the risk and issue registers. This includes quality control through challenging any inputs from Risk Owners and reporting on risk management performance.
Risk Owner	Accountable for ensuring individual risks are managed in line with the Risk Management Process.	Risk owners are assigned to specific risks and responsible for risk assessment, developing the response strategy, mitigation plans, reviewing risks and responses and ensuring risk data is up to date.
Action Owner	Responsible for mitigating actions in line with the Risk Management Plan.	The individual best placed to optimise the delivery of the response.
Technical Advisors / Subject Matter Experts	Responsible for identifying risks relevant to their area of expertise and making NLHPP Project Manager aware of foreseeable risks associated with their delivery.	Technical Advisors will support the delivery of each project through production of design deliverables. Through this exercise they will manage their own design development risk and highlight wider project risk for awareness.

Table 2: Roles and Responsibilities for RMP

3.8 Risk and Issue Recording

All functional areas shall utilise the Programme Insight Manager (PIM) Datahub to record their risks and issues. Risk data shall be recorded and maintained in compliance with data standards outlined in this RMP.

Issues are recorded and managed in the PIM Datahub in a separate module. Refer to section 4.6.

3.9 Risk Register Configuration

NLHPP shall use the PIM Datahub to maintain the NLHPP risk and issues registers. The NLHPP Risk Register acts as the “live” central database and reporting tool for all risks and is maintained by the Risk Lead.

The tool will enable the production of all reports required to support all levels of qualitative process risk reviews. Contractors, delivery partners and supporting NLHPP disciplines can use any risk register tool on the condition that it can be configured to produce equivalent reports. The risk classification criteria and Probability-Impact Matrix defined in section 4.2.2 will be used to configure the database.

The NLHPP Risk Register shall be configured to align with the NLHPP latest organisational programme and projects structure. Sub-folders may be configured in consultation with the Programme Office but should be based on the current workbook, drumbeat and organisational structure and align with structural requirements for upward flow of data for reporting and management across the business.

Configuration and access to the risk and issue registers shall be controlled by the Risk Management Team with support from the Digital Implementation Project Manager.

Multiple sources will contribute to the knowledge within the register, including other formal registers maintained for specific disciplines (see Table 3) and team members via individual discussions and workshops.

In the case of defined risk registers as sources, an escalation route has been defined to identify risks which merit raising to the NLHPP Risk Register. This escalation ensures that risks are managed at the right level. For example, senior project team members can focus on the significant risks, without having to work through all the detailed technical risks.

Risk Register	Owner	Contains	Escalation
NLWA Risk Register	Programme Director/SRO	Strategic risks facing NLHPP. The risks are grouped to summarise all top programme risks.	Communication to register owner; MD via NLHPP Programme Director.
NLHPP Risk Register	Programme Director	All programme and project risks	Key risk reporting through programme structure. (project > programme > NLWA)
Governance or discipline risk register(s)	Functional Lead	Risks relating to specific function or discipline	Key risk reporting through programme structure and merits escalation to NLHPP risk register
Design Risk Register(s)	Designer(s)	Technical risks being mitigated through design development.	Risk cannot be “designed out” Risk has an impact outside the specific design project e.g. on planning consent Risk owned by the NLHPP.

Risk Register	Owner	Contains	Escalation
Contractor Risk Register(s)	Contractor(s)	Construction risks transferred contractually.	Risk is of major reputational or schedule significance/impact and requires close client awareness Risk has an interface impact outside that contract.
Construction Design & Management (CDM) Risk Register	Principal Designer/ Contractor	Design and Safety Risks as per CDM 2015 requirements.	Risk mitigation requires scope changes to be made.

Table 3: Risk Registers and escalation routes

3.10 Risk Management Support and Continuous Improvement

The central hub for NLHPP Risk Management is contained within the NLHPP Intranet. The purpose of this area is to share knowledge for training material, best practice, support materials and resources. It also serves as a reference for relevant publications, guidance, and forum records.

A Risk Toolkit shall be maintained within the area for facilitation and support to risk management activities including presentation material for workshops, specific risk prompt lists and checklists, desktop guides on the process and software tools.

Lessons learnt are to be used to enhance working practices within the team and will focus upon the improvement of skills in the risk process and the management of threats, issues, and opportunities.

4 Risk Management Process

The Risk Management Process consists of five elements as depicted in Figure 4. Although each step will typically be applied sequentially for individual risks, the management process occurs iteratively and concurrently to ensure that risks are adequately identified, assessed, controlled, reviewed and recorded continually.

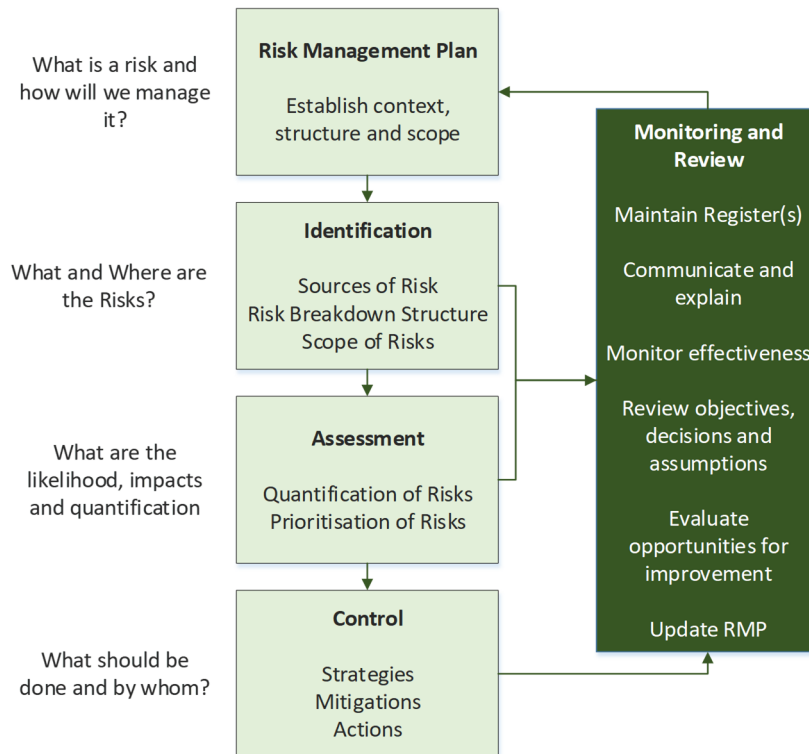


Figure 4: Risk Management Process

4.1 Identification

Risk identification provides a structured approach to ensure the following:

- All significant risk sources potentially affecting the achievement of objectives are identified and recorded.
- Risks are clearly defined, do not overlap, and there are no unintended gaps.
- Threats and opportunities are addressed as appropriate.
- Each risk's cause is examined.
- The validity of assumptions is challenged.
- Interaction/conflict between stakeholders and objectives, which can be a significant source of risk, is identified.

Risk identification and capture may be conducted via formal reviews or workshops, brainstorming sessions, interviews, working groups, or more informal project talks and catch-ups. Risk checklists, risk prompt lists (see section 3.10) and lessons learned may be used in addition to project documents and artefacts to identify risks and sources of uncertainty.

When recording a risk the following terminology should be used:

Risk Title: This should be a brief overview, typically one sentence, to give an accurate snapshot of the risk contents.

Cause: The driver(s) of the risk

- Describe the context of the risk (what you do know)
- Describe the assumptions (things which you assume will happen)
- Describe the uncertainty (what you do not know) around the risk event

Event: Clearly articulates the risk event that may or may not happen

Consequence: The impact(s) that explain the specific effect of the risk occurring on the project, in the form of time, cost, and/or reputational impact. This should consider all possible effects that the risk event would have on the achievement of objectives. This can be articulated in terms of cost, time, performance, health and safety, operational and reputational impacts.

An example of this would read: 'Due to <cause(s)>, there is a risk/issue/opportunity that <event>, Resulting in <consequence(s)>.

For example, *Due to uncertainty in early-stage ground condition data, there is a risk that ground contamination may be discovered during construction. This will result in unplanned remediation being required leading to an increase in cost and possible time delay.*

The following diagram can be used to help describe a risk:

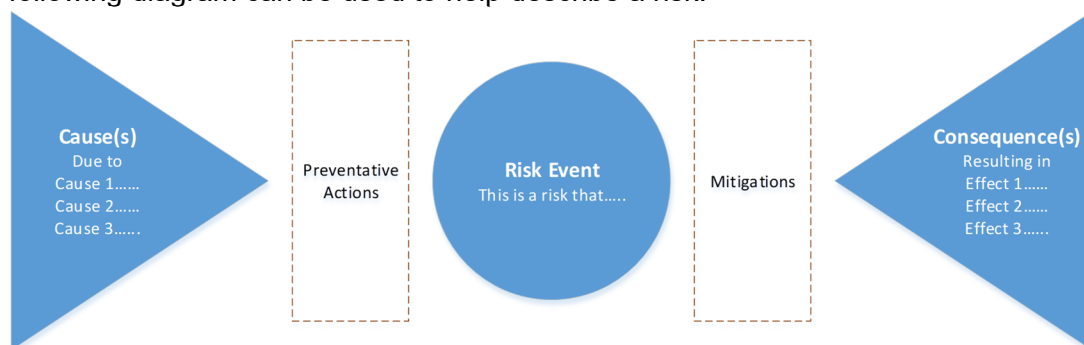


Figure 5 - Bow-tie Diagram

Identified risks are categorised according to a common *Risk Breakdown Structure (RBS)* which is a hierarchical structure of potential sources of risk. A detailed explanation of all the inputs and categorisation options, as well as guidance for risk categorisation is outlined in the NLHPP Risk Register file.

4.2 Assessment

4.2.1 Risk Ownership Policy

Risk ownership policy will follow the principle that risk ownership should be assigned to the party best able to manage the risk. The ownership of each risk will be identified from two perspectives:

- The person responsible for managing each risk – the Risk Owner and,
- The organisation that owns the risk – the risk bearing organisation.

The Risk Owner should be the person who has the most influence over the risk's outcome. This principle will apply to all project risks including those owned by contractors. A risk owner needs to understand the risk and have sufficient time to manage it. However, they must also have the authority to implement the most effective responses. In practice, this will mean that

some risks are owned at senior levels, including, potentially, the Programme Director and SRO themselves.

4.2.2 Qualitative Assessment

Risk is assessed qualitatively to allow the significance of the risk to be estimated and allow reliable measure and comparison. The following can act as a guide:

Impact: This is the quantification of consequences in terms of Time, Cost, and Reputational Impact (which may additionally consider Operational, Health, Safety and Environmental impact).

Likelihood: This is the probability of occurrence, represented as a percentage.

Each risk is assessed using a pre-defined matrix (Figure 6) to determine the impact a risk could potentially have and the probability of each risk occurring. Each project will need to tailor its cost impact ratings according to its latest cost forecast.

Probability of Occurrence (P)			Impact on the Project (I)		
Value	Description	Range	Cost	Time	Reputation
5	Almost Certain (High)	>90%	>10% of ETC*	>26 Weeks	Severe negative impact affecting reputation with all stakeholders - Negative reporting nationally. -Members loss of trust with NLWA. - Escalation to central government - Major Disruption to operations of LEL.
4	More than likely (Medium - High)	>60% - 90%	<5%-10% of ETC*	13-26 Weeks	Major negative impact affecting reputation with wider external stakeholders. - Prolonged negative reporting in local press, - Damaged relationship with Members. - Prolonged disruption to operations of LEL
3	Equally likely as unlikely (Medium)	>30% - 60%	<2.5%-5% of ETC*	4-12 Weeks	Medium negative impact affecting reputation with wider external stakeholders, eg North London Boroughs - Short term negative reporting in local press, - Complaints to councillors - Minor disruption to operations of LEL
2	Less likely (Low - Medium)	>10% - 30%	<1.25 -2.5% of ETC*	1-3 Weeks	Minor negative impact affecting reputation with internal and external local stakeholders eg local residents, businesses, LEL
1	Remote (Low)	<10%	<1.25% of ETC*	<1 Week	Minor negative impact affecting reputation with internal project stakeholders e.g. contractors, consultants

* Estimate to Complete (ETC) represents the remaining cost for each project

Figure 6 - Risk Classification Table for NLHPP

Once the risk impact and probability are properly understood, a detailed basis of estimate must be generated to understand the justification behind the scoring of the risk. The basis of estimate needs to use existing information/evidence wherever possible.

For the purposes of prioritisation by severity, the probability and impact will be classified in accordance with the criteria detailed in Figure 7. The Risk classification criteria table is used in conjunction with the Probability-Impact Matrix (PIM).

		Scoring Scheme for Opportunities					Scoring Scheme for Threats					Severity Rating	
Probability	Very High 5	-25	-24	-15	-10	-5	5	10	15	20	25	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="background-color: red; width: 15px; height: 15px; margin-bottom: 5px;"></div> High 15-25 High <div style="background-color: yellow; width: 15px; height: 15px; margin-bottom: 5px;"></div> Medium 5-14 Medium <div style="background-color: lightgreen; width: 15px; height: 15px; margin-bottom: 5px;"></div> Low 0-4 Low </div>	
	High 4	-20	-16	-12	-8	-4	4	8	12	16	20		
	Medium 3	-15	-12	-9	-6	-3	3	6	9	12	15		
	Low 2	-10	-8	-6	-4	-2	2	4	6	8	10		
	Very Low 1	-5	-4	-3	-2	-1	1	2	3	4	5		
		5	4	3	2	1	1	2	3	4	5		
		Very High	High	Medium	Low	Very Low	Very Low	Low	Medium	High	Very High		
		Impact (Opportunity)					Impact (Threat)						

Figure 7 - Probability Impact Matrix

4.3 Control

4.3.1 Mitigation Strategies

A key activity of risk management is to ensure that mitigation plans are put in place, in order to proactively respond to the risks identified. For each risk one of the following risk response options (strategy) is to be applied:

- **Tolerate:** Accept current risk exposure and take no actions to change the probability or impact.
- **Terminate:** Avoid or eliminate the risk by not starting or by ending the activity that gives rise to the risk
- **Treat:** Act to change the probability and/or impact of the risk.
- **Transfer** all or part of the risk to a 3rd party, e.g., by outsourcing activities
- **Take** the opportunity

For higher level risks, a cost benefit analysis may be needed to decide on most appropriate strategy.

Once the strategy has been chosen, specific response actions should be determined, with the volume and scale of these actions being proportionate to the scale of the risk itself. Actions will be recorded in the NLHPP Risk Register.

Each response action should have target completion dates and an action owner. These actions will need to be monitored and managed by appropriate response owners. The response owner(s) can be anyone who is best placed to implement the mitigation response.

Response actions should follow SMART principles (specific, measurable, actionable, recordable and time-bound) and avoid business-as-usual activities. Responses with additional costs shall follow the change process (see section 7.2) for their funding and approval.

4.3.2 Residual Risk Assessment

Once appropriate mitigation actions have been identified, the residual risk assessment will need to be conducted. The residual assessment should reflect the probability and impact once the response plan has been completed successfully, following the same assessment process.

4.3.3 Risk Dates and Phasing

As part of the risk recording the risk trigger date (date from which the risk could materialise) and risk expiry date (date after which the risk can no longer occur) should be recorded as part of the assessment. Risks will be assigned to one of the following high-level project phases / activities which have defined start and end dates:

- All Stages / Project Management
- Design Development
- Consents
- Pre-Procurement or Procurement
- Construction
- Transition and Commissioning
- Operations

The risk phasing allows the risk contingency costs to be allocated to the applicable time periods to support compilation of the risk exposure profile and contingency management.

Where a detailed project schedule has been developed, the risks will be assigned to appropriate Work Breakdown Structure (WBS) elements.

For longer-term or higher-level risks it may be appropriate to record additional dates of decision points, events or thresholds at which the chances or impacts of the risk materialising may increase.

4.4 Monitoring and Review

Risk reviews will be undertaken at a variety of levels. The lowest level of review will be the review of each risk by its risk owner. As a minimum each risk will be reviewed at this level every month. The risk manager will be responsible for tracking and ensuring that this objective is met. At times, some risks may merit a more frequent or less frequent review. The relevant PM and Risk Management team will be responsible for making this judgement and acting accordingly.

Terms of Reference for the series of NLHPP risk meetings, their attendance, purpose and outputs are outlined in Appendix C. The meeting owner will recommend which risks should be reviewed. This judgement will depend upon circumstances but will take into account factors such as risk severity, urgency of response, proximity, clarity of ownership, whether or not progress against responses has been satisfactory and how recently each risk has been reviewed in the same forum.

Responses to overall project risk, together with responsibility for their implementation will be recorded in the minutes of the project meetings or reviews in which they are agreed.

4.5 Joint Risk Reviews

Joint Risk Reviews may be held so that the NLHPP, LEL and contractors can openly discuss risks, issues, and opportunities. Any risk or issue that will affect a milestone date, a cross-party dependency, or that requires support from another party to resolve should be reported. Other aims include:

- To promote a joint approach in developing risk mitigation strategies, monitoring action progress, and setting appropriate review dates for the current status of risks or issues.
- Align, review and record risks, issues and opportunities which affect multiple parties and ensure the relevant information relating to each is captured correctly.
- Ensure appropriate mitigation plans are in place within the relevant parties and are progressing towards successful resolution.
- To agree and highlight the highest priority risks which require escalation.

There may be occasions in the future where NLHPP chooses to maintain a joint risk register to support this forum. In such circumstances the following must be adhered to.

- a) The joint risk register should be held separately and outside of the NLHPP risk and issues register.
- b) NLHPP-specific risks will still need to be identified (either from the joint register or through the risk management process) and captured within the NLHPP risk register. It is likely that a number NLHPP-specific risks will be present, specifically around not delivering to NLHPP as expected.

- c) If a joint risk register is used the relevant team shall inform the Risk Management Team and state arrangements for:
- Any additional tasks or process required to be undertaken in addition to those listed in this document,
 - Where the joint risk register will be held and who will be responsible for its maintenance,
 - Any additional roles and responsibilities imparted onto the team, and
 - Rules around the governance and escalation of joint risks.

Terms of Reference for a Joint Risk Review are covered in the risk review forums in Appendix C.

4.6 Issues Management

Issue Management forms part of the NLHPP Risk Management Process. Issues are not limited to impacted risk events captured on the risk register.

Issues will be managed through a dedicated Issues Management Register. Depending on the severity of the issue, stakeholders will be informed at the appropriate levels through the organisation where necessary.

Figure 8 shows the core data flow into the Issues Management Register.

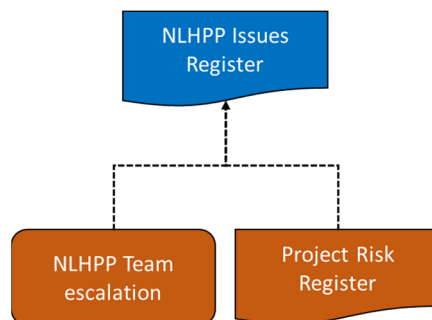


Figure 8 - Issues Management Data Flow

Issues arising from the NLHPP Risk Register;

- Where risks are increasing in likelihood (>90%) and require immediate action.

Issues arising from the NLHPP Team,

- Any event currently occurring, or is certain or virtually certain to occur, that has a negative impact on the programme and requires resolution for the programme to proceed successfully
- Direct input from team or wider team

Issues that require senior engagement and/or support to manage or resolve should be escalated, via the issues register, to the NLHPP Leadership Team. Escalation shall be managed through the same risk management governance routes and reported for review to the NLHPP Leadership Team as required by the Risk Manager.

4.7 Risk and Issue Change of Status

4.7.1 Approval of risks and issues

Once a new risk or issue has been articulated, it shall be saved as status 'New' in the NLHPP register and validated with the project or programme team to agree the description, assessment and mitigations have been correctly articulated. The Risk Manager will provide assurance and checking it is compliant with data quality standards before changing status to 'Active'.

4.7.2 Closure of risks and issues

Risk or issue closure relates to the following change of status:

- 'Closed' is to be used for risks and issues that have either expired (passed their expiry date without impacting and can no longer occur) or rejected either as errors or duplicate items.
- 'Closed-Impacted' is to be used for risks that have materialised and impacted on the project (issues). At this point the risk should be closed on the Risk Register and a new issue opened on the Issues Log. Any fallback plans identified against the risk should be transferred to the Issues Log as remediation actions. Any new residual risks which have been identified as a result of the risk occurring should also be raised in the Risk Register.
- 'Closed-Mitigated' status is to be used for all risks that have been successfully mitigated to the extent they no longer pose a threat to the programme

4.7.3 Partially impacted risks

If a risk has impacted or partially impacted consideration should be given to whether secondary risks have now arisen and whether there is still extant risk or uncertainty that needs to be covered as a new risk in addition to the issue.

Change of status shall be reviewed and made ideally in a formal review and confirmed by the Risk Owner and Risk Manager. In circumstances where this is not possible written communication to the Risk Manager shall be used to record an audit trail of the decision and justification for close-out. The update shall be recorded appropriately in the risk register using the audit functionality to state the date, review forum and decision-maker.

A report of new active and closed risks will be provided through periodic reporting.

Impacted risks will be periodically scanned by the Risk Team for incorporation into lessons learned logs and risk checklists.

5 Quality Assurance

The Programme Office shall review risk data on a regular basis to assess the latest risk exposure profile, track any changes to individual risk and issue status and provide assurance that risk data provided for management review is correct.

The Risk Management team will periodically assess the risk data for quality, currency and validity. Reports will be made available and stored in the Risk Team shared area so that trends can be monitored. Item checks may include but are not limited to:

- Active risks missing a cause, effect, or adequate justification

- Active risks with target resolution dates or expiry dates in the past
- Active risks missing a mitigation strategy or mitigation actions (if applicable)
- Active risks with review overdue or not reviewed in a timely manner
- New risks that have not been approved in a timely manner

Targeted audits on particular projects or areas may be conducted on an ad-hoc basis as directed by the Programme Office team (for example in the approach to a major change, major meeting or review, or following a transfer or change in the management structure for a particular project)

Risk maturity audits will be conducted by the Risk Team to assess the effectivity and maturity of the risk management process. Frequency and format of the audits will be agreed by the head of the Programme Office and Risk Manager.

6 Risk Reporting

A copy of the NLHPP Risk Register shall be taken and stored at the end of each monthly period, in line with the Project reporting cycle.

In addition to the Risk Register, the following outputs will be provided by the Risk Manager.

Output	Description	Prepared For
Monthly NLHPP Risk Dashboard	Key risk information and indicators designed to give an overview on the status of risk and changes from previous period	Monthly Programme Review
Monthly Cost Risk Exposure profile	Updated risk exposure profile apportioned over financial periods to inform the monthly project cost reports	Monthly Cost Update
Monthly Remaining Contingency profile	Updated contingency profile per project to inform the monthly project cost reports	Monthly Cost Update
Monthly Project Report	Project level risk data (Top risks and issues, risk exposure, contingency levels and overview of any trends or key movements)	Monthly Project Review
Programme Board Report	Textual summary of period highlights, mitigations, current focus and priorities, strategic risks and board decisions.	Programme Board
Periodic Members Report	Contain only key risk information and present monthly risk. Escalate risk of strategic importance.	Programme Committee & Authority Meetings

Table 4: List of Risk Reports

6.1 Risk Escalation

Risks and issues can be escalated for awareness, action or ownership change. Escalating risks for action should only be done as a last resort and when the escalating authority has exhausted all possible mitigations. Reasons and triggers for risk escalation are captured below.

Risks should be escalated for **awareness** in any of the following circumstances:

- a) A risk is starting to increase in severity and may become an issue
- b) Higher management visibility is considered prudent
- c) The risk has the potential to impact on multiple projects and/or dependencies
- d) There are commercial, or other wider, implications that need to be considered

Risks should be escalated for **action** if:

- a) Help is needed from outside of the project to respond to the risk
- b) Direction is required on how a risk/issue should be managed
- c) Disagreement over how to mitigate, or mitigation is not being actioned
- d) The cost of undertaking a proposed response is outside the scope of the project, or the risk exposure exceeds the project's risk contingency

Risks should be escalated for Ownership Change if:

- a) The risk is attributable to a higher-level objective and outside of the scope of the project's objectives or
- b) Management of the risk/issue is outside of the capability or authority of the project to manage
- c) The risks can be more cost-effectively managed at programme (or strategic) level

Figure 4 displays the flow of escalation and expected protocols to enable escalation of risk through each project level.

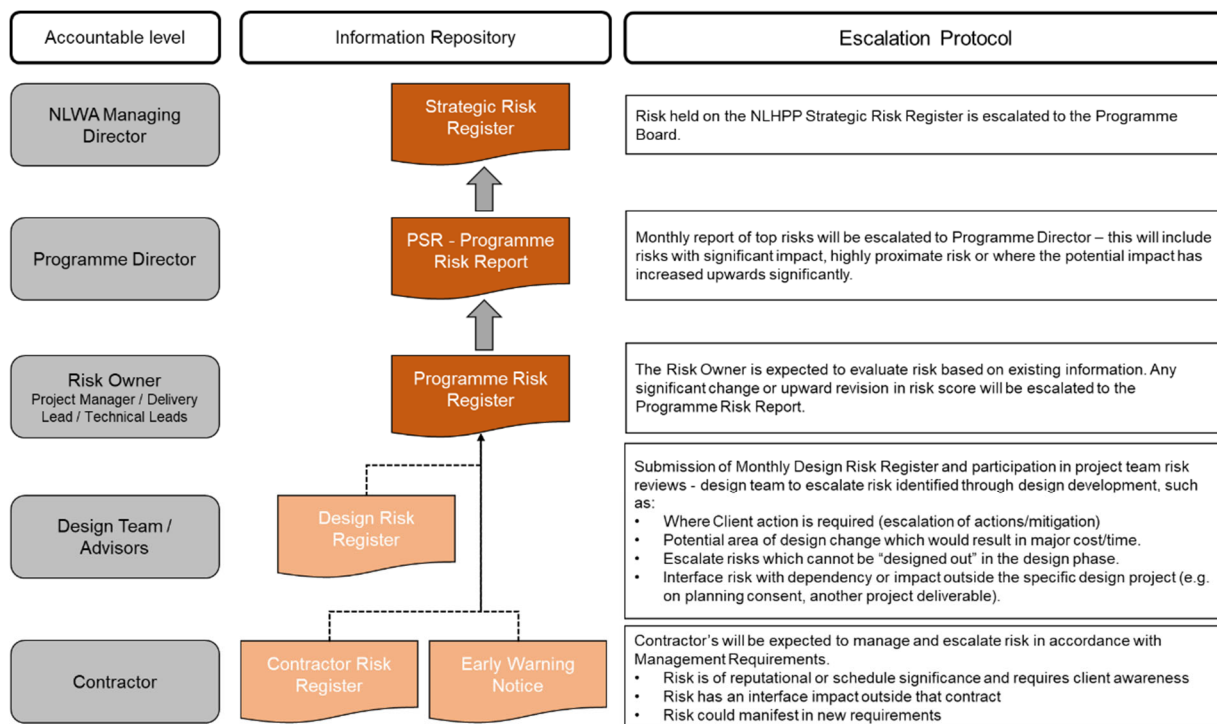


Figure 9 – NLHPP Risk Escalation Protocol

The escalation route must be the most immediate opportunity, such as via;

- Monthly Project Review
- Project Risk Review
- Informal or formal communication to expedite escalation
- Design / Technical meeting

For risks of strategic importance, a broader mitigation plan may be required with an issue report generated. This notes the direct cost of the risk, the cost of prolongation and the cost of mitigation along with an expanded version of the risk cause, effect, mitigation strategy and a detailed plan of action for containing the risk. This report is escalated to the Programme Board and Authority meetings if needed.

6.2 Contractor Risk Management and Reporting

Under NEC contracts, the Early Warning Process (EWN) will represent the primary method for escalation. An EWN is issued to the Client as soon as the contractor becomes aware of 'any matter' which could affect the total of the costs, impact completion or a key date or impact the performance 3rd party works. Under IChemE a similar practice is employed whereby Contractors are expected to notify the Project Manager of any risks as soon as possible. As per Figure 9, Early Warnings shall be allocated to the Project Risk Register where relevant.

6.3 Engineering Design Risk Management

Engineering Design Risk Management is described as the management of design related uncertainty. It is the responsibility of the designers and technical advisers to identify potential risks during engineering design development and determine adequate mitigation measures as improvements in the design and/or construction methodology to reduce risk to an acceptable level. The Designer is expected to escalate delivery risk to the Project Manager

for awareness and action. During design delivery, the Designer is expected to recognise mitigating actions within their control and deliver against these.

7 Change & Contingency Management

Contingency represents an agreed sum of money that will be allocated to a project to cover additional costs factoring the effects of risk and uncertainty on the project delivery.

The monitoring of risk will provide a quantified risk exposure which reflects the movement in risks from the baseline and could increase or decrease from the contingency value. When a new risk is added, the initial qualitative assessment and quantitative assessment will be kept in the Project Risk Register as a baseline to allow for monitoring of current risk against the initial inputs.

Figure 10 shows a typical risk exposure and contingency profile over successive reporting periods as a project progresses. The risk forecast will decrease as risks impact, expire or are mitigated. The contingency will reduce as drawdowns are made to transfer funds into the Performance Measurement Baseline to cover the cost of impacted risks and new mitigation actions.

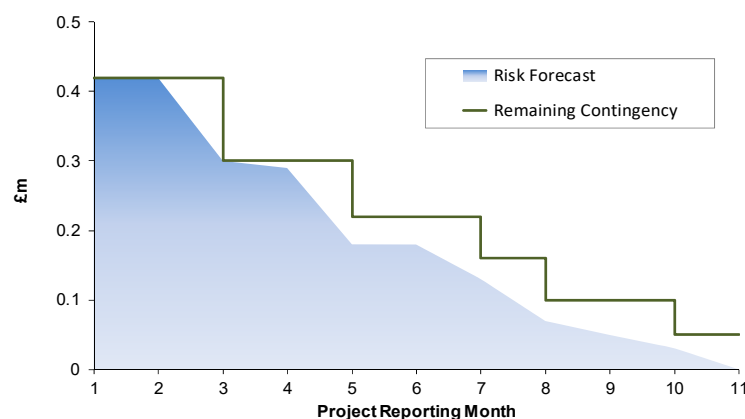


Figure 10 - Example risk forecast and contingency profile

As the risk exposure reduces, the risk contingency should be actively monitored against it. If there is a surplus contingency, return of the surplus to programme should be considered.

All changes to risk contingency are subject to change control and shall follow the Change Management Process.

The following guiding principles will apply while managing a project's contingency:

- Contingency can be legitimately used to fund mitigation actions (a mitigation not already in the project baseline scope) – it is better to spend a small amount minimising risks than to incur the full impact of the risk occurring.
- Contingency can be for new risks as well as existing risks if there is adequate risk contingency – if a risk has impacted on the business and the event could occur again, projects will need to raise a new risk to cover any potential residual impacts
- Risks need to be managed proactively so that the amount of contingency required on each project can be reduced as threats are successfully mitigated or reduced and opportunities are realised. The Monte-Carlo analysis used to calculate the contingency works on the principle that not all risks will impact and calculates an overall cost of impact for all risks, not individual risks.

- d) Project managers should regularly (at least quarterly) review opportunities to release contingency – if there's not a full justification for why contingency is needed, they must consider a reassessment of the risks.

In the event of a risk or proactive mitigation activity occurring that leads to a change in project scope, the change control process shall also be followed. The Risk Lead will be a recipient of the change process output routinely to ensure that new risks are identified when changes are implemented and that mitigating actions being completed are noted.

7.1 Reconciliation of Early Warnings and Compensation Events

Project risk reviews include a review of Early Warning Notices (EWNs), pending and approved Compensation Events (CEs).

New EWNs shall be added to the NLHPP risk register on a case by case basis. Risk entries are updated to cross-reference EWN ID(s). For EWNs with significant potential impact to programme, new risks should be raised, and the cost impact included in the updated risk exposure.

Before CEs are implemented an assessment of the risk contingency position against the risk forecast to understand the total exposure. Risk entries shall be updated to reference the CE ID.

The process outlined in Appendix B shall be followed to capture risk whilst avoiding duplication between the risk exposure and cost forecast profiles.

7.2 Change and risk impact or mitigation

In the event of a risk or proactive mitigation activity occurring that leads to a change in scope, the change control process shall be followed. The Risk Manager will be a recipient of the change process output routinely to ensure that new risks are identified when changes are implemented and that mitigating actions being completed are noted. Risk exposure shall be reassessed in parallel with the change to ensure forecasting is aligned.

Any new risk response plans which generate additional cost will need to be approved by the relevant budget owner. The response plans will be reviewed as part of monthly project risk reviews and budgetary approval gained via the Change Control Process.

In the event that the contractor submits a contract change proposal, the modelling and estimates for any associated provision for risk will, if required by NLHPP, be conducted on the same cost risk analysis tool and be open to NLHPP scrutiny.

8 Quantitative Risk Analysis

Quantitative Risk Analysis (QRA) is conducted on NLHPP to enable:

- Establishing the value of contingency required to underpin the overall baseline.
- Monitoring the risk forecast against risk contingency.
- Undertaking uncertainty modelling and derive probabilistic financial outcomes.
- Identifying the risk events that could cause the greatest positive or negative variation from the project baseline that may require further attention.

The quantification process will use estimates of actual costs, delays or other effects of a risk and the percentage probability of the risk occurring.

8.1 Quantitative Schedule Risk Analysis

The Quantitative Schedule Risk Analysis (QSRA) contributes to project development and delivery by:

- Supporting the development and evaluation of implementation options
- Supporting the development of a robust project schedule
- Estimating the probability of meeting key dates in a project schedule
- Additionally, QSRA should aid in schedule recovery plans and 'what if' scenario planning including resource constraints and requirements

Programme-wide Schedule Risk Analysis will be performed on a regular basis. This will be synchronised with leadership boards so that every other review is provided with a contemporaneous schedule risk analysis report.

Quantitative Schedule risk analysis will be conducted using Primavera Risk Analyser (Primavera P6 is also used as the NLHPP scheduling tool). The model used may include both NLHPP and contractor activities. The Risk Lead will develop and maintain the risk analysis schedule and author the analysis report.

8.2 Quantitative Cost Risk Analysis

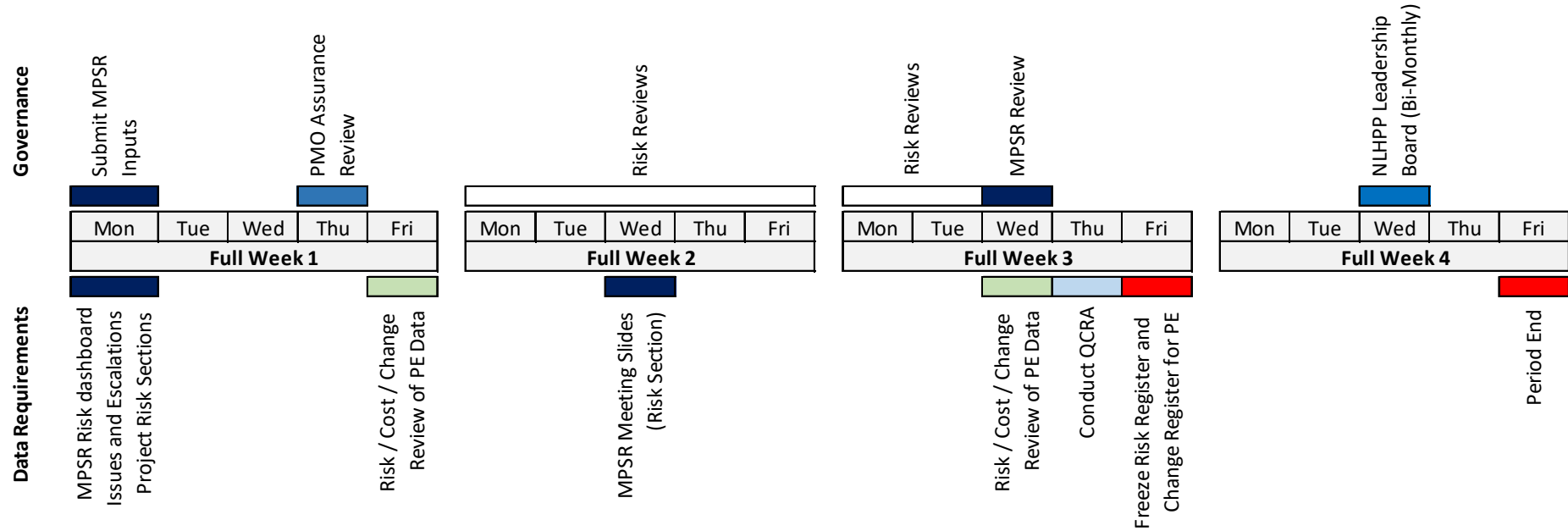
Quantitative Cost Risk Analysis (QCRA) contributes to project development and delivery by:

- Supporting cost risk estimating during contract negotiations to help inform target cost and the required project and programme-wide contingencies
- Quantifying a project's changing risk exposure profile as it progresses post contract-award. This activity forms part of periodic forecasting and supports the contingency drawdown and release processes.

QCRA will be conducted on the NLHPP risk register during each reporting period to inform the risk exposure, risk exposure profile and risk allocations, and to assist management of risk contingency.

Appendix A Monthly Risk Management Process

This is an indicative reporting cycle purely from a risk and issue management perspective



Where:

PE = Period Ending

MPSR = Monthly Project Status Report

Appendix B Risk Process for Early Warning Notices and Compensation Events

The following table depicts how to handle and account for Early Warning Notices (EWNs) and Compensation Events (CEs) in the NLHPP Risk Register and the cost forecast.

CLAIM	RISK	COST
Early Warning Notice	Risk assessed based on EWN impact, and cost impact added to risk exposure	No action needed; accounted for in risk exposure
Pending Compensation Event (Previously raised in risk register)	CE reviewed for residual cost impact (above what is included in cost forecast)	CE cost is added to cost forecast
Pending Compensation Event (Not raised in risk register)	CE reviewed for residual cost impact (above what is included in cost forecast); Where applicable, new risk added to cover residual cost impact	CE cost is added to cost forecast
Approved Compensation Event	Risk reassessed or closed out Where applicable, risk exposure changes	Cost baseline changes

Assumptions for this process are as follows:

- All EWNs are raised and discussed during the risk management review (with proactive PM participation). This results in some EWNs being incorporated into the risk register and others discounted as having no project impact
- There is an associated EWN for each CE
- CEs which do not have a reconcilable risk are considered to be previously discounted EWNs

Appendix C Risk Review Terms of Reference

The following terms of reference are purely from a risk and issue management perspective, please refer to the references section for wider Programme Office terms of reference and drumbeat.

Occurrence	Purpose	Inputs	Standing Agenda	Outputs	Attendees
Workshops to identify threats, issues, opportunities and/or mitigation strategies					
As needed. Align to project delivery phases, key milestones or events.	To support risk identification, deep dives on particular risks or themes or to support key reviews, decision points, options or changes.	<ul style="list-style-type: none"> • Risk Register • Assumptions and dependencies • Programme/Project Schedule • Scope baseline • Project Documents • LFE register • Business Case • Commercial Strategy 	Agenda to be confirmed prior to workshop.	Dependent on standing agenda. This may include <ul style="list-style-type: none"> • Candidate risks for maturing • Mitigation plans • Assigned responsibilities 	Permanent Attendees: <ul style="list-style-type: none"> • Project Manager and Project Team or Senior Leadership Team • Risk Lead • SME/technical experts Optional Attendees: <ul style="list-style-type: none"> • Head of PMO • Representatives from Schedule and Cost team
1-2-1 Risk Reviews					
Monthly	To review project/programme risks, take decisions on the status of risks and provide validation of the risk register.	<ul style="list-style-type: none"> • Updated Risk Register • Candidate risks for approval • Risk analysis (qualitative and quantitative) • Updated Assumptions 	<ol style="list-style-type: none"> 1. Review of Actions 2. Candidate risks 3. Risks for closure/transfer 4. Record type changes 5. Review of existing risks/issues/opportunities 6. Risks for Escalation 7. Update of Risk management activities 8. AOB 	<ul style="list-style-type: none"> • Validated Risk register • Live-Active risks for escalation • Top 5 risks • Record of Actions and Decisions 	Permanent Attendees: <ul style="list-style-type: none"> • Risk Manager • Risk Response Owners • Project Lead • Risk Owner Optional Attendees: <ul style="list-style-type: none"> • Project Controls Officer • Project Lead

Occurrence	Purpose	Inputs	Standing Agenda	Outputs	Attendees
Project Risk Reviews					
Monthly	To review, capture and update project risks and issues, define or quantify new risks, approve changes in risk status. To plan mitigations that will effectively manage the projects exposure to risk.	<ul style="list-style-type: none"> NLHPP Risk Register Assumptions and Dependencies Project Schedule Contractor Early Warning register Open actions from previous meeting 	<ol style="list-style-type: none"> Review of project risks and issues Review/draft new risks Review of EWNs and CEs Top risks and issues for project reporting Items for Escalation AOB 	<ul style="list-style-type: none"> Updated NLHPP risk and issues registers Items to be escalated Record of actions and decisions List of top risks and issues 	Permanent Attendees: <ul style="list-style-type: none"> Risk Manager Project Scheduler Project Cost Manager Project Manager Optional Attendees: <ul style="list-style-type: none"> Risk Owners
Programme Risk Reviews					
Bi-Monthly Supported by regular 121 reviews with risk owners	To review NLHPP programme level risks with leadership team, to monitor emerging risks, assess risk performance, and take decisions on the status of risks and issues.	<ul style="list-style-type: none"> NLHPP Risk Register NLHPP Issue Register Proposed escalations from projects Dashboard of significant risks by project Open actions from previous meeting 	<ol style="list-style-type: none"> Review of programme risks and issues Review new risks Approve/reject escalations from projects Progress against mitigations AOB 	<ul style="list-style-type: none"> Updated NLHPP risk and issues registers Record of Actions and Decisions 	Permanent Attendees: <ul style="list-style-type: none"> NLHPP Leadership Team Risk Lead Representatives from Cost and Schedule team Optional Attendees: <ul style="list-style-type: none"> Representatives from LEL
Leadership Board					
Quarterly	SRO scrutiny of NLHPP Programme. To review strategic and external programme risks or issues. Forward look at emergent risks, trends and themes	<ul style="list-style-type: none"> Summary of NLHPP programme-wide risks and issues Programme risk profile (PESTLE) Programme risk and issue report including escalated items 	<ol style="list-style-type: none"> Review of Actions Top 5 Risks Risks for Escalation AOB 	<ul style="list-style-type: none"> Record of Actions and Decisions Leadership Board report, additional meetings, and post-meeting clarifications 	Permanent Attendees: <ul style="list-style-type: none"> NLWA Managing Director Programme Director Senior Leadership Team PMO Risk Risk Lead

Occurrence	Purpose	Inputs	Standing Agenda	Outputs	Attendees
Joint Risk Review					
As needed (bi-monthly or quarterly)	To review existing shared risks and outputs of most recent schedule risk analysis (QSRA). To review shared mitigations. To compare risk registers, potential gaps, or new risks.	<ul style="list-style-type: none"> • Extract of NLHPP Risk Register • Assumptions and Dependencies • Project Schedule • Contractor Early Warning register • Contractor risk report with summary of top risks and actions progressed • Schedule risk analysis report (as applicable) 	<ol style="list-style-type: none"> 1. Review of project joint risks 2. Review of issues 3. Review of actions and decisions 4. Agreement on allocation of any new risks 5. mitigation actions / decisions to be taken 6. Review of schedule risk analysis 7. AOB 	<ul style="list-style-type: none"> • Agreement of risk allocations and mitigation actions • Highlight report of key risk items, actions, and decisions • Further actions or refinements to QSRA model or report 	<p>Permanent Attendees:</p> <ul style="list-style-type: none"> • Risk Manager • Project Scheduler • Project Cost Manager • Project Manager • Contractor Project Manager • Contractor Risk Manager • Contractor Commercial Representatives <p>Optional Attendees:</p> <ul style="list-style-type: none"> • Project Team • Commercial Representatives