Asset Management Working Group

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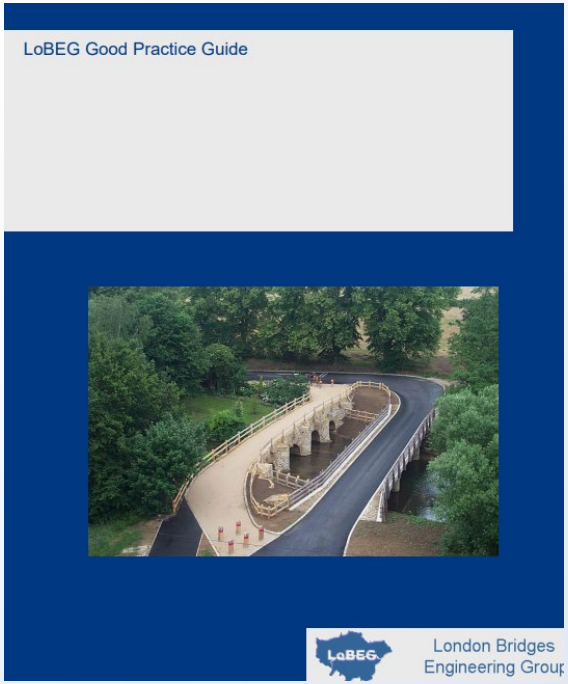
AMWG Objectives

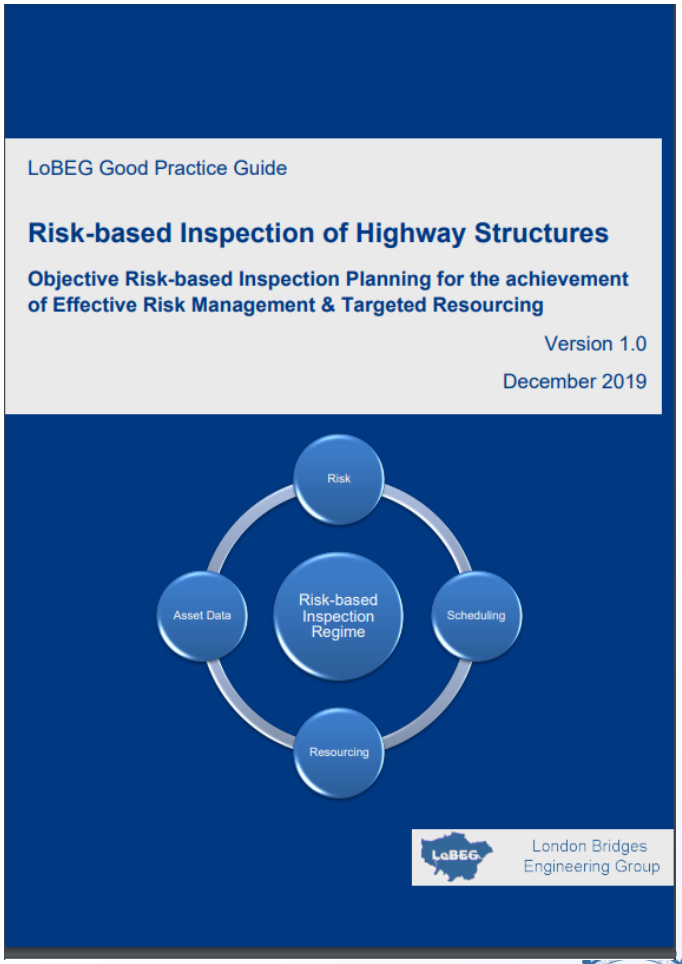
- Develop and promote good practice in the management of Bridge Infrastructure in London
- Collaborative research approach
- Meets every 6 weeks



2021/22 Updates

- Good practice guides
  - Risk Based Inspections (GI and PI)
  - Defect codes Update
  - Consistent Inventory Data
- Life cycle/Investment planning
- Consistent Element Hierarchy for
  - Tunnels, Buildings, River Piers
- Mobile Inspection

Risk Based Inspections



- Optimal allocation of resources
- Balance between Risk and Inspection efforts
- Proactive Approach

Inspection and Maintenance Planning strategies

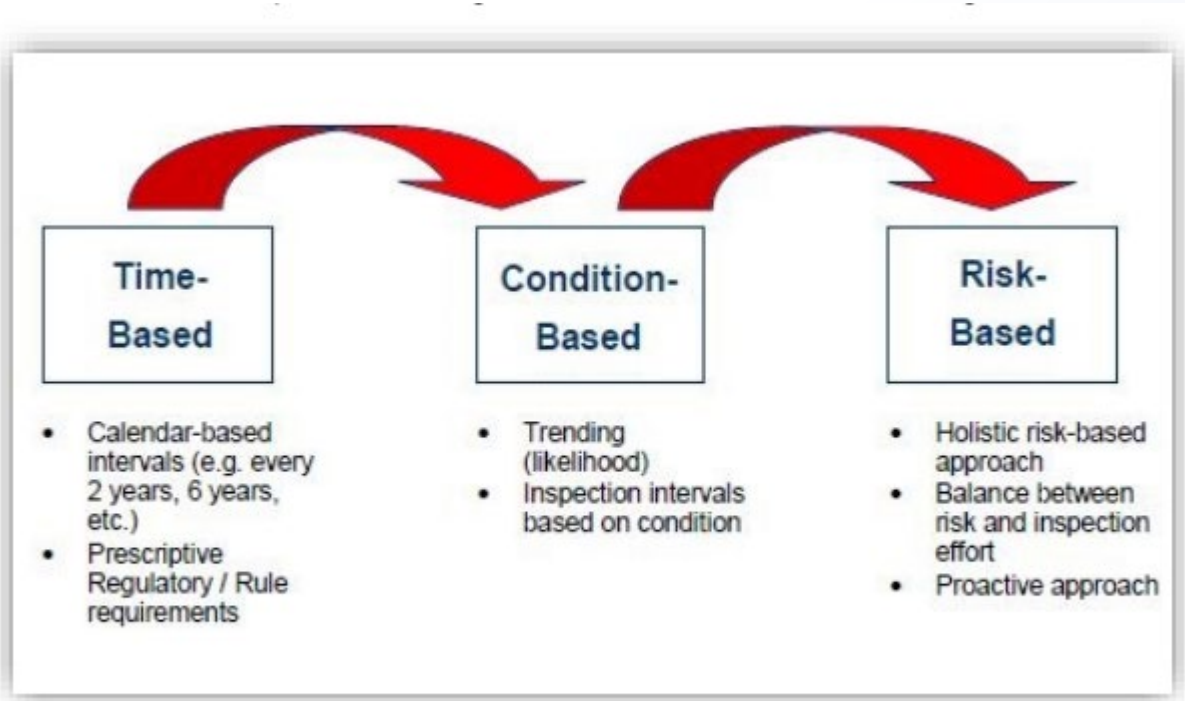
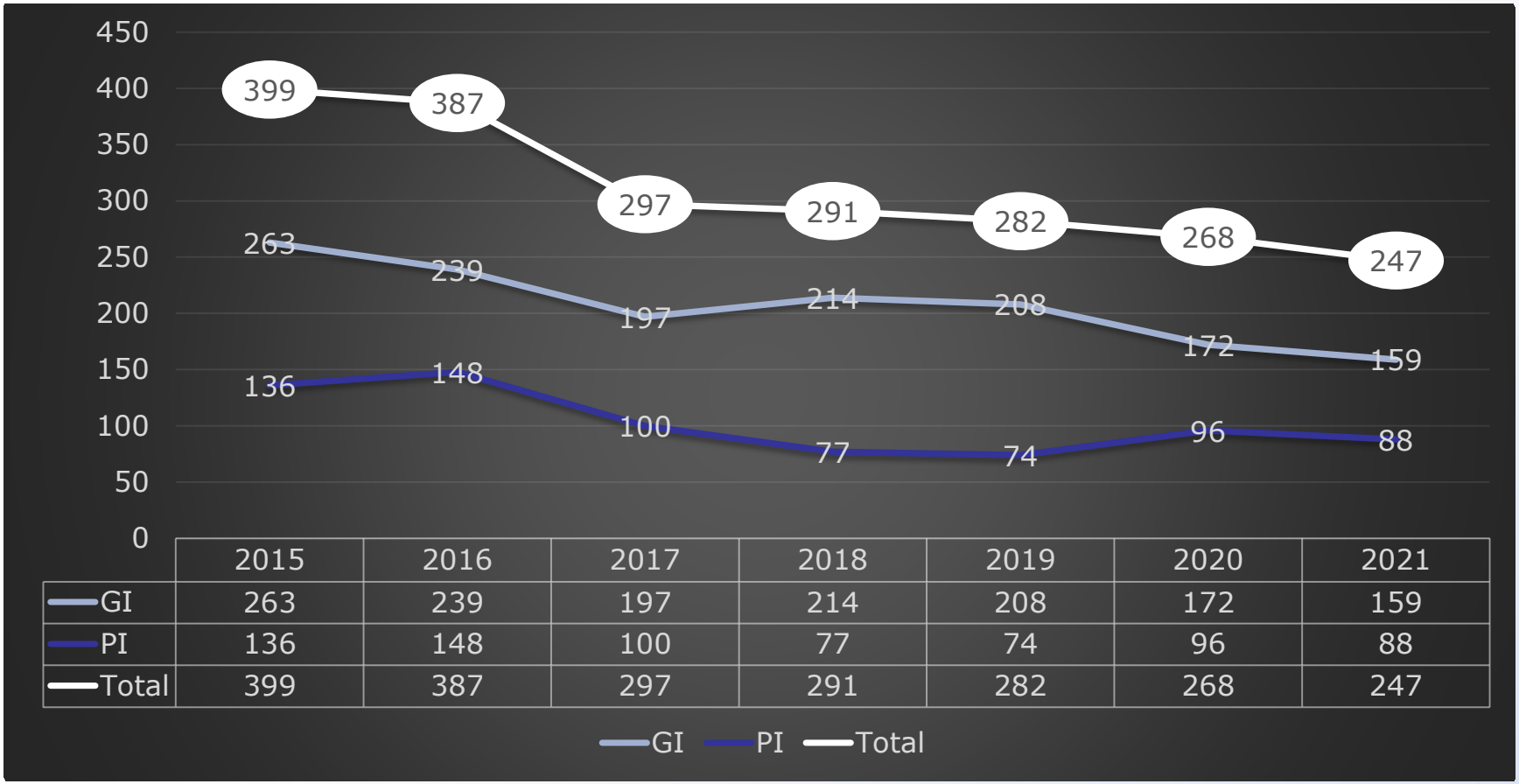


Figure 1: Evolution of Inspection and Maintenance Planning Strategies

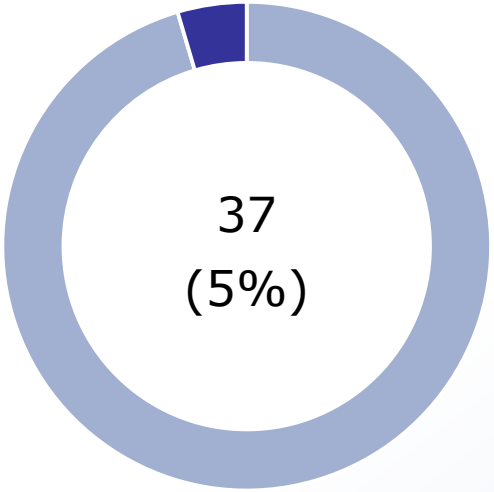
BPRN Inspections
(810 Structures)



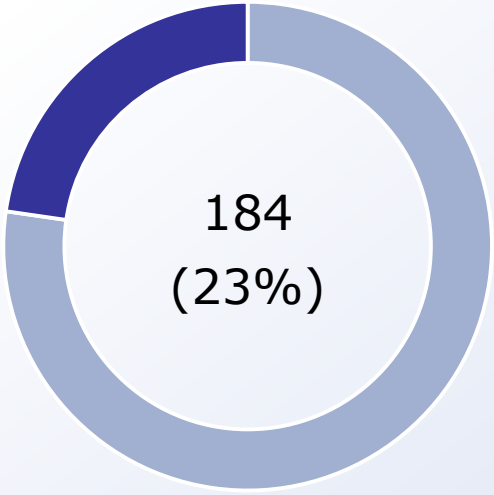
	2015	2016	2017	2018	2019	2020	2021
GI	263	239	197	214	208	172	159
PI	136	148	100	77	74	96	88
Total	399	387	297	291	282	268	247

BPRN Inspections

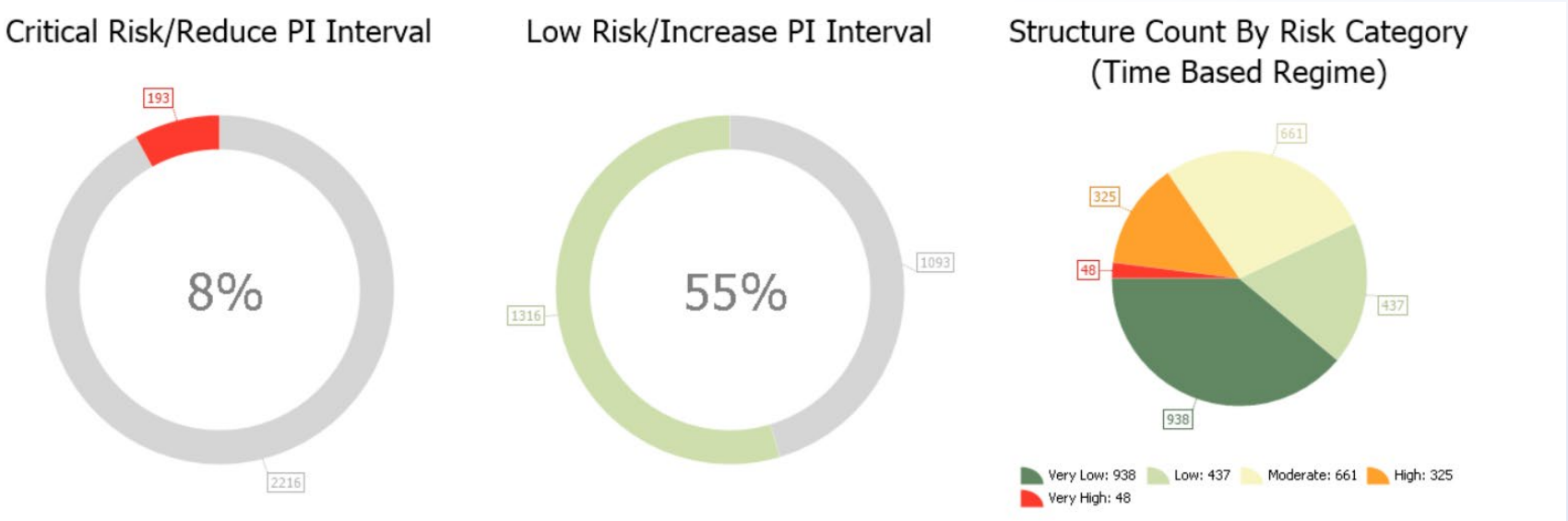
Structures with No Inspections in Last 6 Years



Structures with No PI in Last 6 Years



BridgeStation RBI Module



BridgeStation RBI Module

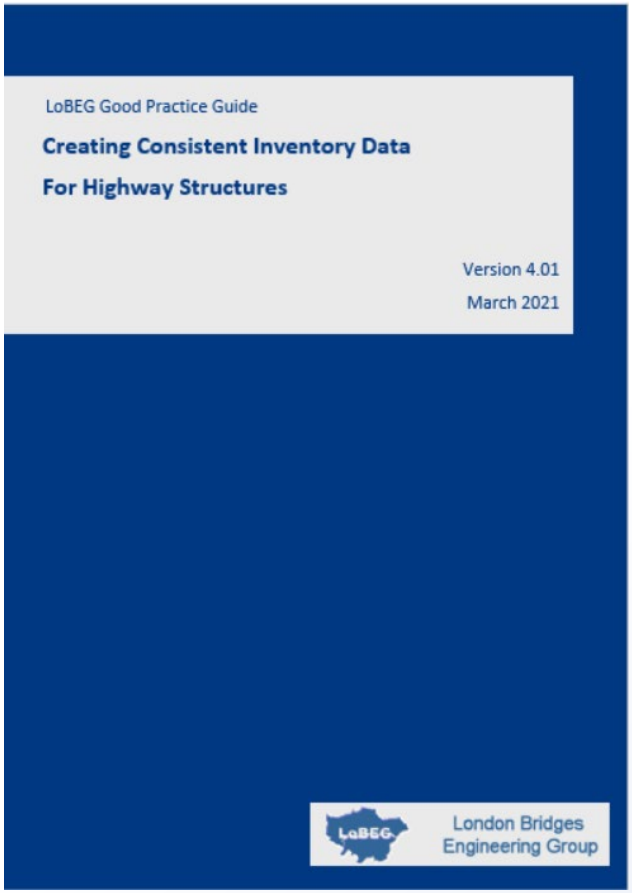
Maintaining Area	Analysis Type	Notes	Added to Programme	Start Year		
				Total PI	Total GI	Annual Cost
All	Time Based PI & GI		No	179	94	£0
All	Risk Based PI & Time Based GI		No	137	138	£0
All	Risk Based PI & GI		No	116	146	£0
All	Altered		No	116	146	£0

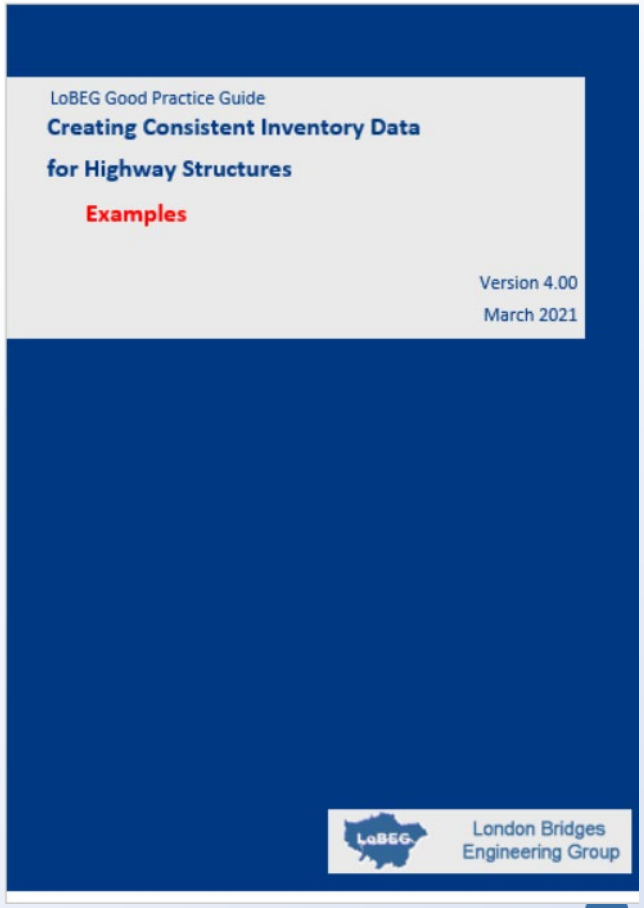
Defect Code Updates

No.	Item		Severity 1	2	3
20	Aesthetic Issues (possibly affecting durability e.g. algae, lican, moss, leachate, efflorescence, staining, etc)	.1	None, Low or Medium levels of aesthetic issues not visible to the public. Not significant to long term durability.	High levels of aesthetic issues not visible to public and/or low levels visible to the public. Not significant to long term durability.	High levels of aesthetic issues in areas with low to moderate footfall. Affecting long term durability.
21	Pigeon proofing/ Guano	.1	None, insignificant defect to the pigeon proofing, insignificant deposits of guano	Missing spikes, small breaks in the mesh/netting or gaps at connections. Guano build up not noticeable by public but could affect durability of element.	Missing spikes and evidence of guano, breaks in netting large enough to allow avian access. Guano build up noticeable by the public.
22	FRP Composites Pultruded and Moulded construction	.1	No sign of damage	Minor signs of damage	Moderate signs of damage
		.2	No visible signs of open joints	Joints open slightly on surface or cracked coating at joints	Open joints <50% width of beam in areas of low flexure or <25% in areas of high flexure
		.3	No signs of rusting or damage to fixings	Non-structural bolts loose, minor corrosion of fixings	Non-structural bolts missing, moderate corrosion of fixings
		.4	No signs of damage to bonded joints	Minor signs of disbondment at joints	Bonded joints failing in areas of low flexure

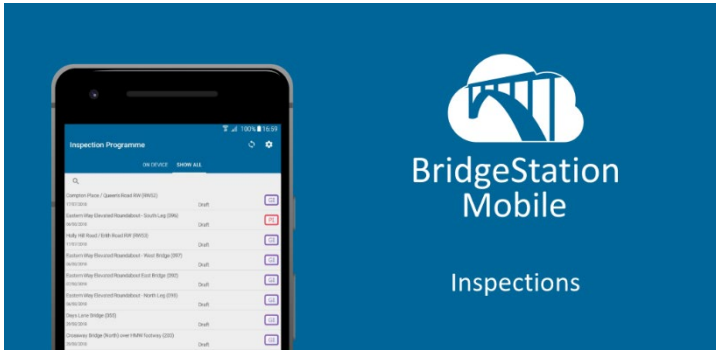
- New defect codes
  - Joint types
  - Pigeon proofing/ Guano
  - FRP Composites Pultruded and Moulded construction
  - Aesthetic Issues
  - Composite Structures

Consistent Inventory Data GPG





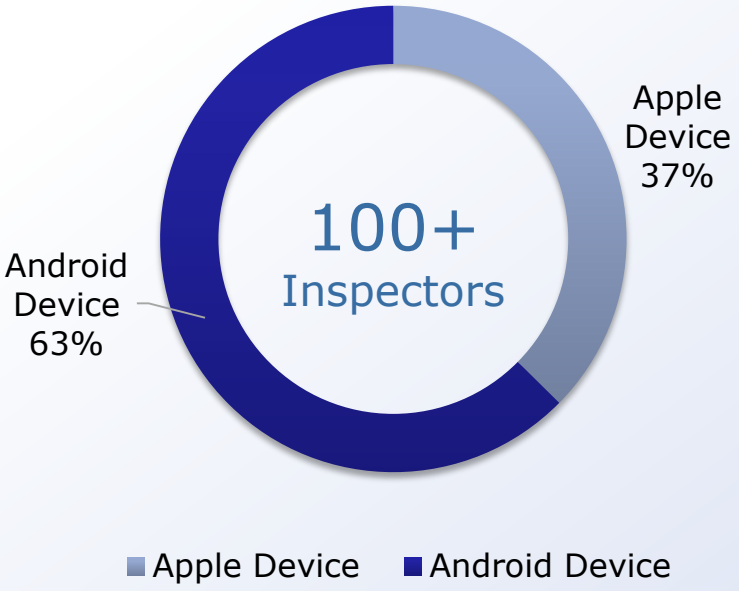
Mobile App for Inspection



Download on the App Store

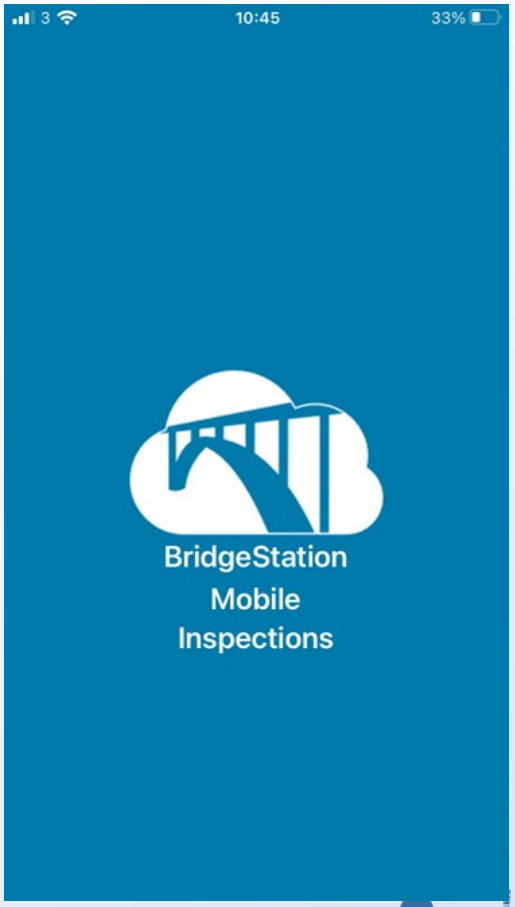
GET IT ON Google Play

App Usage

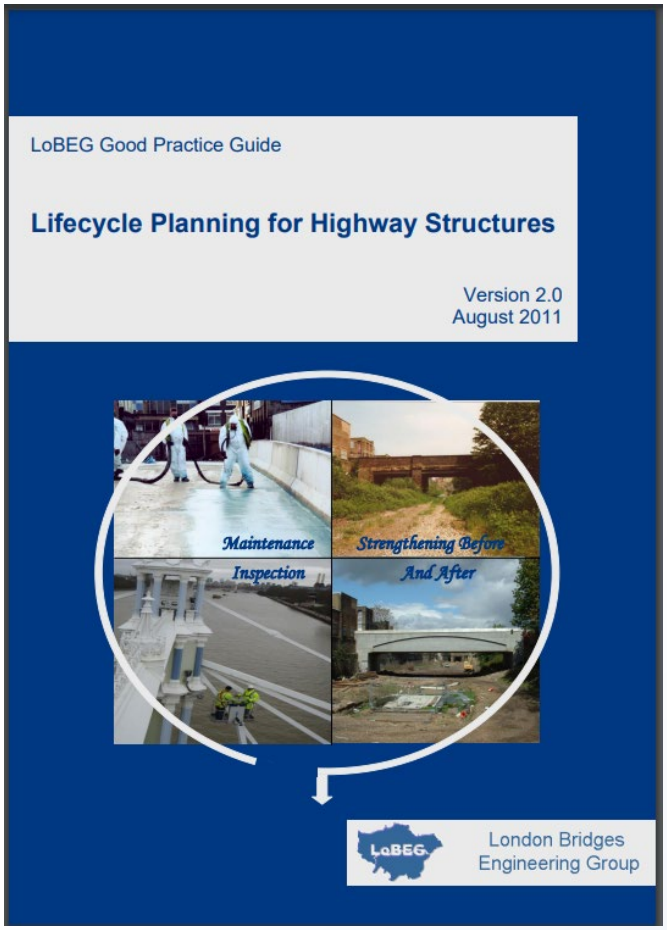


Mobile Inspection Key Features

- Offline
- Previous inspection photos/comments while onsite
- Interactive defect code table
- Manage inspection teams
- Risk assessment forms



Life cycle Planning



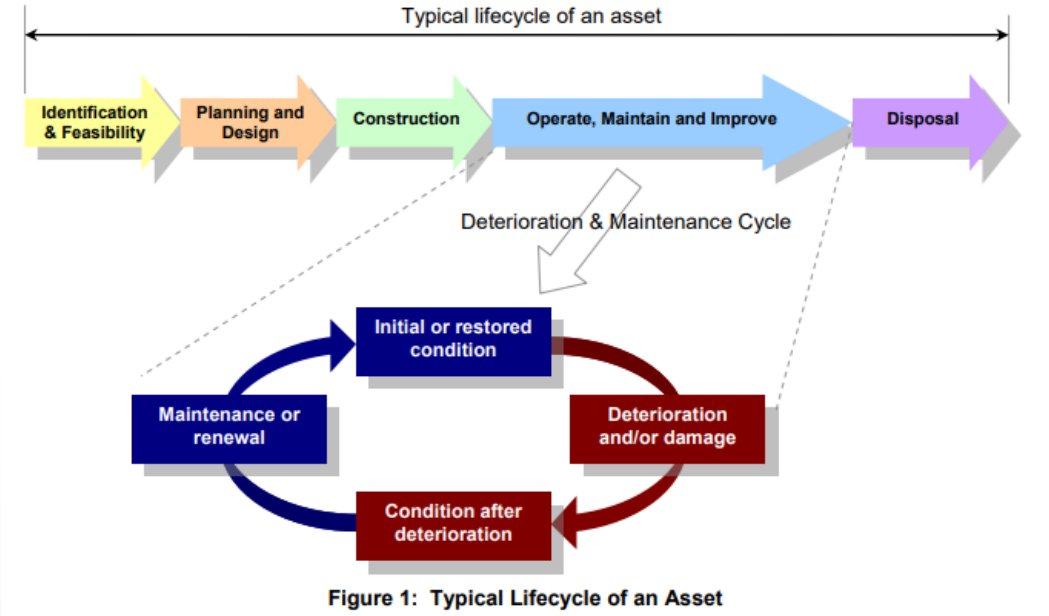


Figure 1: Typical Lifecycle of an Asset

Investment Strategies

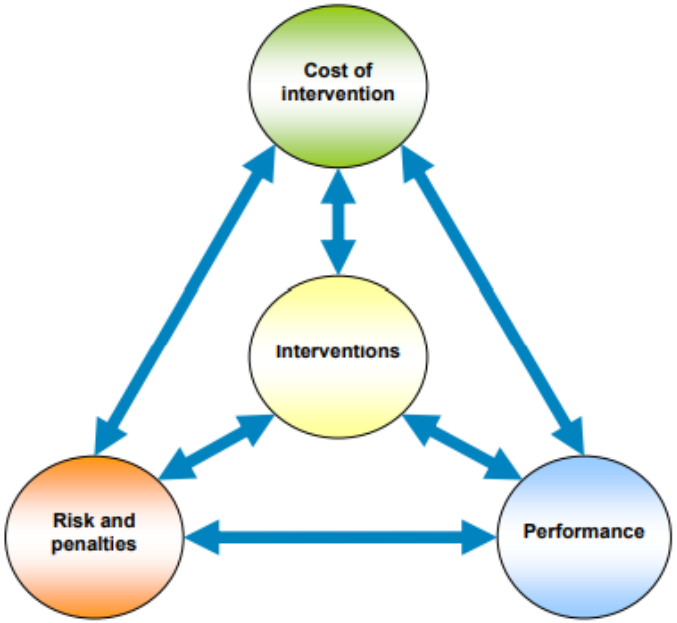


Figure 2: Balancing Risk, Performance, Cost and Interventions

- National Strategies and Rates/SAVI
- Custom London Strategies and Rates
- Optimisation

BridgeStation
Automate Stock Investment Planning

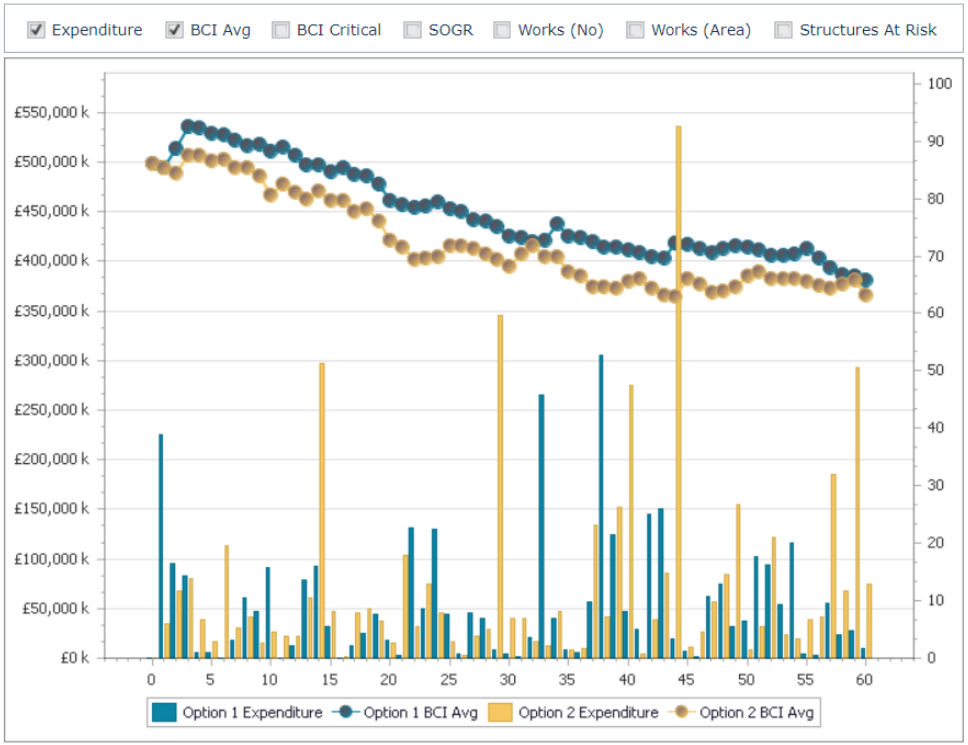
Investment Planning : Standard Scenarios

Note: Following investment scenarios are based on each strategy defined in the strategies section.

Standard (System Managed) Scenarios

	#	Title	Strategy	Start Year	Optim. Step	Whole Life Cost	Structure Count	Stock BCI Avg		
								Yr 0	Yr 5	Yr 10
National Strategy										
	View Report	Do Nothing	Do Nothing	2021			3205	86.16	78.53	68.98
	View Report	Planned Preventative	Planned Preventative	2021		£3,432,022,128	3205	86.16	90.74	87.69
	View Report	Planned Targeted	Planned Targeted	2021		£3,454,174,151	3205	86.16	90.30	86.94
	View Report	Planned Do Minimum	Planned Do Minimum	2021		£4,484,926,187	3205	86.16	86.31	80.42
	View Report	Unplanned Reactive	Unplanned Reactive	2021		£4,480,523,857	3205	86.16	86.18	80.29
National Strategy - Optimised										

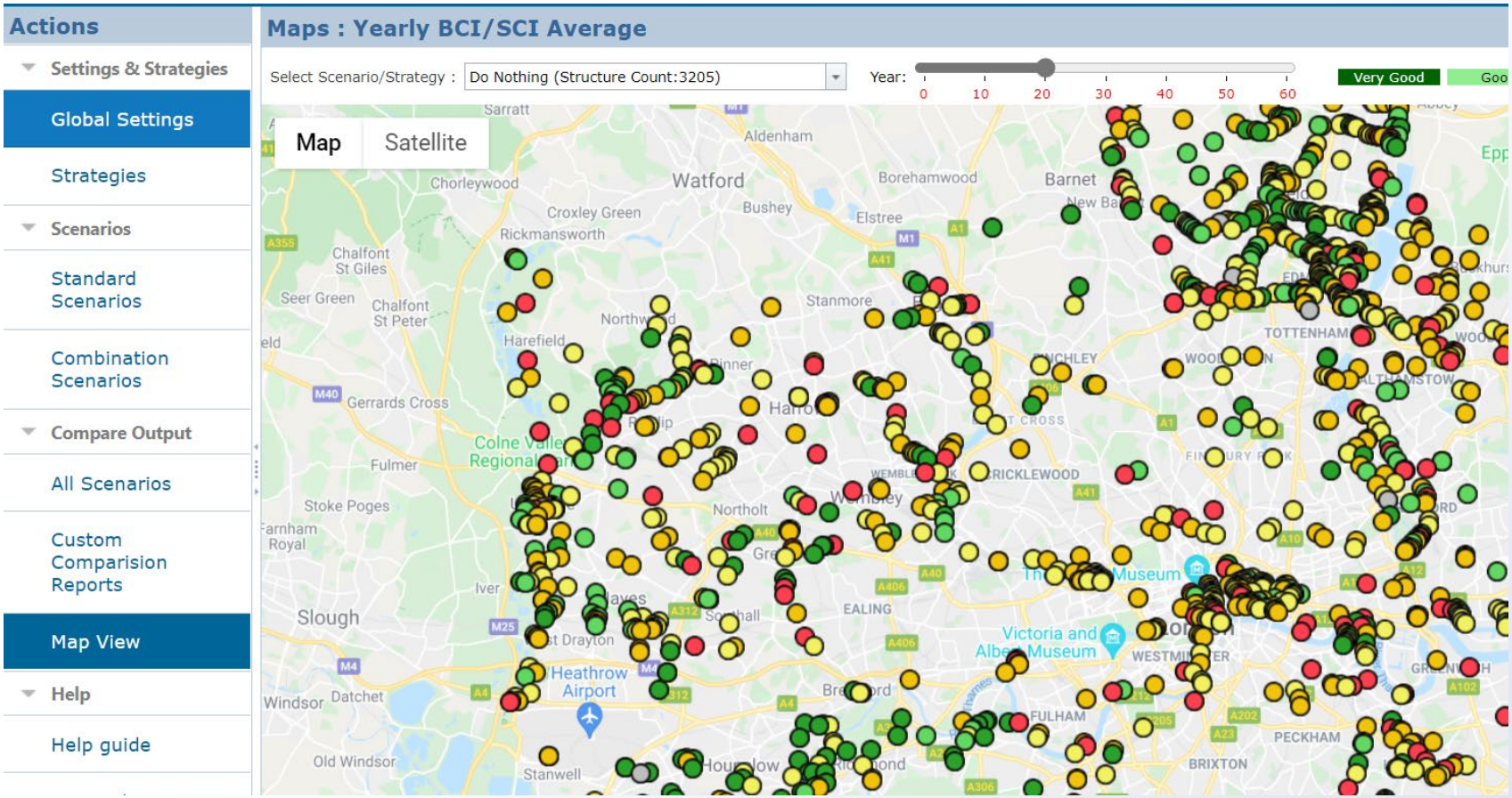
Option Analysis



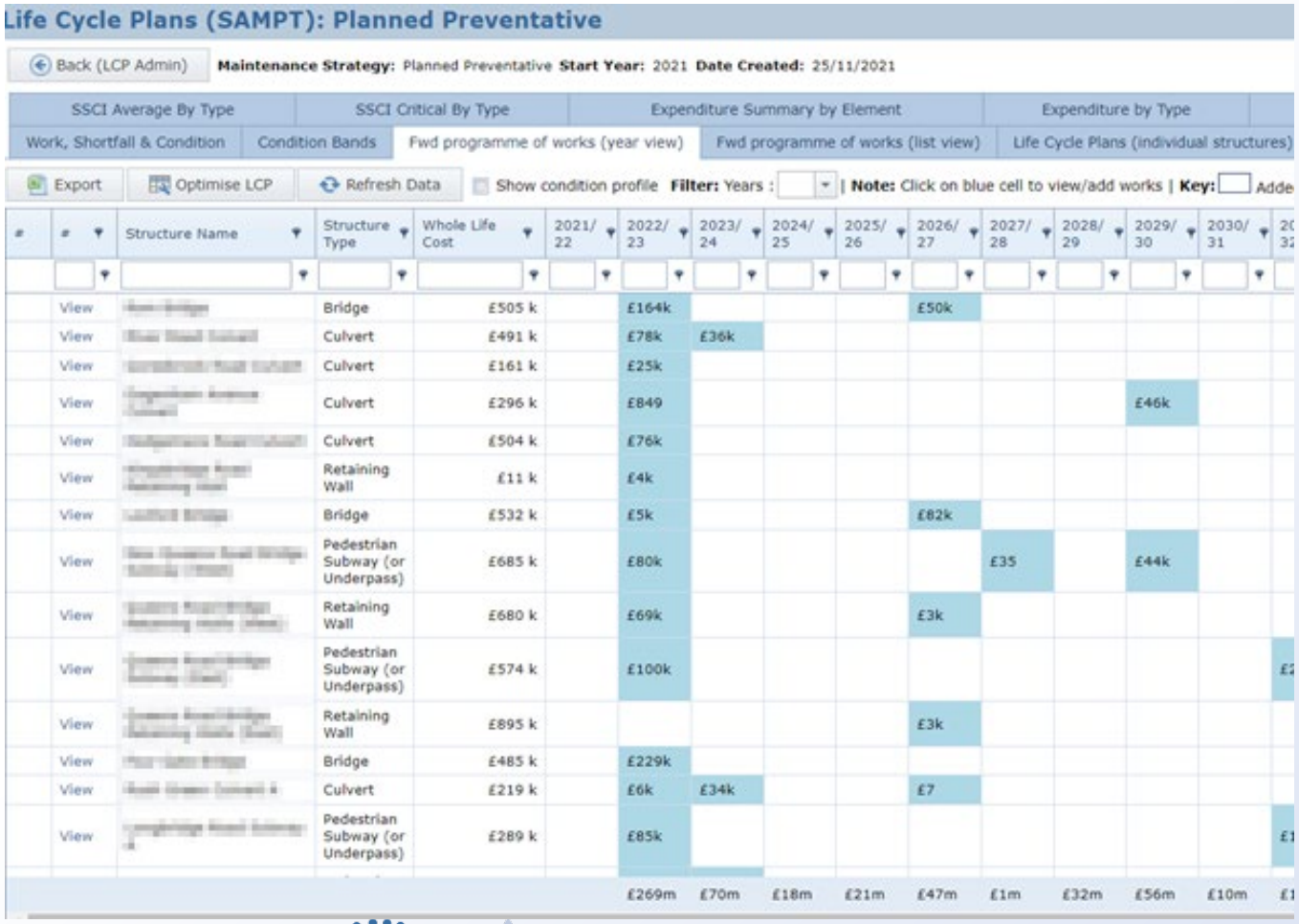
	Year	BCI Average	BCI Critical	Expenditure	SOGR %	Structures with Safety or Performance at Risk	Works		
							Area	Area %	Structure Count
Scenario Title: Planned Do Minimum - Optimised (Option 2) (Continued on the next page)									

Scenario Title	Chart Title	Strategy Name	Whole Life Cost
Planned Preventative - Optimised (5 Yrs)	Option 1	Planned Preventative	£3,329,228,047
Planned Do Minimum - Optimised	Option 2	Planned Do Minimum	£4,409,685,474

Visualise Data Over Map



Detail Forward work plan



Life Cycle Plans (SAMPT): Planned Preventative

Back (LCP Admin) **Maintenance Strategy:** Planned Preventative **Start Year:** 2021 **Date Created:** 25/11/2021

SSCI Average By Type | SSCI Critical By Type | Expenditure Summary by Element | Expenditure by Type

Work, Shortfall & Condition | Condition Bands | Fwd programme of works (year view) | Fwd programme of works (list view) | Life Cycle Plans (individual structures)

Export | Optimise LCP | Refresh Data | Show condition profile **Filter:** Years : | **Note:** Click on blue cell to view/add works | **Key:** Adde

#	#	Structure Name	Structure Type	Whole Life Cost	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	20 32
	View	[redacted]	Bridge	£505 k		£164k				£50k					
	View	[redacted]	Culvert	£491 k		£78k	£36k								
	View	[redacted]	Culvert	£161 k		£25k									
	View	[redacted]	Culvert	£296 k		£849							£46k		
	View	[redacted]	Culvert	£504 k		£76k									
	View	[redacted]	Retaining Wall	£11 k		£4k									
	View	[redacted]	Bridge	£532 k		£5k				£82k					
	View	[redacted]	Pedestrian Subway (or Underpass)	£685 k		£80k					£35		£44k		
	View	[redacted]	Retaining Wall	£680 k		£69k				£3k					
	View	[redacted]	Pedestrian Subway (or Underpass)	£574 k		£100k									£2
	View	[redacted]	Retaining Wall	£895 k						£3k					
	View	[redacted]	Bridge	£485 k		£229k									
	View	[redacted]	Culvert	£219 k		£6k	£34k			£7					
	View	[redacted]	Pedestrian Subway (or Underpass)	£289 k		£85k									£1
						£269m	£70m	£18m	£21m	£47m	£1m	£32m	£56m	£10m	£1

Ongoing Topics

- Scour - Hidden Defects
- Net Zero
- Inspection Brief
- Investment Strategies and Life Cycle Planning

Questions