Data Management Strategy

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Contents

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Document History

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1. Introduction

Good asset management relies on accurate, appropriate, complete, quality and up to date data supported by robust data management systems in order to understand fully the highways infrastructure asset.

Infrastructure asset data is required for many purposes, it may be to assess and monitor operational performance against service levels and identify current and future maintenance needs and the budgets required to support these activities, alternatively it may be to provide information in support of enquiries, complaints, FOI's, legal challenges, statistical analysis, etc. Whatever the reason quality data is fundamental to supporting the Authority's business activities and its risk-based decisions and also to understand the potential outcomes of those decisions.

Decisions made without good quality data represent a risk to the future performance of the asset, levels of service, maintenance need, the replacement of assets, the financial demands of the highway infrastructure and information reporting and analysis.

Decisions made with good quality data are well informed, allowing the risks associated with asset maintenance management to be considered, balanced against competing needs and actioned to deliver the most appropriate, effective and affordable solution. It also supports the substantive provision of information to address all manner of enquiries and legal challenges, etc.

The infrastructure asset data held by the Authority is complex and wide ranging, crucial to its value is the effective management of this data which is governed by a 'Data Management Strategy'.
A well-conceived data management strategy will mitigate some common challenges such as:

- Data handling activities that consume time and resources but do not contribute to overall business objectives
- 'Siloed' projects that use the same data, yet duplicate the efforts and costs associated with that data

- Incompatible, duplicate, or missing data from undocumented or inconsistently documented sources

Data collection and management is essentially determined by the Authority's defined business need and objectives against which the data is held and processed. Business need may be determined through a consideration of:

- The Authority's overall objectives
- What data is needed to meet these objectives?
- What types of insights and information are required to make progress against these initiatives?

The Highways Code of Practice provides the following recommendation for information management:

RECOMMENDATION 8 – INFORMATION MANAGEMENT:

'*Information to support a risk-based approach to highway maintenance should be collected, managed and made available in ways that are sustainable, secure, meet any statutory obligations, and, where appropriate, facilitate transparency for network users.'*

It is against this background that a 'Data Management Strategy' is required.

This 'Data Management Strategy' sets out the approach to managing all Highway Authority selected data sets associated with the highway infrastructure assets and the highways network. The subject of this 'Data Management Strategy' describes the approach that the data set(s) are registered, held and managed.

Should sensitive or personal data be collected and held on the Authority's information systems which could impact on the safety and security of individuals, sensitive assets and systems, eg, commercial in confidence data, names, addresses, contact information, etc, a security minded approach should be adopted for its capture, creation, processing, storage, distribution. This would come under the terms of the General Data Protection Regulations (GDPR) and additional data management, storage,

security and handling requirements and constraints will apply. Any project or programme team that do require this type of data storage will revert to the Corporate Policy. However, it is very unlikely that this type of information will be required to be held for typical highway related projects."

Key to this 'Data Management Strategy' is what is termed an 'Information Asset Register' which serves to tabulate the various data sets held by the Authority in support of highway infrastructure asset maintenance and management.

Each data set may be held in its own Asset Register acting as a data storage repository. These asset registers may simply be individual databases for each asset type that are used to support the maintenance management needs of the asset, however in their advanced form they will be integrated databases using a common network referencing system in order to provide a "single source of truth" for each asset type.

The Highways chosen 'Asset Management Systems are:

- Alloy and Horizons for Highways
- Alloy and Telensa for Street Lighting
- Bridge Station for Structures

These are commonly used to store various data sets on a shared platform against a single defined network, this promotes the concept of a "single source of truth" which is key to reliable service management.

Note: The consideration of what asset data is held and how, why and when it is collected by the Authority is outside the immediate scope of this document and is discussed in the Highways Inventory strategy document.

The 'Highways Infrastructure Asset Management Plan and Strategy' is founded on a risk-based approach, and the successful management and use of its infrastructure data is key to delivering a well-managed highway infrastructure and its ability to communicate effectively with stakeholders.

1.1 Typical Business Needs

The following infrastructure-based business needs for data collection and data management are typical for a Highway Authority environment:

- Understanding the highway assets, their condition and history
- Understanding the risks
- Planning and prioritising future works and budgets
- Performance and accountability
- Improving assets and their effectiveness
- Defending actions
- Informed decision making
- Reporting on performance to internal and external stakeholders
- Responding to enquiries, legal challenges and statistical evaluations

The 'Highways Infrastructure Asset Management Guidance Document' provides the following recommendation for asset data management:

RECOMMENDATION 5 ASSET DATA MANAGEMENT:

'The quality, currency, appropriateness and completeness of all data supporting asset management should be regularly reviewed. An asset register should be maintained that stores, manages and reports all relevant asset data.'

2. Scope

A 'Data Management Strategy' is essentially a roadmap of how the information collected by the Authority and held on the Asset Register(s) is effectively recorded, stored and managed in accordance with the Authority's business needs and document retention periods. For highway infrastructure assets this may be demonstrated in the form of an **'Information Asset Register'** comprising of various parameters for each data set:

The Authority has chosen to set up separate 'Asset Registers' for 'Information' and 'IT Systems' reflective of the Authority's defined business needs and management systems. An example of an asset register is shown in Appendix A.

2.1 Information Asset Register: (typical heading components)

- Information Asset Owner – the service or manager responsible for the data ownership
- Asset Name – the name assigned to identify the asset data set
- Asset Description – a brief outline description of the data set
- Primary Use – the main business need and use for the data
- Secondary Use – any secondary business use of the data
- Asset Data Type – Inventory, Performance, Financial
- Date Created/Installed – date the data was compiled
- IT Supplier/System Name – the name of the IT/storage system and its supplier
- Service Area Info, eg, Directorate, Team – the Authority's service team with data ownership responsibility
- Information Administrator(s) – the service team or individual responsible for managing and administering data currency and updates
- Business System Owner/IT Administrator - the IT or business team responsible for managing and administering system currency and updates
- Information Asset Storage Location (e.g., physical place or IT storage location) – the location or platform where the data or system is held

- Asset Info Status (e.g., Active/Inactive) – a statement of the current data activity status
- Accessibility & Date Stamping - Access rights to the data
- Data Disposal - how archiving or disposing of out-of-date data is dealt with
- Date became inactive – date when the data became inactive
- Number of users – how many people routinely use the data
- Information Sharing Status – whether the data is shared internally/externally and the circumstances of sharing, e.g., routine, ad hoc, exceptional
- Sharing Method – how the data may be shared, e.g., hardcopy, email, access to system, etc
- Risk – the risk level associated with the data not being available/accessible based on 'Business Risk Impact' and 'Risk Likelihood'
- Risk Mitigation Measures – the control measures used to promote data availability, eg, backup on external server

The above 'Information Asset Register' components are neither exclusive or exhaustive and other service defined data parameters may be included.

Note: - the actual method of asset data collection, the frequency of collection and updating, and the accuracy, reliability and repeatability of the data collected is outside the scope of this strategy Note: and is discussed in the Highways Inventory strategy document.

3. Asset Data

The 'Highways Infrastructure Asset Management Guidance Document' suggests that infrastructure asset data typically held by the Authority tends to fall within three main categories:

- Inventory
- Performance
- Financial

Effective asset management planning and decision-making relies on this data being available, appropriate, reliable and accurate.

3.1 Typical Infrastructure Asset Data Sets

Examples of typical asset data sets and IT systems included in the 'Information Asset Register' may include:

- Asset Management System – the repository for highways infrastructure inventory, condition, asset valuation and inspection records, etc.
    - Typically for assets such as carriageways, footways, street lighting, signals, signs etc…
- Construction and maintenance treatments – to inform lifecycle plans and support decision making
- Construction Health & Safety Files – to support the consideration of future maintenance options, designs and treatments
- Highways adoptions records and list of streets - provides a legal record of this asset
- PROW definitive maps - provides a legal record of this asset
- Bridges Management Database – provides the platform for asset management, inventory, condition and asset valuation
- Damage to street furniture – supports the recovery of monies from third parties (elements of this data will be subject to GDPR)
- Drainage– records, inventory, condition data and CCTV surveys
- Emergency Planning Event Logs – a statement of events and actions taken during an emergency incident (elements of this data will be subject to GDPR)

- Electronic Service Delivery for Abnormal Loads (ESDAL) – a national web-based application for the routing and movement of abnormal loads
- Flood Event Recording System - to record all instances of flooding to property and infrastructure as required under Section 19 of the Floods and Water Management Act 2010
- Freedom of Information Requests (FOI) - files & records of FOI requests
- Highway Network Maps & Register – maps and register of adopted roads
- Video Inventory - videos of highway inventory & condition
- Decision Records - Cabinet/Committee/Corporate Management Team decisions reports or Officer Key (and non-key) Decision Reports - record of full and those redacted/not published.
- Service Level Agreements (SLA) – customer SLA's providing works, terms and conditions.

This list is neither exclusive or exhaustive and many other user and service defined data sets and IT system platforms may be added.

It is recommended that an annual review of the contents of the 'Information Asset Register' is undertaken in order to validate its accuracy, completeness and correctness and to provide the user(s) of the data with confidence that asset data sets it depicts are readily available and current.

3.2 Benefits of an Information Asset Register:

The benefits of compiling an 'Information Asset Register' in support of data management are:

- The existence of multiple data sets held by various of the Authority's service areas are all shown in one place so are readily discernible
- Identifies who the data set owner is and the data administrator(s) in order to query data content and accessibility provisions
- Supports data handling activities relating to overall business objectives
- Reduces the occurrence of repetition and duplication through 'silo working'
- Promotes the concept of a "single source of truth"
- Supports information sharing
- Identifies the various asset management/IT systems used to store the asset data

These benefits serve to save on time and costs and promotes significant operational efficiencies and effectiveness when interacting with common and bespoke data sets.

At the time of writing the Asset Management Data systems are being newly configured and will be added to this document at its formal review.

4.Summary

This strategy is geared towards data management needs rather than data collection, so it becomes an overarching support document to the more detailed and separate entity of asset data collection.

The provision of a 'Data Management Strategy' supported by the composition of an 'Information Assets Register' provides the means for multiple data owners to resister their respective asset data sets on a common platform thereby making them notifiable and accessible to many ancillary users who may wish to engage with the data. The acquisition of such knowledge and the ability to communicate this widely outside the immediate environment of the asset data owner is of great importance and benefit to the maintenance management of the overall service. The strategy therefore supports a 'Partnerships' approach to the process of asset maintenance management and it underpins the need for effective communications and the sharing of information based on the concept of a "single source of truth" which is key to reliable service management.

APPENDIX A - Example Asset Register

Example - Information Asset Register

Date of Creation:	Date of Last Edit:
06/06/2016	19/04/2021

Information Asset Owner	Asset Name	Asset Description	Primary use	Secondary Use	Date Created/Installed	IT (Supplier) / System Name	Directorate	Team	Information Asset Administrators	Business System Owners - IT Administrators	Information Asset Physical or Virtual Location	Asset Status	Date Asset Became Inactive if Applicable	No of users	Information Sharing Status	Business Risk Impact Level	Risk Likelihood	Risk Level	Risk Controls
(insert name)	PROW Definitive Maps	Public Rights of Way - Definitive Maps	Legal record	Inspection and maintenance	1966	N/A - held on paper maps	Regeneration and Environment	Public Rights of Way	(insert name)	(insert name)	Civic Office & S Drive	Active	Ongoing	4		1	1	1	Scanned maps backed up on server and hard copy
(insert name)	Bridges Asset Management (BMX)	A specialist bridges asset maintenance management system to aid the logical design, generation and building of planned bridge maintenance schemes. The system holds asset data for bridges and other highway structures against which detailed inspection and condition data is stored. The system holds data processing models against which the condition data is processed and analysed.	Bridges asset management system. Inventory, scheduling, asset valuation.	Inventory, condition, works, photo's	2005/6	IAMtech	Regeneration and Environment	Bridges	(insert name)	(insert name)	S Drive, B Drive and on CD	Active	Ongoing	9	No	4	2	8	Backed up on server, CD in Locked cabinet
(insert name)	Damage to Council Street Furniture	Damage Council Street Furniture	Recover monies from third Parties caused to street furniture	Reconcile budgets	2016	Excel	Regeneration and Environment	Professional Business Services	(insert name)	(insert name)	U Drive	Active	Ongoing	1	No	1	1	1	Backed up