



# Risk Modelling of Gas Assets

An Actuarial View

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# Disaster



# Risk Assessments

Engineering



Actuarial



**X 5**

# Why Risk?

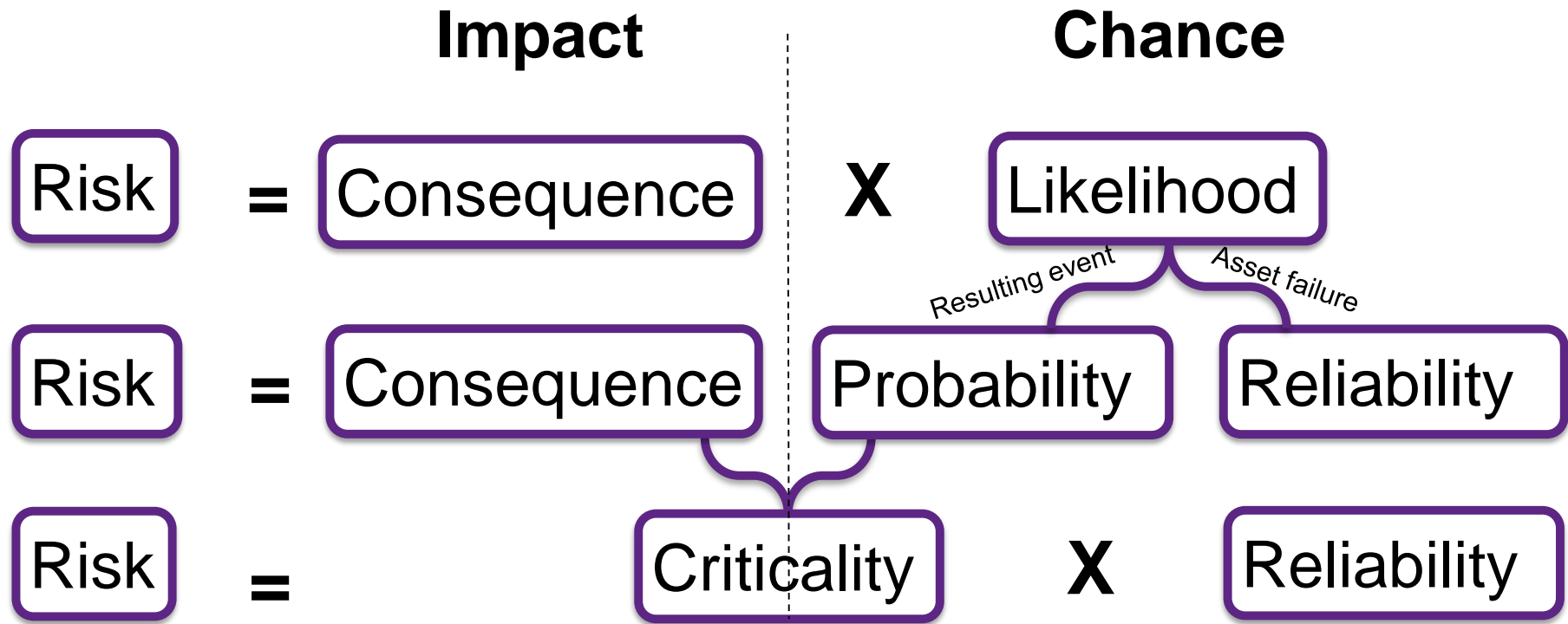
- Optimise expenditure
- Transporting hazardous substance
- Heavily regulated



# Risk

		CONSEQUENCE				
		1	2	3	4	5
LIKELIHOOD	5	Medium	High	Very high	Very high	Very high
	4	Medium	Medium	High	Very high	Very high
	3	Low	Medium	Medium	High	Very high
	2	Low	Low	Medium	Medium	High
	1	N/A	Low	Low	Medium	Medium

# Risk



# Risk Example

## **Polyethylene old vs new**

- Old has higher chance of leaking
- Same potential consequences
- Same probabilities of consequences

# Criticality



Driver	Consequence
Delivery	# of Customers
	Type of Customers
	Backup supply
Efficiency	Cost of Unscheduled Repair
	Cost of Scheduled Repair
	Cost of Replacement
	Cost of Maintenance
Partnership	Location
	Previous Outages
	Media
Safety	Pressure
	Energy release Volume
	Induced currents
	Operational Hazards
	High Consequence Areas
	Hazard Zones
	Third Party Activity
	Hazardous Materials



# Criticality

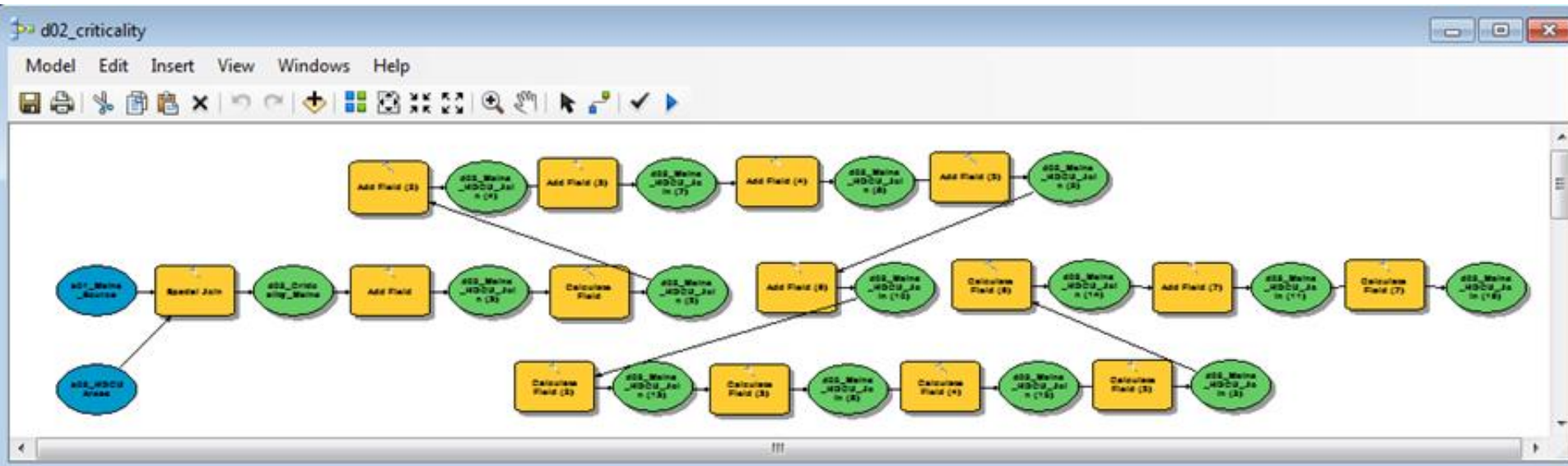
## Factors

Asset Type
Asset Subtype
Asset to Standard
Region
Depth
Surface Type
failed odorant downstream
# dependent customers
Diameter
Load shedding category
Proximity to environmental asset
# downstream outages
Operating Pressure
Volume Downstream
Hazardous repair/replace area
Proximity to HDCU
Electrically Hazardous Area
Proximity to Third-party Assets
Population Density

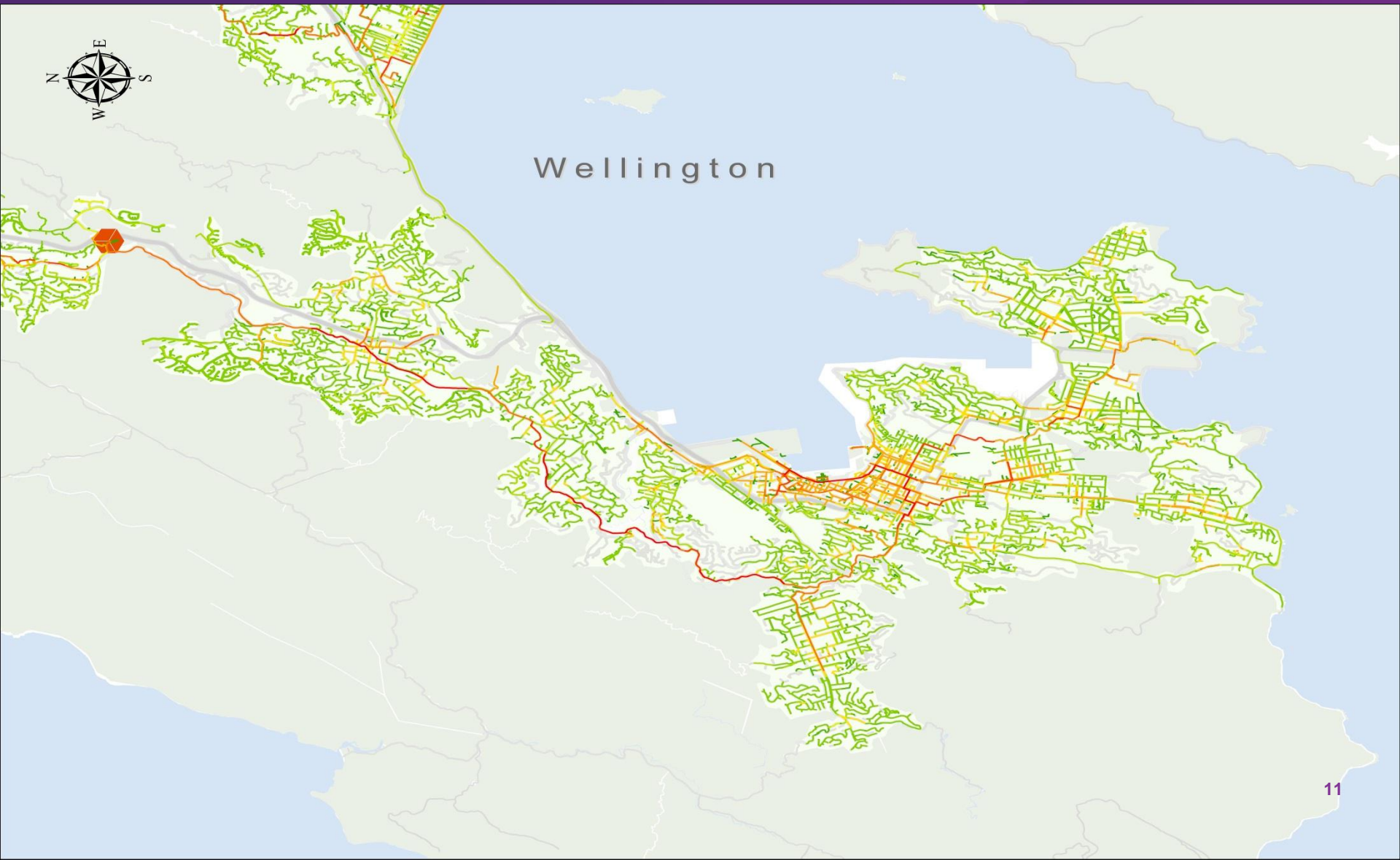
## Current factors

Asset Type
Diameter
Pressure
Material
Region
Population Density

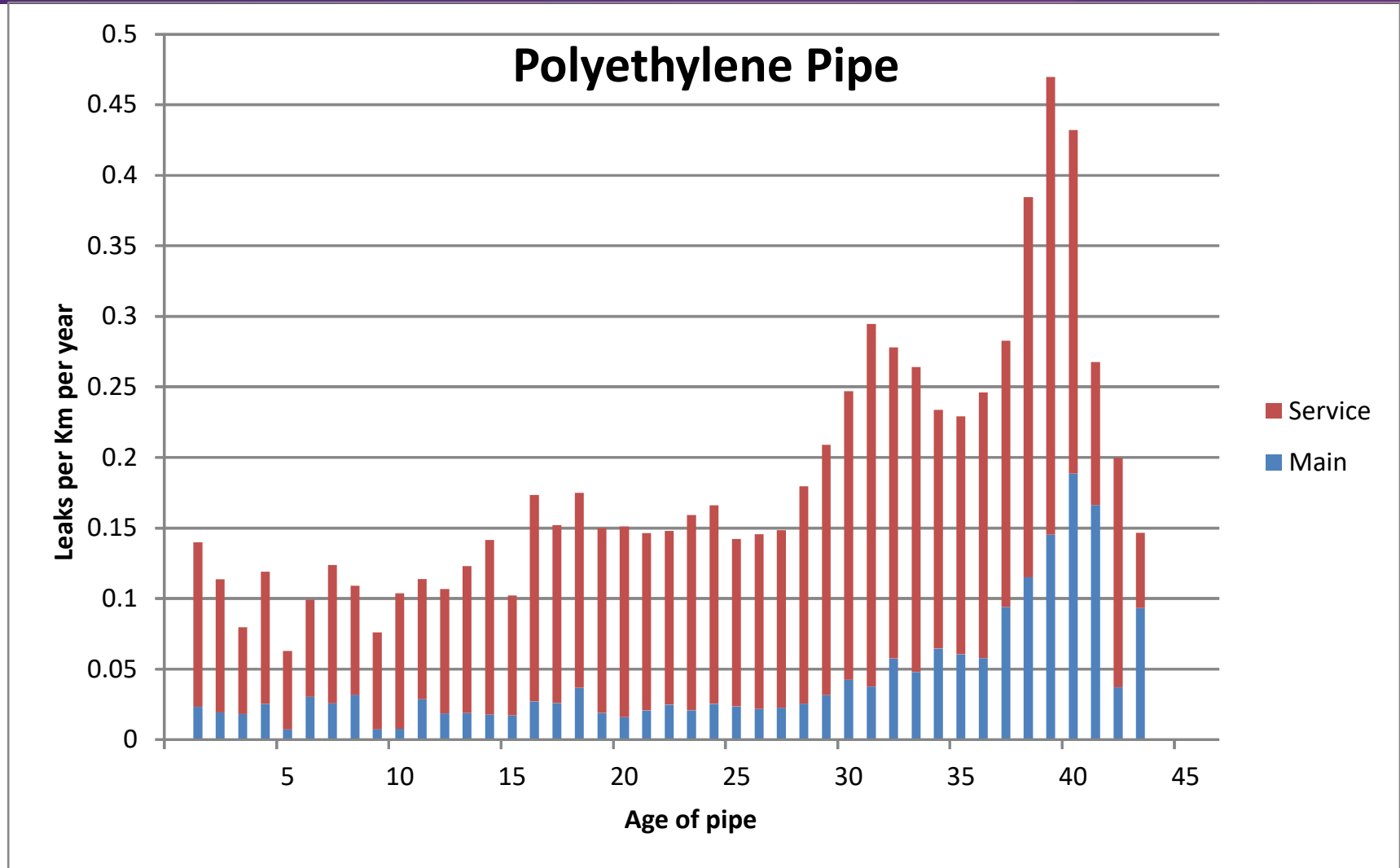
# Criticality



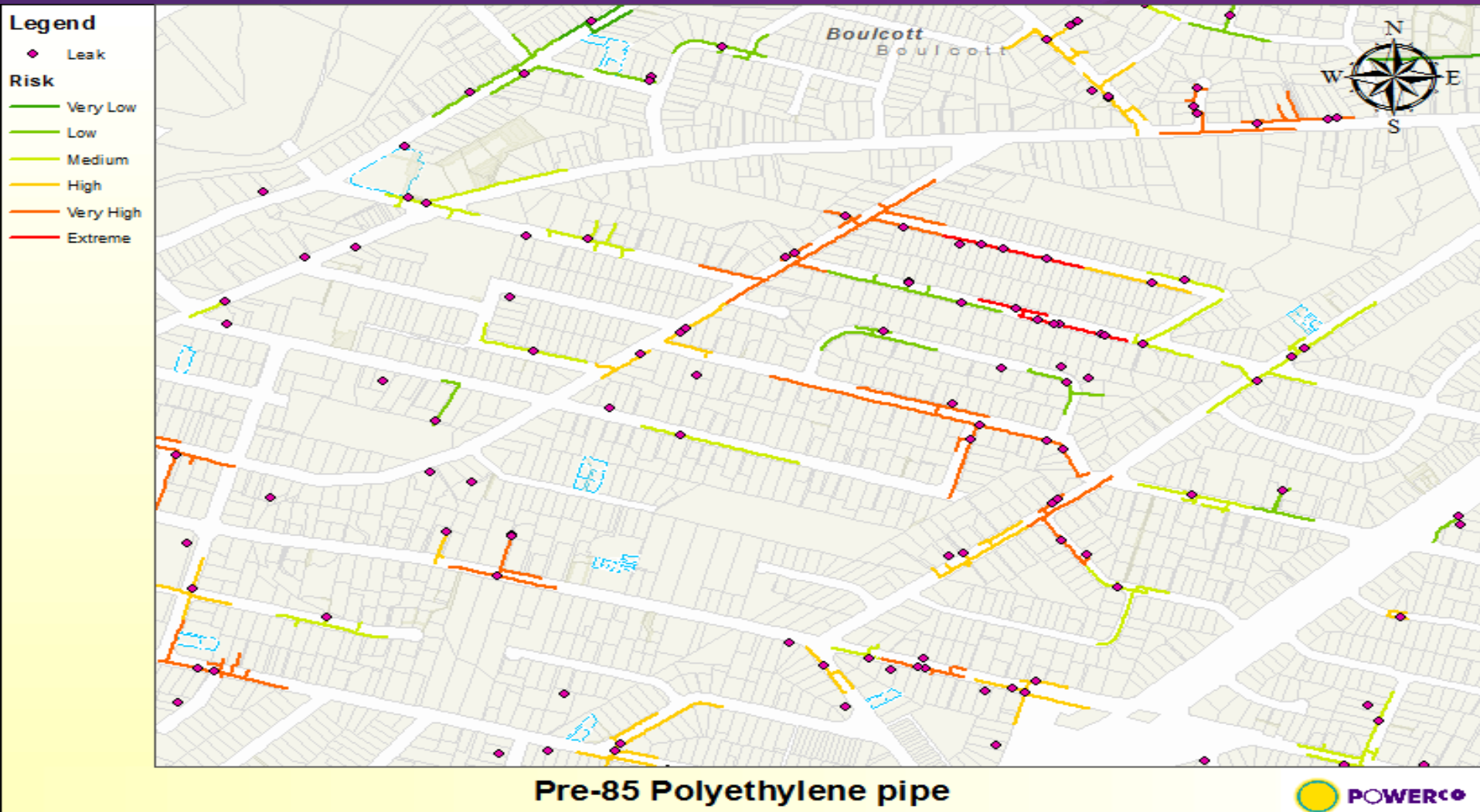
# Criticality



# Reliability

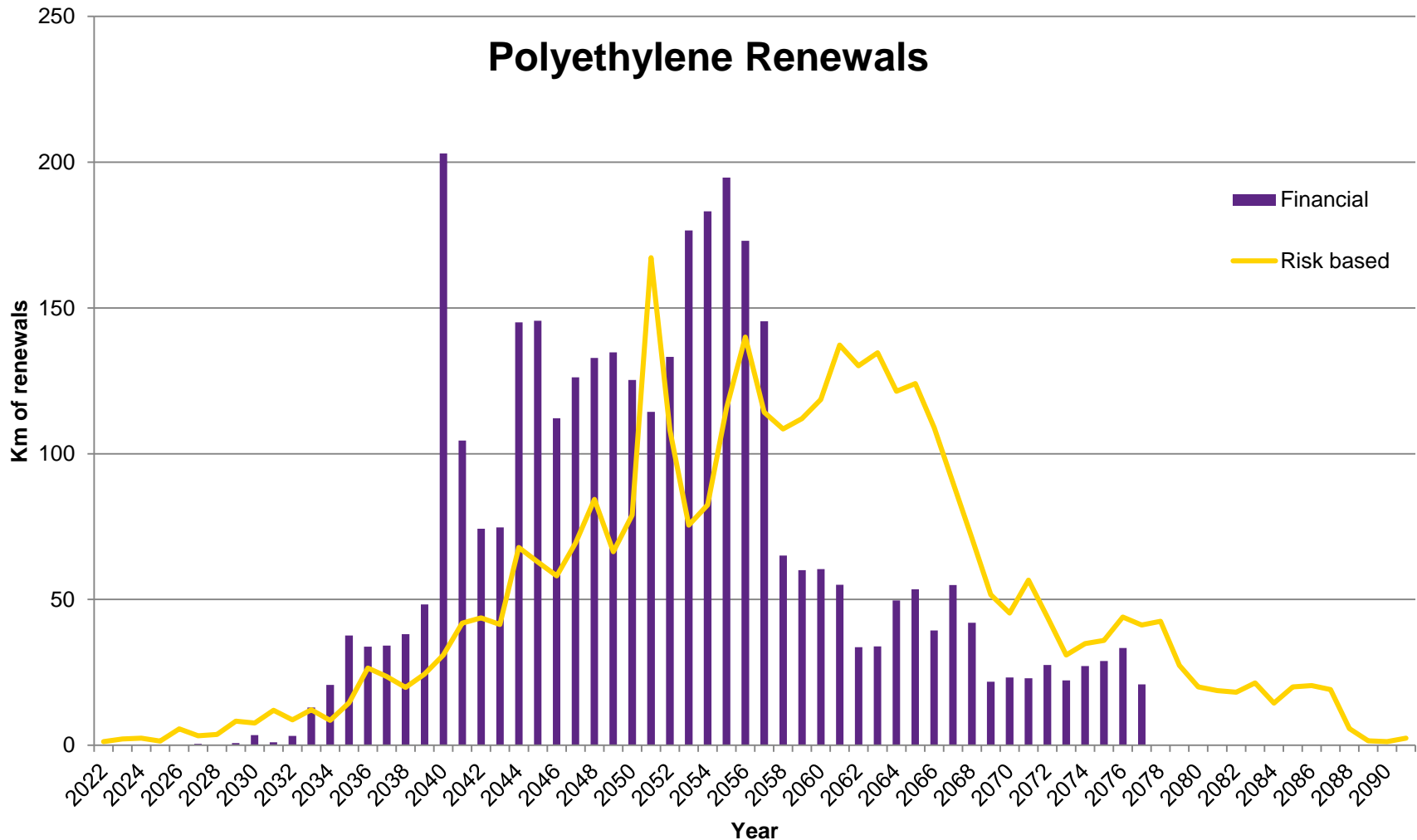


# Applications





# Applications



# Questions?