



Training Course for Railway Executives from South and South Asian Countries

Risk Management in Public Private Partnerships

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Understanding Risks

- A risk is any factor, event or influence that could threaten the successful completion of a project in terms of time, costs, quality or financial returns
- Every project is exposed to a variety of risks – commercial and non-commercial risks
- The private sector is perhaps better qualified to manage most of the commercial risks
- PPP involves sharing of risks – risk being allocated to the party best suited to manage them

Risk Management

.... goes beyond risk planning...

Risk management includes:

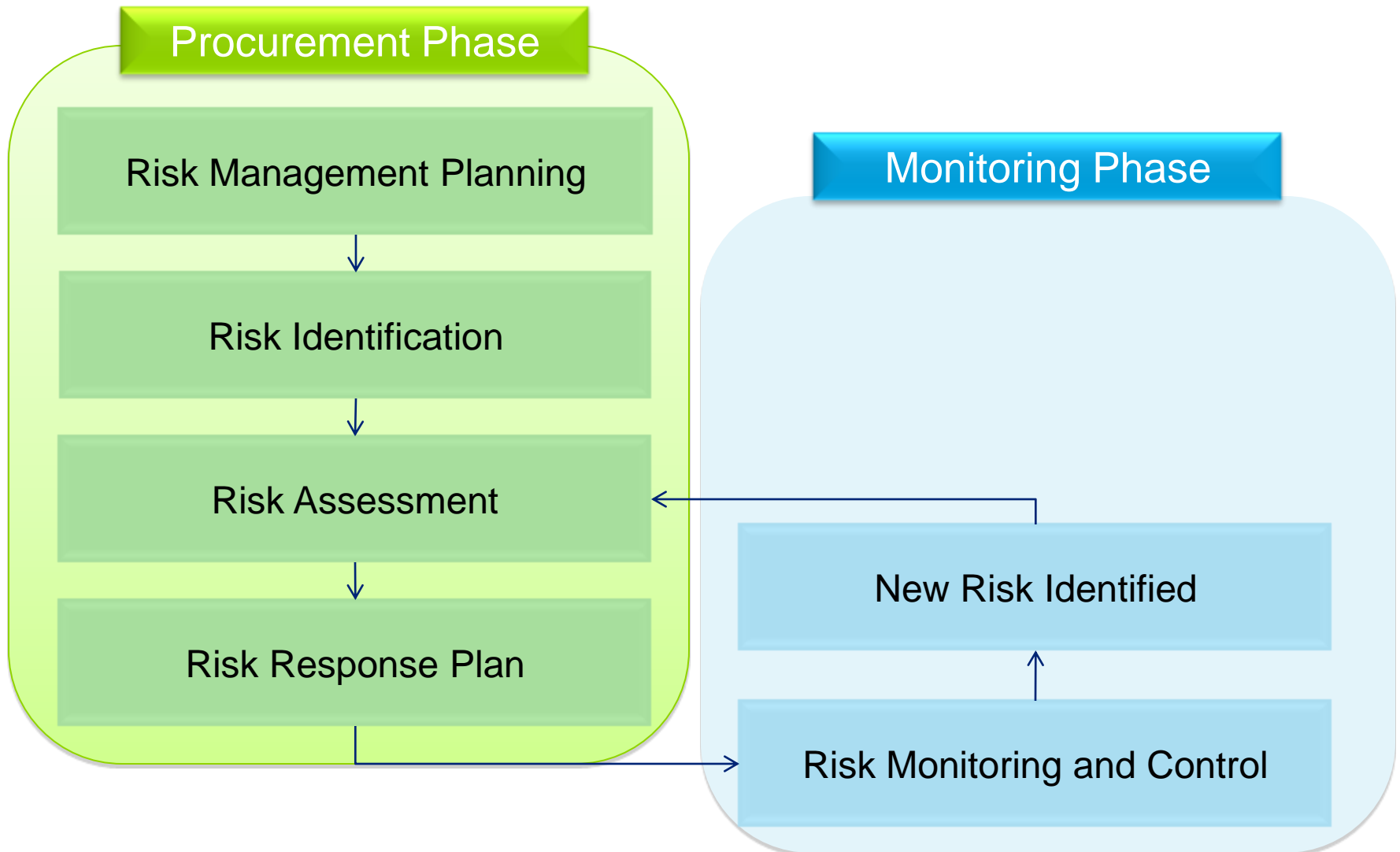
- Identifying project & contractual risks
- Developing risk management/mitigation mechanisms
- Incorporating them into a risk management plan
- Efficiently executing the risk management plan
- Continuous monitoring of plan to ensure effectiveness
- Updating plans with new risk variables

To ensure that the value for money outcome expected in the initial contractual allocation of project risks is not compromised and risk is managed over the life of the contract, the government party must devote adequate resources to contract management activities.

Source: Contract Management Guide,
Partnerships Victoria

Risk Management

... covers the entire project lifecycle



Risk Assessment

Why Relevant?

Infrastructure is risky business

- So that identified risks can be valued and priced in
- To ensure more accurate, risk adjusted assumptions in the financial and economic analysis
- Which would ensure more reliable estimates of value for money from the PPP
- And to allocate risks in the best possible manner to the party most qualified to handle them

Risk analysis is often inadequate in PPP projects

When is it done?

At least three times over the project life cycle

- By the government agency developing the project
- By bidders – main subject of discussions at the pre-bid meeting
- By lenders and financial investors
- Thereafter it is an ongoing and coordinated effort by the parties to the Concession Agreement

Comprehensive analysis upfront gives confidence to investors

Key Project Risks

Early Stage Risks

Completion Risks

Operating Risks

Demand/ Revenue/ Market Risks

Environmental & Social Risks

Force Majeure Risks & Governmental Action

Early Stage Risks

Completion Risks

Operating Risks

Market Risks

Other Risks

Force Majeure

- ❖ **DEVELOPMENTAL RISKS** can be largely addressed through comprehensive and credible project preparation studies
- ❖ **SPONSOR RISKS** are addressed through the qualification process – ensuring that capable and competent bidders alone participate in the bidding process
- ❖ **COUNTER-PARTY RISKS**
 - ❖ Where government is the purchaser of services - need to evaluate its ability to make payments throughout the concession period or whether mechanisms such as a dedicated fund or ring fencing arrangements need to be made
 - ❖ Where government agrees to supply key inputs (MSW for instance) of a minimum standard and in minimum quantity – need to evaluate its ability to do so sustainably - If not what other comforts can be provided to the private partner
 - ❖ Where third parties are involved – for instance fuel supply arrangements in a power project – what kind of guarantees would be needed to ensure continuous operation of the facility

Early Stage
Risks

**Completion
Risks**

Operating
Risks

Market
Risks

Other
Risks

Force
Majeure

COMPLETION RISKS

NATURE

1. Ability to commence the project within the budgeted time
2. Ability to complete project within the budgeted costs
3. Adherence of the project assets to the specifications (including the quality standards)
4. Completion risks can delay the project & increase project cost very significantly

KEY COMPONENTS

- ❖ Delays in site being made available
- ❖ Delays in supporting infrastructure
- ❖ Delays in approvals
- ❖ Design & engineering risk
- ❖ Geo-technical risk – uncertain ground conditions
- ❖ Construction technology
- ❖ Availability of construction materials
- ❖ Contractor's delays and failures



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COMPLETION RISKS – MITIGATION MEASURES

- ❖ Assurances from GA regarding delivery of land – either 100% or the bulk of it, with suitable penalties and comforts in the event of non-compliance
- ❖ Other assurances – environmental clearance, statutory approvals, any other support infrastructure or activity (dredging of channel for instance in a port project) – with suitable comforts in the event of non-compliance
- ❖ Evaluate DPR – supply of key construction inputs – material, equipment and manpower in the vicinity of the project sites and costs of these inputs



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COMPLETION RISKS – MITIGATION MEASURES

- ❖ Evaluate need for various components and specifications – extent of civil construction, access points, grade separators, drainage etc.
- ❖ Completion Certificate by Independent Engineer – only after verification that project assets created are as specified and of desired quality
- ❖ Other construction – in a railway over bridge – portion over rails – done by Railways or private partner
- ❖ Incentive structure in the contract – bonuses, penalties and liquidated damages



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COMPLETION RISKS – HOW TO ENSURE PRICE REASONABLENESS

- ❖ Estimate for 4-laning NHAI projects ~ Rs 4 crore per km (in 1998-99)
- ❖ Past BOT projects (average 2006 prices) works out to Rs 5.30 crores/ km; recent projects - per km cost range of Rs 7 crores to Rs 10 crores
- ❖ The per km rate may vary from project to project primarily due to difference in the following:
 - ❖ Civil construction - No. of RoBs, major & minor bridges, fly-overs, culverts
 - ❖ Distance between project site and source of aggregates
 - ❖ Kind of terrain – rolling / flat
 - ❖ Difference in specifications (NHs vs SHs)
 - ❖ Ground condition at project site
 - ❖ Escalation in cost of inputs assumed
 - ❖ Profit margins of contractors

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COMPLETION RISKS – HOW TO ENSURE PRICE REASONABLENESS

There has been considerable difference even in the per km cost as estimated by NHAI and by private bidders. For the same project, the EPC Cost assumption may vary between two private contractors

Project	Length (km)	Final EPC Cost		NHAI Estimate of Cost		Yr of Cont	*Cost/Km In 2006
		Total	Cost / Km	Total	Cost / Km		
Tuni-Anakapalli	59.0	234	3.97	342	5.80	2002	4.73
Tambaram-Tindivanam	73.5	315	4.29	441	6.00	2002	5.11
Panagarh-Palsit	64.4	408	6.34	407	6.32	2002	7.56
Durgapur Expressway	64.0	323	5.05	524	8.19	2002	6.02
Rajahmundry-Dharmavaram	53.0	219	4.13	251	4.74	2002	4.93
Dharmavaram-Tuni	47.0	212	4.51	281	5.98	2002	5.38
Belgaum-Maharashtra Border	77.0			390	5.06	2002	
Bangalore Maddur	62.6	215	3.43			2004	3.74
Vadape Gonde	99	650	6.57			2006	6.57
Ahmedabad - Mahesana	52.0	224	4.31			2000	5.61
Vadodara-Halol	32.0	119	3.72			1999	5.06
Tumkur-Nelamangala	32.5	132	4.06	194	5.97	2001	5.06

* Considering 5% inflation to bring it to 2006 prices

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OPERATING RISKS – NATURE OF RISKS

- ❖ Technology
 - ❖ Ability to operate at desired performance level
 - ❖ Risk of obsolescence
- ❖ Nature and Costs of Operations – Capacity (road capacity for instance and level of service) and costs of operations
- ❖ Nature and Costs of Maintenance – regular, periodical, planned shutdowns



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OPERATING RISKS – MITIGATION MEASURES

- ❖ Proven technology/ transfer of technology
- ❖ Systems and procedures for O&M – procedures/ manuals
- ❖ Performance guarantees/ AMC from technology provider
- ❖ Sinking Fund/ Maintenance reserve creation
- ❖ Credible Technical studies by good consultants
- ❖ Project monitoring – site visits and performance reviews



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DEMAND/REVENUE/MARKET RISKS – NATURE OF RISKS

- ❖ MARKET RISK
- ❖ Traffic risk – uncertainty in forecasting, price/ demand elasticities
- ❖ Demand risk - Insufficient demand for products/ services
- ❖ Industry risk – changing structure, obsolescence/ competing facility
- ❖ PRICE RISK
- ❖ Resistance of Users to pay
- ❖ Regulatory & political control over pricing
- ❖ Delays in revisions/ inadequate revision

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DEMAND/REVENUE/MARKET RISKS – MITIGATION MEASURES

- ❖ Firm throughput/ Long term off-take contracts
- ❖ Cost competitiveness of the input raw material & of the end product
- ❖ Studies by experts:
 - ❖ Traffic Studies
 - ❖ Willingness to Pay surveys, toll payment history
 - ❖ Present count at tolling booth location
- ❖ Contractual frameworks – Liquidated Damages for short/ interrupted supply
- ❖ Sensitivity analysis

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DEMAND/REVENUE/MARKET RISKS – FACTORS AFFECTING TRAFFIC

- ❖ Historical data
- ❖ Independent variables & Elasticities
- ❖ Current traffic
 - Timing , duration
 - Traffic mix
 - Through traffic V/s Local traffic
 - Proposed restrictions
 - Assignment of traffic
- ❖ Other items impacting traffic
 - Competing routes (present and future)
 - Leakages
 - Capacity augmentation
 - Capacity reduction (Slow Moving Vehicles)

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DEMAND/REVENUE/MARKET RISKS – BOT PROJECTS PAST TRAFFIC HISTORY

	No. of years	Cars	LCV	Trucks	MAV	PCUs
Project in NW India	3	23.20%	16.97%	-5.61%	12.35%	5.2%
Project in W India	5	16.4%	5.5%	3.0%		4.0%
State Project in W India	5	6.74%	0.15%	5.9%		5.8%
Bypass Project in W India	5	3.6%		8.1%	27.5%	9.6%
Project in W India	5	0.3%		-17.8%	7.5%	2.0%
Project in Central India	5	-0.75%		-10.4%	22.85%	-2.70%
Project in N India	First year's opening traffic 75% below projections					
State Project in W India	First year's opening traffic 50% below projections					

* Only those project included which have an operating history of ≥ 3 years

* Greenfield projects excluded as they can throw up a misleading picture



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DEMAND/REVENUE/MARKET RISKS – FACTORS CAUSING PRICE RISKS

- ❖ Non-payment risk
 - ❖ Initial Toll levels, willingness-to-pay
 - ❖ Commitment of large users
 - ❖ Local Vs Long distance traffic
- ❖ Toll revision (fixed/ indexed)
- ❖ Delay in toll notification
- ❖ Reduction in toll by Govt
- ❖ Exemption to certain users by Govt

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OTHER RISKS – FINANCIAL RISKS

The risks that matter most are – completion (within budgeted costs and time), revenue risks (demand/ traffic and tariff risks) and O&M risks. If these are comprehensively evaluated and addressed, the rest would follow

FINANCIAL RISKS

In terms of the concession agreement – financing documents are required to be submitted to the Concessioning Authority (CA). We need to broadly review whether:

- ❖ The financing plan is robust enough to withstand the impact of adverse factors
- ❖ The project is subject to interest rate, liquidity (tenor of borrowing) or currency risks
- ❖ This could prepare us for any crisis situation in the future



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OTHER RISKS – ENVIRONMENTAL AND SOCIAL RISKS

ENVIRONMENTAL AND SOCIAL RISKS

Usually are identified in an EIA/ SIA study done as part of project preparation. Since the bulk of the risk is absorbed by the CA it is important to ensure that:

- ❖ The project is insulated from the risks of land acquisition, environmental advocacy and social issues – R&R issues, compensation claims etc – so that implementation is not hampered
- ❖ Public consultations are duly held – issues such as access in road projects are dealt with early in the development cycle



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RESIDUAL RISKS

- ❖ Force Majeure Risks (action not within the control of either of the contracting parties, risk of governmental action such as early determination, expropriation or change in law and regulatory regime change risks are suitably addressed through provisions in the concession agreement)
- ❖ It is important to remember that the remedy for commercially insurable risks would need to be insurance taken by the SPV
- ❖ The affected party would have to show that the event has had a “materially adverse impact” on its ability to perform its obligations under the contract
- ❖ Any excuse from performance may last only till such time this ability is impaired

Risk Allocation in the Concession Agreement

Concession Agreement and Risk Mitigation

Reflecting the Risk Allocation in a Concession Agreement

- The risk allocation framework is set out/ documented in the Concession agreement - the contractual provisions are critical
- Concession agreements should be structured and managed so as to lessen the scope for a government agency to unintentionally take back risks for which it paid a risk premium to allocate the risk to the private party.
- PPP Tendering process reflects/attempts to develop a continuing risk mitigation strategy through the RFQ, RFP, and the Concession Agreement
 - e.g. While the financial risk is partly mitigated through examination of the credit worthiness of the bidders during the RfQ/RfP stage, in the contract this will be further mitigated through appropriate clauses such as substitution rights.

Contracts should accurately reflect Risk Allocation

Concession Agreement and Risk Mitigation

Reflecting the Risk Allocation in a Concession Agreement

- Risk Allocation, to be effective, should be suitably dovetailed in the service obligations, payment mechanism and the project agreements.
 - **Service Obligations:** Specifications should be drafted to clearly reflect government's output requirements, while minimising any prescription as to how the service is to be delivered or the asset maintained.
 - **Payment mechanism:** should be designed in a way that will appropriately incentivise performance by private party
 - **Other Important Agreements:** Risk allocation and mitigation is managed through a complex contractual structure. Parties will enter into various other agreements to mitigate or reallocate the risks they assume (e.g. construction contract, O&M contract, off-take agreements etc.)

Risk Allocation agreed by the parties will be reflected in their mutual rights and obligations as set forth in the concession agreement

Concession Agreement and Risk Mitigation

Contractual clauses addressing various risks

- **Design, construction and commissioning risk:**
 - Proper specification of project outputs to be delivered
 - Review of designs
 - Commissioning tests, preferably through an independent party
 - Linking contracted services to key performance indicators and, in turn, to the payment mechanism

- **Sponsor risk:**
 - Performance Guarantee
 - Change in ownership provisions
 - Step in rights to Government

Concession Agreement and Risk Mitigation

Contractual clauses addressing various risks

- **Financial risk:**

- Financial Close
- Escrow Mechanism
- Substitution rights
- Step in rights to government
- Termination Payments

- **Operating risk:**

- Well defined service standards with clear outputs which can be objectively identified and measured
- Linking contracted services to key performance indicators and, in turn, to the payment mechanism
- Address future service delivery demands
- Inbuilt options for upgrading technology as the contract term proceeds
- Escrow mechanism that prioritises project cash flows to meet O&M requirements

Concession Agreement and Risk Mitigation

Contractual clauses addressing various risks

- **Market risk:**
 - Dealing with competition (clause regarding competing facilities)
 - Provisions for variations in demand (e.g. variations in traffic)
 - Provisions for price/ tariff indexation
- **Force Majeure risk:**
 - Minimizing the consequences through appropriate insurance
 - Performance obligations during the occurrence of FM event
 - Ensure that FM events do not include events that may be prevented, overcome or remedied so as to ensure vigilance on the part of the private party to prevent a risk event before it occurs

Ongoing Risk Management

Service Delivery Monitoring

What is it?

- Service Delivery Monitoring broadly involves:
 - Ensuring that contractually agreed services are delivered as per specified quality
 - Cost associated with service delivery is in line with expectations
- Assessment of both quantitative and subjective parameters is the key to efficient Service Delivery Monitoring

Service Delivery Monitoring

It ensures achievement of defined performance standards

Service Delivery Monitoring focuses on two areas:

Performance Management

of private party in terms of efficient service delivery that provides expected value to the contracting authority

Risk Management

by managing and controlling risk exposure of the project

Risk Management

Developing a risk management plan

For key Institutional Risks

- Evaluate different options for treating the risk
- Identify who will be responsible for managing the risk
- Establish procedures and mechanisms to control the risk
- Estimate resource required to manage the risk.

For key Private Party Risks

- Identify obligations and reporting requirements
- Assess resource that institution devotes to monitoring the risk
- Establish mechanisms to be used by institution to deal with failure of the private party to manage the risk, namely penalty deductions, step-in, etc.
- Develop & document business contingency plan to ensure continued service delivery.

Risk Management

Contents of a Risk Management Plan

Risk Management Plan

The Risk Management Plan shall include the following information:

- (a) approach to identifying, recording, monitoring, mitigating, controlling and assessing risks;
- (b) proposals for implementing the risk management strategy notified pursuant to paragraph (a) above;
- (c) details of the risk analysis undertaken in preparation of the Risk Register; and
- (d) appropriate cross-references to those parts of the safety arrangements addressing risk management and the activities of the Risk Management Committee undertaken pursuant to the Risk Management and Insurance Code.

Risk Management

Risk Monitoring

- Risks are dynamic and risk monitoring would take place throughout the project lifecycle
- Efficiency of risk monitoring and updating would depend on how the following questions are answered
 - Are the identified risks being systematically tracked?
 - Is there timely reporting of new risks that are likely to arise ?
 - Is there a system to document lessons for future risk assessment and allocation?
- To ensure an efficient Risk Monitoring the following should be detailed and implemented
 - Comprehensive reporting procedures
 - Effective monitoring and reporting of existing and new risk
 - Feedback Mechanisms on analysis and mitigation

Risk Management

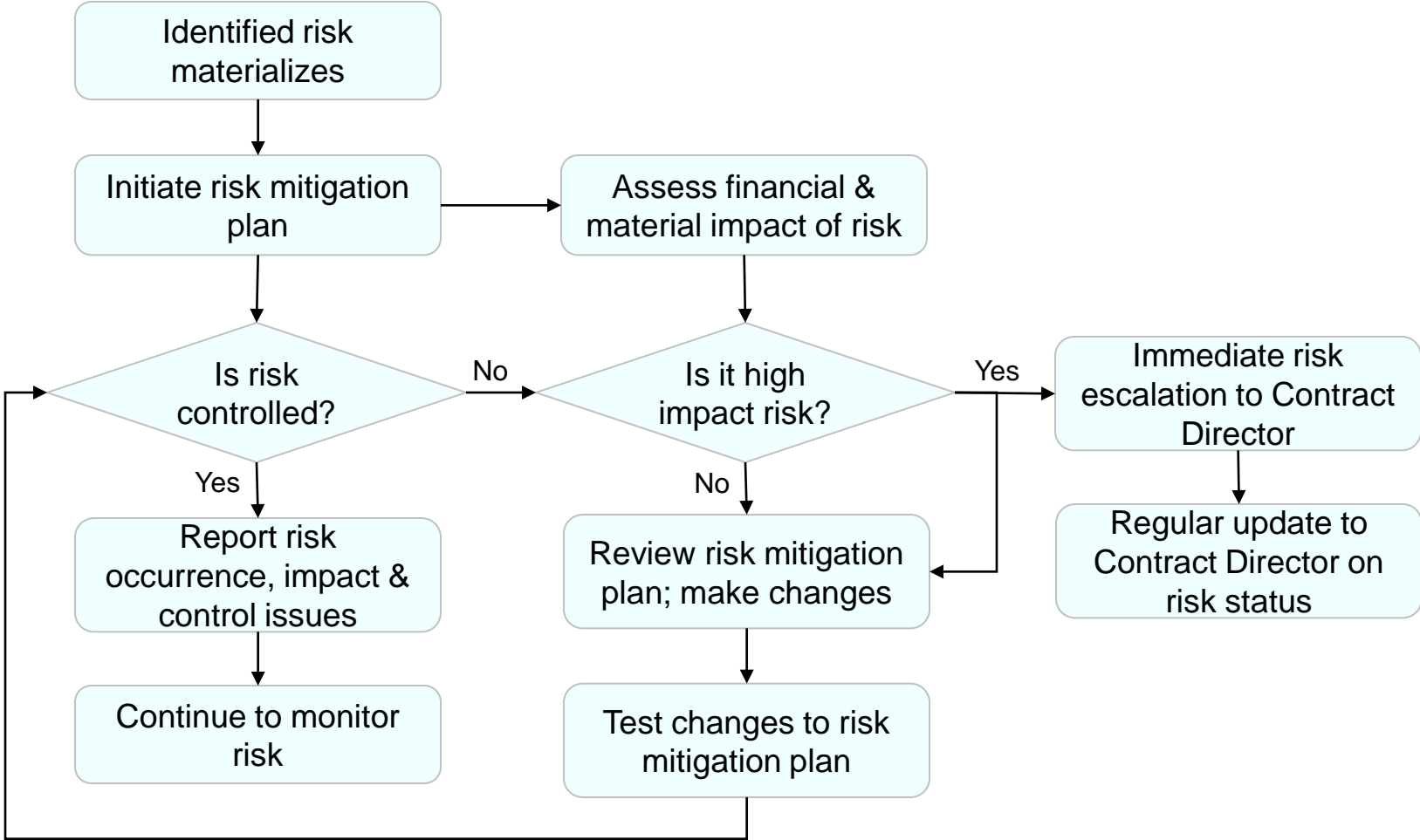
Risk monitoring & risk register updates

- Risks being monitored are documented in the risk register which is continuously updated with the status of risk throughout the project lifecycle.
- Template of a risk register

Risk No.	Date of Registrn.	Description of Risk	Impact			Probabi lity	Possible Response	Target Date for Action	Owner	Action
			Time	Cost	Qty					
Sno. 13	18/03/09	Public resistance to toll increases	Project delay by 6 months,	cost escalation of 4%		High	Stakeholder communication meeting	28/03/09	Contract Mgr	Pending
Sno. 23	21/04/09	Asset transfer issues	Project delay not quantifiable,	significant cost overrun		Medium	Mediation between disputing parties	20/05/09	Contract Direct	Preliminary discussions undertaken
Sno. 25	23/04/09	Incorrect time & cost estimates	Project delay limited,	cost impact 2% capex		Medium	Discussion with pvt party for remedial action	25/04/09	Contract Mgr/ Proj Mgr Pvt Party	Initiated

Risk Management

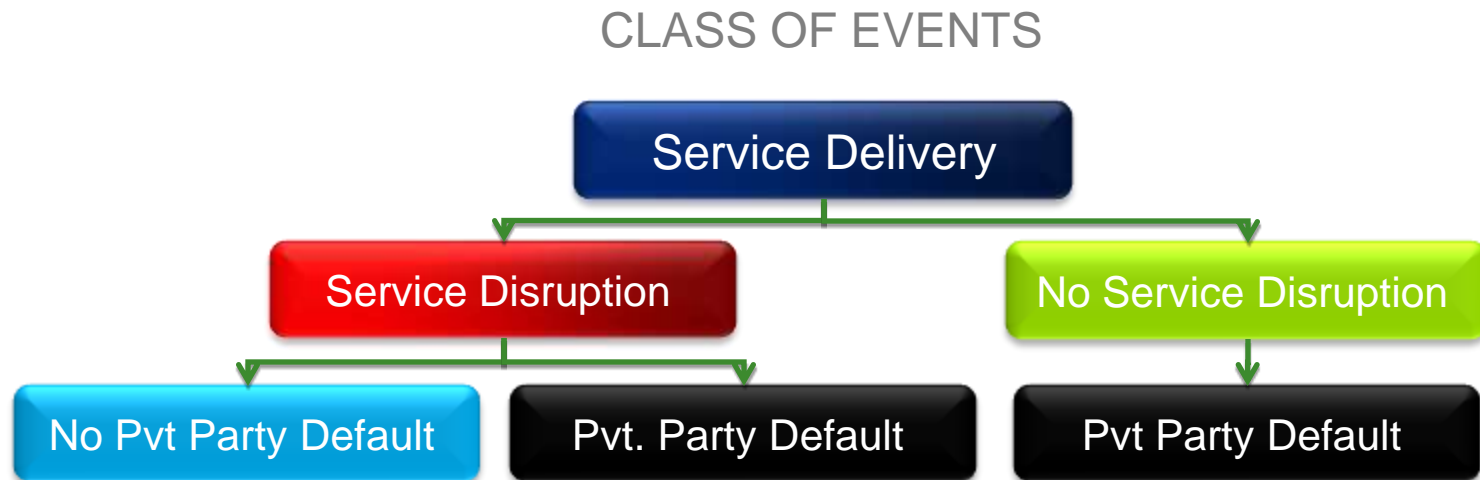
Risk Monitoring & Escalation



Preparing for Contingencies

Contingency Planning

Events that could be categorised as contingencies include



3 TYPES OF CONTINGENCY PLANS

Business
Continuity Plan

Step In
Plan

Default
Plan

Contingency Management

The Glasgow Airport Experience

Glasgow Airport

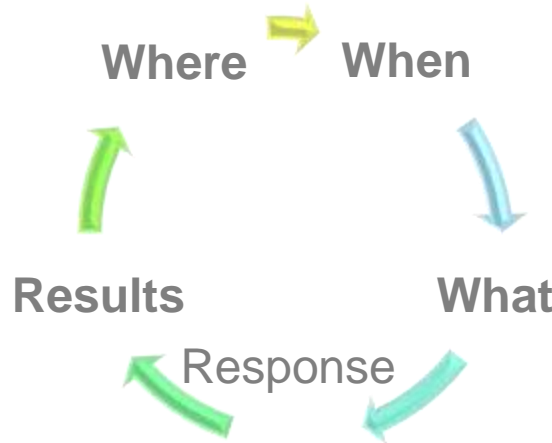
- Owned and operated by BAA Ltd.
- Handled over 8.8 million passengers a year;

On 30 June 2007

The second busiest day of the year due to the school holidays commencing the previous day

Airport is back in action

- Perpetrators arrested
- Fire brought under control
- Area cordoned off.
- Limited operations restored in remaining area
- Airport's Media Relations Team handled Media queries over 800 calls in the first 24 hours
- Main terminal building reopened within 24 hours after the incident started.



Became the target for **a car bomb attack**, which propelled the airport into the glare of the world's media and created severe business continuity issues for the airport.

Emergency plans activated

- The airport's integrated emergency plans kicked in
- 2 teams took over :
 - Crisis Management Team to look after tactical command & Business Recovery Team to look after the strategic command
- Response time:
 - The crisis team was initiated & operational within 45 minutes
 - Business recovery team operational an hour later.

Contingency Management

The Glasgow Airport Experience

2/3

Aftermath of the attack
on 30 June 2007



Gate is fully operational
on 27 July 2007



Thank you for your kind attention

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