



Risk Management

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Risk Manager – tie limited

22 September 2005

What Goes Wrong?

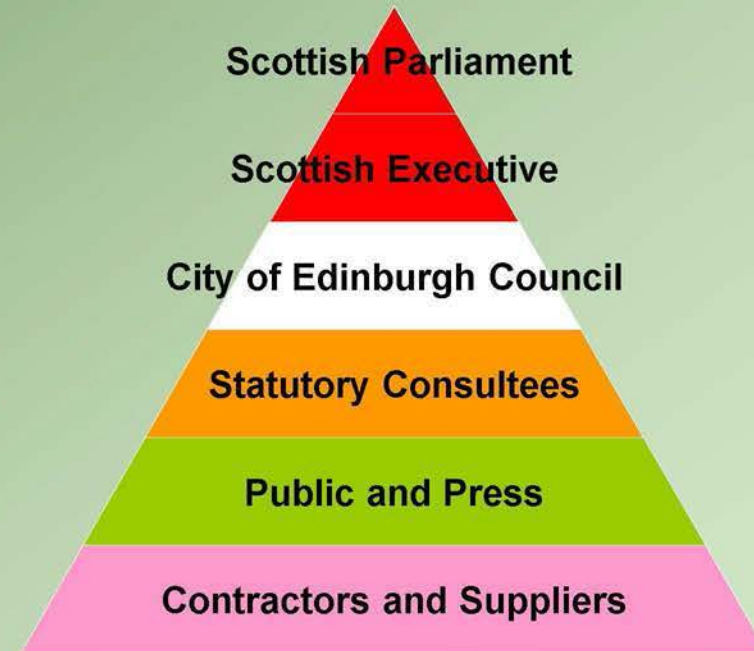
- Inherent attractiveness as a "superior" commodity
- Competitors' responses
- Demographic changes
- Land use changes
- Marginal travel corridor selected
- Yield (revenue per passenger)



▶ Assume makes ass out of u and me...

Stakeholder Management

- **First Tram Private Bill before Holyrood – now detail...**
- **Investment to develop Economic and Financial Case**
- **Quality Standards defined in Scheme Design Manual**
- **In-house and External PR team**



► **Ensuring effective consultation**

What needs improved?

- Integration with other modes
- Standardisation
- Route optimisation and highway priority
- Identify the most cost-effective procurement methods
- Enhancing with schemes such as Park and Ride
- Seek ways of improving revenue collection methods



Risk Management Policy

- Two Page Document
 - Detailing in brief the procedures to be implemented
- Supported by Risk Management Plan
- Effective Risk Management involves everyone
- outlines what is expected from employees
 - Positively encouraged to raise concerns
 - Committed to identifying all key project risks

Risk Management Plan

- Developed in July 2003 - identified areas of system development
- Updated in June 2004 – meeting industry best practice e.g. OGC
- **Aim** – to define our risk management systems
- **Coverage** – all tie portfolio
- Identifies **tie Objectives**
 - Schemes are delivered within budget and on time;
 - A culture of risk awareness (not risk averse) and management is created;
 - All identified risks passed to the best parties capable of managing the risk;
 - All identified risks mitigated to a 'medium' significance or less;
 - Schemes are supported by all key stakeholders; and
 - Schemes provide a fully functioning operational service.

Risk Management Plan

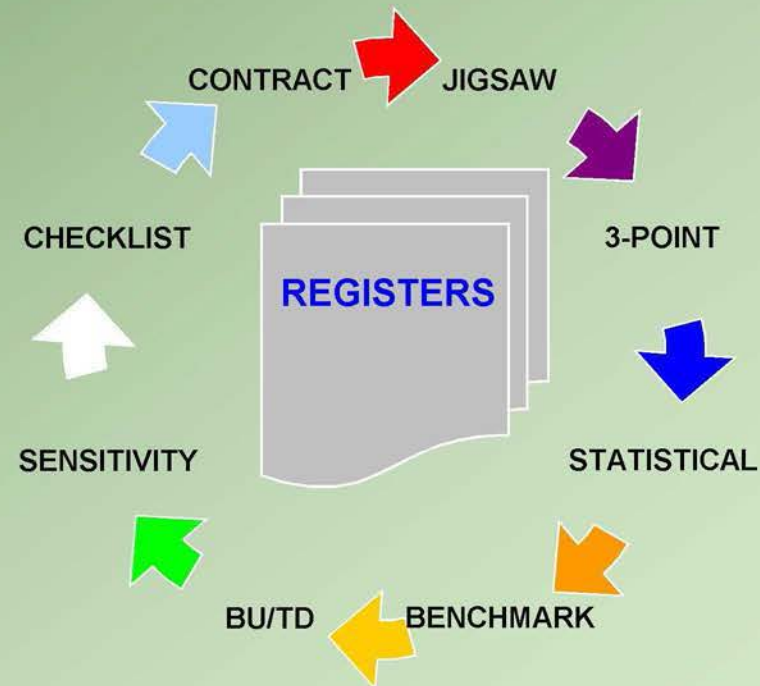
- Plan Outlines
 - Project Portfolio
 - RM Overview
 - What is Planned
 - Risk Custodians
 - Key Deliverables
 - Recommendations

Risk Management Plan

- Risk Procedures
 - Assessment
 - Objectives
 - Classification
 - Responsibilities
 - Handling
 - Transfer
 - Categorisation

How we handle risk?

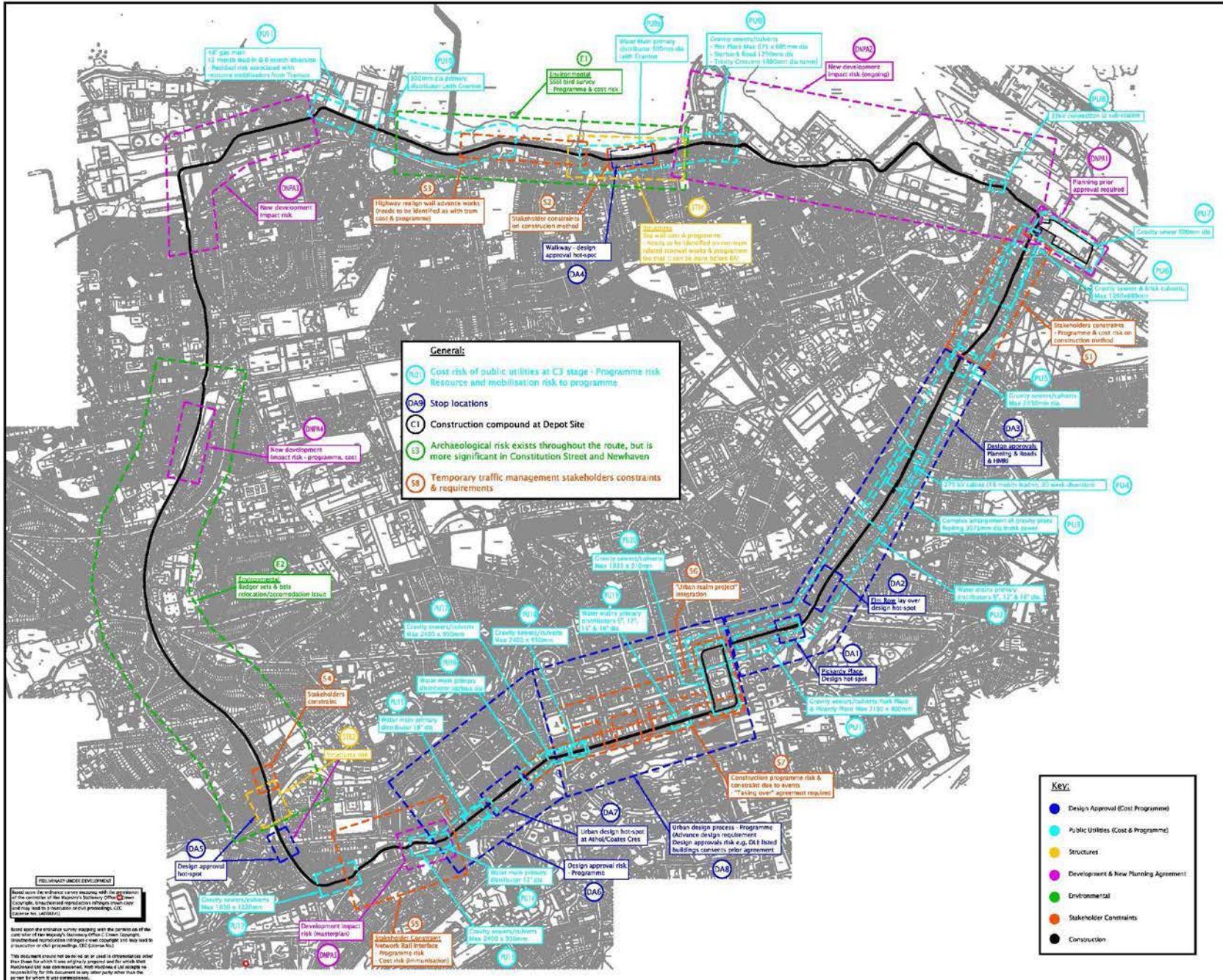
- **Avoided altogether**
- **Reduced by further study**
- **Controlled or shared**
- **Switched from one party to another by means of a trigger**
- **Contingency (self-insurance)**



▶ **Application of industry best practice...**

Observations

- Department for Transport requires:-
 - Heavy/Light Rail Projects set aside 40-57% Optimism Bias and IT Projects to set aside 200% Optimism Bias
- Tillinghast- Towers Perrin reports:-
 - One third of S&P 500 corporations have a chief risk officer
- McKinsey reports:-
 - 36% of executives did not fully understand the risks affecting their business
- National Audit Office figures state:-
 - 63% of all project risks were not identified (thus not catered for) at start of project



Edinburgh Tram

PRELIMINARY UNDER DEVELOPMENT

Key to Symbols: Colour coding reflects risk

Key Plan

Date	Drawn	Description

Edinburgh Tram
 3 Railways 3 Stations 3 Lines
 www.edinburghtram.com

Best Practiced in accordance with:
 British Standard BS 5896:2005
 BS 5897:2005
 BS 5898:2005
 BS 5899:2005
 BS 6000:2005
 BS 6001:2005
 BS 6002:2005
 BS 6003:2005
 BS 6004:2005
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EDINBURGH TRAM
 LINE ONE
 CONSTRUCTION STRATEGY
 PROJECT RISK IDENTIFICATION ASSESSMENT
 AND MITIGATION STRATEGIES

Author	SCR	Eng. C/N
NTS	DMAC	Commodore
Project	WBS	Approved
NTS	230101	
Date	Issue No.	Rev. No.
203011	EDIN/CS/0785	

How we avert risk?

- Corporate policy and plan
- Support for risk management
- Common language
 - Amongst all employees
- An individual responsible
 - Bring risk into the organisational culture
- Incentivise our project teams
- Share risks with others
 - limit our liabilities



Who should contribute?

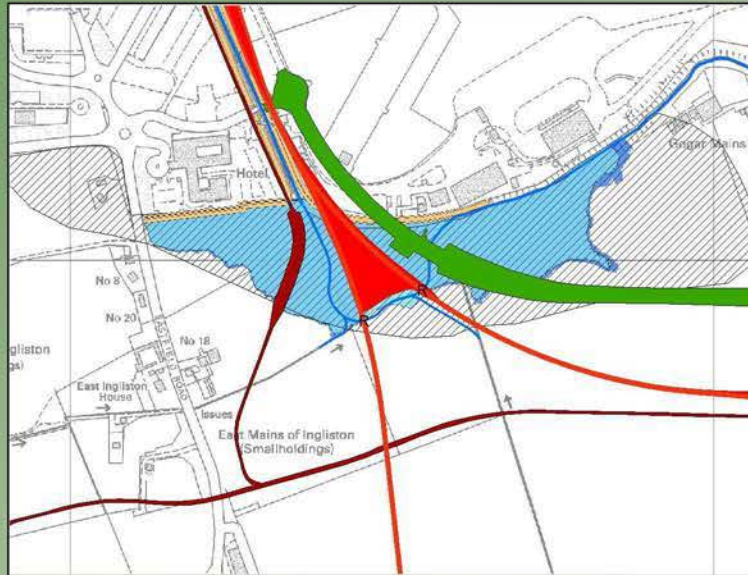


The views of significance of risk varies between these parties

If we are not managing our risks, we are not managing our projects appropriately

Effective Assessments...

Envelope 200 year flood



Interface Management

	Tram	Track	Highway	Signals & Control	Power	OLE	Depot Equipment	Depot	Ticketing	Tramstops	Cable ducts	Building Services	Planners	Emergency Services	Structures	Network Rail	Maintce and standards	Other Operators	Utilities	Environment	Run time	
Tram	2	3	2	2	2	2	1	3	2	2	2	2	2	1	3	3	2	2	2	1	2	2
Track	2	2	2	2	2	1	2	3	2	1	2	2	2	2	1	1	2	2	2	2	2	2
Highway	1	1	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2
Signals & Control	3	3	1	1	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	2
Power	2	2	2	2	2	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2
OLE	0	1	1	2	1	2	1	2	2	2	2	2	2	2	2	1	2	1	2	1	1	1
Depot Equipment						1	2	2	0	1	1	1	2	1	1	1	1	1	1	1	1	1
Depot								0	1	1	1	1	2	1	1	1	1	1	1	1	1	1
Ticketing									0	2	1	1	1	1	1	1	1	1	1	1	1	1
Tramstops									0	2	1	1	1	1	1	1	1	1	1	1	1	1
Cable ducts										0	1	1	1	1	1	1	1	1	1	1	1	1
Building Services											0	1	1	1	1	1	1	1	1	1	1	1
Planners												0	1	1	1	1	1	1	1	1	1	1
Emergency Services													0	1	1	1	1	1	1	1	1	1
Structures														0	1	1	1	1	1	1	1	1
Network Rail															0	1	1	1	1	1	1	1
Maintce and standards																0	1	1	1	1	1	1
Other Operators																	0	1	1	1	1	1
Utilities																		0	1	1	1	1
Environment																			0	1	1	1
Run time																				0	1	1

Risk Management

Historical Light Rail Risks...

- Approvals and over-estimation of **patronage**
- Poor **integration** of trams and buses – fares, routes
- Costly **site costs** - utility diversions
- Full **revenue risk transfer** to private sector consortia
- Planning Approvals

Our solutions...

- **'State-of-the-art'** land-use (LUTI) transport models
- **Operator now delivering integrated pre-planning**
- **Challenging utility diversion from swept path**
- **New approach to revenue risk sharing**
- **SDS - reference design**

▶ **Adopting new strategies...**

Risk Handling

- Avoided altogether !!!
- Reduced by further study...
- Controlled or shared
 - Contract (RAM)
 - Retained, Shared or Transferred
- Switched from one party to another by means of a trigger
 - Liquidated damages
 - Business volume trigger
 - Insurance
- Contingency (self-insurance)
 - Specified
 - Optimism Bias



Risk Classification

- Three-Point
 - Sensitivity Modelling
 - Bottom Up/Top Down Assessments
 - Statistical – Monte Carlo Simulation
 - Checklist
 - Contract - Risk Structure & Allocation
 - Insurance
 - Jigsaw
 - Benchmarking
- And a few others...
- Scenario Analysis
 - HAZOP
 - R&D
 - SWOT
 - BPEST
 - PESTLE
 - Fault Tree Analysis
 - Threat Analysis
 - FMEA

Current Clients

- City of Edinburgh Council
- Forth Estuary Transport Authority
- Clackmannanshire Council
- Stirling Council Waste Management
- Fife Council

*Since 2002 tie has spent
£71.916m on all their projects*

Advisors **tie** has used

- The £72m has been shared amongst 14 different advisors
 - 8 technical advisors -2 legal advisors
 - 3 financial advisors -2 insurance advisors
 - 3 project management advisors
 - 2 modelling advisors -2 PR advisors
 - 1 operations advisor -1 procurement advisor
 - 1 cost management advisor
 - 1 planning & land advisor
 - 1 clerk of works services advisor
 - 2 contractors; and 1 constructor

Procurement Policy

- **tie's** main objectives
 - *Select the most economically advantageous tender and achieve value for money (VFM)*
 - *Seek the optimum combination of whole life costs and quality to meet set out requirements*

Procurement Policy

- Policy sets out
 - Procurement Strategy
 - Value for Money
 - Competition
 - Legal Obligations
 - Secondedees
 - Contract Management; and
 - Sustainable Procurement

Procurement Strategy

- Design
 - Development
 - Supply
 - Construction; and
 - Operational risks
- Advice from
 - Legal
 - Financial
 - Technical; and
 - Other advisors

By doing so **tie** are understanding both the *advantages* and *disadvantages* of the preferred procurement route, therefore delivering overall scheme *quality, cost and programme* objectives

Value for Money (VFM)

- Whole life cost not lowest short term price
 - cost over time
 - including capital
 - maintenance and management; and
 - operating costs
- Project Managers responsibility to ensure VFM is followed and obtained

Competition

- **tie's procurement policy**
 - Open competition
 - Looking for most economically advantageous bid
- **Tendering competition policy**
 - Min. 2 quotations for services <20k
 - Min. 4 quotations for services >20k
 - Max. 6 quotations for similar services

Legal Obligations

- EC Procurement Rules
 - Set of specific rules affected by
 - Thresholds depending on what the contract is for; works, services or supplies
- **tie** seek legal advise to adhere to these obligations and maintain compliance with competition policy as detailed before

Secondees

- External consultancies may be approached to provide professional services on a part-time basis
- Project Directors must seek the most economically advantageous solution
- They should also set targets for individuals and undertake 1-2-1 assessments to ensure motivation and VFM
- They have to ensure confidentiality agreements are signed with all secondees

Contract Management

- Essential part of contracting process
- **tie**
 - will define clear roles and responsibilities for all parties
 - ensure that points of control and leadership are defined
 - consider the use of contract completion reviews and feedback the results into the process

Sustainable Procurement

- **tie** aim to minimise the impact their services have on the environment
- **tie** will seek evidence that service providers have in place appropriate environmental management policies
- **tie** expect that our service providers share our commitment to continuous environmental improvement

Procurement Plan

Application of...

- EU Procurement Rules
- Delegated Authorities
- Documented Policies & Procedures

Resulting in...

- Governance
- Clarity of Responsibilities
- “Best of Breed” Advisors and Partners
- International Market Interest



Workstreams	2004	2005	2006	2007	2008	2009	20
Parliament	█	█	█	█			
Permissions & Consents		█	█	█	█		
Detailed Design		█	█	█			
Advance Works			█	█			
Land Acquisition			█	█	█		
Vehicles			█	█	█	█	
Construction				█	█	█	█
Commissioning							█

► Application of procurement best practice

Maximising Opportunities

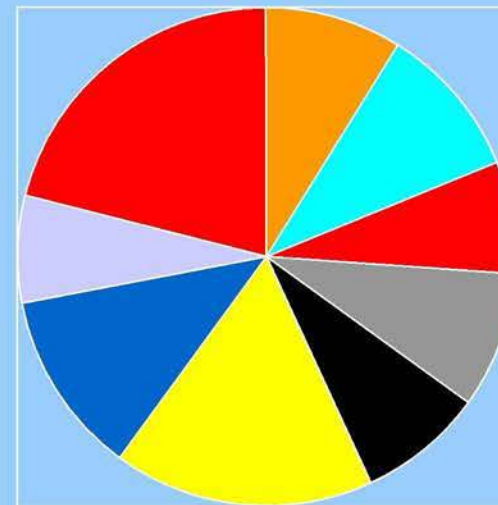
- Maximising revenue opportunities with Early Operator involvement
 - Levering the existing assets – Developer gains
 - Integrated with long term planning strategy
 - Shaping the deliverable – increasing market appetite
- Improving value for money



Our Investment Decision

- Other Funding Sources
- Procurement Strategy
de-risking Main Contract
- Growth in resources
for Implementation
- HM Treasury Guidance
Optimism Bias

Key Cost Components



- Design
- Utilities
- Preliminaries
- Land
- Vehicles
- Civils & Elect.
- Track
- Stops & Depot
- Optimism Bias

► Delivering a robust business case

Optimism Bias?

- **Conspiracy or Incompetence?**
- **Technical, Psychological, Economic and Political-Institutional causes**
- **Cost Estimation**
- **Procurement Routes**
- **Gestation**

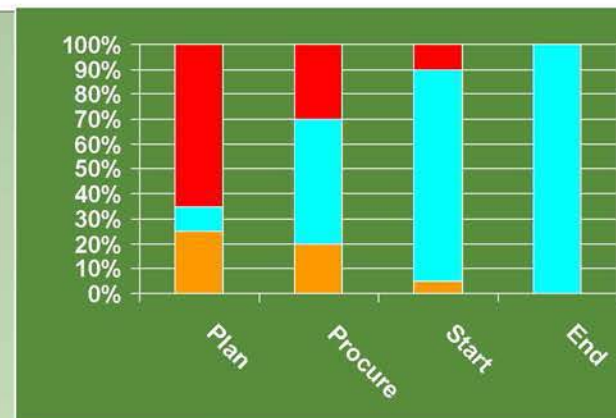
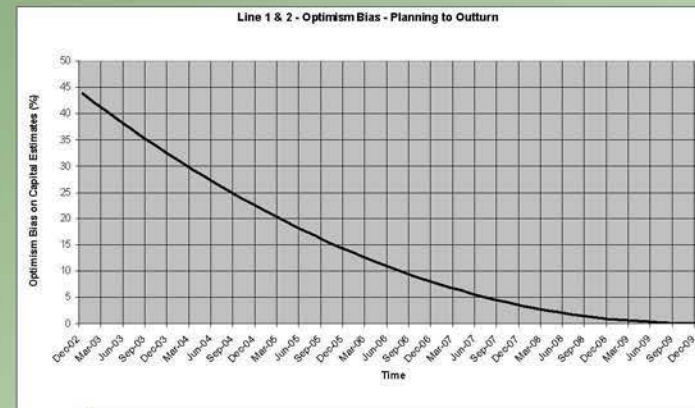


Areas of Risk

- **Optimism Bias** captures the following three areas of risk that will need to be managed throughout the project lifecycle.
 - Known risks
 - Unknown risks
 - Market risks

Areas of Risk

- **Optimism Bias captures all our risk**
- **Three areas of risk will need to be managed throughout the project lifecycle**
 - Known risks
 - Unknown risks
 - Market risks



► **Challenging the known and unknown**

Desired Outcomes

- We limit our exposure to risk
- We achieve all our project objectives
- We all contribute to the process
- We make decisions based on risk knowledge
- We all use common systems
- We select strong partners
- We press our advisors, suppliers, contractors and operators to advise us of risk exposure
- We apply an above average risk management throughout project lifecycle industry 'best practice'

Next Steps...

- Listen to others to ensure we learn lessons
 - Seek market commitment to realistic work packages – optimal solutions
 - Become more sophisticated - turn to safety and hazard
 - Resource and set-up of organisation - close supervision
- ▶ **Keep risk management a core value...**

Thank you...

Any Questions ?

Quality Management

- The “tie” way
- Aim to follow processes that lead to efficient and effective delivery of projects
- Actively seeking continual improvement

The image displays three overlapping forms related to quality management and auditing:

- tie AUDIT CHECK LIST:** A table with columns for 'Date', 'Audit No.', 'Improvement/Compliance', 'Sheet', and 'PT'. It includes a 'Per Issue Evidence' section.
- tie AUDIT REPORT SUMMARY:** A form with fields for 'To: Project Director', 'From: Project Manager', 'Audit Date', 'Audit Type', 'Project No.', and 'Project Title'. It also includes a 'Summary of Audit Findings' section.
- ACTIVITIES:** A detailed activity log table with columns for 'Activity', 'Project Director', 'Project Manager', and 'Project Team'. The activities listed include:
 - 1.1 OUTPUT DEFINITION STAGE**
 - 1.1.1 Direction:** Ensure remit and authority to proceed from client / sponsor is in place. Design and appoint project management team. Provide advice and guidance as requested, monitor project status and react to exceptional circumstances.
 - 1.1.2 Scope Management:** Define and document Client's scope and constraints. Produce initial Project Registry Document (PRD) to record client's scope (objectives, critical success factors, key deliverables etc.). Take delivery of completed (adviser) output /products. Capture and act on project issues.
 - 1.1.3 Risk Management:** Produce Risk Management Plan & Risk Register. Produce monthly risk report to record progress, and identify issues.
 - 1.1.4 Planning:** Decide on and document approach to be used to find a solution (Project Management Plan). Decide on planning tools, estimation methods, levels of plan and monitoring methods to be used. Produce cost plan (spend profile).
 - 1.1.5 Monitoring & Control:** Prepare Stagegate checklist for this project stage, detailing generic requirements (Output stage report) and specific project deliverables, e.g. deliverables. Establish & implement financial controls & change management processes. Authorise work to be done including procurement. Monitor events and take necessary corrective action.

Quality Management

- Aiming for accreditation in quality management
- Provision of training and information for staff
- Director's Sign off of activities

