

Enterprise Risk Management (ERM) Project

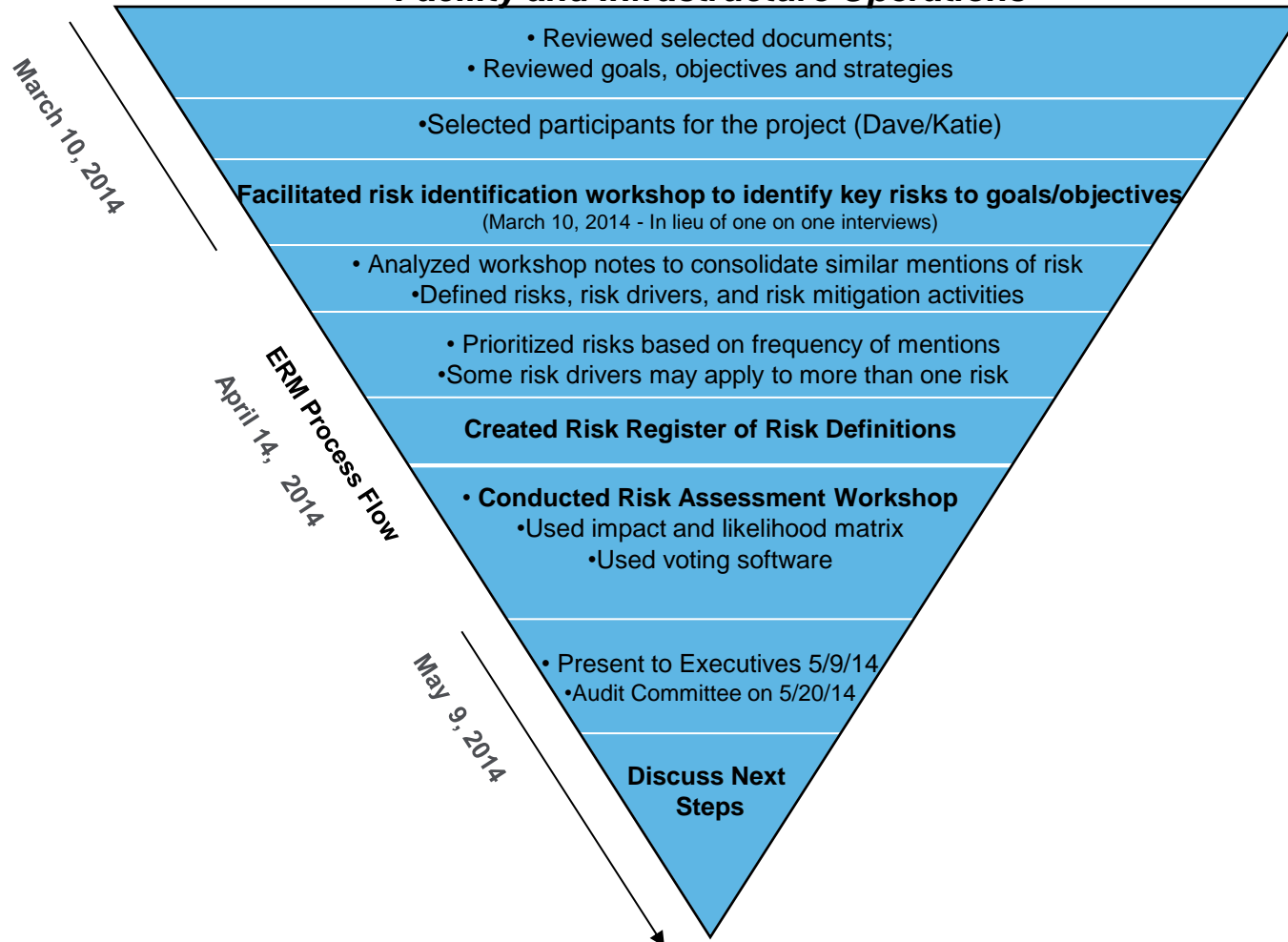
Aviation Division - Facility & Infrastructure and Maintenance Operations

Audit Committee
May 20, 2014

Prepared and Presented:

Jeff Hollingsworth
Lauren Smith

Focusing on the Most Critical Risks to Facility and Infrastructure Operations



Objectives/Strategies

- Limit growth of O&M costs to CAGR of 2.8% from 2012 to 2018; *Reduce airline costs (CPE) as far as possible without compromising operational and capital needs.*
- Meet all future electrical growth through conservation and renewable energy sources. *Reduce airline costs (CPE) as far as possible without compromising operational and capital needs.*
- Minimize life cycle capital and O&M costs. *Operate a world class international airport by managing airport assets to minimize long term total cost of ownership.*
- Develop a comprehensive computer based asset management system to anticipate airport and tenant needs. *Operate a world class international airport by managing airport assets to minimize long term total cost of ownership.*

Objectives/Strategies

- Grow continuous process improvement across Port by increasing the number of process improvements and increasing executive, staff, and craft participation. *Continually invest in a culture of employee development, organizational improvement, and business agility.*
- Operate all systems reliably, including electrical, mechanical, and communication systems to the benefit of our tenants and passengers. *Operate a world class international airport by anticipating and meeting needs of tenants, passengers, and region's economy.*
- Reduce greenhouse gases by 15% below 2005 levels by 2020. *Lead the US airport industry in environmental innovation and minimize the airport's environmental impact.*

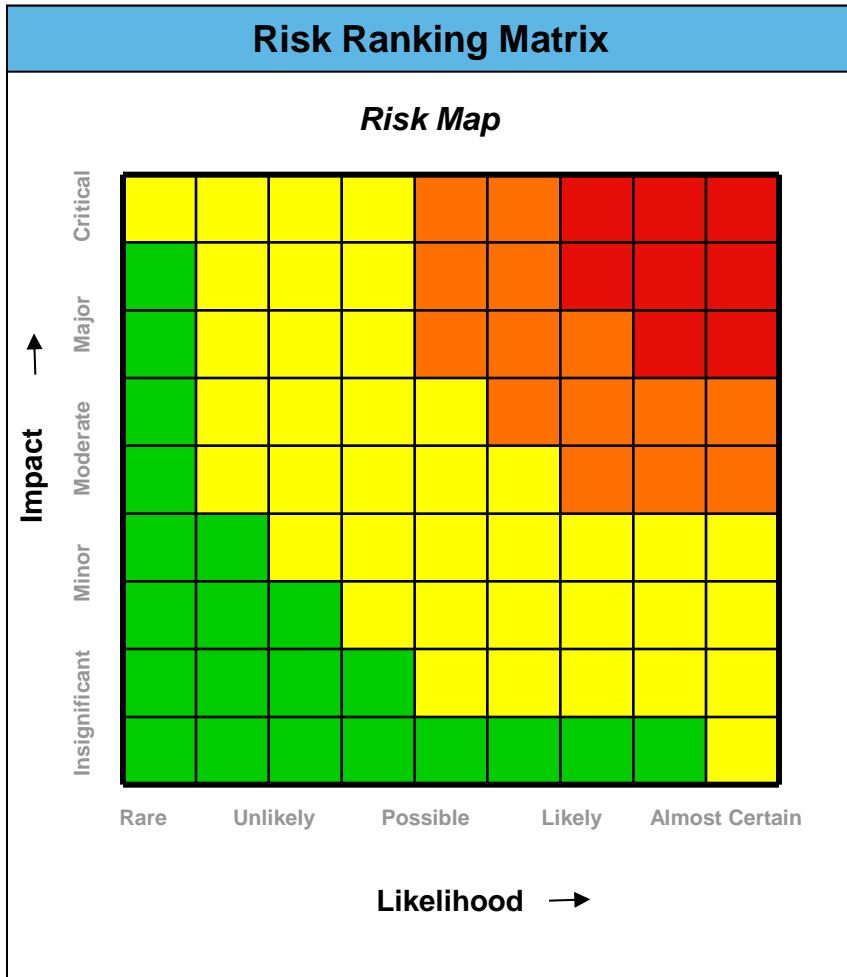
Objectives/Strategies

- Operate a world class international airport by ensuring safe and secure operations for our employees, customers, and business partners.
- Improve overall safety of aircraft and vehicular movement measured by an increase in a composite annual score of 100 total possible points, ranking runway incursions, wildlife strikes, *Operate a world class international airport by ensuring safe and secure operations.*
- Continue to manage and renegotiate agreements with the City of SeaTac. *Maintain valued community partnerships based on mutual understanding and socially responsible practices.*

Risk Assessment & Prioritization Workshop Results

Aviation Division – Facility and Infrastructure Operations - Risk Ranking Process

Initial Prioritization Based Upon Assessments of Impact and Likelihood



Risk Ranking Overview

- Risk Ranking provides an initial means of prioritizing assessed risks based upon assessments of Impact and Likelihood
- Risk Rankings are used to identify a risk’s position on a Risk Map (see chart to left)

Risk Ranking Calculation Steps

- Multiply the Impact assessment (on a scale of 1-9 with 9 being the highest impact and 1 being the lowest) and the Likelihood assessment (on a scale of 1-9 with 9 being the highest likelihood and 1 being the lowest) for each risk
- Reference the product against a range of values (see table below)

Risk Rankings	
<i>Risk is ranked as...</i>	<i>...if the product of Impact & Likelihood is...</i>
VERY HIGH	Greater than 42.0
HIGH	Greater than 27.0 , but less than 42.0
MEDIUM	Greater than 9.0 , but less than 27.0
LOW	Less than 9.0

RISK ASSESSMENT MATRIX

AVIATION DIVISION – FACILITY AND INFRASTRUCTURE OPERATIONS - RISK MATRIX

LIKELIHOOD		Description	IMPACT TO AVIATION DIVISION					
Measure	Description		Financial	Operational ¹	Emergency Prepare/Safety ²	Reputation/Community	Employees ³	Environmental
When voting, the overall combined impact should be considered on the areas identified above.								
ALMOST CERTAIN Something already happening on a regular basis.	Almost Certain	Critical	Broad and sustained interruption to airport activities. Multiple people and key systems impacted. Full recovery and return to normal operations will be gradual and over a long time period. Decisions and investments made in the present that will result in difficult and irreversible constraints in the future, that impact airport activities to include higher costs, less opportunity for revenue growth, and less ability to meet other business strategies.					
LIKELY Something already happening on a regular basis but is sporadic in nature.	Likely	Major	Broad and/or sustained interruption to or cessation of operations. Multiple people and/or key systems impacted. Full recovery and return to normal operations estimated to be long term. Decisions and investments made in the present that to a degree may result in difficult constraints in the future, that impact airport activities to include higher costs and less opportunity for revenue growth.					
POSSIBLE Something not happening currently, but anticipated to happen.	Possible	Moderate	Impacts require sustained and/or complicated workarounds; some operations disrupted or cancelled. Recovery will take some time. Some people and key systems impacted. Decisions and investments made in the present that may result in future challenging constraints that could impact some airport activities and strategies.					
UNLIKELY Something not happening but it could in very infrequent cycles.	Unlikely	Minor	Workarounds are relatively easily to implement and maintain. Few operations disrupted or cancelled. Recovery will take relatively little time. Fewer people and key systems impacted, and then only slightly. Decisions and investments made in the present do not pose significant threats that will impact airport activities in the future.					
RARE Something not happening and not anticipated to happen.	Rare	Insignificant	No impact or consequence that cannot be easily absorbed into daily operations. All key systems remain fully functional. Today's investment decisions have no future impact.					

Table Notes:

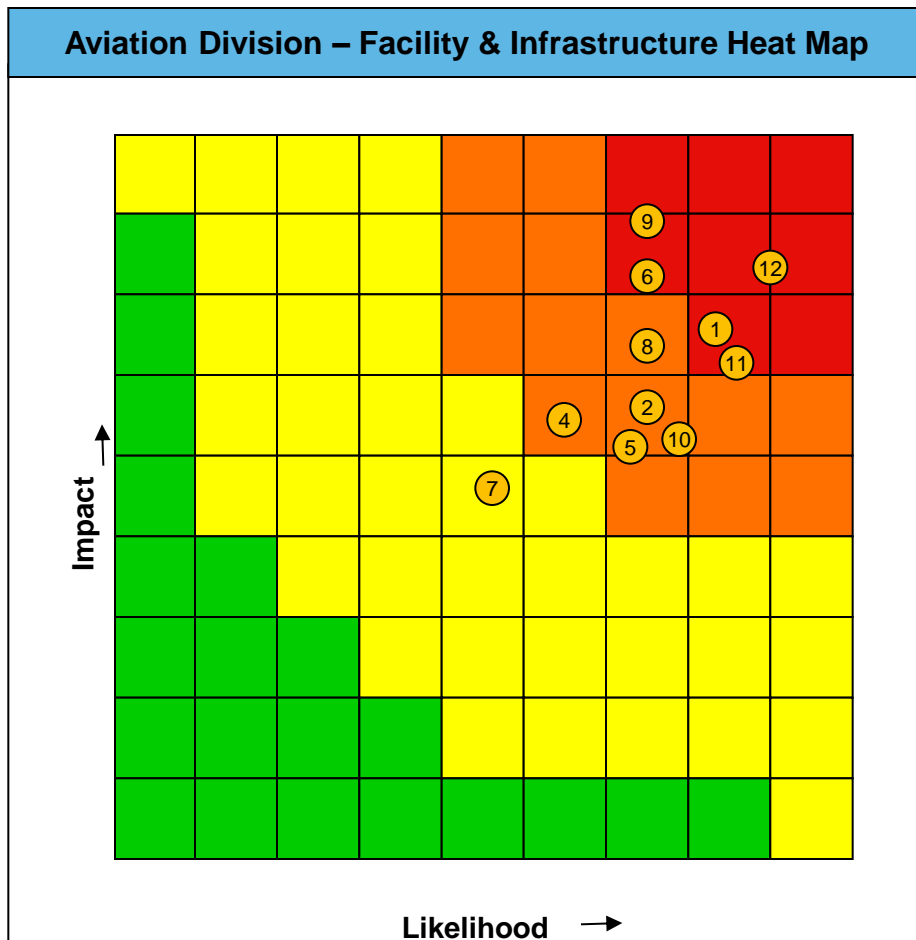
1 Operational impacts are in three main areas: (1) Airline and concession tenants/Port's revenue (2) Slowing down the CIP (3) Effect on the traveling customers.

2 Safety to Port employees, our tenants, and the public or traveling customer

3 Impact on employee staffing and employee engagement

Risk Assessment & Prioritization Workshop Results

Aviation Division – Facility & Infrastructure and Maintenance Risk Map



Rank	Risk Name/ Risk Definition	Likelihood	Impact	Risk Ranking
1	RD-12 Record Master Drawings	8.00	7.33	58.6
2	RD-9 Localized Event/Disaster	6.58	8.00	52.6
3	RD-6 Reliable Infrastructure	6.83	7.25	49.5
4	RD-1 Growth of Costs/Long Term Cost of Ownership	7.33	6.42	47.1
5	RD-11 Common Use Trash Recycling/ Composting	7.25	6.25	45.3
6	RD-8 Relations with City of SeaTac	6.50	6.42	41.7
7	RD-2 Conservation Emphasis	6.67	5.83	38.9
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9	RD-5 Continuous Process Improvement	6.58	5.50	36.2
10	RD-4 Airside Safety	5.75	5.83	33.5
11	RD-7 Green House Gases	4.58	4.75	21.8

Workshop participants assessed each risk on two criteria:

- The estimated likelihood of a risk’s occurrence
- The estimated impact of a risk’s occurrence on Aviation F&I and Maintenance ability to meet its strategic objectives

The assessments of Impact and Likelihood are used to develop Risk Maps to focus management attention on the most critical risk risks.

Risk Definition- RD-12

Lack of Master Record Drawings: Significantly impedes the ability to both prepare inexpensive designs of capital projects, and maintain projects afterward; and severely restrict ability to rapidly regain continuity of airport operations in emergency situations.

Risk Drivers

- Lack of record drawings
- Overly reliant on a lack of enough people with institutional knowledge
- Designers utilize Port data/drawings to create their designs, which if the Port drawings are not correct or up to date, will create change orders thus creating extra costs.
- Designers paid to create as-built drawings; but, sometimes can't access these easily
- No master facility record

Existing Risk Management Activities

- Researching locations and places that benefit from master record as built drawings
- Note: Team to add additional mitigation efforts underway

Risk Definition- RD-9

Localized Event/Disaster: An unexpected event could create an unsafe and catastrophic condition for Port employees as well as airport tenants, partners, and passengers and employees and result in injury, property damage, and create delays (to a lesser degree) with respect to operations getting back to normal.

Risk Drivers

- Seismic even could cause significant damage; some existing campus buildings may not be up to current codes and standards, and no complete plan (to upgrade everything)
- Lack of emergency preparedness, continuity of operations, lack of training
- Utility reliability (i.e. single source supplies)
- Jet A fuel availability due to single source of fuel in from Olympic Pipeline to fuel farm
- Communication systems - PA Systems Voice Paging Evaluation (upgrading) and Radio 800 MHZ (upgrading) are 2 examples - in addition to other systems such as computer and voice

Existing Risk Management Activities

- On site generation (project planned; early phase)
- Certain seismic improvements have been made or studied
- Continuous ongoing training and new emergency management staff to support preparedness
- Two source substations
- Plans to move forward with back-up power generation facilities on-site
- Emergency Preparation department –new focus and manager

Risk Definition- RD-6

Reliable Infrastructure Systems: Demands on all systems could impact the reliability of electrical, mechanical, and communication systems in turn would impact airports tenants, partners, and passengers.

Risk Drivers

- Lack of power back up
- Lack of ability to sub meter
- Lack of master record drawings
- No comprehensive renewal plan for key systems
- Single source of domestic water
- Single source natural gas feed to airport
- Inability to register and inspect aging assets rapidly (ex. Break of steam pipe joint)
- Communication systems don't have sufficient redundancy

Existing Risk Management Activities

- Baggage system optimizations
- Working development of asset management plan
- Development of well for water
- Dual fuel capability of boilers
- Onsite generation to island airport (status 2 project)
- ERM meeting

Risk Definition- RD-1

Growth of O&M Costs & Minimize Long Term Cost of Ownership : Today's investments in capital projects will create future growth in required infrastructure and maintenance that, along with caring for earlier investments, will exceed the resources available to maintain these assets properly through their life cycle.

Risk Drivers

- Added facility sq. ft. in projects such as North Star and IAF which will require more maintenance
- Selecting low cost maintenance systems during initial construction can result in more maintenance, at an earlier life cycle stage.
- Inadequate human and financial resources to maintain assets through life cycle
- Project teams do not consider total cost of ownership
- Requirement for renewal/replacement of existing assets may drive up costs from what they should realistically be.
- Could overtax existing resources and reduce customer service.

Existing Risk Management Activities

- Working toward a dedicated management liaison to large projects to champion for Total Cost of Ownership (starting/not in place fully yet)
- Freer use of sole source
- Find energy conservation opportunities
- Construct systems and buildings that have lower life cycle cost (not consistently done – new process not fully developed, not clear how it fits decision matrix)
- Revenue growth
- Preventative maintenance program to extend life cycle.
- Gain maintenance capacity through CPI initiatives and technology
- Utilize R&R program to reduce repair demand
- Emphasize LCCA (Lifecycle cost analysis) on projects

Risk Definition- RD-1 (Continued)

Growth of O&M Costs & Minimize Long Term Cost of Ownership : Today's investments in capital projects will create future growth in required infrastructure and maintenance that, along with caring for earlier investments, will exceed the resources available to maintain these assets properly through their life cycle.

Risk Drivers

- Project teams during planning fail to consider future total costs of ownership
- Port's bidding and procurement process focus on low bid, and it's difficult to use a sole source approach, even if it's the best method identified.
- Environmental benefits often not initially forecast in life cycle projections
- Inconsistent use of Port standards by Port consultants
- Disconnect between asset additions v. expense budgets
- Resources inadequate to appropriately maintain the assets through their lifecycle.
- Human and political judgment versus a financial analysis (NPV) that takes into account future costs which may impact future budgets ; not a standard and not consistently used (NPV analysis has been used)

Existing Risk Management Activities

- Some work to update Port standards (but not enough)
- Best bid process is available, but not always used
- Freer use of sole source; improvement over the years
- Trying to develop a life cost analysis template (NPV); runway light analysis is one example of using a NPV approach. Not consistently used; not a standard approach being used now

Risk Definition- RD-11

Common Use Trash/Recycling/Composting Infrastructure: Responsibility for the design, daily operation and maintenance of common use trash, recycling and composting facilities is not clearly defined.

Risk Drivers

- Trash, recycling and composting collection require space for equipment near concessions locations, which is typically in short supply.
- When equipment breaks down, debris builds up, causing health and safety issues
- Delays in repairing equipment and cleaning the facilities increases unpleasant odors and the potential for pest infestation (i.e. lengthy CPO process)
- As passenger volumes increase, additional infrastructure for larger facilities may be needed, or more frequent pick-ups will be required.
- Ownership of existing facilities and equipment is not clearly defined
- Sponsorship for needed infrastructure upgrades is not clearly defined
- CPO process takes a long time

Existing Risk Management Activities

- Airport Environmental Programs, Airport Operations and Facilities and Infrastructure play a role in facility and equipment design, siting and installation
- Airport Operations plays a role in the daily operations of the facilities and equipment
- Aviation Maintenance plays a role in ongoing equipment maintenance
- Adding two new elevators in CTE
- North Satellite updates in planning phase
- Business Development / Concessions plays a role with tenants and concessionaires who utilize the equipment
- Adding two new elevators

Items Open for Port Discussion

- **Where does Port take ERM moving forward and what do we do with ERM results?**
 - ERM assessment versus performance audit
 - Response to findings
 - Mitigation efforts – funding for

- **Who is the audience for reporting ERM findings?**
 - Audit Committee versus Commission or both
 - Division finance and budget

- **Establish Roles & Responsibilities and Policies & Procedures**
 - What is the merit of establishing an ERM process and identify ERM roles and responsibilities

- **Establish Initial Risk Reporting Framework**
 - Should formal reporting tools and approaches for ERM results be created?

- **Define Risk Appetite and Tolerances – Recommendation from Initial Consultants**
 - Formally define the Port’s risk appetite and establish a consistent and documented approach to understanding risk drivers, risk management options, and governance for key risks

Appendix - Enterprise Risk Management (ERM) Project Aviation Division – Facility and Infrastructure Operations

The Port of Seattle representatives who participated in the ERM Project are listed below .

Dave Soike, Senior Manager	Steve Rybolt, Environmental Management Specialist 2
Stuart Mathews, General Manager Aviation	Katie Blair, Assistant
Jennifer Mims, Senior Manager, Aviation Maintenance Asset & Logistics	Goran Versegi – Senior Aviation Infrastructure Engineer
Gary Richer, Senior Manager, Aviation Maintenance	
Luisa Bangs, Senior Manager, Aviation Maintenance	
Trevor Emtman, Utility Business Manager	
Mike Smith, Airport Facilities and Infrastructure Systems Manager	
Wendell Umetsu, Airport Facilities and Infrastructure Systems Manager	
Jeff Ganges, Fire Marshall, Fire Protection Engineer	
Tina Soike, Chief Engineer – Engineering CDD	

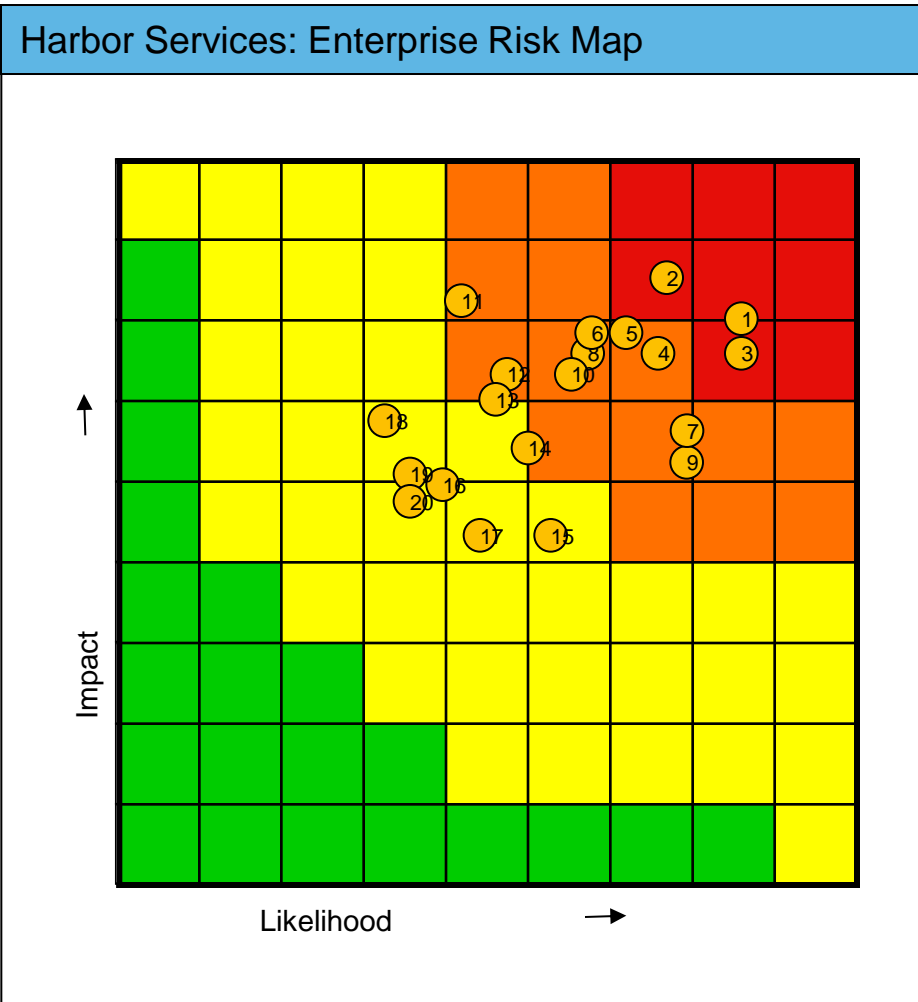
Appendix I

Past ERM Heat Maps From Prior Studies

- **Harbor Services 2010**
- **ICT 2011**
- **Cruise Operations 2012**

Enterprise Risk Management (ERM) Pilot Project Results

Harbor Services Enterprise Risk Map



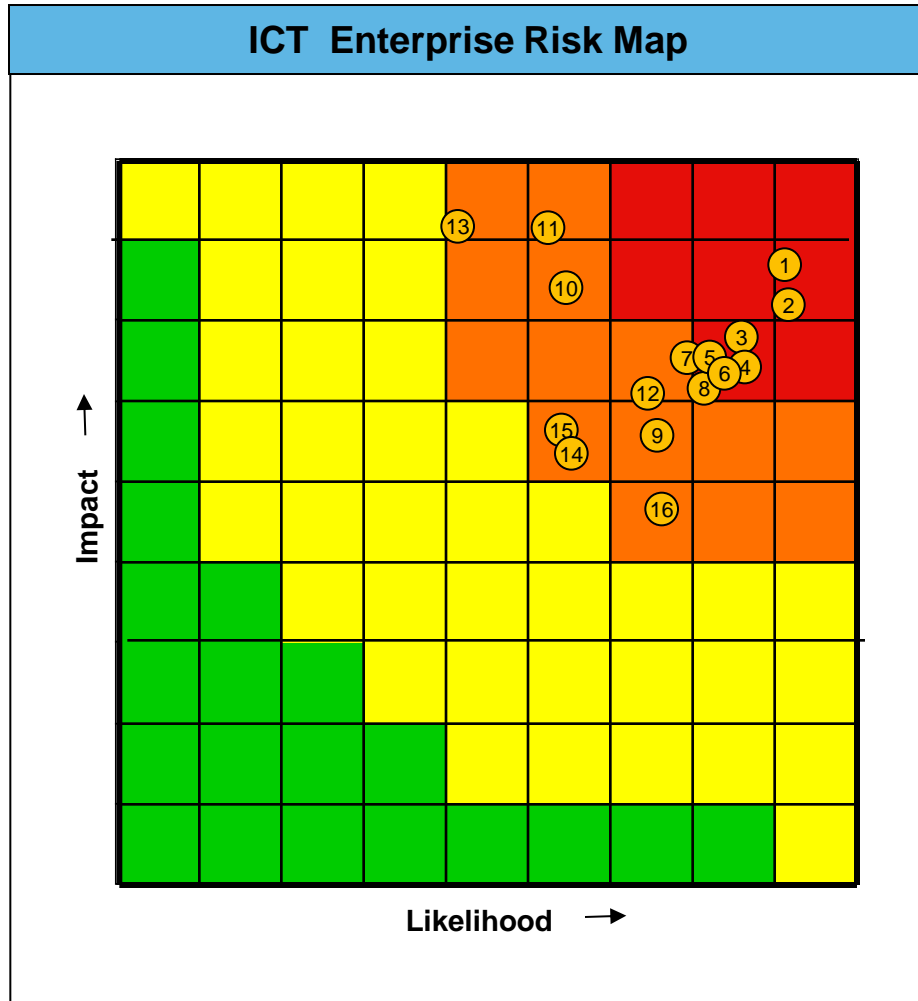
Rank	Risk Name	Risk Ranking
1	Land Use / Zoning*	53.20
2	Environmental Regulations	50.25
3	Political Relations	49.40
4	Maintenance*	43.55
5	Commercial Fishing Industry	42.84
6	Access to Capital*	40.12
7	Internal Port Support Services	38.64
8	Strategic Business Model	37.05
9	Litigation	35.88
10	Legal & Regulatory Compliance*	35.28
11	Natural Disasters, Cat. Events and Business Continuity	30.24
12	Economy	29.61
13	Competition	27.60
14	Public Relations	27.00
15	Budgeting	22.79
16	Employee Costs	19.11
17	Marketing	18.92
18	Customer Service	18.81
19	Safety & Security	18.36
20	Hiring & Retention	17.28

Note: Risks are listed in the order of Risk Ranking; additional information for each risk can be found in the detailed risk overviews

* Risk Action Plans including Assignment of Risk Owners was done during the workshop. Risk Action Planning templates are included in this deck for the selected risks

Risk Assessment & Prioritization Workshop Results

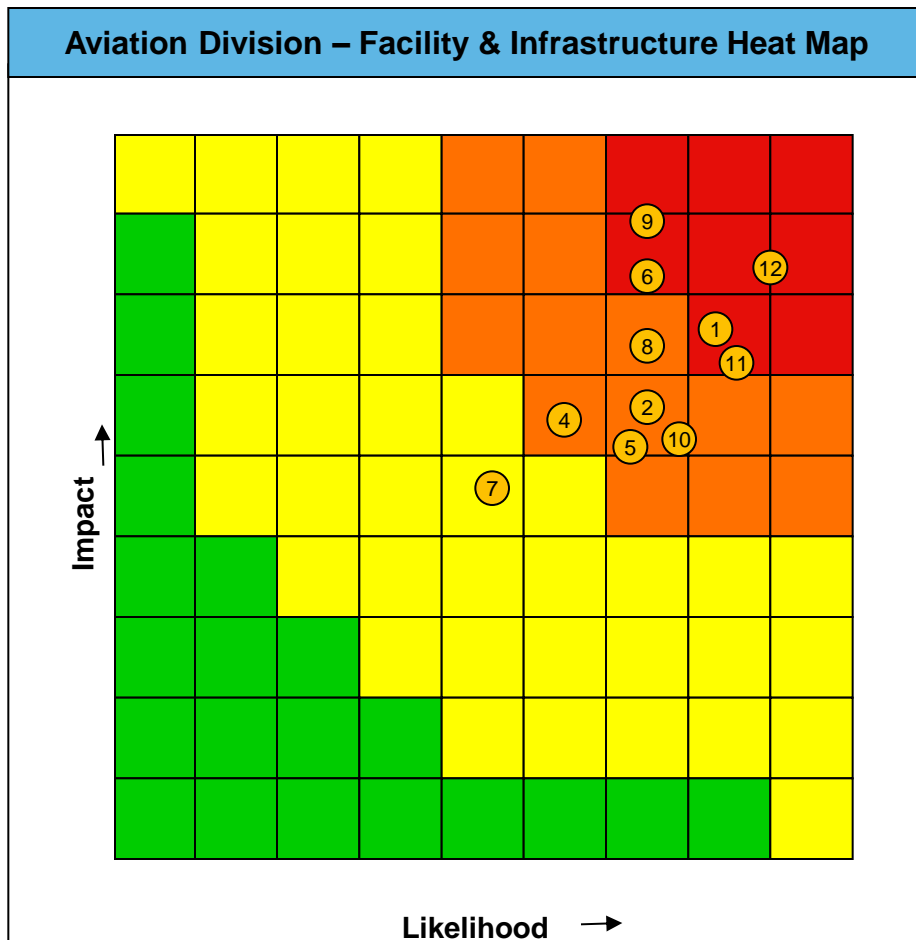
Information and Communications Technology Enterprise Risk Map



Rank	Risk Name	Risk Ranking
1	Decentralized Systems	65.78
2	Internal Port Processes	63.11
3	ICT Budget	50.03
4	Complexity and Volume of Systems	49.28
5	Leadership	48.41
6	Roles and Responsibilities	48.19
7	Contracting	47.53
8	Change Management/Employee Engagement	43.76
9	Staffing	43.29
10	Compliance	41.33
11	Security	40.91
12	Workload	39.76
13	Natural or Manmade Disasters	33.84
14	Enterprise Technology Strategy	32.60
15	ICT Department Leadership	31.97
16	Technology Marketplace	31.10

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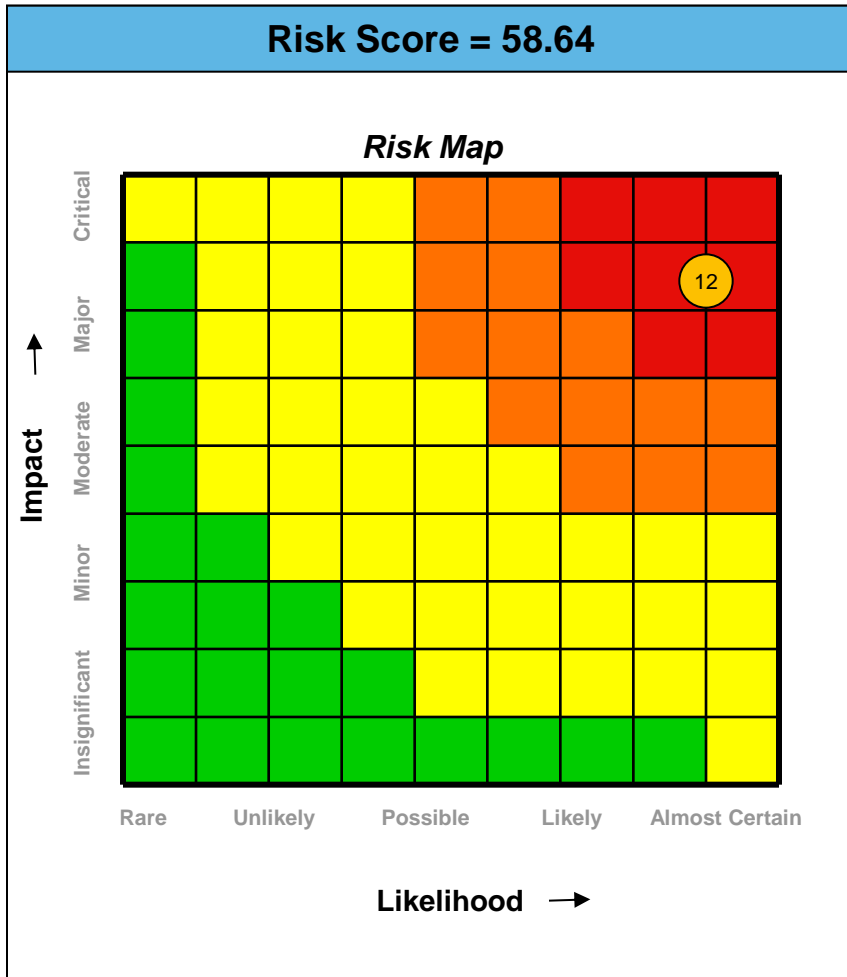
Appendix II

Individual Heat Maps and Scoring for Each Risk Definition

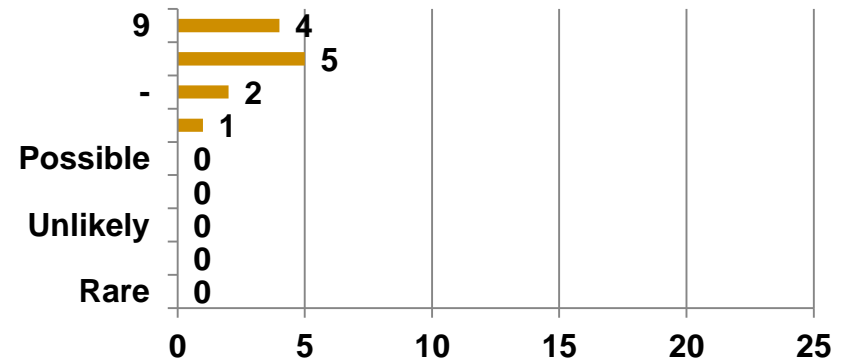
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Aviation Division – Facility & Infrastructure and Maintenance Risk Map

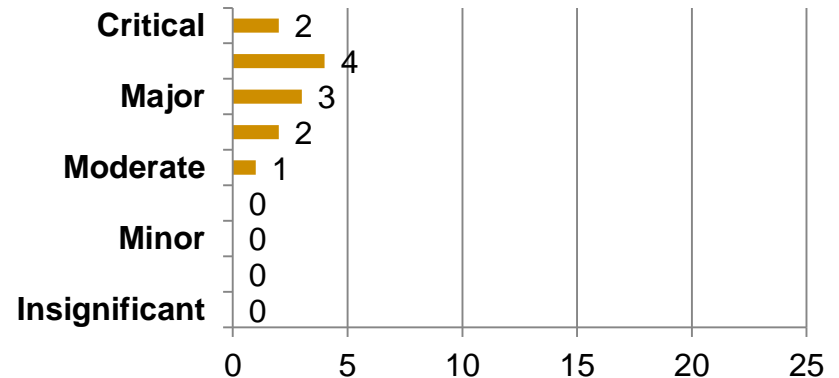
RD-12 Lack of Master Record Drawings:



Likelihood Mean Score: 8.00



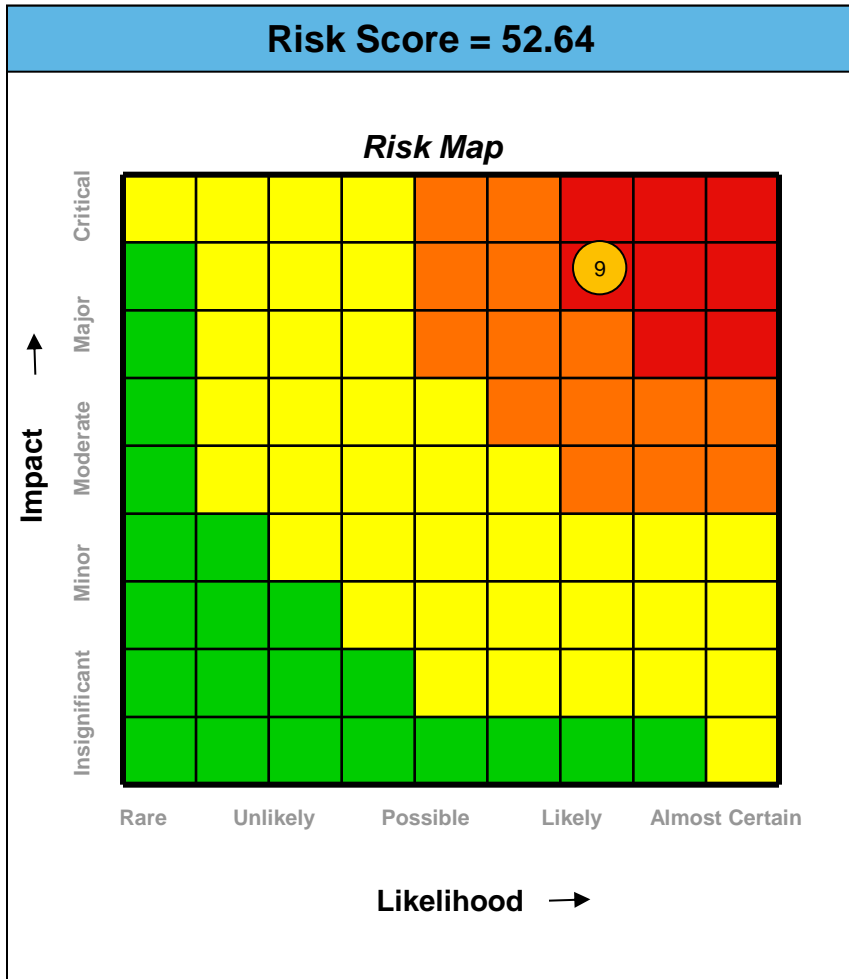
Impact Mean Score: 7.33



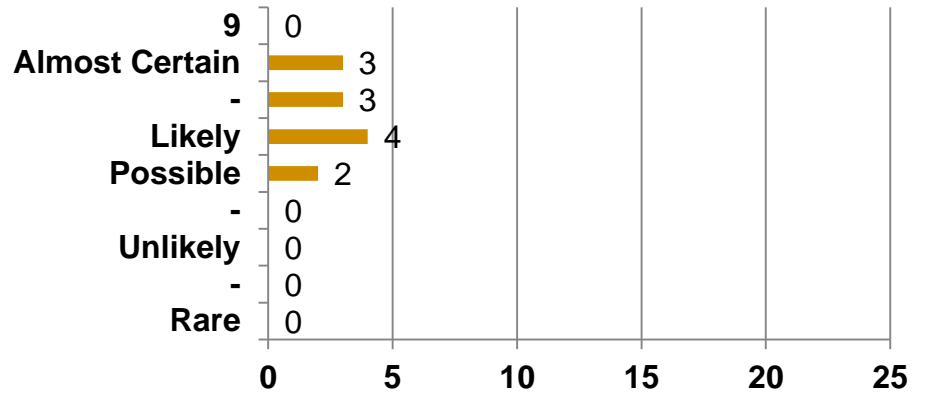
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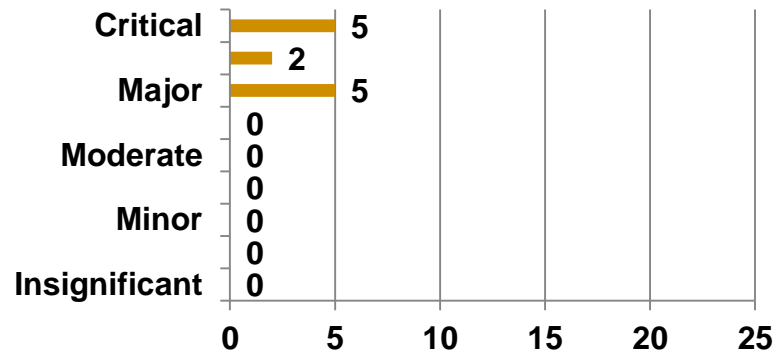
RD-9 Localized Event/Disaster:



Likelihood Mean Score: 6.58



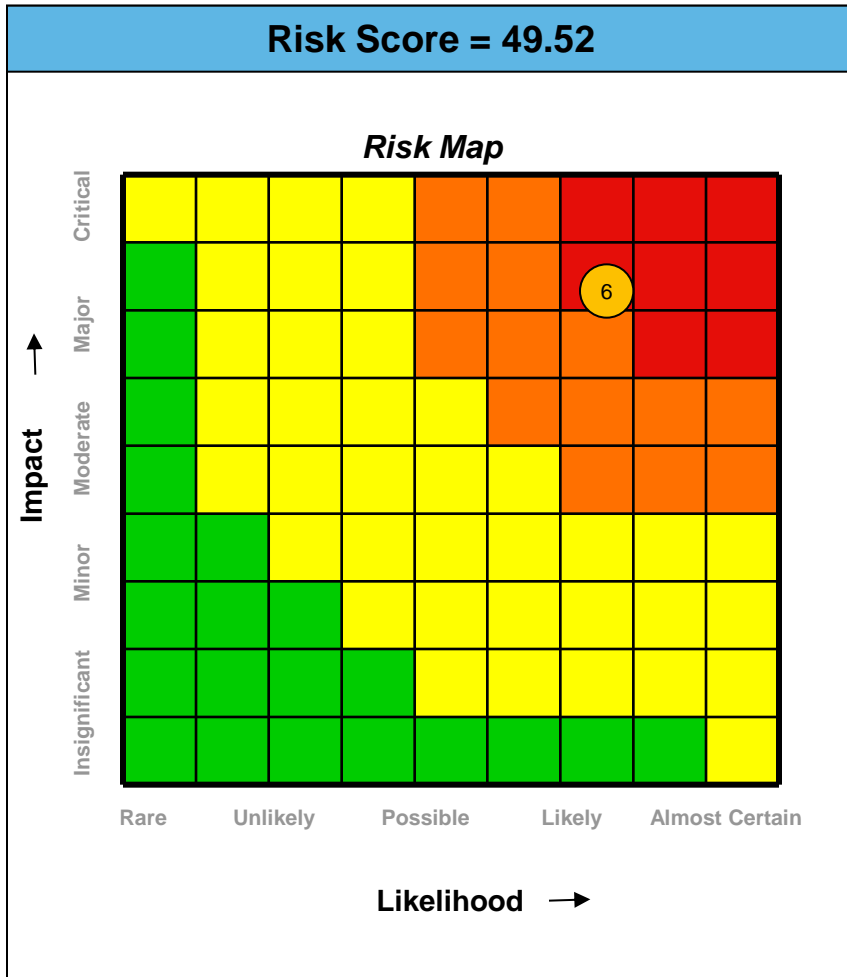
Impact Mean Score: 8.00



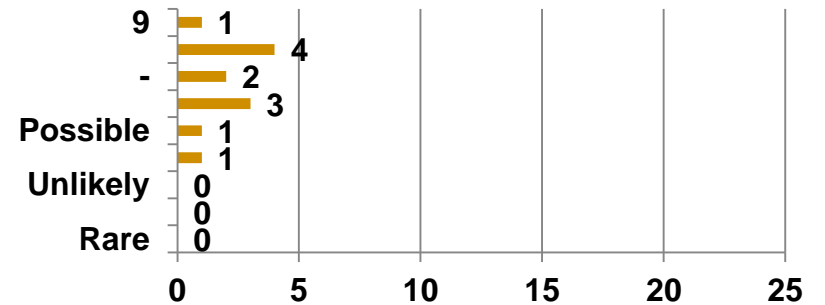
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Aviation Division – Facility & Infrastructure and Maintenance Risk Map

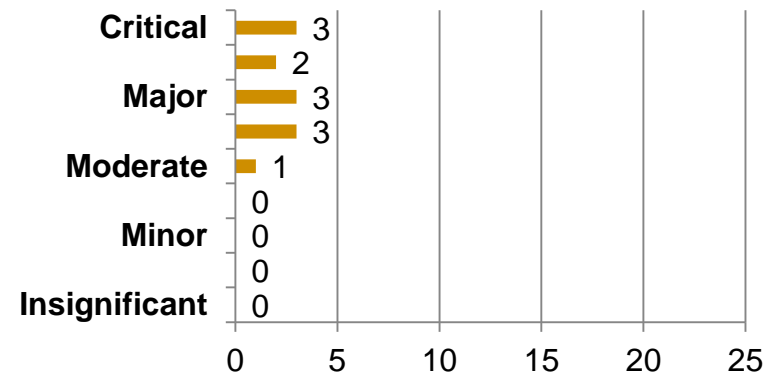
RD-6 Reliable Infrastructure Systems:



Likelihood Mean Score: 6.83



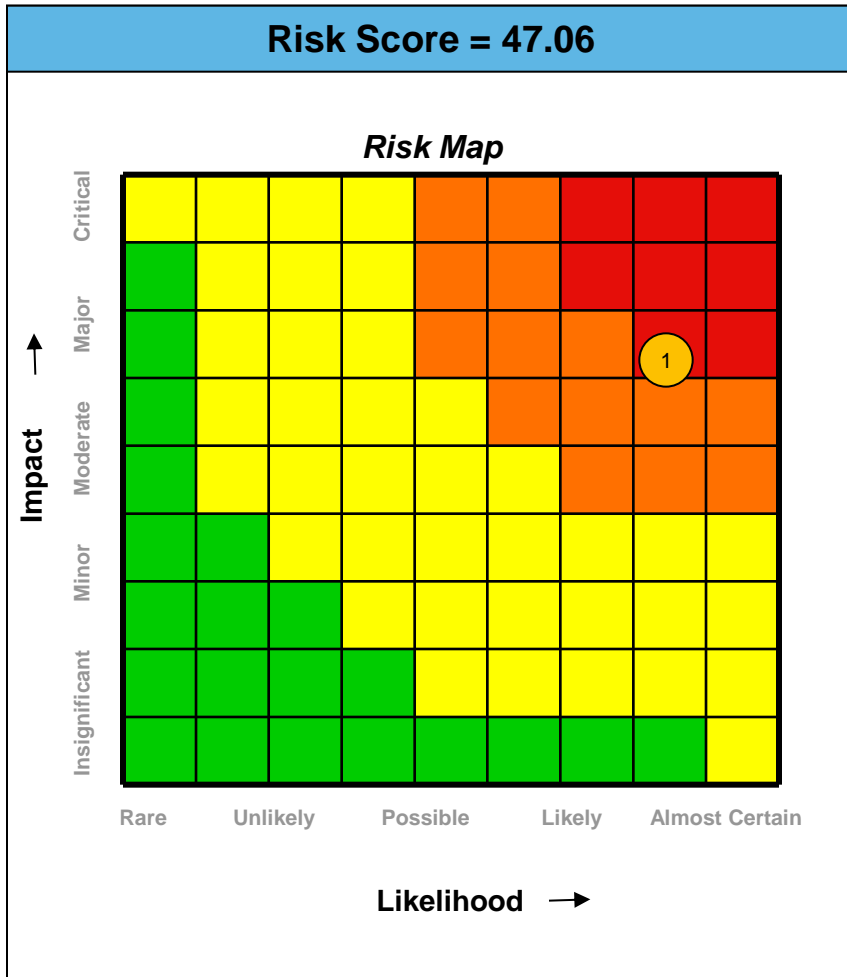
Impact Mean Score: 7.25



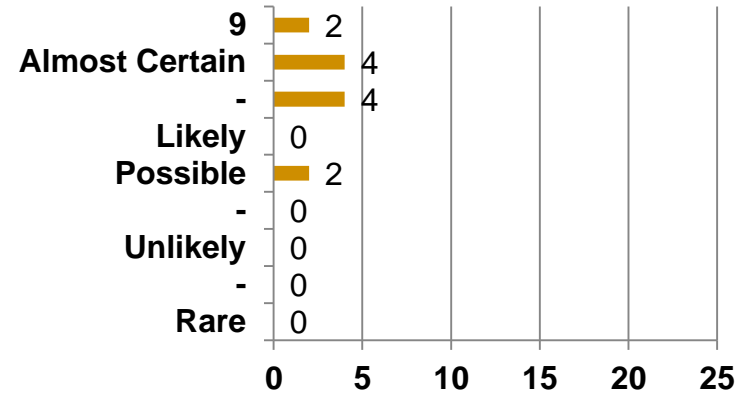
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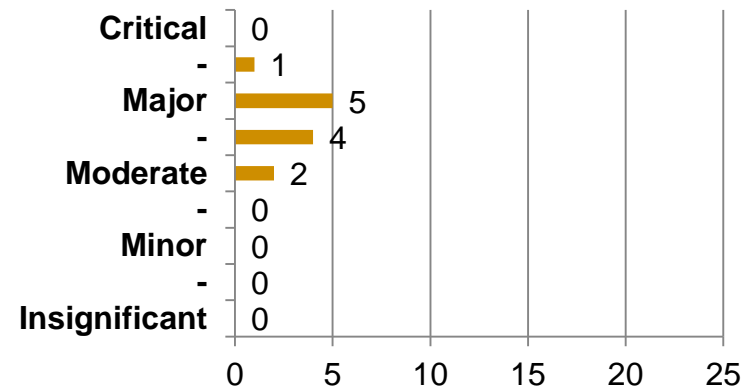
RD-1: Growth of O&M Costs :& Minimize Long Term Growth of Ownership:



Likelihood Mean Score: 7.33



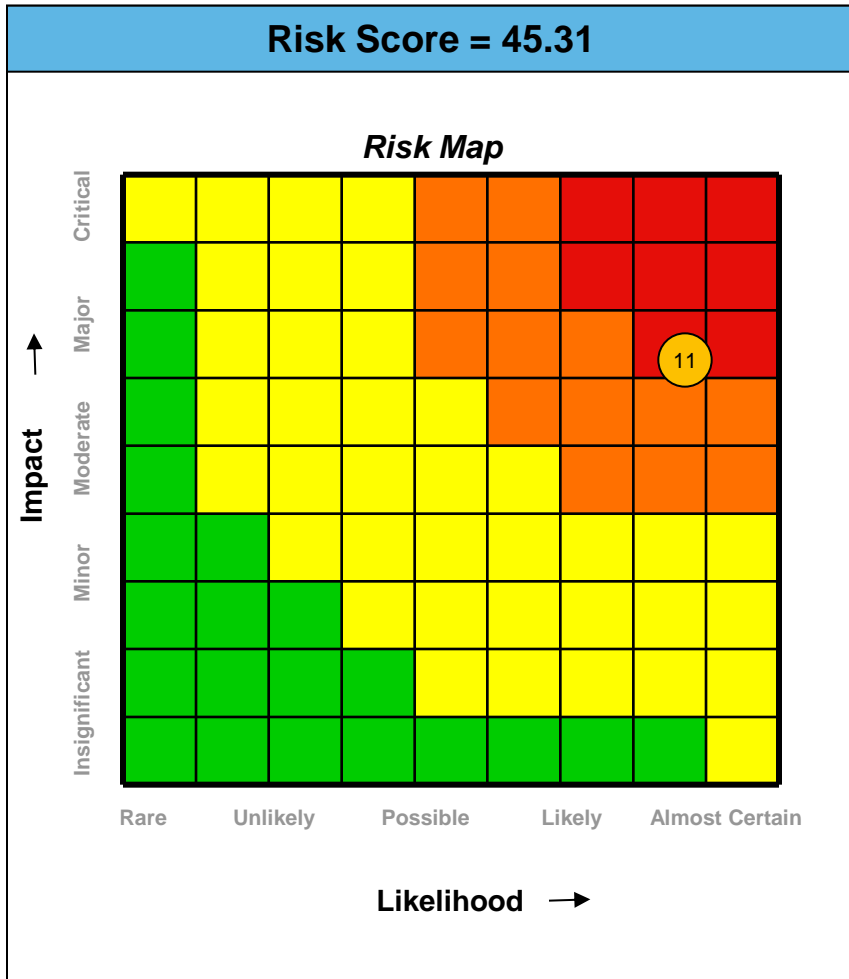
Impact Mean Score: 6.42



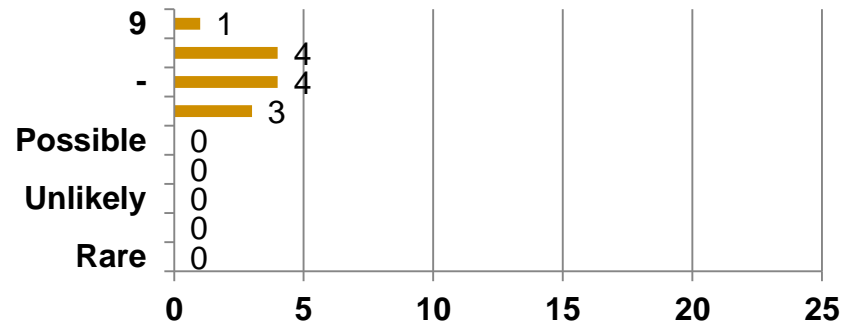
Risk Assessment & Prioritization Workshop Results

Aviation Division – Facility & Infrastructure and Maintenance Risk Map

RD-11 Common Use Trash/Recycling/Composting/Infrastructure:



Likelihood Mean Score: 7.25



Impact Mean Score: 6.25

