



BridgeStation

Bridge Management System Proposal and Service Definition

Prepared for

Crown Commercial Service

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Executive Summary

The attached proposal outlines the supply and support of a Bridge Management System (BMS) called BridgeStation Web Edition (or just BridgeStation). The BMS and its associated support service are supplied by FSW IT Solutions Limited.

BridgeStation Web Edition is web-based bridge management system (BMS) owned by the London Bridges Engineering Group (LoBEG). The BMS and its associated support service are supplied by FSW IT Solutions Limited, who has exclusive rights to develop, maintain and market the system. FSW IT work closely with LoBEG and their partners to further enhance and develop the system.



BridgeStation is used by a number of other U.K authorities to manage their structure and bridges stocks. BridgeStation is an example of a Community Cloud Platform. With all users of the system being U.K. Bridge owners. In the main this means users will be local or regional authorities based in the United Kingdom.

BridgeStation is delivered as a cloud-based Software as a Service (SaaS). So instead of buying, installing and then managing software locally, authorities can subscribe to BridgeStation and accessed it over the internet.

To deliver the solution FSW maintains a database server and a file server. Each new installation of BridgeStation gets its own unique database. FSW publish a website to the internet where users can access the application.



BridgeStation users require only a PC with an internet connection and a browser installed to access the system. As such the system can be used at home, at satellite offices and by consultants at their offices.

The system is customised to work with the authority's local administrative boundaries and authority specific lists during the migration process. This work is conducted by the BridgeStation Support Department.

Credentials are issued to users who wish to access the system, and permissions can be specified for each user to restrict certain functions of the system.

BridgeStation Web Edition is a cloud-based solution and as such has the following benefits:

1. Accessible - anywhere you have an internet connection
2. Ease of update - new features are released centrally to all subscribers
3. Shared resources – subscribers keep costs down to sharing hardware and only paying for what they need

BridgeStation Web Edition is a full-featured BMS with several advanced modules. The main features (modules) of BridgeStation include:

- Structure Inventory and elements
- File and documents
- Inspection Management including risk-based inspections and an inspection signoff process
- BCI and BCS Condition Calculations
- Maintenance Management (Defects)
- Restrictions
- Load Capacity Management
- Incidents and Events
- Standard Reports
- Reports Builder
- GIS Map Themes
- Asset Valuation
- Life Cycle Plans (Structures Asset Management Toolkit)
- Maintenance Prioritisation
- Management of Sub-Standard Structures

To implement BridgeStation Web Edition for the authority, there is broadly only one step that needs to be taken. Being a hosted, web-based system, a website can easily be created for the authority at a URL such as <https://www.bridgestation.co.uk/clientname>. From here the major implementation work needed is to migrate the existing data from the authority's existing systems.

Initial information about the environment is below:

Site Information

URL: [https://www.bridgestation.co.uk/\[client-name\]](https://www.bridgestation.co.uk/[client-name])

System Email Notifications: no-reply@bridgestation.co.uk

Support Email Notifications: tickets@bridgestation.co.uk

Servers

Type: Azure Virtual Machines - Standard E2bds v5 (2 vcpus, 16 GiB memory))

Operating Systems: Windows (Windows Server 2022 Datacenter Azure Edition)

Database Format

Type: RDMS

Database Name: BridgeStation_Client Name
RDBMS Type: MS SQL
Database Edition: SQL Server Standard

Physical Location

Hosting type: Cloud-based
Name of cloud supplier: Microsoft Azure
Physical location of cloud servers: UK South Region

1. Introduction

The attached proposal outlines the supply and support of a Bridge Management System (BMS) called BridgeStation Web Edition (or just BridgeStation). The BMS and its associated support service are supplied by FSW IT Solutions Limited.

FSW IT Solutions Limited is a company registered in England and Wales (Company Registration Number 07356859) whose registered office is at Suite 402, Britannia House, 1-11 Glenthorne Road, Hammersmith, London, W6 0LH.

FSW IT Solutions Limited have been providing the service since 2010.

VAT Registration Number: 998 1528 61

SME Status: Micro organisation (9 employees or less)

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FSW IT Solutions Limited proposes to provide a dedicated web portal (BridgeStation Web Edition) for the Authority to manage its bridges and structure stock. The service provided will also include updates (enhancements and fixes), support and maintenance of the System.

The Service Provider is willing to provide the Services to the Authority on the terms and conditions set out in contract.

2. Proposal

The solution architecture

BridgeStation Web Edition is web-based bridge management system (BMS) owned by the London Bridges Engineering Group (LoBEG). The BMS and its associated support service are supplied by FSW IT Solutions Limited, who has exclusive rights to develop, maintain and market the BridgeStation BMS.

BridgeStation is built for the web using industry standard technologies:



This means the solution is up-to-date with the latest hosting technologies and is extended and developed using the standard software development environment. Integration with Google Maps and Crystal Reports is also present to provide base-mapping and a reporting functionality.

The solution is hosted on the Microsoft Azure Platform - UK South Region. The local authority or bridge owner will remain the Data Controller, FSW IT Solutions will act as a Data Processor, with Microsoft Azure acting as a Sub-Processor.

BridgeStation is developed in coordination with partners from the Bridges community, who can take part in the LoBEG Asset Management Working group. The partners work together to further the development of the BMS, keep abreast of new developments in the industry and offer advice to the structures community as a whole.



By working together on the development of the BMS, resources are shared between the subscribers. This means smaller authorities with fewer resources to drive new developments are still kept up to date with the latest industry practice.

An outline of the proposed implementation of BridgeStation Web Edition is shown below:



To deliver the solution FSW maintains a database server and a file server. Each new installation of BridgeStation gets its own unique database where the data migrated from existing systems will sit alongside any new records or edits made by the users. Any potential for client data crossover is eliminated using this arrangement.

The file server is there to store documents, photographs and drawings that users wish to attach to individual structures. FSW IT Solutions publish a web portal accessible over the internet and user accounts are provided to the authority's bridges team to access the system.

The users require only a PC with an internet connection and a browser installed to access the system. This means users can work from home, the office or out on site (data connection permitting). This adds a great degree of flexibility to the systems use, allowing location independent working. It's easy to create accounts for your consultants with limited access to the system, which they can then access from their own offices.

BridgeStation is essentially a cloud computing solution. The benefits of cloud computing are numerous. Along with accessibility cloud computing allows users freedom regarding the computer they use to access the service. Users are not restricted to a particular PC of a particular specification; there are no programmes or patches to apply, almost any modern computer will be able to access the service.

BridgeStation can very easily be updated. With changes in legislation and new enhancements and features due, BridgeStation can simply release new versions of the website to get those enhancements and features out to the users. No coordination with corporate I.T needed; no patches to download and apply to the PC that may need administrative access.

BridgeStation subscribers share resources and as such there are significant savings to be made from cloud computing solutions. Storage devices, servers and database servers can be shared between installations and the savings passed to the subscriber.

Cloud computing solutions still offer the kind of disaster recovery and data retention features that authorities have come to expect from their own corporate I.T network. Data is replicated and backed up at regular intervals, and archives are maintained of records that the authority no longer needs.

BridgeStation Web Edition is a full-featured BMS with several advanced modules. BridgeStation's functionality is built upon the advice and technical guidance developed by LoBEG and their partners. As new guidance is produced, new corresponding modules are coded into BridgeStation.

A diagram of the main features/modules of BridgeStation is shown below:



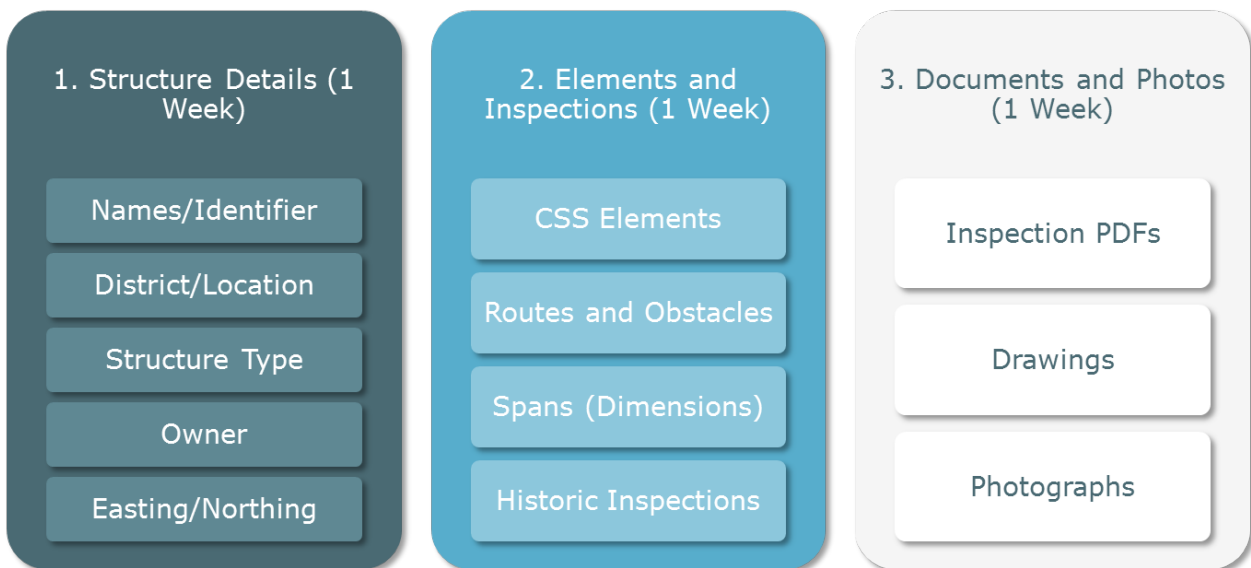
Outlined implementation approach - Migration

To complete a successful migration FSW IT Solutions will follow a structured change management approach. FSW IT will include clear and consistent communication to the Bridge Managers as we import your existing Bridges and Structures data. A number of migration meetings to review imported data will be required. We will also provide introductory training programmes for different user roles, and the BridgeStation Support Department will be available to the authority during the initial rollout. We will

establish a feedback loop to quickly resolve issues and ensure that end-users understand the value and new workflows, maximizing user adoption and ensuring a smooth, effective transition from your current system.

Being a hosted, web-based system, a website can easily be created for the authority at a URL such as <https://www.bridgestation.co.uk/clientname>. From here the major implementation work needed is to migrate the existing data from the existing systems.

To complete the migration a website will be published at, for example: www.bridgestation.co.uk/clientname, the existing databases will be analysed in consultation with the authority and a migration exercise completed to populate the website's new database with as much of the original data as possible. Examples of the information that can be imported are below:



Data can be transferred to FSW in secure manner using either a service such as One-Drive/SharePoint or via an encrypted hard drive that the BridgeStation Support Department will provide.

The data to be transferred will be the bridges and structures data from the existing system in use. This may take the form of an export or backup file from the existing BMS database. Or it may take the form of a collection of spreadsheets and other documents if that's how it's being currently managed.

If it's an existing BMS that is currently in use, contacting the existing provider might be required. Or the authority's own administrators may be able to complete a data export.

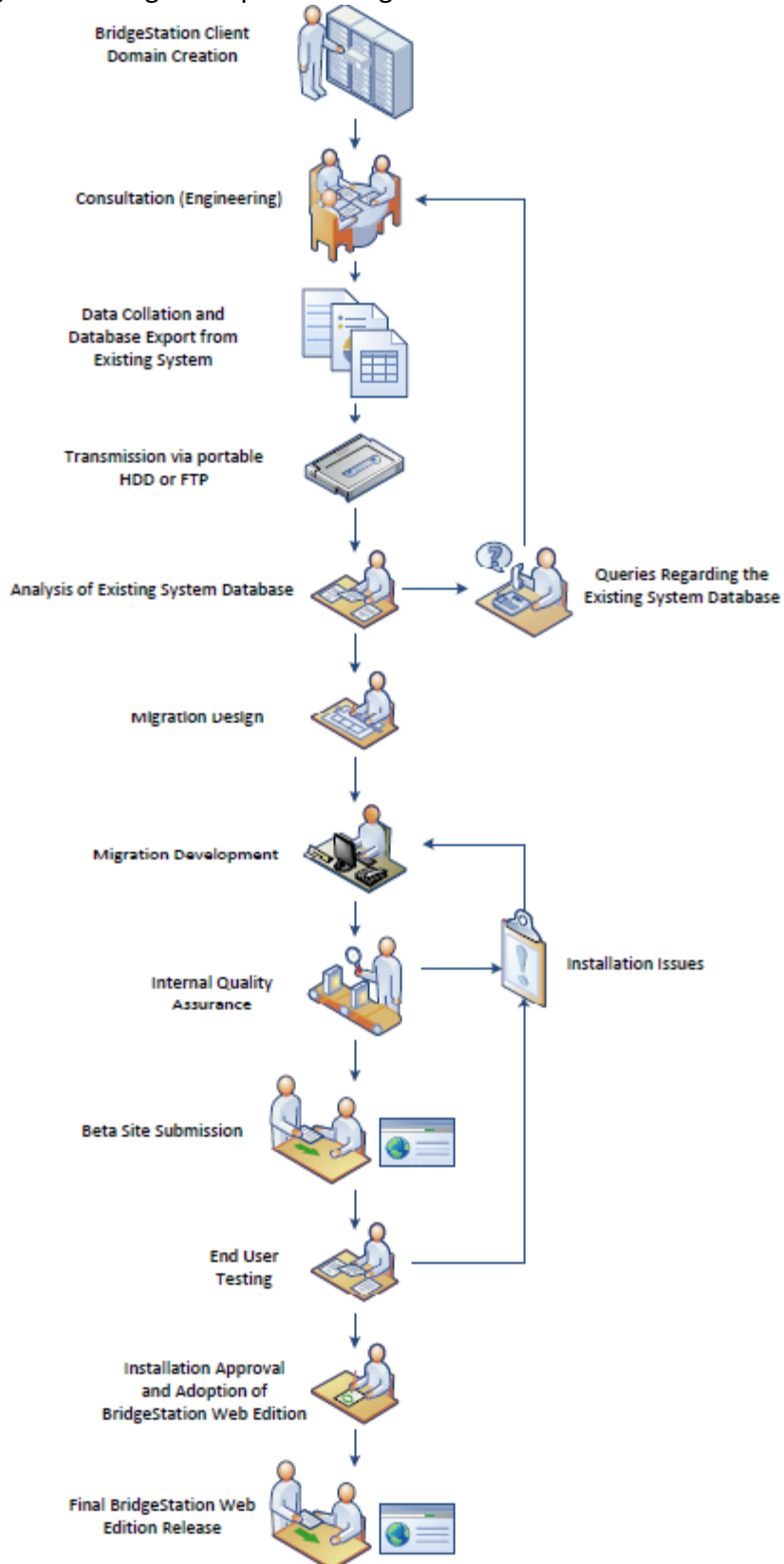
This will undergo internal testing by FSW before a beta site (testing site for end users) is released to the web and submitted for appraisal by the authority. The authority can still continue to use his existing system in parallel whilst this process is on-going.

From here an iterative process will take place with subsequent beta site releases being made whilst migration/installation issues are being dealt with.

Once the authority is satisfied with the beta site, approval can be given for the adoption of BridgeStation Web Edition and a LIVE Release. A final migration takes place to cover any changes recorded during the beta site phase.

Additionally, if at a later date additional information needs to be migrated across, the BridgeStation help desk can assist with bulk updates to the system

An excerpt of the BridgeStation migration process diagram is included below.



Constraints, assumptions and limitations

There are some constraints on the use of the system and assumptions made during this proposal:

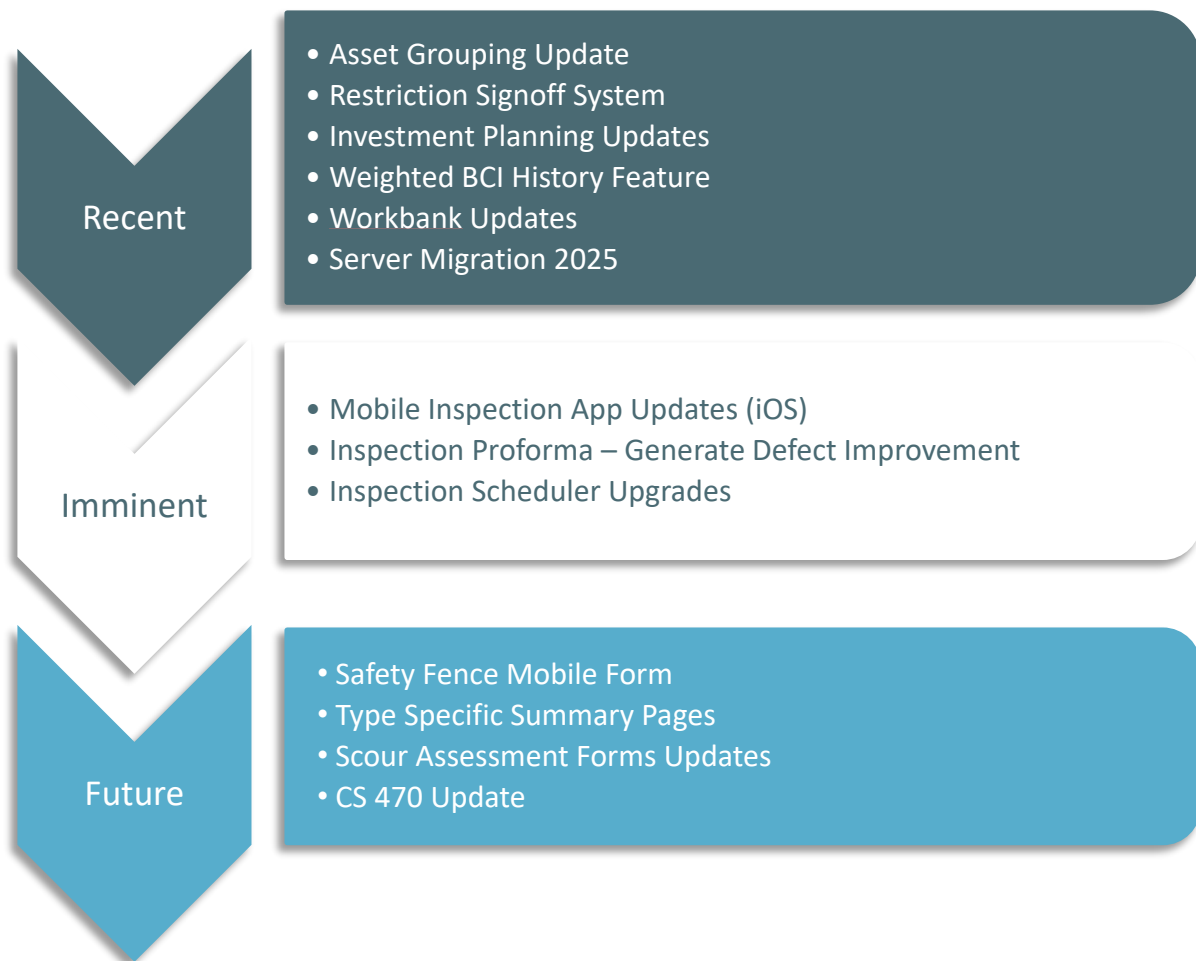
1. BridgeStation is a web-based system so an internet connection is needed to make full use of the system
2. It must be assumed that the authorities proxy settings and website filtering policies will allow users access to the system from the authority's network. Use of VPNs can sometimes cause connectivity issues, though these are usually resolved via an update.
3. BridgeStation is a hosted service so it must be assumed that the authority will allow its data to be hosted externally.
4. A browser is all that is needed to access the system, but not all browsers are 100% compatible and display issues may exist. BridgeStation's system requirements along with supported browsers have been provided in the appendices.
5. It is often worth having the following domains and email addresses whitelisted by you IT department, this saves any delays in email deliverability
 - a. URL: [https://www.bridgestation.co.uk/\[client-name\]](https://www.bridgestation.co.uk/[client-name])
 - b. System Email Notifications: no-reply@bridgestation.co.uk
 - c. Support Email Notifications: tickets@bridgestation.co.uk
 - d. Enquiry Email Notifications: enquiries@bridgestation.co.uk

Innovation and Enhancements

FSW IT Solutions work very closely with the London Bridges Engineering Group (LoBEG) and other subscribers to keep BridgeStation up-to-date with the latest legislation. FSW attend LoBEG's working group meetings where new directions and innovations for the BridgeStation product are discussed.

Projects are developed with existing users acting as project sponsors. This enables the users to BETA test any new developments and have input into the development itself.

FSW IT Solutions maintains and actively updates a roadmap for the future development of BridgeStation. An excerpt of which is included below.



BridgeStation is well placed to evolve with changing legislation and new functionality. Being web-based, with the application hosted centrally, it is far simpler to update and release new versions of BridgeStation to subscribers.

BridgeStation also holds an annual user group meeting for current subscribers. At this meeting ideas for enhancements and extensions to the functionality are discussed. This is offered as an in-person meeting with Remote option for those who wish to join via web-conference. Here any major changes to the software is communicated to the users. And upcoming projects are also sign-posted.

BridgeStation also uses a community development model, which means if a subscriber funds the development of a new module or pieces of functionality it becomes available to all the other subscribers. The other subscribers get access to new features at no additional cost.

Further input from the authority is also welcomed and all subscribers are encouraged to take part in the development process including becoming project sponsors and trialling prototypes of new modules and features

BridgeStation plans to integrated with emerging technologies, by working in close coordination with bridge managers who subscribe to BridgeStation and are part of the community development setup.

Examples emerging technologies include:

- Digital Twins (or Building Information Models (BIM))
- Real-Time Data Streams from sensors
- Predictive Deterioration Modelling, and Automated Damage Detection.

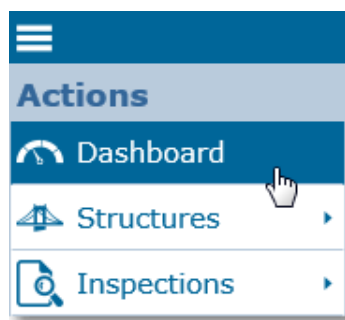
3. Response to Requirements

3.1. User Interface

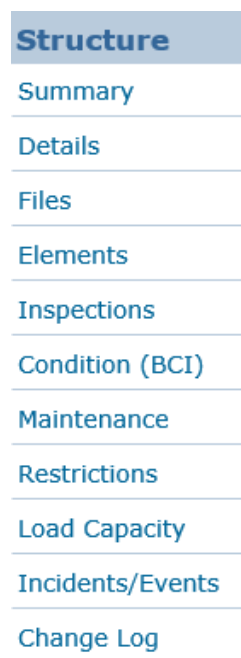
BridgeStation Web Edition offers a user-friendly interface making use of navigation controls; buttons and drop-downs that users are already familiar with. The user interface is consistent in appearance as the user navigates between pages and modules.

Navigation around the website is handled with the use of menus and tabs. These include:

Actions Menu – used to access the different modules on the site, be that dashboard or the Inspection Programme module.



Structure Menu – where the structure specific information is held. The contents describe items that are associated with the structure, such as Elements, Files and Inspection results.



Feature pages – If you click on a structure menu item you'll get a page with additional information. For example, if you click the Inspections menu item a list of the Structure's inspections will be shown along with a button to add a new inspection.

Structure Inspections

[Inspections](#) | [Latest Environment Awareness Sheet](#) | [Latest Hazard Assessment](#)

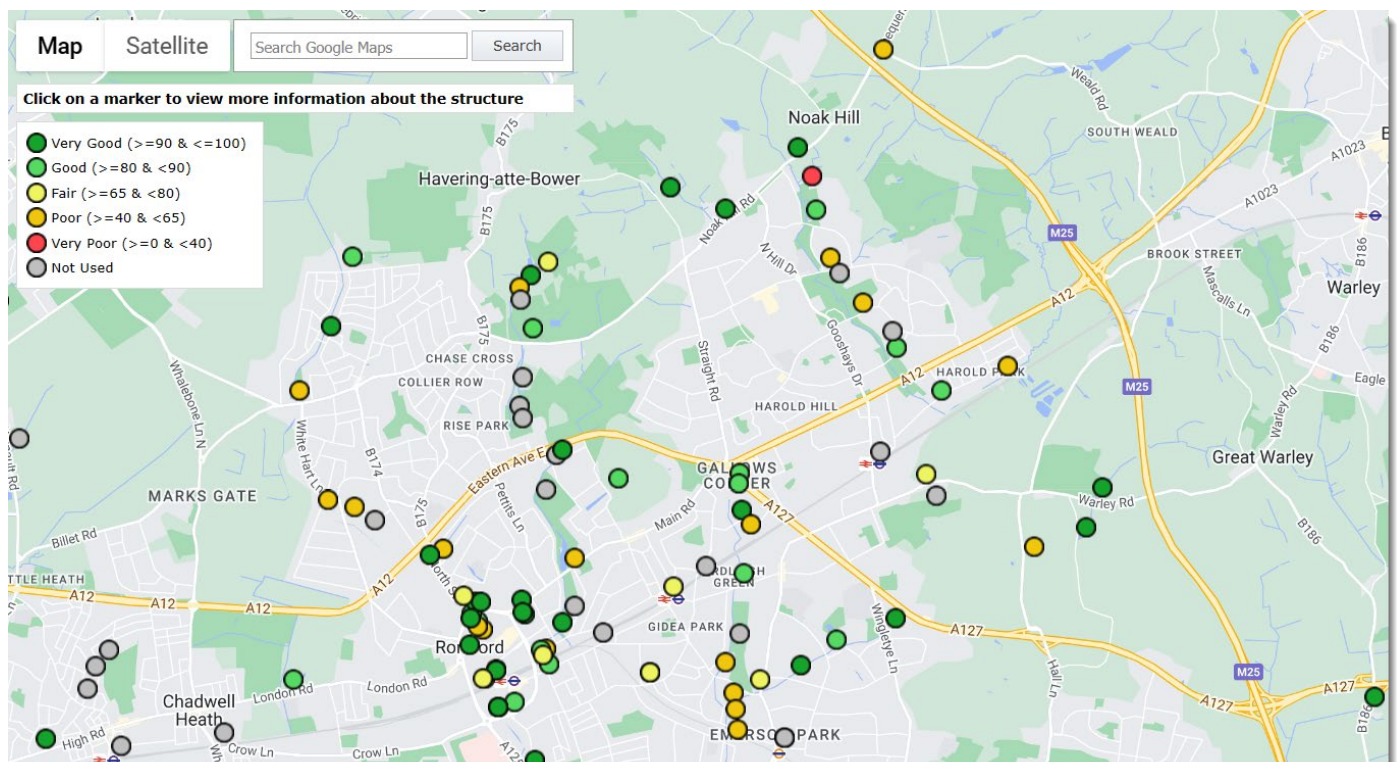
[Add Structure Inspection](#)

Link	#	Type	Inspection Date	Inspector	Signoff Status
▼ Actual					
View	Add	GI	31/03/2016	Inspector Name	Draft

In addition to menus and tabs BridgeStation provides **map views** to aid in geographical interpretation. BridgeStation Web Edition makes use of the Google Maps API (application programming interface) to display background mapping. From here the coordinate information stored against each structure is combined with other data held against that structure to produce a series of map views. The standard views available include:

1. Latest condition (BCI Average)
2. Structure types
3. Owner types
4. Restriction types
5. Inspection programme progress
6. Abnormal load management

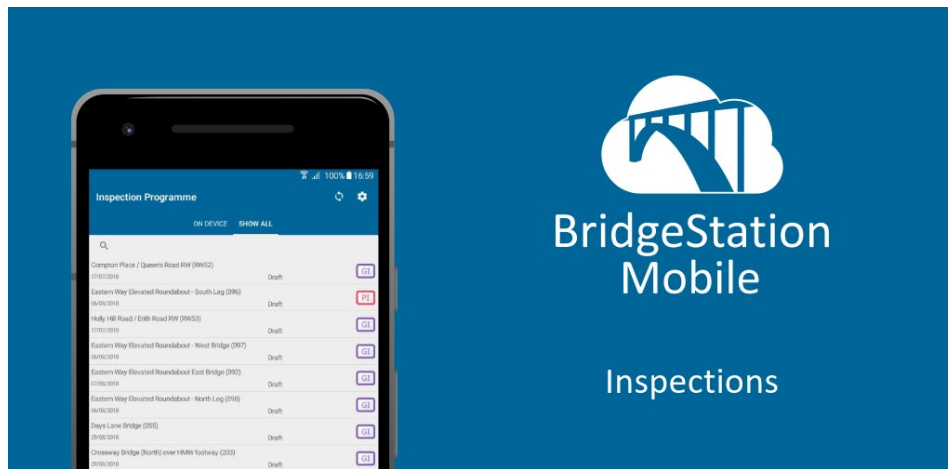
An example map is provided below. Users can click on a structure's marker to open an info balloon with additional information and links back to the main structure record.



Input boxes, dialogs and drop-downs – Data is entered into BridgeStation via a variety of means. Where standard lists are available a dropdown list or check box system will be used to aid in validated input.

Authority:	Authority A ▼
Owner:	Local Authority ▼
Maintaining Authority:	Local Authority ▼
Description:	<ul style="list-style-type: none"> British Rail Property Board British Waterways Docklands Light Railway Local Authority
Classification	<ul style="list-style-type: none"> London Underground Private Railtrack TfL Utility Company Network Rail Local Authority (Non B/S) Bridge House Estates Highways Agency Local Authority (Not Highway)
On Inspection Programme:	
Is a Highway Structure:	
Network Type:	
Hierarchy:	
Heritage Listing:	
Site Of Nature Conservation Interest (SNCI):	
Site Of Special Scientific Interest (SSSI):	
Location	

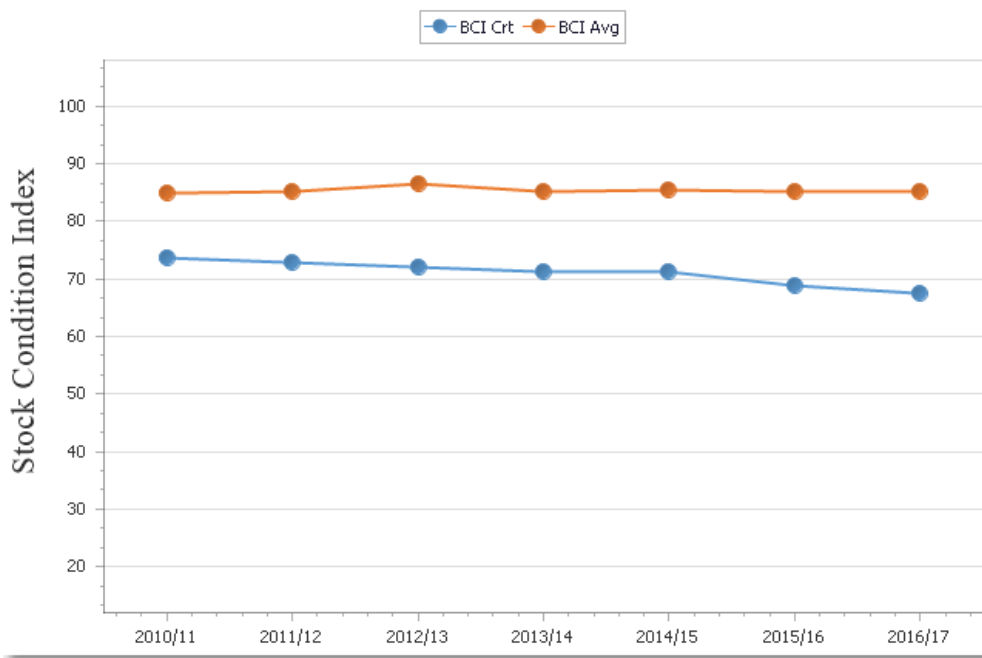
Mobile Data Collection – Inspection data can be collected on site with BridgeStation Mobile. This module provides a touch-screen friendly version of the structure’s inspection form.



The BridgeStation Mobile Inspections App is an onsite data collection tool for the users of BridgeStation (Advanced Bridge Management System). It is designed to enable inspectors to collect and record element level structure inspection data using phones and tablets.

BridgeStation Mobile Inspections is available for both Android and iOS devices and is downloaded from the Play Store and App Store respectively. The app is regularly updated via the Play and App Stores. The mobile applications do not feature user experience/feedback requests or advertising of any kind.

Graphs - Where possible information is summarised and presented graphically. For example, stock condition information over the years.



Data Grids – Elsewhere data is presented in tables (grids) which can be exported by the user for additional manipulation if required.

#	Borough	Name	Identifier	Structure Type	Last GI	Last PI	BCS Average	BCS Critical	BCI Average	BCI Critical
				Tunnel	18/01/2010	31/01/2012	3.14	0.00	54.52	Not Used
				Footbridge	01/04/2006		3.11	3.10	55.17	55.48
				Bridge	23/12/2012		2.15	3.70	77.71	39.52
				Bridge	23/12/2010		2.15	4.10	77.73	28.08
				Retaining Wall	15/11/2012	03/02/2011	2.07	3.30	79.50	50.32

3.2. Asset Database

There is a wide variety of information that can be stored against that structure including:

Searching for Structures

You can search for a structure via the Open Structure page. Searching on the system for structure records is case-insensitive by design



This screen allows you to see a list of all your structures, which you can open any one of them by clicking on their name.

Name	Identifier	Authority	Owner	Maintaining Authority
Beam Bridge North	68	Authority A	Local Authority	Local Authority
Beam Bridge South	69	Authority A	Local Authority	Local Authority

Filtering

A faster way to locate a structure in the list is to make use of the filters. The filters allow you to search by Structure Name, Identifier, Owner, Authority, Maintaining Authority, Structure Type, Network Type, Is Highway and Ward/District. You can also filter using combinations of all of these categories.

Open Structure

Name: Maintaining Area:

Identifier: Authority: Maintaining Authority:

Structure Type: Owner: Is a Highway Structure:

Network Type: Structure ID:

List Map Search Clear Include Archived Structures **Results found: 11**

Name	Identifier	Authority	Owner	Maintaining Authority	Structure Type	Is Highway Structure
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Structure type

Structure type is stored in on the Structure Details page. The field is a drop down. If a standard list of type is available from the authority this can be updated.

Name:

Identifier:

Structure Type:

Authority:

Owner Type:

- Basement
- Bridge
- Culvert
- Earthworks
- Embankment
- Footbridge
- Gantry

There are some restrictions on the creation of new types as it is involved in the Bridge Condition Index calculation via the proforma type available to the user. Structure type is also an important parameter in the Asset Valuation section. The BridgeStation Support Department can assist with structure type creation if required.

Structure Number and Unique Identifier

The Structure Number (referred to as Identifier) is stored in BridgeStation on the Structure Details page. The field is an input box that allows alphanumeric entry.

Identification & Ownership	
Structure Type:*	Bridge
Name:*	Beam Bridge North
Identifier:	68
External Asset Identifier: (e.g. Network Rail ID)	100.01
ESDAL Identifier:	A1230
Year Of Construction:	1969
Authority:	Authority A
Owner:	Local Authority
Maintaining Authority:	Local Authority
Description:	

If multiple referencing systems are in place, then additional fields can be provided. For example, AIMS Number and Structure Number.

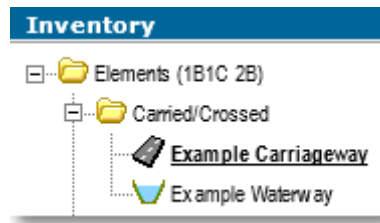
Ownership

Ownership is stored in BridgeStation along with the main structural Information on the Structure Details page. This is configurable with client-specific owner types.

Authority:	Authority A
Owner:	Local Authority
Maintaining Authority:	Local Authority
Description:	<ul style="list-style-type: none"> British Rail Property Board British Waterways Docklands Light Railway Local Authority London Underground Private Railtrack TfL Utility Company Network Rail Local Authority (Non B/S) Bridge House Estates Highways Agency Local Authority (Not Highway)
Classification	
On Inspection Programme:	
Is a Highway Structure:	
Network Type:	
Hierarchy:	
Heritage Listing:	
Site Of Nature Conservation Interest (SNCI):	
Site Of Special Scientific Interest (SSSI):	
Location	

Route Supported and Obstacles Crossed

Routes supported by the structure are added to the structure's carried/crossed folder within its element hierarchy.



Obstacles such as waterways can also be added. Type information and other element details can be added and their relative position to the structure defined.

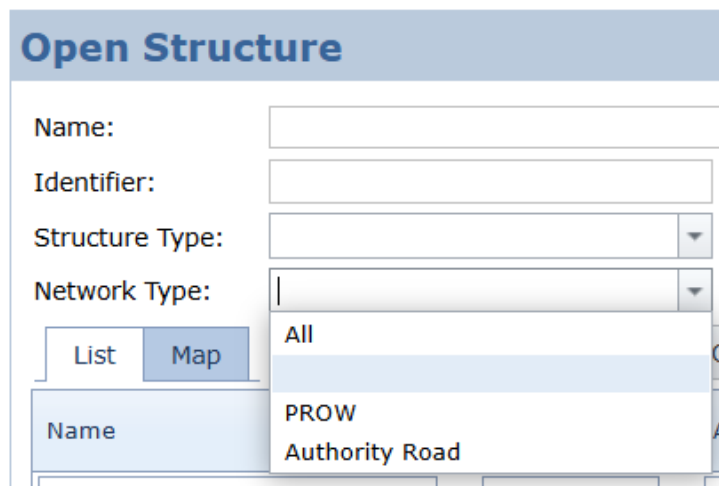
Description	<input type="text" value="Camden River"/>
Identifier	<input type="text"/>
Quantity	<input type="text"/>
Comment	<input type="text"/>
Waterway Type	<input type="text" value="River"/> <input type="button" value="Other"/>
Relative Position	<input type="text" value="Crossed by Structure"/> <input type="button" value="Other"/>

The route or obstacle will then appear on the structure summary.

Carried:	Road A
Crossed:	Camden River

Network Types

Each authority can configure a Network Type list and then apply network types to individual structures. This aids in management of large authorities with structures placed on differing networks.



Is Highway Structure

Each structure can also be defined as either and Highway or Non-Highway structure.

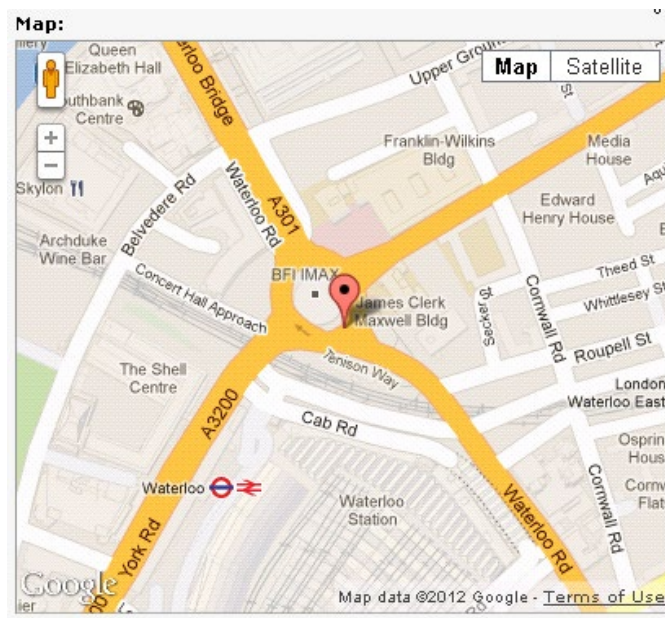
Classification	
On Inspection Programme:	<input checked="" type="checkbox"/>
Is a Highway Structure:	<input checked="" type="checkbox"/>
Network Type:	Authority Road <input type="text"/>

Grid Reference and Location

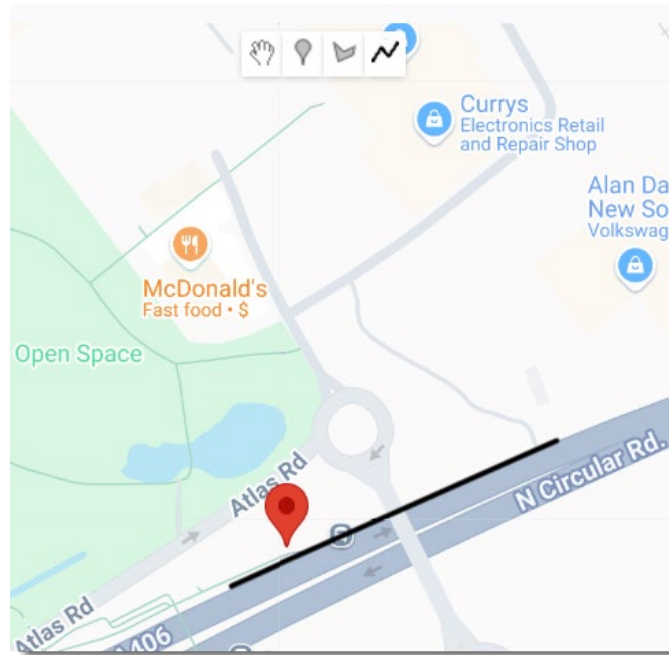
Users can record Easting and Northing as well as Map No. or Grid References against each structure on a page called Structure Details.

Map No:	<input type="text"/>
Easting:	<input type="text" value="531040"/>
Northing:	<input type="text" value="180100"/> Map

With the Easting and Northing recorded, the system automatically converts this to latitude and longitude and displays the structure as a point on a Google Map on the Structure Summary page.



You can also describe a structure using polyline or region if you prefer using the built-in drawing tools



Boroughs, Wards and Districts

District Area (referred to as District/Ward) is stored in BridgeStation along with the main structural information on a page called Structure Details. The field is an input box that allows alphanumeric entry.

District / Ward:	<input type="text"/>
Borough:	<input type="text" value="Demo"/>
Owner:	<input type="text" value="Local Authority"/> Other
Maintaining Authority:	<input type="text" value="Local Authority"/> Other

If a standard list of Districts is available from the authority a drop-down list can be used for this instead.

Year or Construction

The Year of Construction is stored in BridgeStation along with the main structural Information on the Structure Details page. The field is an input box that allows numeric entry.

Heritage Status

Listed status (referred to as Heritage Listing) is stored the Structure Details page.

Heritage Listing:	<input type="text" value="Unknown"/>
Year Of Construction:	<input type="text"/>
Designer:	<input type="text"/>
Asset Value (£k):	<input type="text"/>
Vehicle Incursion Index:	<input type="text"/>

Unknown

Grade I

Grade II

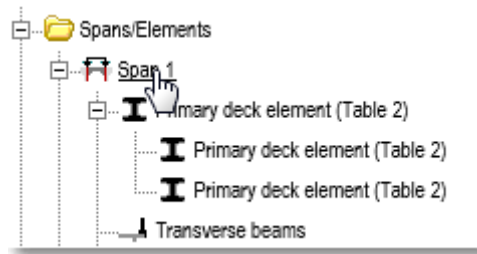
Grade II*

Grade III

Ancient Monument

Total Span and No of Spans

Spans are also recorded within the structure's element hierarchy. Multi-span hierarchies are possible and elements can be assigned to each span.



Individual span dimensions can be recorded, along with overall structure dimensions.

Description	Span 1
Display Order	
Identifier	
Quantity	1
Comment	
Length (m)	2
Maximum Width (m)	7.2
Minimum Width (m)	7 <input type="text"/> x
Measured Height Direction	A- North / B-South <input type="button" value="v"/>
Measured Height (Direction A) (m)	17
Measured Height (Direction B) (m)	17
Headroom (m)	14
Skew (°)	

Form Type and Material Information

The construction details section within the structure details page allows the user to record a material type or form type against each piece of construction.

Construction Details

Form Type: [Other](#)

Shape: [Other](#)

Material: [Other](#)

Number Of Bores:

Width / Diameter (m):

Maximum Height (m):

Length (m):

Allowable Headroom (m):

Masonry

P/S Post Tensioned Concrete

P/S Pretensioned Concrete

PC Concrete

RC Concrete

Steel Girders

Timber

Element Editor

BridgeStation allows you to build custom element hierarchies for each structure on your database.

Structure

Summary

Details

Files

Elements


Inspections


Condition (BCI)


Maintenance


Restrictions

Structure Element Hierarchy

 Lock element hierarchy

 [Edit elements](#)

 Create new element hierarchy

 Switch element hierarchy level (i.e. multi span)

The Element Editor allows you to:

- Add new elements
- Copy and move elements
- Archive unwanted elements
- Delete elements

There is a simple hierarchy system that guides you through the element edit process.

Element Hierarchy

Copy Move

- Elements
 - Carried/Crossed
 - River Brent
 - Footway
 - Bell Lane
 - Construction/Elements
 - Span
 - Span2**
 - M&E/Comms
 - Other Elements / External Area
 - Archive

Element Details

Save Changes Cancel Changes Ar

Element Number : NA Element Type : Span (Bridge)

Description: Span2

Display Order: 2

Identifier:

Quantity:

Comment:

Length (m):

Maximum Width (m):

Add Elements

<< Add Selected << Ad

No	Element Description	<input type="checkbox"/>
Deck Elements		
1	Primary deck element (Table 2)	<input checked="" type="checkbox"/>
2	Transverse beams	<input checked="" type="checkbox"/>
3	Element from Table 3	<input type="checkbox"/>
4	Half joints	<input checked="" type="checkbox"/>
5	Tie beam/rod	<input type="checkbox"/>
6	Parapet beam or cantilever	<input type="checkbox"/>

Load carrying capacity

The load capacity features in BridgeStation include tools to manage Design Loads, Structural Reviews, Assessment Results, Interim Measures and Strengthening Loads.

Structure Load Capacity

This structure does NOT require assessment to BD21.

Year of Construction : 1981

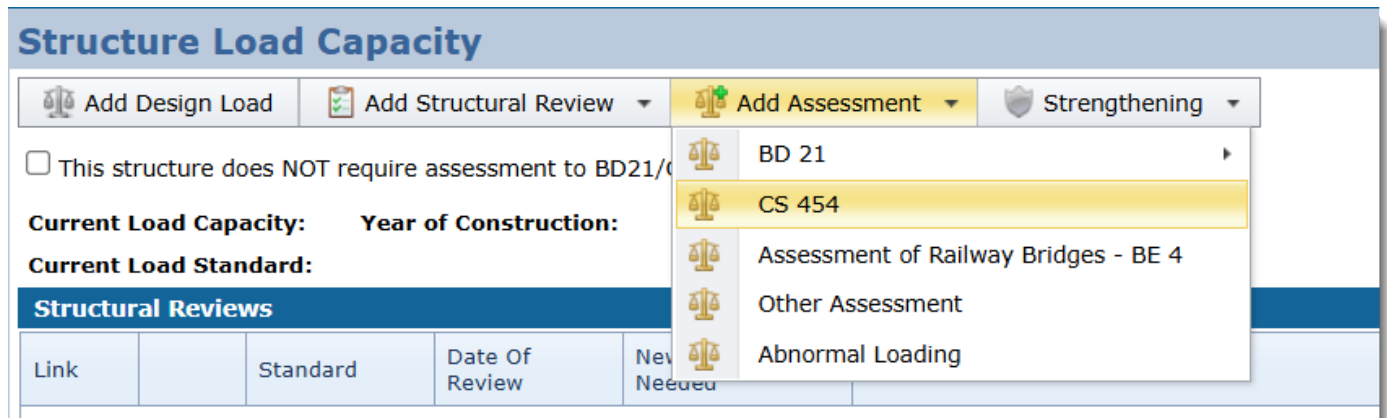
Current Load Capacity: 40 (t) **Current Load Standard:** BD21: Initial Assessment **Date:** 06/06/1992

The current load capacity is determined by the date of the loading information, with the most recent load rating judged to be the current load capacity.

A full set of BD21 and CS451 profomas are available to the user to record their assessments.

Assessment Results

Users can click the Add Assessment button to add a new assessment to the structure. This will also open the assessment details page.



The screenshot shows the 'Structure Load Capacity' interface. At the top, there are buttons for 'Add Design Load', 'Add Structural Review', 'Add Assessment', and 'Strengthening'. The 'Add Assessment' button is highlighted, and a dropdown menu is open, showing options: 'BD 21', 'CS 454', 'Assessment of Railway Bridges - BE 4', 'Other Assessment', and 'Abnormal Loading'. Below the buttons, there are input fields for 'Current Load Capacity', 'Year of Construction', and 'Current Load Standard'. A 'Structural Reviews' table is visible at the bottom, with columns for 'Link', 'Standard', 'Date Of Review', and 'New Review'.

The assessed capacity is included as part of the assessment details page.

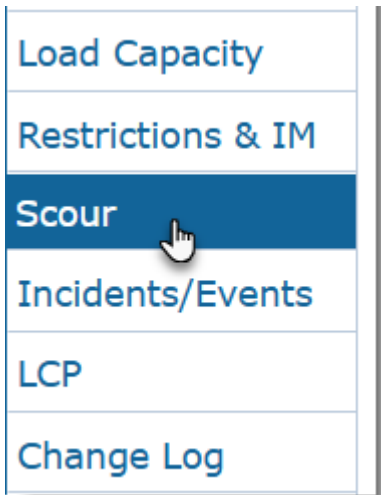
Description:	Initial Assessment
Assessment Date:	10/05/2011 (dd/mm/yyyy)
BD21 Results	
Assessed Capacity (t):	17
Is it likely that further assessment will increase capacity:	No

The most recent assessed capacity is also displayed on the structure summary.

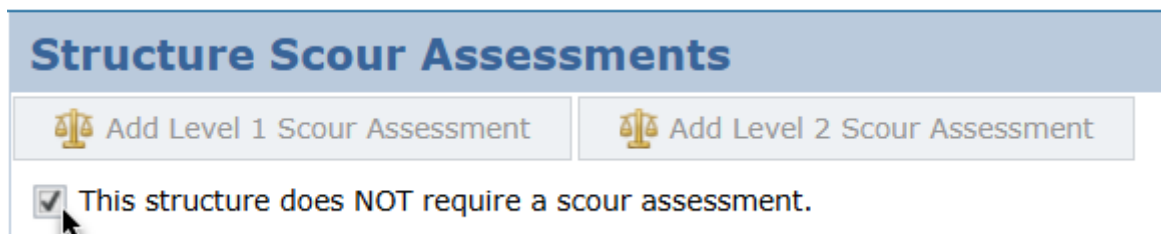
Assessment Status:	Assessed 12/05/2011
Assessed Capacity:	7.5(t)

Scour Assessment Results

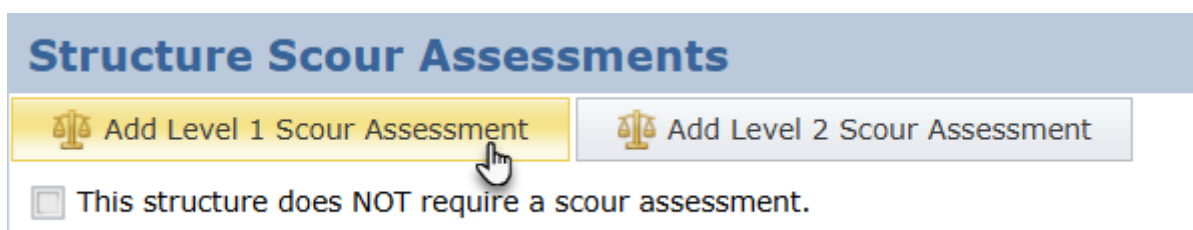
Users can add Level 1 and Level 2 Scour Assessment Results via Scour Menu Item in the Structure Menu.



Here you will be able to mark the structure as requiring or not-requiring Scour Assessment. Check the box to declare that Scour Assessments are NOT required.



If you are Scour Assessing Structures you can add either Level 1 or Level 2 Scour Assessment results via the relevant buttons.



The forms can be completed by working through the relevant sections. The forms are based upon: *BD 97/12 THE ASSESSMENT OF SCOUR AND OTHER HYDRAULIC ACTIONS AT HIGHWAY STRUCTURES*

A new version based upon: *CS 469 - Management of scour and other hydraulic actions at highway structures*. will be developed shortly

Level 1 Scour Assessment

[← Back \(Scour Summary\)](#)

[Assessment Details](#) | [Structure Files](#)

[Save Changes](#) | [Cancel Changes](#) | [Delete](#)

Details of Inspection

Inspected By: Inspection Date:

Weather: Flow Condition:

Details of Structure

Construction Type: Road Carried:

Foundation Type: Waterway Crossed:

Date of Construction: Gridref:

General

Title	Yes/No	Notes
Is there a bend in the river immediately upstream or under the structure?		
Does the river geometry agree with the OS plan of the site?		
Are there any confluences within 1km of the structure?		

Restrictions and Interim Measures

Weight, Height and Width restrictions can all be applied to a structure. Other restrictions and interim measure can also be managed.

Restriction Summary

[Add Restrictions](#)

	Link	#	Restriction Type	Restricted To	Description	Date Imposed	Date Removed
▼ Status: Active							
	View		Weight Restriction	7.5 t		01/04/2001	
	View		Width Restriction	3 m		01/04/2001	

An additional user defined restriction type is available to the user. Details of the restriction can be added to the restriction details page.

Maximum Width:	<input type="text" value="7.5"/>	m
Component Identifier:	<input type="text"/>	(if applicable)
Date Imposed:	<input type="text" value="26/05/2010"/>	(dd/mm/yyyy)
Date Removed:	<input type="text"/>	(dd/mm/yyyy)
Comments:	<input type="text" value="Example comments"/>	

Access Arrangements and Health and Safety

Each structure record includes a section where access arrangements can be configured. Users can pick from a predefined list the access issues that are present. Use this to describe confined space working and other site issues.

Access Arrangements

Select from the list:

Other:

Note: 'PPE', 'Data recording equipment', 'Access equipment'

- Lighting
- Ladders
- Underbridge Unit Access
- River Bed Access
- River Boat Access
- River Diversion Temporary Works
- Underwater Access

Additionally, each inspection has an Environmental Awareness sheet and Hazard Assessment Sheet for users to complete and store against the structure.

Asbestos Information

Asbestos Management

Known Asbestos Present: Date of Asbestos Report: Asbestos Documents (0)

Comments:

Last Updated By: **Example Account** Last Updated: **10/11/2023**

Document Management – Photos, documents and drawings













BridgeStation includes a hosted document management system. This means that documents, photographs and drawings need to be uploaded to the BridgeStation servers to be displayed on the website. This aids with location independent working.

All major file types are supported including; Microsoft Office Files, PDFs, Image Files.

Files can be stored against:

- Structures
- Individual structural elements/elements
- Inspection proformas
- Individual Inspection proforma elements
- Restrictions and assessments
- Maintenance items and events
- Custom folders created by the user
- Organisation-Level folders

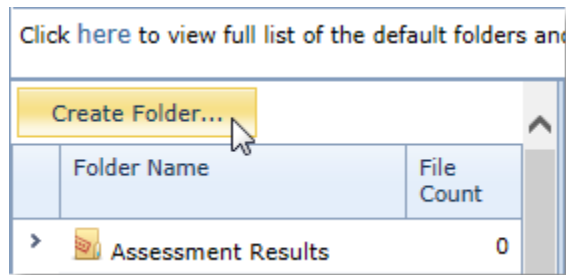
Click on the **Structure Files** tab at the top of any structure's summary page to view all the files and folders associated with that structure.

Create Folder...	
Folder Name	File Count
>  Assessment Results	0
 Design Information	3
>  As Built Drawings	0
 Environment	1
>  Health and Safety	0
>  Inspections	0
 Legal	0
>  Maintenance	0
>  Structure Summary Photographs	8
>  Elements	0
>  Events	0
>  Restrictions	0

Files within folders are displayed in a results grid with associated metadata

Upload Files...		Delete Files	Move Files...	Unlock Files	Lock Files	Image Viewer
<input type="checkbox"/>	#	File Name	Number ▼	Document Date ▼	Document Type ▼	
<input type="checkbox"/>		Beckenham High Street Bridge Plan		27/08/2014	Other Reports/Documents	
<input type="checkbox"/>		Double drainage gully partially blocked at Kelsey Park Road		28/08/2014	Inspection Photographs	
Double drainage gully partially blocked due to build up of silt at the end of the B1 span at the south-west side of Kelsey						
<input type="checkbox"/>		Manhole to the carriageway in good condition (Manhole D)		28/08/2014	Inspection Photographs	
Manhole to the carriageway at Kelsey Park Road in good condition (called Mahole D at the structure plan attached).						

Users can create their own folders to aid with organisation.






For convenience one folder can be designated as a structure's summary image source. The summary includes an image viewer so users can preview the images.

Photographs:










Users can also manage organisation documents. If you wish to host any other data not associated with a particular structure, this feature should be useful. You can design a custom folder structure and start uploading global documents for your authority.

Actions

-  Organisation Documents
-  Dashboard
-  Structures

Organisation Documents :

Note: Only organisation/global documents should be stored here, and any structure-specific files should be uploaded to individual records.

 Create
 Delete
 Rename
List View 
 Upload
 Display Order
 Delete

Folder Name	File Count		File Name	Number	Docum Date
		<input type="checkbox"/>			

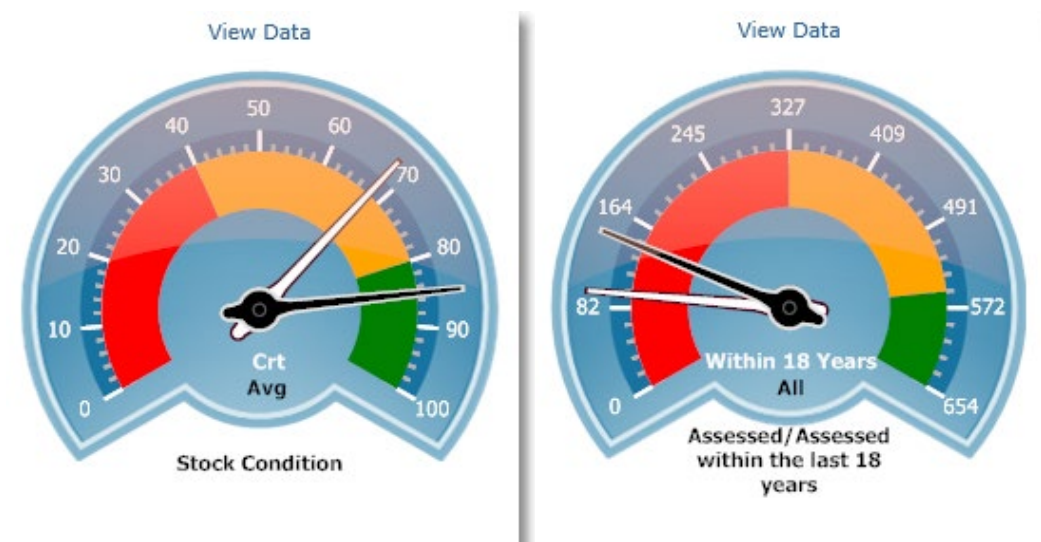
3.3. Decision Support

Dashboards and Reports Pages

To aid in decision making BridgeStation includes a number of pages with reports, graphs and dashboard-style dials.

The dashboard includes graphical dials with the following themes:

- Current Bridge Condition for the entire stock
- Assessment status for stock
- Basic data completeness rating
- Progress with this year's inspection programme
- Overall progress with inspections across all years (inspection coverage)



Each dashboard dial includes a tabulated data export, so that the data behind the dial can be further examined

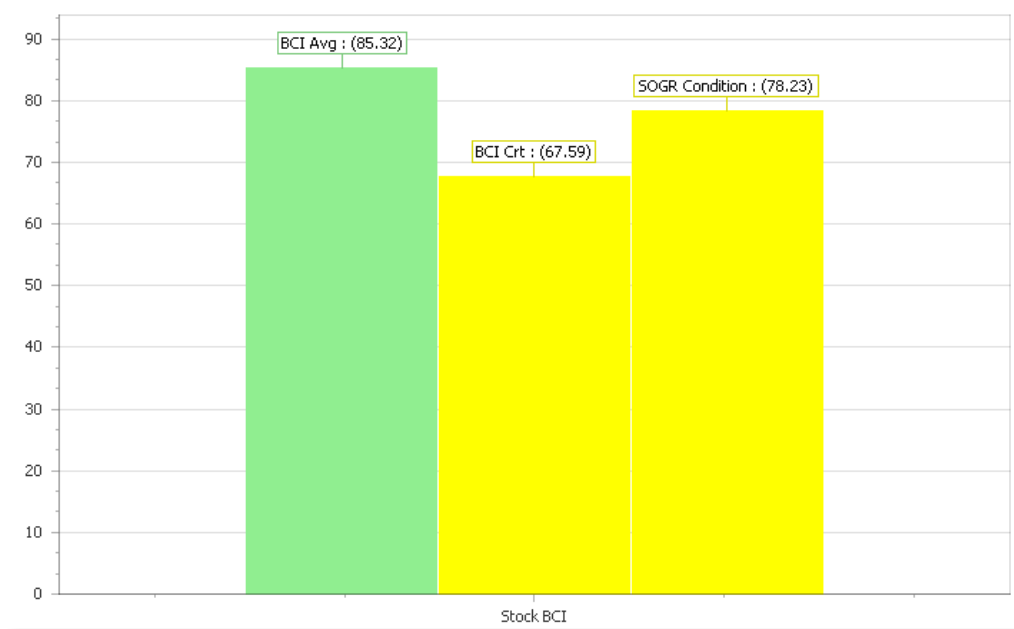
When it comes to conditions, there is a Performance Reports section with a number of decision support reports including:

- Latest Structure Condition
- Structure Condition History
- Stock Condition History
- Historic Condition Rating Counts Chart

Latest Condition Information

Link	StructureID	Maintaining Authority	StructureType	LatestGI	LatestPI	BCI Average	BCI Critical
View	1602149385	Local Authority	Subway	11/04/2014	09/08/2016	98.10	100.00
View	1602149387	Local Authority	Subway	16/04/2014	22/05/2015	90.43	58.00
View	1602149391	Local Authority	Subway	11/07/2012	16/01/2009	92.27	100.00
View	1602149392	Local Authority	Subway	22/04/2014	13/11/2015	83.90	55.48
View	1602149393	Local Authority	Subway	22/04/2014	28/08/2015	94.99	100.00
View	1602149394	Local Authority	Retaining Wall	22/04/2014	16/10/2015	86.35	55.48
View	1602149395	Local Authority	Retaining Wall	09/06/2016	15/10/2012	88.17	81.00
View	1602149396	Local Authority	Retaining Wall	02/06/2016	23/10/2014	94.75	100.00

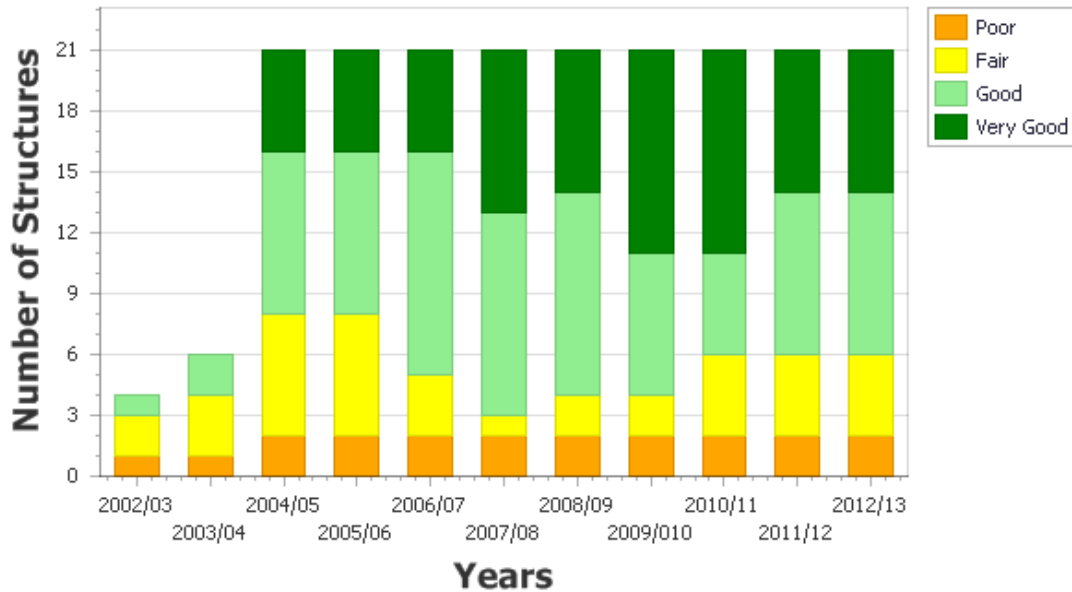
Stock condition graphs



Stock conditions for different types

Average BCI Ratings For The Stock (Numbers)

Authority : ██████████



Standard Report : Latest Stock BCI By Structure Type

Export

Structure Type	Structure Count	AV Factor	Total Area	BCI Average	Average_Ratings	BCI Critical	Critical_Ratings
Bridge	352	0.2	554080.30	85.37	Good	62.55	Poor
Cat Lighting	14	0	197.43	85.08	Good	55.97	Poor
CCTV Mast	7	0	112.45	95.86	Very Good	92.89	Very Good
Chamber	41	0	1920.26	88.64	Good	75.47	Fair
Culvert	115	0	42423.58	87.49	Good	74.30	Fair

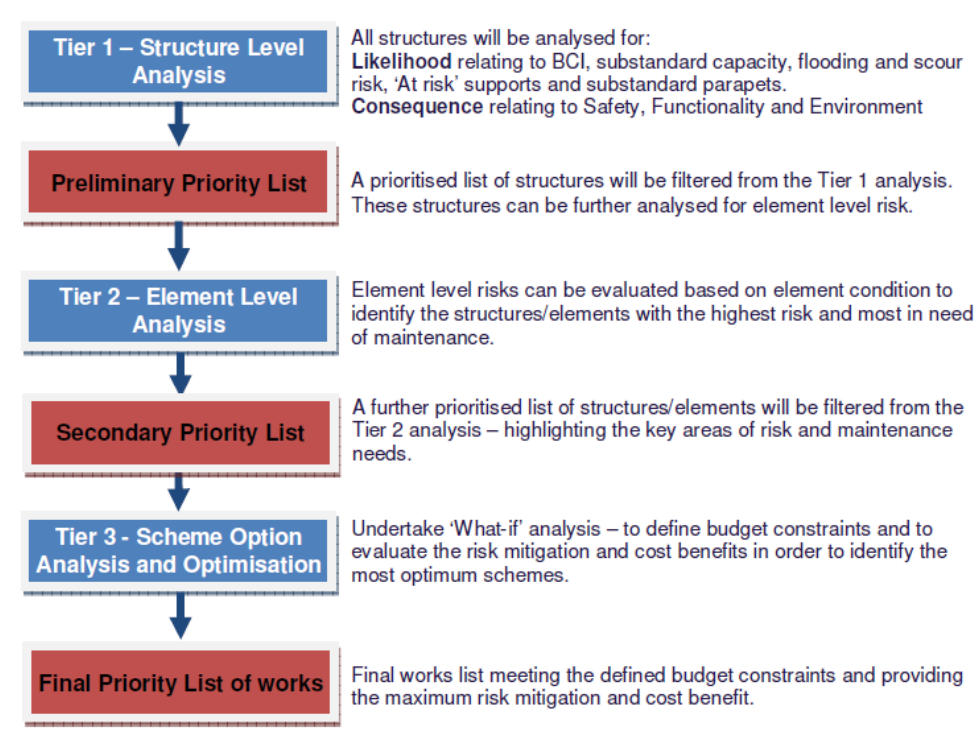
Short- and long-term planning

BridgeStation Web Edition includes a number of tools to aid in short- and long-term planning including:

- Short Term: **Value for Money Maintenance Prioritisation**
- Long Term: **Structures Asset Management Toolkit (SAMPT/SAVI)** integration (including Life Cycle Planning (LCP))

Value for Money Maintenance Prioritisation


As an alternative to the Structures Asset Management Planning Toolkit (SAMPT/SAVI), BridgeStation includes a maintenance prioritisation feature called Value for Money (VFM). VFM includes a three tier process to identify at risk structures and elements, then develop maintenance schemes. The schemes are prioritised according to built-in algorithms. Users can then select the most optimum scheme based on budget constraints and the risk mitigation and cost benefits offered.



Example Structure Analysis Output:



Identifier	Structure Type	Likelihood Score			
		Structure Condition	Substandard Structure	Flooding And Scour	At Risk Support
21	Bridge	100.00	13.00	40.00	30.00
22	Culvert	65.00	13.00	40.00	
23	Culvert	86.00	13.00	40.00	30.00
33	Culvert	65.00	13.00	20.00	30.00
36	Culvert	65.00	13.00	40.00	60.00

Example Element Analysis Output:

#	Tier2 Status	Financial Year	Local Authority	Name	
	Manual Override	Fail	2017		
#	Element No	Element Name	Condition	Condition Likelihood Score	Final Element Score
▼ Span/Wall/Group: Grid 114 - 115 Tidal Basin Entrance Bridge					
	23	Parapet	5B	100.85	66.30
	11	Pier / Column	3B	43.00	49.00
	15	SuperStructure Drainage	5E	100.75	58.50
	16	Substructure drainage	5E	100.75	58.50
	21	Finishes: parapets/safety fences	3B	42.75	36.75

Long Term: Life Cycle Plans

Life Cycle Plans (LCPs) are produced by the SAMPT/SAVI module outputs. Deterioration profiles are produced and suggested maintenance interventions are applied to the profiles.

 Export Data						
	Structure ID	Authority Name	Identifier	Structure Type	Structure Code	Structure Name
	1331000048	City of London	33/P01	Pipe Subway		Paul's Walk Pipe Subway
	1331000053	City of London	33/P03	Pipe Subway		Puddle Dock Pipe Subway
>	1331000057	City of London	33/P04	Pipe Subway		Distaff Lane (E48 - E50)
>	1331000075	City of London	33/14	Bridge		Holborn Viaduct over Thameslink

Deterioration Profile														
CSS Element	Description	Starting Condition	1	2	3	4	5	6	7	8	9	10	11	12
1 - Primary deck element (Table 2)	Main Member	3B	3B	3B	3B	3B	3B	3B	3B	3B	3B	3C	3C	3C
3 - Element from Table 3	Secondary Member	3B	3B	3B	3B	3B	3B	3B	3B	3B	3B	3B	3B	3B
6 - Parapet beam or cantilever	Parapet Beam / Cantilever	3B	3B	3B	3B	3B	3B	3B	3B	3B	3B	3B	3B	3B
9 - Abutments (inc arch springing)	Abutment / Support	3B	3B	3B	3B	3B	3B	3B	3B	3C	3C	3D	3D	3D
13 - Bearings	Bearing	3B	3B	3D	3E	4B	4D	5B	2E	2E	3B	3B	3B	3B
14 - Bearing plinth/shelf	Bearing Plinth / Shelf	3B	3B	3B	3B	3C	3C	3D	3E	3E	4B	4B	4B	4B
15 - Superstructure drainage	Drainage	3B	3B	3B	3B	3B	3B	3B	3C	3C	3C	3D	3D	3D
16 - Substructure drainage	Drainage	3B	3B	3B	3B	3B	3B	3B	3B	3C	3C	3D	3D	3D
17 - Waterproofing	Waterproofing	3B	3B	3D	3E	4B	4D	5B	5C	5D	5E	5E	5E	5E
18 - Movement/expansion joints	Joint	1A	1A	1A	1A	2B	2B	2D	3B	3D	4B	5C	5E	5E
23 - Handrail/parapets/safety fences	Parapet	3B	3B	3D	3E	4B	4D	5B	5C	5D	5D	5E	5E	5E
24 - Carriageway surfacing	Carriageway	3B	3B	3B	3C	3D	3E	4B	4B	4B	4B	4C	4C	4C
25 - Footway/verge/footbridge surfacing	Footway Surfacing	2C	2D	2D	2D	2E	2E	3B	3B	3B	3B	3B	3B	3B
32 - Retaining walls	Retaining Wall	3B	3B	3B	3B	3B	3B	3B	3B	3B	3B	3B	3B	3B
			£0	£0	£0	£0	£0	£0	£0	£50,400	£0	£0	£0	£0
										Total Cost: £50,400				

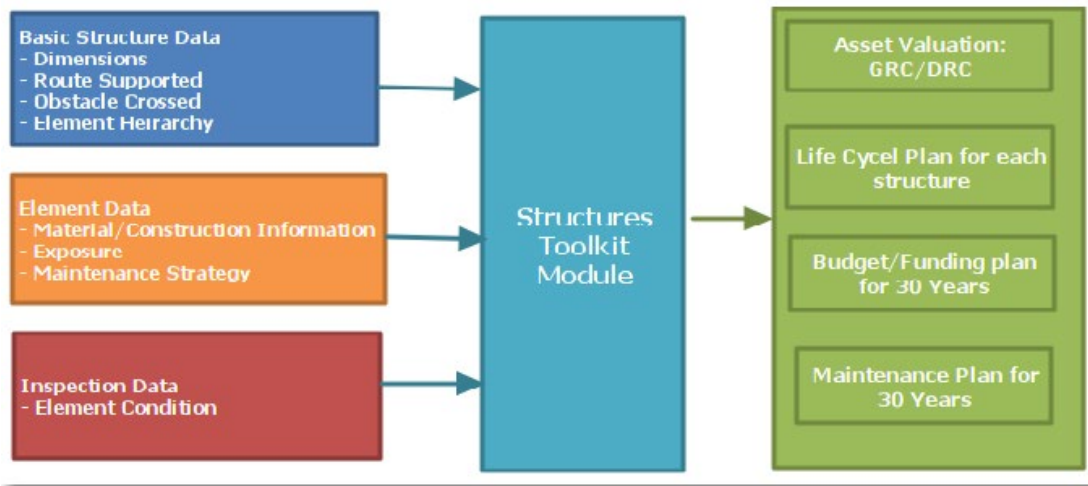
The deterioration profile updates itself to show the improvements to condition affected by the maintenance works.

Each year's scheme costs can be managed with the LCP module. Users can manage scheme costs associated with the following areas:

- Work Pattern
- Traffic Management
- Engineering Difficulty (Scheme level)
- Other Costs
- Design Costs
- Revenue Costs

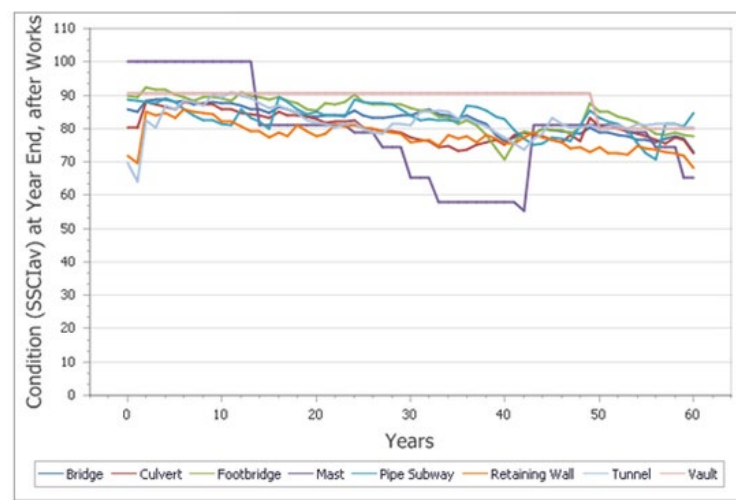
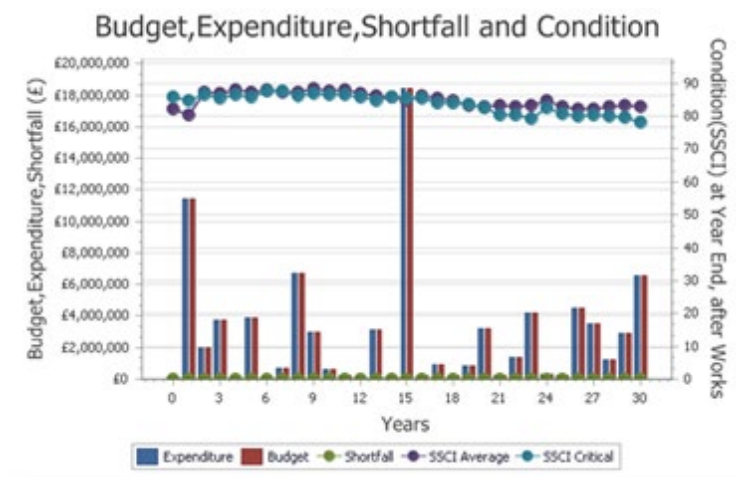
Structures Asset Management Planning Toolkit (SAMPT/SAVI) – Integration Module

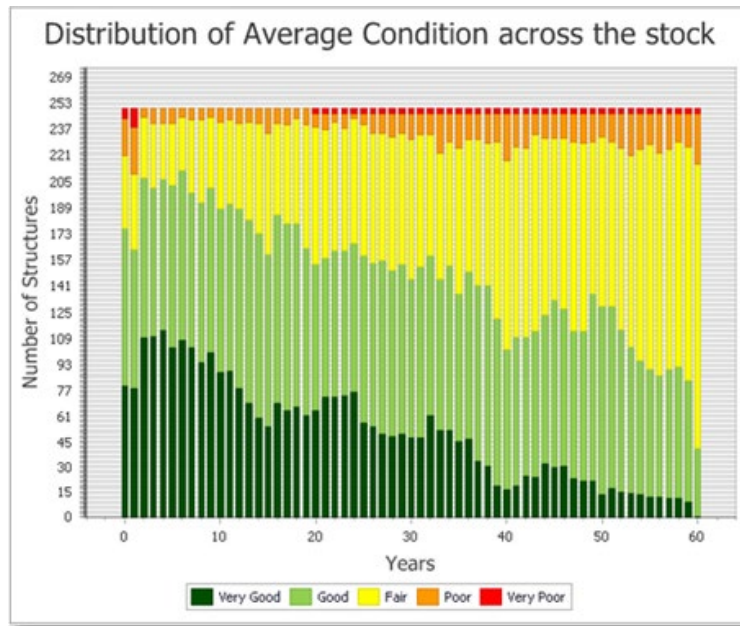
The **SAMPT/SAVI** integration module combines life cycle plans with maintenance prioritisation process allowing user to run scenarios or what-if analysis based on financial constraints. It also allows users to identify best value schemes for given funding.



Using existing data in BridgeStation including element hierarchies, material and environment information for each element, and basic structure data: Dimensions, routes and obstacles information, the SAMPT/SAVI module then produces a number of outputs.

Manage budgets

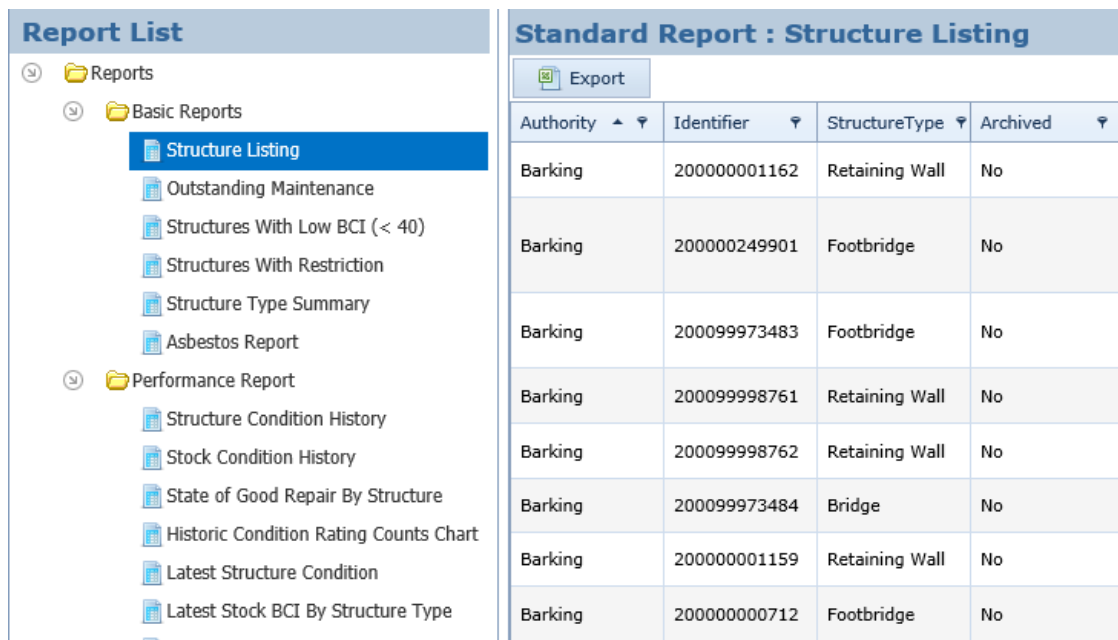




3.4. Reports Generator and Standard Reports

BridgeStation Web Edition currently has a set of **Standard Reports** module available to the user to export, along with an ad-hoc report generator called the **Reports Builder**.

Standard Reports are available for quick interrogation. The reports are grouped around themes such as performance/condition and can all be exported to an Excel format.



The screenshot shows two panels. The left panel, titled 'Report List', displays a tree view of reports under 'Basic Reports' and 'Performance Report'. 'Structure Listing' is selected under 'Basic Reports'. The right panel, titled 'Standard Report : Structure Listing', shows a table with an 'Export' button and a table of data.

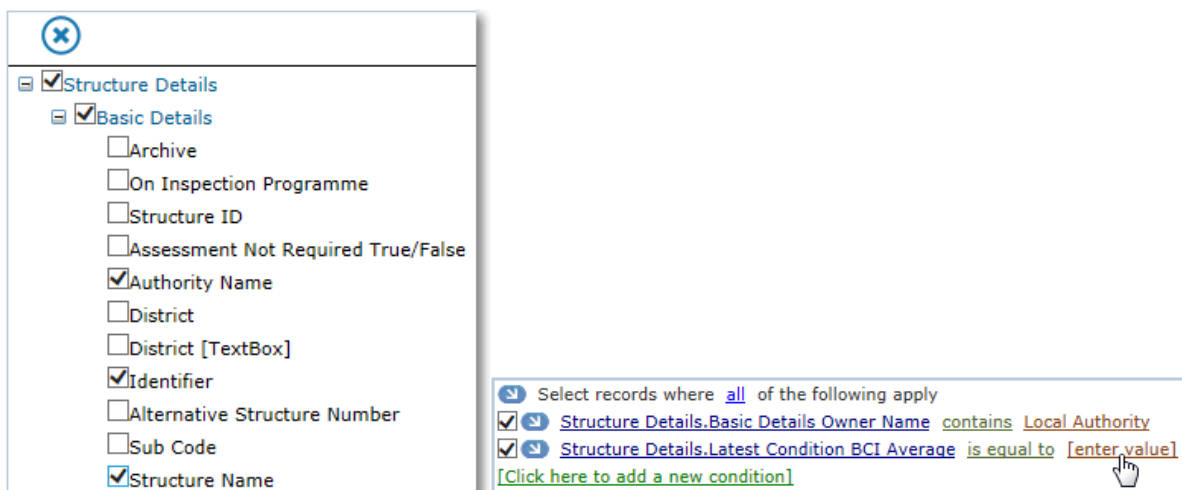
Authority	Identifier	StructureType	Archived
Barking	200000001162	Retaining Wall	No
Barking	200000249901	Footbridge	No
Barking	200099973483	Footbridge	No
Barking	200099998761	Retaining Wall	No
Barking	200099998762	Retaining Wall	No
Barking	200099973484	Bridge	No
Barking	200000001159	Retaining Wall	No
Barking	200000000712	Footbridge	No

Reports Builder - The solution allows multi format outputs from user defined queries, and then in turn allows these queries to be saved and run as report templates. Features of the report generator include:

Field Picker (Input Criteria)

The input criteria comprise the following:

- Fields or combination of related fields contained within the BridgeStation database.
- The ability to select multi fields and add them to a report design
- The ability to incorporate filters (queries) into the report design

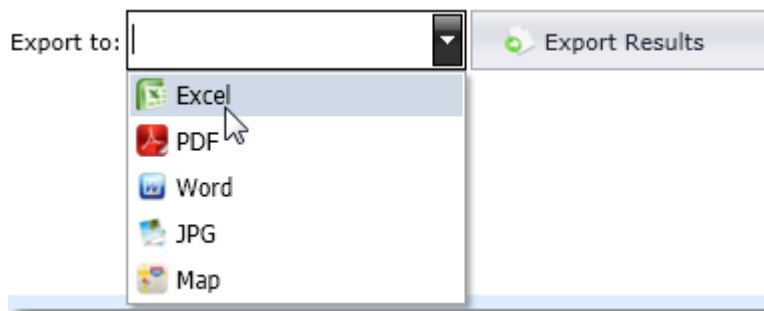


The screenshot shows the 'Field Picker' interface. On the left, a tree view shows 'Structure Details' expanded to 'Basic Details', with various fields listed and checkboxes for selection. On the right, a filter builder shows a query: 'Select records where all of the following apply'. Two conditions are selected: 'Structure Details.Basic Details Owner Name contains Local Authority' and 'Structure Details.Latest Condition BCI Average is equal to [enter value]'. A link '[Click here to add a new condition]' is also visible.

Output Criteria





The tool has the capability to present the results of the query in the following output formats:

- Word
- Excel
- PDF
- JPEG
- Map based
- Web based (HTML)



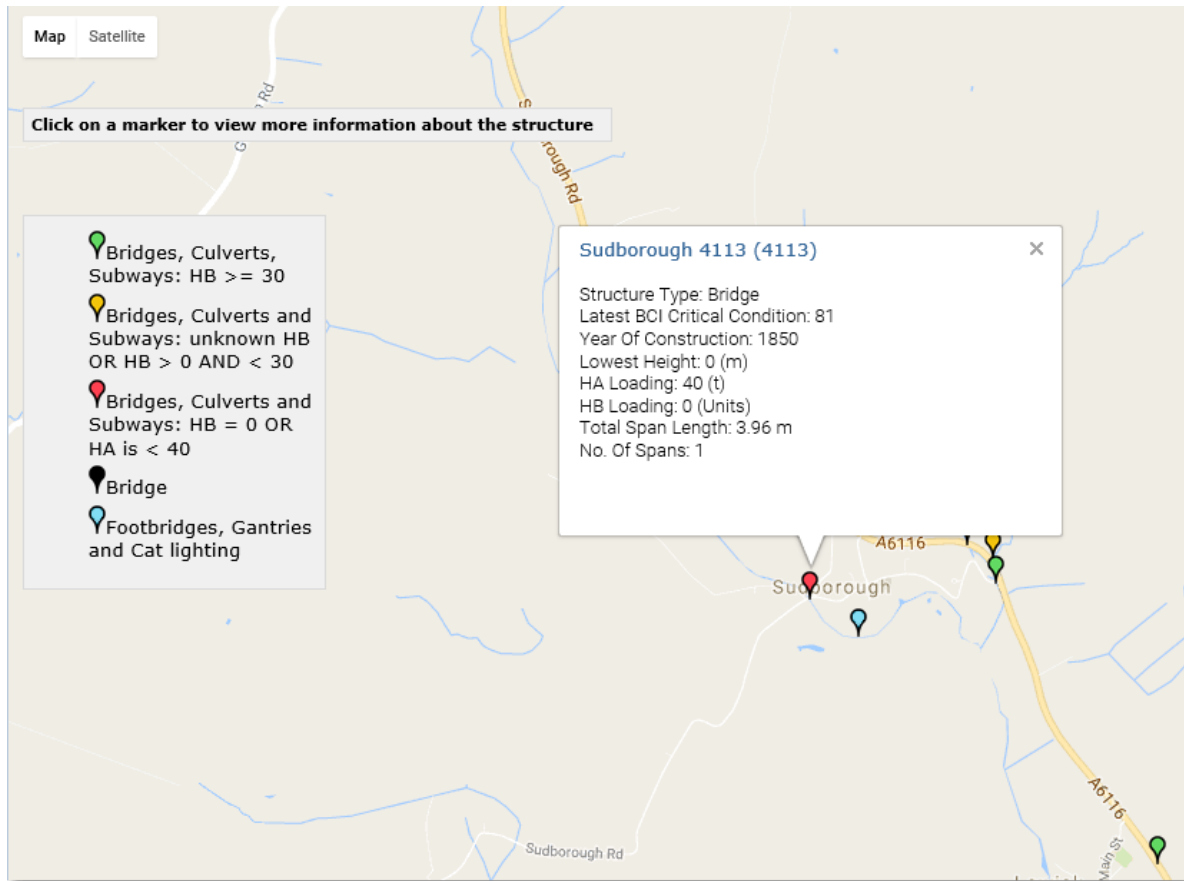
Saving Search Criteria and Creating Report Templates

The reporting module also has the facility to allow the user to save a report design. The saved report design can be made 'private', so the only the user who designed the report can see the outputs or made 'public' so that other users can run the same report design.

Report ID	Report Name	Report Description	Publicly Available	Created Date	Updated Date	Locked State	Delete Report
			<input type="checkbox"/>				
32	Demo 1: Structure Details	All Structure Details	<input checked="" type="checkbox"/>	26/11/2012	20/12/2012		
33	Demo 2: Inspection Results	All Inspection Results	<input checked="" type="checkbox"/>	26/11/2012	26/11/2012		

3.5. Abnormal Load Management

BridgeStation currently includes two features to assist with abnormal load management. Firstly, a Map theme that shows current capacities and potential obstacles.



Secondly an ESDAL data export as part of the Standard Reports module

Standard Reports : ESDAL Structure Details

Export

Enter text to search...

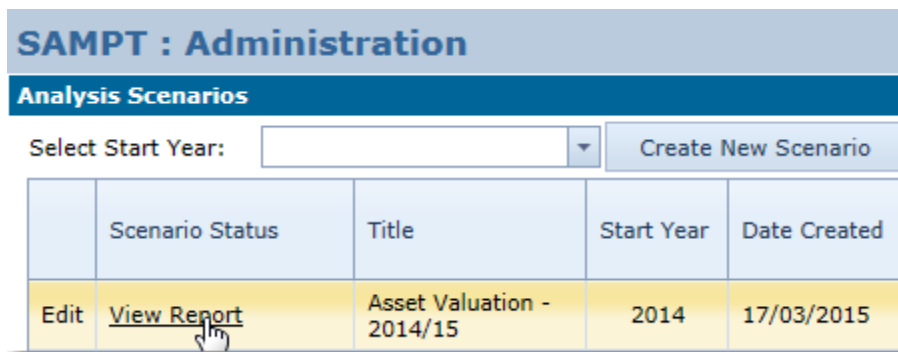
Height	CarriedList	CrossedList	Bearing Types	Foundation Types	LatestAssessment	AssessmentStand	HA Loading (t)
0.00	Carriageway	Footway		Shallow Foundation: Strip	30/09/1998	BD 21/97	45
3.30	Carriageway	Railway	Other/Unknown Bearing	Deep Foundation: Piles		Design Load	44
4.39	Carriageway	Railway	Other/Unknown Bearing	Other/Unknown Foundation	31/12/1998	BD 21/97	44
5.70	Carriageway	Carriageway	Pot	Other/Unknown Foundation	02/01/2006	Design Load	44

3.6. Prediction Models and Whole Life Costing

The **Life Cycle Plans (SAMPT/SAVI)** module combines life cycle plans with maintenance prioritisation process allowing user to run scenarios or what-if analysis based on financial constraints. It also allows users to identify best value schemes for given funding.

The module is fully integrated and compliant with the CIPFA and HAMFIG Structures Toolkit (SAMPT). The new SAVI toolkit is also being integrated and future updates and rate changes are included with BridgeStation.

Users can run and manage multiple scenarios.



SAMPT : Administration

Analysis Scenarios

Select Start Year: ▼ Create New Scenario

	Scenario Status	Title	Start Year	Date Created
Edit	View Report	Asset Valuation - 2014/15	2014	17/03/2015

Scenarios can have different maintenance strategies including; Unplanned Reactive, Planned Do Minimum, Planned Targeted and Planned Preventative.

Strategy : ▼ Analysis Period : ▼

Strategy Name	Notes
Planned Preventative	All elements of any importance are treated once they reach a predefined condition trigger. This typically varies at 3C, 2C or 4B. Where insufficient budget is available to intervene at the trigger condition, an appropriate intervention must be applied at 5B.
Planned Targeted	'Very High', 'High' and 'Medium' importance elements are treated once they reach a predefined condition trigger. This typically varies at 3C or 4B. Where insufficient budget is available to intervene at the trigger condition, or where elements of other importance reach condition 5B, an appropriate intervention must be applied at 5B
Planned Do Minimum	'Very High' and 'High' importance elements are treated once they reach a predefined condition trigger, i.e. 4D as shown in Section 6a and 6b. Where insufficient budget is available to intervene at the trigger condition, or where elements of other importance reach condition 5B, an appropriate intervention must be applied at 5B.
Unplanned Reactive	Demonstrating the consequences of a zero-budget. It is anticipated that, if no funding is available, the stock condition and value would decline over the evaluation period. However, all elements irrespective of their importance are treated when they reach condition 5B with the appropriate maintenance activity.

Using existing data in BridgeStation including element hierarchies, material and environment information for each element, and basic structure data: Dimensions, routes and obstacles information, the SAMPT module then produces a number of outputs for the planning period. Including:

- Suggested Work, Shortfall and Condition

- Structure Stock Condition profiles
- Expenditure profiles
- Life Cycle plans

Create 60-year life-cycle plans automatically with the tool.

Export Data

Structure ID	Authority Name	Identifier	Structure Type	Structure Code
1	[Redacted]	16/R/LA/32L01/1	Retaining Wall	[Redacted]

CSS Element	Description	Starting Condition	2014	2015	2016	2017	2018	2019	2020
2 - Retaining wall - Primary	Rw02. Primary Element	2C	2C	2C	2C	2C	2C	2C	2C
9 - Handrail/parapets/safety fences	Rw09. Handrail/Parapets/Safety Fences	1A	1A	1A	1A	1A	1A	1A	1A
14 - Embankment - Top of wall	Rw14. Embankment: Top of Wall	2B	2B	2B	2B	2C	2C	2C	2D
			£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00

Use the View/Modify Essential data tool to adjust parameters

SAMPT : View/Modify Essential Data

Structure Data | Element Data | Planned Upgrades, Improvements and LCPs | Routine Maintenance and Inspection Costs

Export Data

#	Authority Name	Identifier	Structure Type	Structure Code	Structure Name	Number Of Structures In Group
> Edit Delete	[Redacted]	16/R/LA/32L01/1	Retaining Wall	Structure 1	[Redacted]	1
> Edit Delete	[Redacted]	16/R/LA/32L01/2	Retaining Wall	Structure 2	[Redacted]	1
> Edit Delete	[Redacted]	16/R/LA/32L01/3	Retaining Wall	Structure 3	[Redacted]	1
> Edit Delete	[Redacted]	16/R/LA/32L01/4	Retaining Wall	Structure 4	[Redacted]	1
> Edit Delete	[Redacted]	11/B/LA/005	Bridge	Structure 5	[Redacted]	1
> Edit Delete	[Redacted]	31/T/LA/03	Bridge	Structure 6	[Redacted]	1
> Edit Delete	[Redacted]	06/X/LA/24/11	Tunnel	Structure 8	[Redacted]	1

BridgeStation's Life Cycle Planning tool has been enhanced to allow users to customise a number of parameters.

Life Cycle Plans (Toolkit) : Administration

Create New Scenario | Customise Analysis Parameters

Existing Life Cycle Plans/An

Enter text to search...

#	Status

- Manage Maintenance Strategy
- Manage Maintenance Rates Schedule
- Manage Deterioration Profiles
- Manage Maintenance Activities

Users can create new maintenance strategies to add to the standard LCP toolkit strategies.

Existing Maintenance Strategies :				
<input type="button" value="Add New Maintenance Strategy"/>				
#	#	Actions	Strategy Name	Safety Critical Threshold
Copy		Manage Rules	Planned Preventative	5B
Copy		Manage Rules	Planned Targeted	5B
Copy		Manage Rules	Planned Do Minimum	5B
Copy		Manage Rules	Unplanned Reactive	5B
Copy		Manage Rules	Do Nothing	none

You can also adjust the maintenance activities and their rates,

Maintenance Options & Base Unit Rates							
#	Maintenance Activity	Units	Cost Type	Fixed Rate	Constant Unit Rate	Variable Unit Rate	
						Severity 2	Severity 3
	(Concrete In-situ Slabs)						
	SAMPT: Revetments: Maintenance (Gabion Mesh Mattresses)	m2	Variable			£432.96	£1,735.49
	SAMPT: Revetments: Maintenance (Grassed Geotextile Mats)	m2	Variable			£630.65	£1,797.35
	SAMPT: Revetments: Maintenance (Grouted Stone or Masonry)	m2	Variable			£432.96	£1,735.49
	SAMPT: Revetments: Maintenance (Grout-Filled Synthetic Mattresses)	m2	Variable			£630.65	£1,797.35
	SAMPT: Revetments: Maintenance (Hand-Placed Stone)	m2	Variable			£432.96	£1,735.49

as well as adjust the element deterioration profiles.

Maintenance Intervention Rules

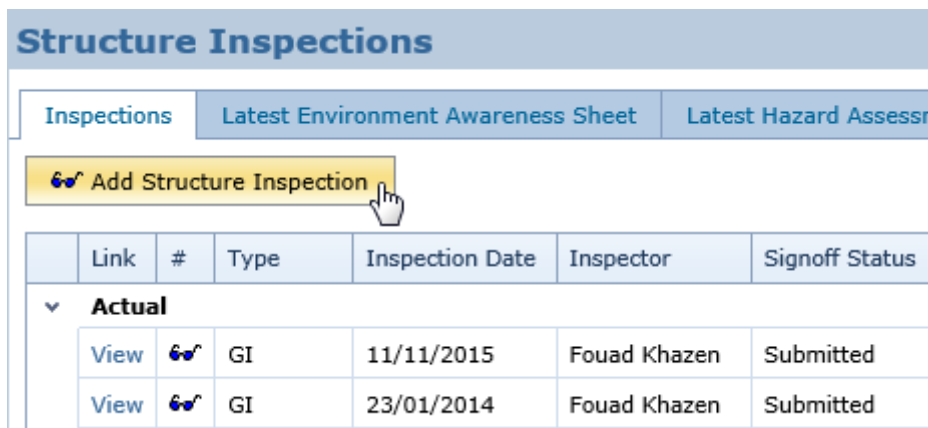
#	Material/ComponentType	Exposure	Fraction of Time to Failure to Reach Cond		
			1A	2B	3B
	Insitu Mass Concrete or Precast Plain Concrete	Mild			
	Mean Time To Failure				
	240				
	1A	0	2B	0.250	
	3B	0.500	4B	0.750	
	5B	1.000			
	Reduction (as a Fraction) in Mean Time to Failure due to Limited or No Routine Maintenance				
	Optimal Condition for Intervention				
	3D				
	Safety Critical Threshold				
	5B				

Update Cancel

3.7. Performance Measures

Inspection Forms (CSS Inspection Forms)

Inspection reports can be stored in BridgeStation in the Inspections folder according to current national standards. Inspections are organised into Planned, Current Year and Historic groups and each inspection has a sign off status.



Selecting an inspection type will add a new inspection icon to the planned folder and open up the inspection for edit. The following types are available

1. General
2. Principal
3. Superficial
4. Special
5. Monitoring/Special

With regards to the CSS inspection types the form is split broadly into four sections:

1. Inspection details (inspector name, date, GI/PI)
2. The element condition grid and multi defects
3. Inspector's and Engineer's comments
4. Works required

Inspection Details:					
Inspection Type:	Principal	Financial Year:	2024/25		
Inspector:	Inspector Name	Inspection Date:	10/06/2024	Photographs:	Yes
Risk assessment reviewed and updated:	<input checked="" type="checkbox"/> Yes				
All above ground elements inspected:	Yes				
Inspection Methodology:	Footways only				
Special Instructions:					

BridgeStation uses three proforma types for CSS inspections:

- Retaining Wall Proforma – For retaining walls, river walls and embankments
- Sign/Signal Gantry Proforma – For gantries and masts
- Bridges Proforma – For bridges and everything else

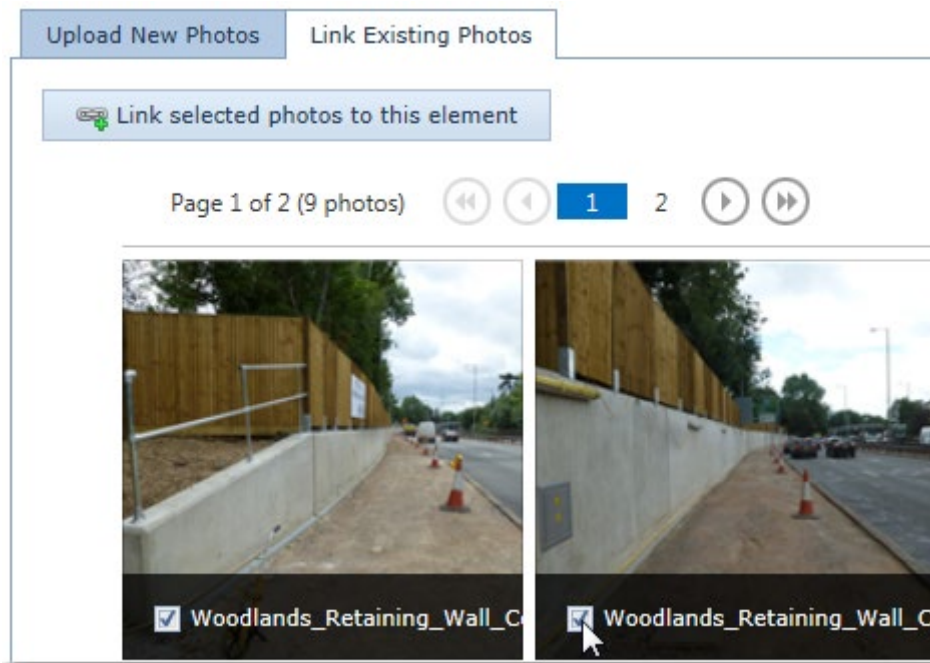
Within the element condition grid, a row is available for each element available for that particular proforma type.

#	No	Element Name	Sev	Ext	Def Code	PR	Wrks Req	Cost £k	Con
▼ Span1									
▼ Deck Elements									
+	1	Primary deck element (Table 2)					0		
+	3	Element from Table 3	Sev	Description					
+	4	Half joints	1	As new condition or defect has no si					
+	5	Tie beam/rod	2	Early signs of deterioration, minor d					
+	6	Parapet beam or cantilever	3	Moderate defect/damage, some loss					
+	7	Deck bracing	4	Severe defect/damage, significant lo					
+			5	The element is non-functional/failed					

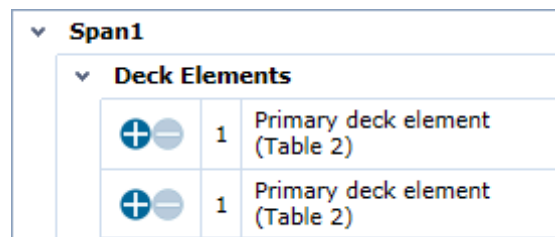
Users can then record condition information, comments and remedial works. Each element row on the BridgeStation Inspection form also includes the ability to add one or more photos of the defect being described.

Page 1 of 3 (65 items) < 1 2 3 >										
No	Element Name	Sev	Ext	Def Code	Wrks Req	Wrks Cat	Cost £k	Comment	Remedial Works	Def Pic
▼ Span1										
▼ Deck Elements										
> 1	Primary deck element (Table 2)	2	B	2.1	<input checked="" type="checkbox"/>	CR	3	Exposed and corroded reinforcement were noted in some locations to the deck soffit, possibly due to weathering. This defect was previously reported in the last GI undertaken in September 2013. Photographs 2, 3 and 4 refer.	In areas of exposed reinforcement, remove loose corrosion, and backfill with an appropriate cementitious material.	

You can upload new photos to the element's defect, or you can link to existing images.



The multi-defect section can be used to add additional elements of the same type to the form. This then enables the user to record multiple defects against each element.



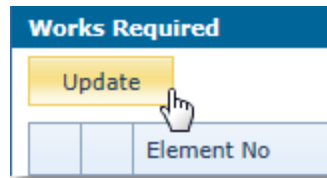
Users can record comments for both the inspector and the engineer who is checking the inspector's work.

Engineer's Comments

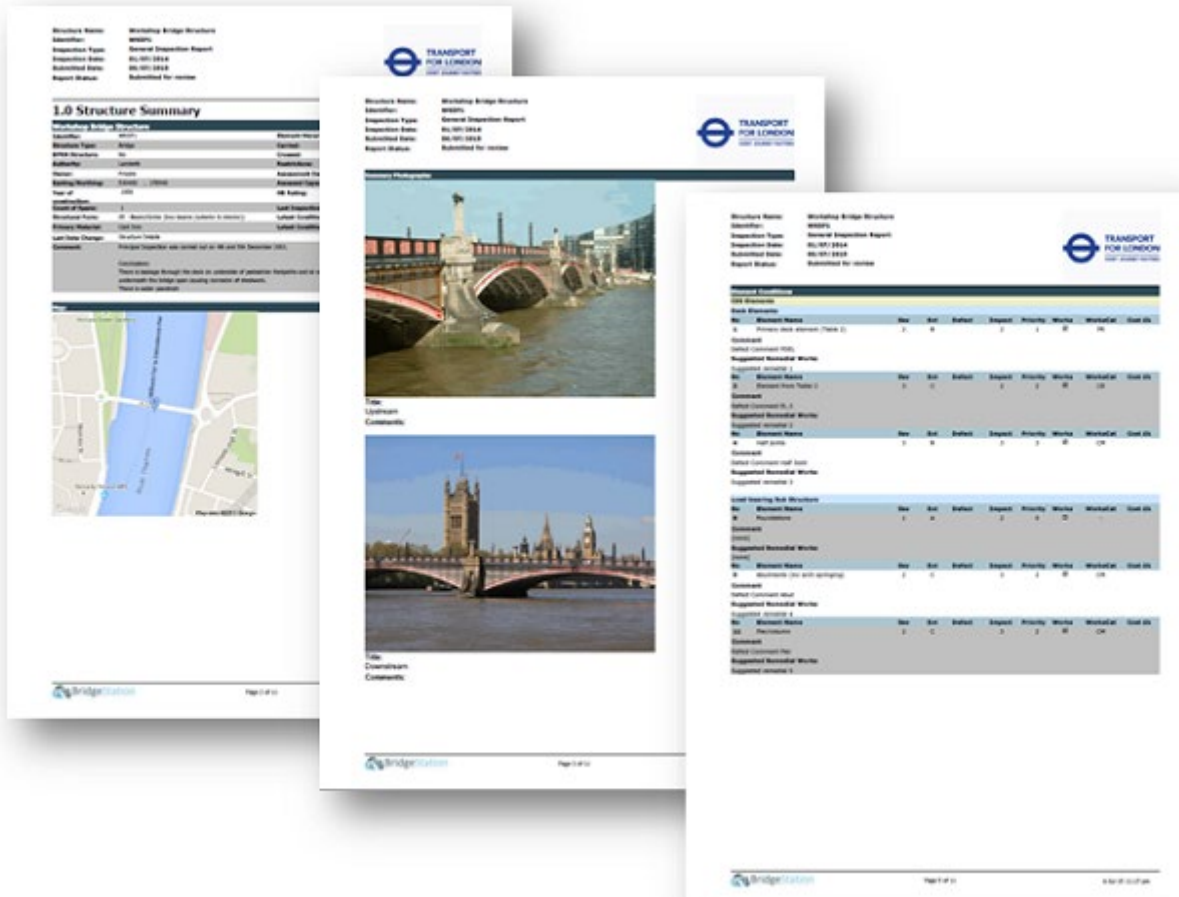
Example Comments

Engineers Name:

Users can build up list of works that are required based upon the element conditions recorded in the element grid.



Inspection Reports can be printed to PDF or Word.



Generation of Inspection Schedules

Inspection Scheduling and Inspection Planning is made available via the Inspection Scheduler and Inspection Programme. Use the Inspection Scheduler to add your inspections for multiple years. The scheduler allows you to add inspections for multiple structures over multiple years.

You may choose between fixed intervals and risk-based intervals when using the scheduler.

Structure Type	Owner	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20
Culvert	Local Authority				GI		GI	PI +1		
Retaining Wall	Local Au									
Bridge	Local Au									
Bridge	Local Au									
Culvert	Local Au									
Retaining Wall	Local Au									
Culvert	Local Au									
Pedestrian Subway (or Underpass)	Local Au									

View Inspection List - Ballards Road Culvert

Actions	Financial Year	Type	Planned Date	Inspection Date	Inspector	Sign Off Status
	2020/21	General	01/04/2020	01/04/2020		Planned

Update and Close

Manage the progress of these inspections with the **Inspection Programme** feature. This feature shows you a particular inspection year and view detailed information about each inspection such as, date, inspector, submitted date, signoff status.

Financial Year: 2017/18

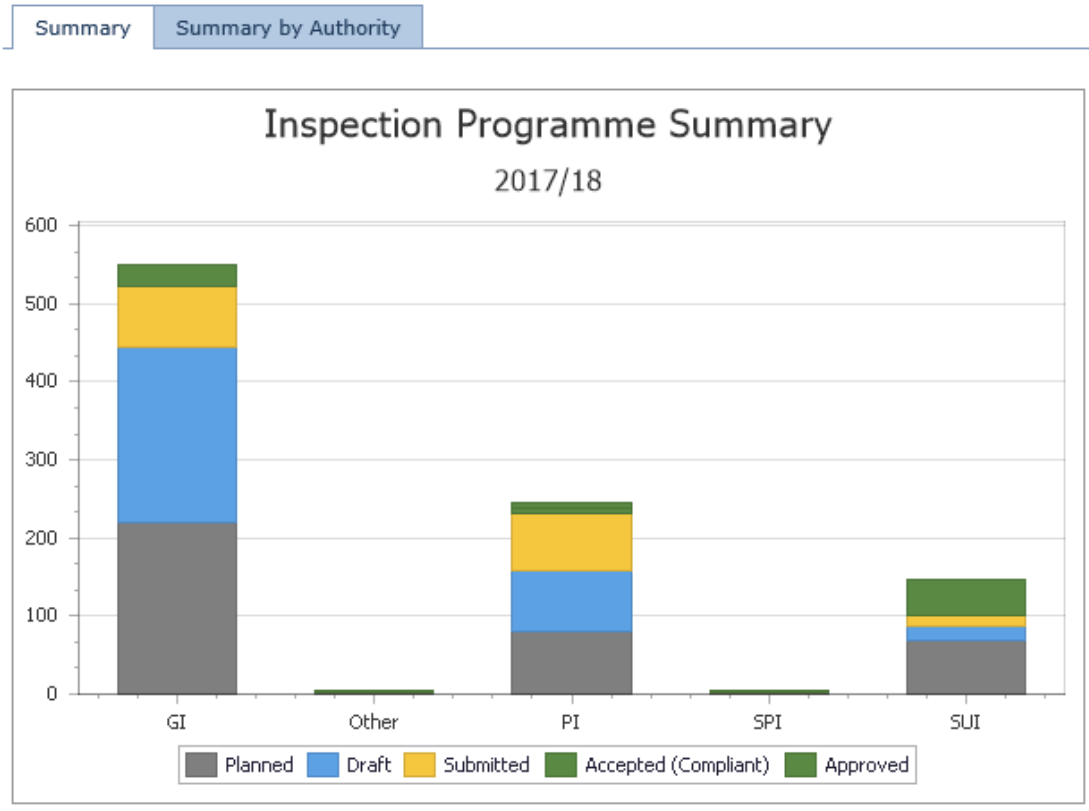
Summary
Annual Inspection Programme
Map
6 Year Programme

Export Data
 Schedule a New Inspection

Page 1 of 48 (952 items) 1 2 3 4 5 6 7 ... 46 47 48

#	Link to Structure	Link to Inspection	Owner Type	Structure Type	Inspection Type	Planned Date	Inspection Date	Signoff Status
	View Structure	View Inspection	Local Authority	Bridge	GI	03/04/2017	03/04/2017	Submitted
	View Structure	View Inspection	Local Authority	Culvert	PI	12/04/2017	12/04/2017	Submitted
	View Structure	View Inspection	Local Authority	Footbridge	GI	04/04/2017	04/04/2017	Submitted
	View Structure	View Inspection	Local Authority	Pedestrian Subway (or Underpass)	GI	21/04/2017	21/04/2017	Submitted

BridgeStation also allows you track progress during the year via the **Programme Summary**. This shows counts of the inspections in each sign-off status and calculates the number of outstanding reports due in the year.



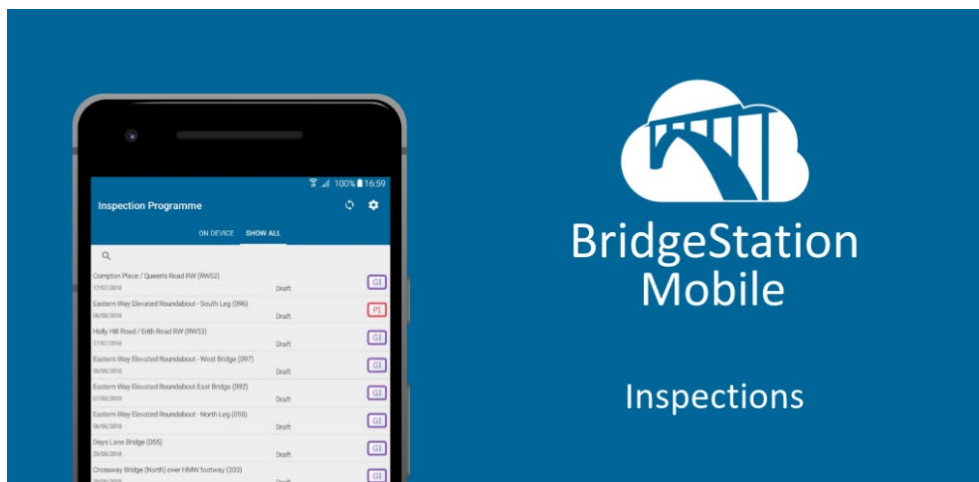
Inspection Sign Off

Inspections can be managed via the Inspection Signoff process. Each inspection has a signoff status (Planned, Draft, Submitted, Rejected, Accepted). Submitting an inspection fires a notification email to a manager who can use the signoff section to reject or accept the inspection.

Inspection Sign off Summary:

Sign off Status:	Draft	View Checklist	Submit For Review
-------------------------	--------------	--------------------------------	-----------------------------------

Mobile Inspections



The BridgeStation Mobile Inspections App is an onsite data collection tool for the users of BridgeStation. It is designed to enable inspectors to collect and record element level structure inspection data using phones and tablets.

BridgeStation Mobile Inspections is available for both Android and iOS devices and is downloaded from the Play Store and App Store respectively. The app is regularly updated via the Play and App Stores. The mobile applications do not feature user experience/feedback requests or advertising of any kind.

The app helps to improve efficiency and data quality by reducing the time spent in the field, and providing a number of inspection friendly features.

Key features:

- Offline mode - complete an inspection without a data connection
- Previous inspection data - condition and photographs included for review
- Defect Code Picker - faster identification of codes and descriptions
- Use the device camera - quickly take defect photos and attach them to individual defects
- Upload inspection data to BridgeStation for final review and submission
- Secure data transfer – via https, TLS 1.2.

The app includes filters so that you can search for structures or inspection types.

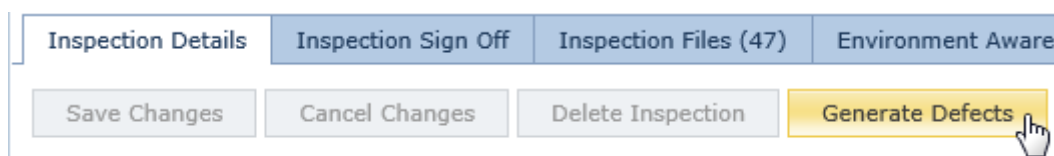
The app requires access to your device's camera and gallery. This is to assist with the collection of defect photographs whilst out on site. A Date/Time stamp feature is also available for audit/insurance purposes.

The app will store the inspection form and defect photographs on the device whilst the inspection is ongoing. Once uploaded the app suggests that the user clears the offline data. The option to clear the offline data is also available at any time to the user.

BridgeStation Mobile takes advantage of the user's built-in mapping application in order to send navigation instructions to the user.

Maintenance Outstanding (defects identified during inspections)

You can use the CSS inspection form to generate defects for the inspected elements. Once you have completed your element conditions including severities and extents and selected which elements require works you can generate defects automatically from the form.



The system will search through your elements on the form and generate a defect for each element.

	#	No	Element Name	Sev	Ext	Def Code	PR	Wrks Req	Cost Ek	Comment
▼ Super Structure										
▼ Deck Elements										
>		1	Primary deck element (Table 2)	3	C		M	<input checked="" type="checkbox"/>	110	Defect comment

The generated defects are displayed in the Structure menu under **Maintenance**.

Structure
Summary
Details
Files
Elements
Inspections
Condition (BCI)
Maintenance
Restriction
Load Capacity
Incidents/Events

The list is separated into **Outstanding** and **History** defect groups.

Link	#	Title	Description
▼ Outstanding			
View	!	Invert/river bed	Vegetation overgrowth to river bed obstructing water flow
View	!	Handrail/parapets/safety fences	Minor splitting to timber handrails and parapets in localised areas
View	!	Finishes: substructure elements	Failure of finishing protective coat throughout the structure
View	!	Pier/column	Extensive Timber decay, loss of section, splits, cracks and shakes in
View	!	Primary deck element (Table 2)	Timber decay , splits, cracks and shakes in various localised areas.

Description of Defect	
Summary:	Primary deck element
Comments/Remarks:	Defect comment
Works Required:	<input checked="" type="checkbox"/>
Found:	24/08/2015

You can also record correction information against a defect and have the corrected condition included in the bridge condition values. Complete a date and a new extent and severity value to update the condition for that element.

New Condition after Defect Corrected	
Corrected:	25/08/2015
New Severity:	1: No significant defects
New Extent:	A: No significant defect
Works Summary:	Summary of works items

Once a defect has been given a corrected date and new condition it moves to the Maintenance>History section.

Maintenance Management (Workbank)

Use the Maintenance Management (Workbank) Module to prioritise your maintenance backlog then develop and programme work packages.

The module allows you to:

1. Find defects to add to the list of Draft Work Items
2. Review your Draft Work Items
3. Prioritise the Reviewed Work Items
4. Package Work Items together and produce a Forward Work Plan
5. Close out Work Items

Work Items (Defects) can be generated during inspections, but if they aren't you can still use the Latest Inspection Results tab to create them.

Latest Inspection Results		Draft Work Items		Maintenance Backlog (Reviewed/Prioritised Workbank)			Work Packaging & Programming	Forward Work Plan	Close
Import Latest Element Conditions		Export Data		Add Selected to Draft Workbank			Show Data Filter	Column	
Workbank Status	Risk Status (VFM)	Risk Based (VFM) Priority Score	Structure Details				Defect Details		
			Owner	Structure Type	Span / Wall Count	Primary Deck Material	Source	Span / Wall	
<input checked="" type="checkbox"/>	High	68.00	Local Authority	Bridge	3	Fabricated Steel, Rolled Steel, Steel, or Steel Plate	GI - 16/04/2013	Span 1	
<input checked="" type="checkbox"/>	High	68.00	Local Authority	Bridge	7	Insitu Reinforced Concrete	PI - 24/11/2012	South Cantilever Span	
<input type="checkbox"/>	High	68.00	Local Authority	Bridge	7	Insitu Reinforced Concrete	PI - 24/11/2012	Span 3	
<input type="checkbox"/>	Draft	High	66.00	Local Authority	Bridge	56	Insitu Reinforced Concrete	PI - 10/06/2015	Grid 114 - 115 Tidal Basin Entrance Bridge

You can mark Draft Work Items as Reviewed and Create brand new Defect/Work Items if needed on the Draft Work Items tab.

Latest Inspection Results		Draft Work Items		Maintenance Backlog (Reviewed/Prioritised Workbank)		
Select Authority : Barking		Add New Defect/Work Items				
Save Changes		Cancel Changes		Archive Selected		
Link	Status	Structure Name	Structure Type	Source	Date Added	

Each work item can be set as Reviewed or Archived as required.

Latest Inspection Results		Draft Work Items		Maintenance Backlog (Reviewed/Prioritised Workbank)			Work Packaging & Programming		Forward Work Plan		Close Packa
Select Authority : Barking											
Add New Defect/Work Items											
Export Data											
Save Changes		Cancel Changes		Archive Selected			Set Selected to Reviewed				
Link	Status	Structure Type	Source	Date Added	Risk Based (VFM) Priority Score	Element /Location	Ext / Sev	Detailed Description			
<input checked="" type="checkbox"/>	View	Draft	Bridge	GI - 07/02/2014	07/02/2014	0.00	Finishes: parapets/safety fences	2B	Minor corrosion to the legs of the steel parapets.		
<input checked="" type="checkbox"/>	View	Draft	Bridge	GI - 07/02/2014	07/02/2014	0.00	Carriageway surfacing	2B	Cracking to the carriageway.		
<input type="checkbox"/>	View	Draft	Bridge	GI - 07/02/2014	07/02/2014		Lighting	2B	Corrosion to the base of the lighting column to the east approach ramp.The functionality of the system was not checked during the inspection.		
<input type="checkbox"/>	View	Draft	Bridge	GI - 07/02/2014	07/02/2014	19.00	Abutments (inc arch springing)	2C	Cracks to abutments some with calcite deposits.		

The Maintenance Backlog tab allows you to prioritise the work items. The backlog is split between Work Items that have been merely reviewed and those that have been reviewed and prioritised. A risk-based priority score is calculated automatically and provided by default by the system.

Latest Inspection Results		Draft Work Items		Maintenance Backlog (Reviewed/Prioritised Workbank)			Work Packaging & Programming		Forward Work Plan		Close out Work Packages/Items
Backlog (All Work Items)											
Reviewed (Not Prioritised)											
Prioritised											
Select Authority: Barking											
Save Changes											
Cancel Changes											
Archive Selected											
Set Selected to Dra											
Link	Status	Structure Name	Structure Type	Element /Location	Risk Based (VFM) Priority Score	Final Priority Score	Detailed Description		Source		
<input type="checkbox"/>	View	Lordford Bridge	Bridge	Spandrel wall/head wall	10.00	10.00	Historical hairline cracks in spandrel walls at several locations at the West and East end of the bridge. Moreover, there was water seepage through the East spandrel wall.		PI - 24/03/2014		
<input type="checkbox"/>	View	Lordford Bridge	Bridge	Finishes: parapets/safety fences	0.00	0.00	Minor lichen and moss growth on the West parapet.		PI - 24/03/2014		

Bridge Condition Indicator

Available Condition Information

BridgeStation has various condition measures available to the user. Condition calculations are based upon the Atkins guidance. Each condition includes:

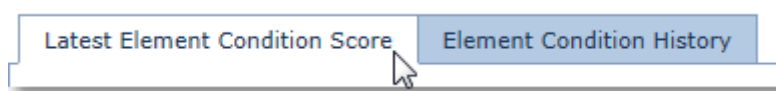
- the Bridge Condition Index (BCI)
- the Bridge Condition Score (BCS)
- the State of Good Repair (SOGR)
- the condition rating for each score and index (Very Good, Poor etc...)

The condition information types available include:

1. Latest condition for individual structures (based on all inspection results and corrected defects)
2. Latest stock condition information – Performance Reports

Latest condition information for structures

The main condition measure used in BridgeStation is the latest condition.



This will look at each element that has been inspected and display the most recent condition information for that element regardless of the source of that condition information.

Latest Element Condition Score		Element Condition History				
Bold rows indicate element is used in Bridge Condition Critical Score and Index						
Export Data Collapse All Expand All						
No	Element Description	Inspected On	Importance	Severity / Extent	ECI	
1) Super Structure						
1	Primary deck element (Table 2)	11/08/2015	Very High	3B	3.00	
2	Transverse beams	11/08/2015	Very High	3C	3.10	
4	Half Joint	11/08/2015	Very High	2B	2.00	
5	Tie beam/rod	11/08/2015	Very High	3D	3.30	
6	Parapet beam or cantilever	11/08/2015	Very High	2C	2.10	
10	Spandrel wall/head wall	11/08/2015	High	2C	1.88	
13	Bearing	11/08/2015	High	3C	2.96	
15	Superstructure drainage	11/08/2015	Medium	3B	2.70	
17	Waterproofing	11/08/2015	Medium	3D	3.05	
19	Surface Finishes	11/08/2015	Medium	3C	2.82	
21	Finishes: parapets/safety fences	11/08/2015	Medium	3C	2.82	
23	Handrail/parapets/safety fences	11/08/2015	High	2C	1.88	
24	Example Carriageway	11/08/2015	Medium	4C	3.97	
25	Footway/verge/footbridge surfacing	11/08/2015	Low	3D	2.79	
2) Sub Structure						
8	Foundations	08/08/2013	High	3B	2.85	
11	Pier/column	11/08/2015	Very High	3C	3.10	

The condition history is also available for each structure. With this you can track the condition over time and identify trends.

Element No	Element Description	Importance	PI - 05/12/2005	PI - 20/07/2011	GI - 13/02/2014	GI - 10/11/2015
BCI Results						
	BCI Average		95.24	72.97	95.93	98.58
	BCI Critical		81.00	55.48	100.00	100.00
Super Structure						
1	Primary deck element (Table 2)	Very High	2B	3C	1A	1A
10	Spandrel wall/head wall	High	1A	2B	1A	2B
17	Waterproofing	Medium	2B	3C	1A	1A

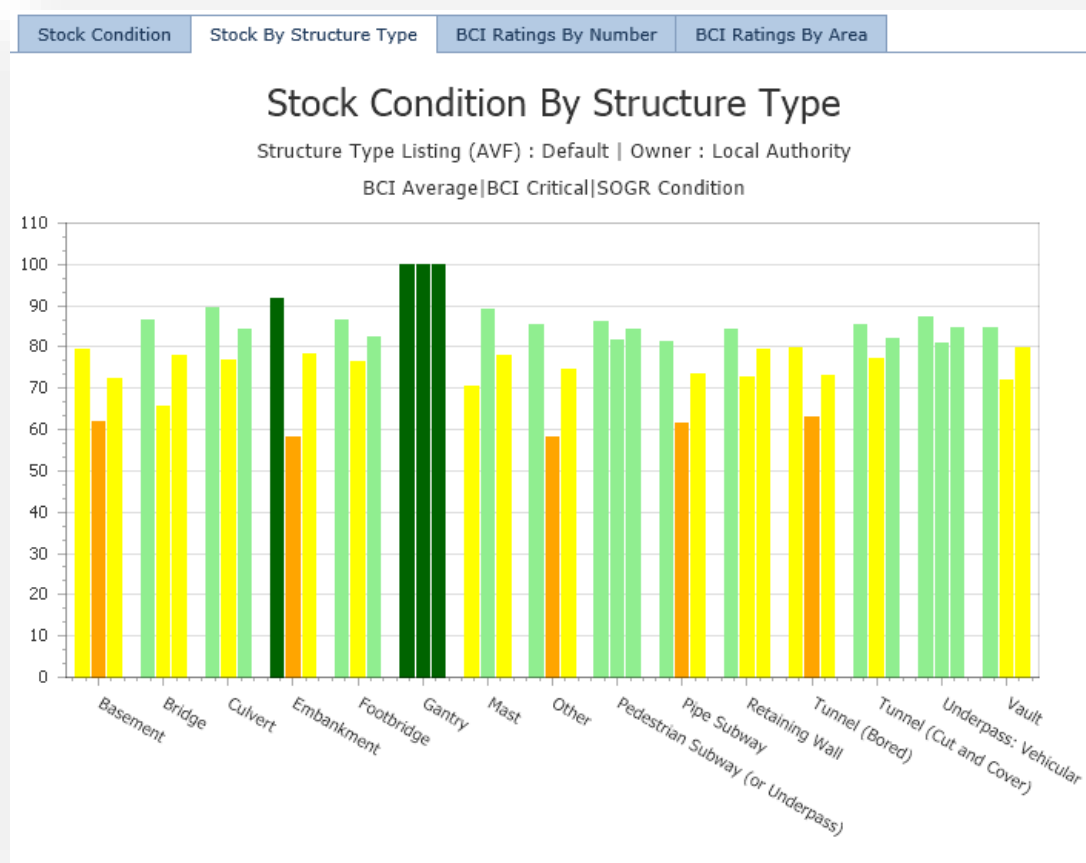
Stock Condition Information – Performance Reports

BridgeStation includes Performance Reports as part of the Standard Reports feature. Reports include:

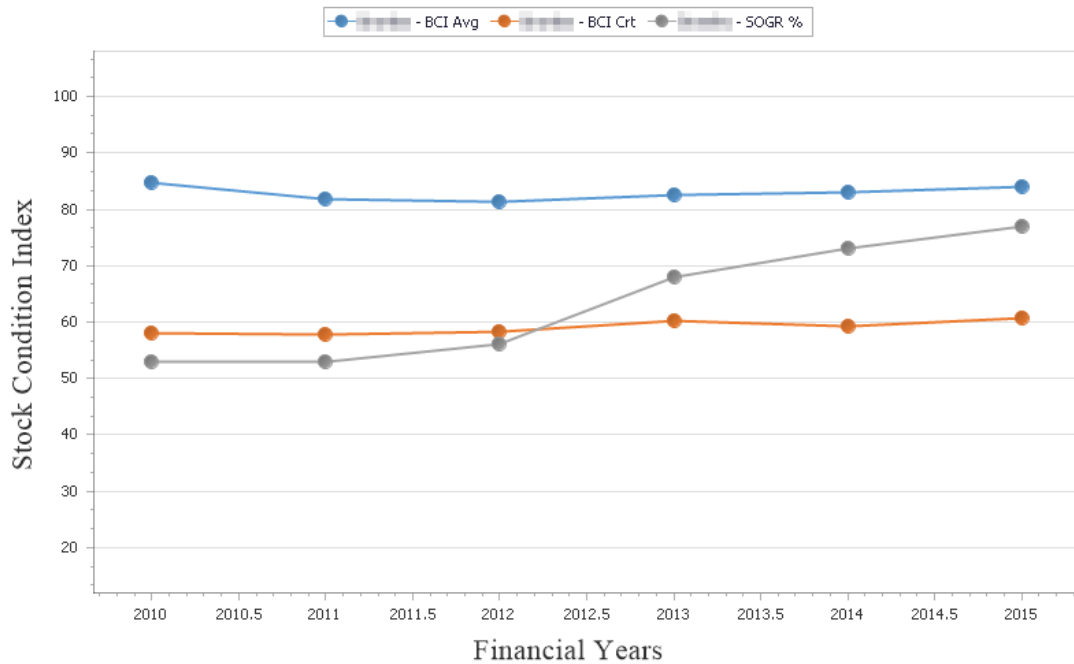
- Latest Structure Condition
- Structure Condition History
- Stock Condition History
- Historic Condition Ratings
- Structures in Poor Condition

BCI Average, BCI Critical and State of Good Repair measures are all displayed on graphs and grids, with appropriate groupings.

Example graphical output is shown below:

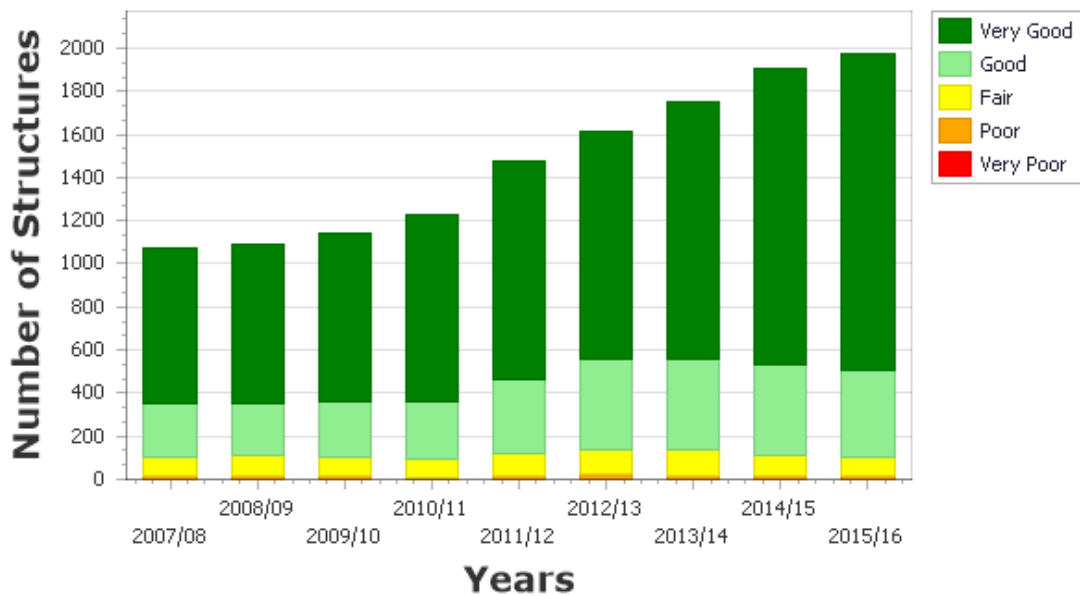


Annual Structure Stock Condition Index (SSCI) History



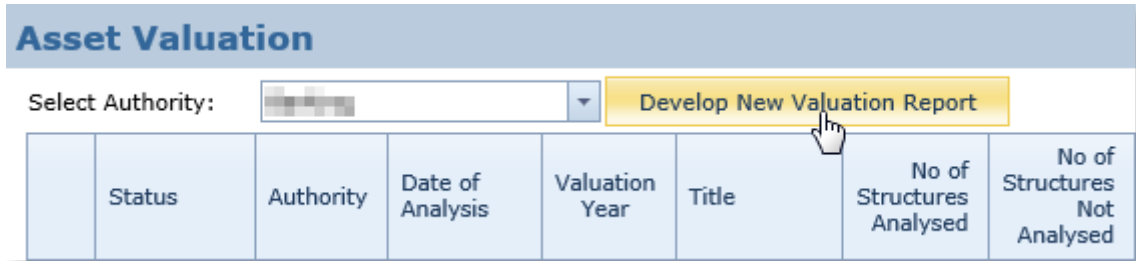
Average BCI Ratings For The Stock (Numbers)

Authority : Northamptonshire County Council



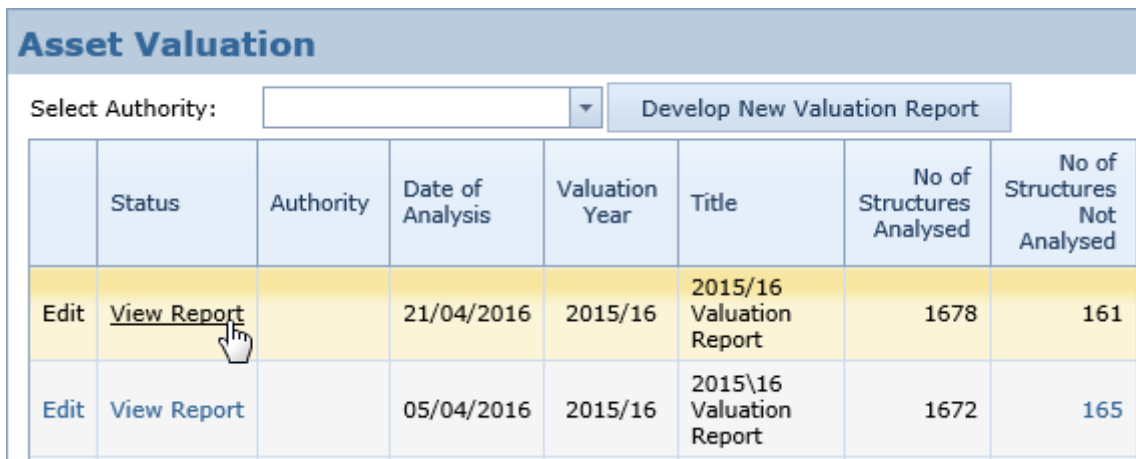
3.8. Asset Valuation

An asset valuation report is included in BridgeStation. This is built around the national guidance within the Structures Asset Valuation and Investment tool (SAVI).



The screenshot shows the 'Asset Valuation' header with a 'Select Authority:' dropdown menu and a yellow 'Develop New Valuation Report' button. Below the button is a table with the following columns: Status, Authority, Date of Analysis, Valuation Year, Title, No of Structures Analysed, and No of Structures Not Analysed.

BridgeStation will process the valuation report based upon the data already held in the system.

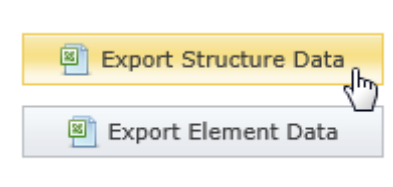


The screenshot shows the 'Asset Valuation' header with a 'Select Authority:' dropdown menu and a 'Develop New Valuation Report' button. Below the button is a table with the following columns: Status, Authority, Date of Analysis, Valuation Year, Title, No of Structures Analysed, and No of Structures Not Analysed. The table contains two rows of data:

Status	Authority	Date of Analysis	Valuation Year	Title	No of Structures Analysed	No of Structures Not Analysed
Edit View Report		21/04/2016	2015/16	2015/16 Valuation Report	1678	161
Edit View Report		05/04/2016	2015/16	2015\16 Valuation Report	1672	165

A CIPFA Structures Toolkit Export is available as an alternative to BridgeStation's built-in Valuation Report.

The export is based on your BridgeStation structure records with the appropriate conversions and treatments made to make it compatible.



The screenshot shows two buttons: 'Export Structure Data' (yellow) and 'Export Element Data' (grey). A mouse cursor is pointing at the 'Export Structure Data' button.











4. Case Studies and References

BridgeStation Web Edition is in use with wide range of UK local authorities and other bridge owners. A full list of the current users of BridgeStation are available here: [BridgeStation Client List](#)

Individual Case Studies and associated references are below:







CASE STUDY - LoBEG	
TENDERER NAME:	BridgeStation (FSW IT Solutions Limited)
Case Study Title	LoBEG – The London Boroughs
Case Study Number	1 of 2
Assignment / Project title	LoBEG
Name of Client	LoBEG
Category of client (Transport Public Sector, Transport Private Sector, Other – please specify)	Transport Public Sector
Type of work	Bridge Management Software (BMS) Service- host, maintain, develop and support the BMS.
Value of assignment	[Confidential]
Project start / end date	2010 to present
Description and objectives of the project.	
<p>Host, maintain, develop, and support a Bridge Management System (BMS) for the 33 London Boroughs. Host and maintain a web-based BMS to enable greater cooperation between the borough members and support day-to-day management activities.</p> <p>Provide a support service including a Help Desk for the borough officers and any of their consultants/contractors.</p> <p>Provide software development services to further enhance the BridgeStation product.</p> <p>In London BridgeStation was also required to support the Bridge Strengthening Bidding process. A strengthening programme in London is administered by LoBEG and BridgeStation required additional modules and features to assist with this.</p>	
Describe key issues and how they were managed.	
<p>One of the key issues in London was the need for fine grain permission control. An authority based permissions system was developed so that boroughs employing consultants could specify a limited permissions profile. The same account could also be given different permissions on different boroughs if required.</p>	

CASE STUDY - LoBEG

Actions	Activated	Locked	User Email	
	<input type="checkbox"/>	<input type="checkbox"/>	example	
  	<input checked="" type="checkbox"/>	<input type="checkbox"/>	example@bridgestation.co.uk	
+ New Authority				
Actions	Activated	Expiry Date	Authority	Authority
 	<input checked="" type="checkbox"/>	12/02/2015		Denied
 	<input checked="" type="checkbox"/>	12/02/2015		Denied
Number of authorities: 2				

To deal with the Strengthening Bids programme in London and entirely new module was bolted on to BridgeStation. This financials package allows boroughs and LoBEG package administrators to submit bids, approve/reject the bids, monitor spending and report back to central government.

With London and LoBEG in particular, there was a particular push to ensure that each structure record had a minimum level of detail and attributes completed. To deal with this a new module was developed with LoBEG's guidance. This module was named 'Data Gap Report' and provided reporting and data completion tools to ensure each structure's record complied with a standard level of completion. Training sessions were then adjusted to include specific training on updating and completing data in BridgeStation.

Structure Name	Identifier	No of Spans / Walls	Length	Average Width
			<input type="text"/>	<input type="text"/>
	/LA/X/10	1	530.00	7.00
	/LA/B/12	1	33.53	14.63
	/LA/B/17	1	7.01	15.13
	/LA/B/18	16	243.83	7.52
	/LA/B/2	1	7.75	13.00
	/LA/X/25, 26 & 27	19	0.00	0.00

Describe the process you deployed to establish client requirements and ensure that the requirements were met.

In London we run bi-monthly progress meetings with LoBEG to discuss upcoming module development. This is attended by LoBEG representatives as well as Transport for London.

FSW IT Solutions also attends the strengthening programme sector meetings to provide additional support and suggest improvements to current practices.

With regards to service uptime, a service has been installed where clients can publicly view the uptime statistics for their own website. This is available to view 24/7 at the following [URL](#).

CASE STUDY - LoBEG

Outcomes (in terms of time, quality, cost).

Describe agreed measures, targets or KPIs and provide details of how you performed against them.

With LoBEG a service level agreement was signed to confirm required targets and performance indicators. The BridgeStation BMS is provided as a hosted service, with an associated annual subscription.

Sample KPIs:

Help Desk Incident Logging Timescales:

Priority Level	Description	First Response	Work around our Temporary Fix	Resolution
Urgent	A serious fault which prevents use of a <i>critical aspect of the system</i> (" System Down ")	Within 1 hour	6 working hours	2 working days
High	A serious fault with needs to be dealt with quickly	Within 1 hour	6 working hours	5 working days
Medium	A fault which does not cause System Down but does cause serious inconvenience for users	Within 1 hour	2 working days	8 working days
Low	A minor fault which causes little disruption or a request for information	Within 1 hour	5 working days	15 working days or as agreed

Describe lessons learned, innovations and best practice – how will these be rolled out to future assignments and clients?

New modules features and enhancements are developed in coordination with LoBEG and TfL, who also provide the structures expertise. These clients also act in a user acceptance testing capacity, so that any features released to the wider BridgeStation community are fully tested.

For each new module a proposal is written with LoBEG or TfL acting as the authority. This proposal outlines objectives, scope, functional requirements and testing. Sponsors are assigned roles, and deadlines as well as cost profiles are set.

Once approved as a project, an initiation meeting is held at FSW IT Solutions offices, where prototypes are developed and demonstrated. A Beta release follows which is released to a test website. Logins are provided to the sponsors so that they can test the module/feature and compare this to the original specification.

Additional walk-through and demonstration meetings are coordinated by FSW IT Solutions if required before final bug fixing and final development work is completed.

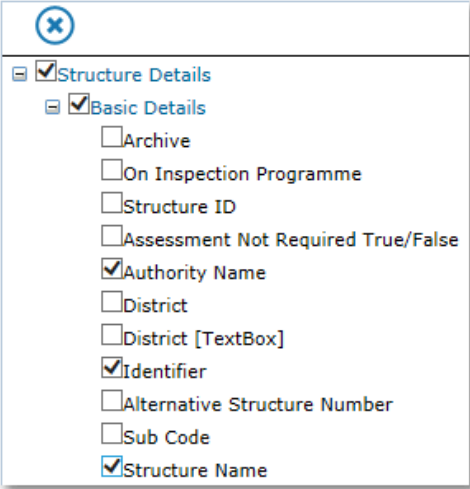
CASE STUDY - LoBEG

With approval from the project sponsors the new feature is released to the LIVE website. In parallel to this supporting help documentation is authored and news items written and released BridgeStation's Support Portal.

BridgeStation uses a community development model so any new features/upgrades developed in conjunction with one client are rolled out for the other clients with the next release.

Reference contact details. .

Name: Richard McFarlane**Position in company: Package Leader****Phone no: 078 3395 2030****Email address: Richard.McFarlane@kingston.gov.uk**

CASE STUDY TfL	
TENDERER NAME:	BridgeStation (FSW IT Solutions Limited)
Case Study Title	Transport for London
Case Study Number	2 of 2
Assignment / Project title	Transport for London
Name of Client	Transport for London
Category of client (Transport Public Sector, Transport Private Sector, Other – please specify)	Transport Public Sector
Type of work	Bridge Management Software (BMS) Service - host, maintain, develop and support the BMS.
Value of assignment	[Confidential]
Project start / end date	2010 to present
Description and objectives of the project.	
<p>Host, maintain, develop, and support a Bridge Management System (BMS) for Transport for London. Host and maintain a web-based BMS to support day-to-day bridge management activities. Provide a support service including a Help Desk for TfL staff and any of their consultants/contractors. Provide software development services to further enhance the BridgeStation product.</p>	
Describe key issues and how they were managed.	
<p>A key issue for Transport for London was the development of a custom reporting. The idea being was to allow users to specify their own report fields and filters, then give them a way to export their results. A working group was formed and proposal was written for a new module to be developed and integrated into BridgeStation.</p>	
	
<p>Along with improved reporting a new folder system was also developed in conjunction with TfL. This was to provide enhanced document management features including; a standard set of folders (template) for each structure, an updated document type system for classifying documents, and a new Move feature to allow users to shift a file between folders or even between structures, as well as a custom folder creation feature.</p>	

CASE STUDY TfL

Create Folder...		
	Folder Name	File Count
>	Assessment Results	0
	Design Information	3
>	As Built Drawings	0
	Environment	1
>	Health and Safety	0
>	Inspections	0
	Legal	0
>	Maintenance	0
>	Structure Summary Photographs	8
>	Elements	0
>	Events	0
>	Restrictions	0

Describe the process you deployed to establish client requirements and ensure that the requirements were met.

For the new modules proposals were written with TfL acting as the authority. Each proposal outlined the objectives, scope, functional requirements and testing. Sponsors were assigned roles, and deadlines as well as cost profiles were set.

Once approved as a project, an initiation meeting is held at FSW IT Solutions offices, where prototypes are developed and demonstrated. A Beta release follows which is released to a test website. Logins are provided to the sponsors so that they can test the module/feature and compare this to the original specification.

Additional walk-through and demonstration meetings are coordinated by FSW IT Solutions if required before final bug fixing and final development work is completed.

Outcomes (in terms of time, quality, cost).

Describe agreed measures, targets or KPIs and provide details of how you performed against them.

A new release is the outcome from these projects. The site is published with the module that has been developed and tested. Help documentation is written for each new module and published on the BridgeStation Support Portal.

News Items are written describing the updates and are circulated by email to the user-base.

Training sessions are updated to include content on the new features developed.

Describe lessons learned, innovations and best practice – how will these be rolled out to future assignments and clients?

The TfL designed Folder System has been adopted as best practice across the user base. User's now have a relevant folder template that they can work with to keep their files and documents organized with.

BridgeStation uses a community development model so any new features/upgrades developed in conjunction with one client are rolled out for the other clients with the next release.

CASE STUDY TfL

Reference contact details.

Name: Duro Basic**Position in company: Programme Value Manager****Phone no: 077 6776 4366****Email address: duro.basic@tfl.gov.uk**

5. Timetable for deployment and handover

Deployment

Task	Estimated Completion
BridgeStation Client Domain Creation	Day 1
Consultation (Engineering)	Week 1
Data Collation and Database Export from Existing System	Week 4
Transmission via portable HDD or FTP	Week 4
Analysis of Existing System Database	Week 5 -6
Queries Regarding the Existing System Database	Week 6
Migration Design and Development	Week 7
Internal Quality Assurance	Week 7
Resolving Installation/Migration Issues	Week 8
Beta Site Submission	Week 8
End User Testing	Week 9-10
Resolving Installation/Migration Issues	Week 1-12
Installation Approval and Adoption of BridgeStation Web Edition	Week 12
Final BridgeStation Web Edition Release	Week 12

Handover upon Termination

Task	Estimated Completion
Consultation (Engineering)	Week 1
Data Collation and Database Export from BridgeStation	Week 1
Transmission via portable HDD or FTP	Week 2
Secure Destruction of client data on the BridgeStation Systems	Week 2
Resolving Handover Issues	Week 3-4
Final Signoff	Week 4

6. Charges

BridgeStation is transparent about its cost model, and provides detailed cost breakdowns.

There is an annual support/maintenance subscription to use BridgeStation. We use a price banding system based upon the number of highway bridges you will be managing with the system. The highway bridges count gives us a clearer idea of how much support/maintenance you will need during the year. Other structure types can be managed with the system; highway bridges are just used to calculate the annual subscription. There aren't any charges for making use of any of the functions of the system; we don't for example, make a charge for each inspection added or charge a separate fee for the mobile application.

There is 'start-up' cost in year one, this is to set up the website, complete any data migration and get it working to your requirements. We will discuss this with the client before providing a quotation.

Each subscription comes with inclusive user accounts and storage, but additional fees may apply. This is reviewed every year to ensure you get the correct quote for the service you are using. FSW use disc analysis tools and user count queries to determine if there are any additional fees.

Annual Subscription Bands

Authority/ Organisation Band	Bridge Count Range	Inclusive User Accounts	Inclusive Data Storage	Annual Support/Maintenance Subscription
Small Charity	0-4	5	10 GB	Available on the UK Government's Digital Marketplace or from FSW IT Solutions
Sub-city Authority	5-14	5	10 GB	
City Council	15-199	5	10 GB	
Borough or Authority	200-499	10	20 GB	
Small County	500-999	15	30 GB	
Large County	1000-2499	20	40 GB	
Metropolitan Area	2500-3999	25	50 GB	


The BridgeStation pricing is available to view on the UK Government's Digital Marketplace (G-Cloud).

<https://www.applytosupply.digitalmarketplace.service.gov.uk/>

APPENDIX A: Minimum infrastructure and hardware requirements

BridgeStation Web Edition is a hosted service accessed via a web-browser and as such is hardware requirements are minimal. A PC connected to the internet with a browser is all that is needed to get started. A full list of system requirements is below:

BridgeStation isn't software you need to install. Instead, it runs on the browser you normally use to access web pages on the internet.

Browser Compatibility	
Supported Browsers	 <p>For best results we recommend you use the latest version (but not a beta version) of your browser. BridgeStation supports the following browsers:</p> <ul style="list-style-type: none"> • Microsoft Edge (PC) • Mozilla Firefox (PC and Mac) • Safari (Mac) • Google Chrome (PC and Mac) • Opera (PC and Mac)
Mobile Browsers	<p>The web edition of BridgeStation will work on most devices and you'll get best results with the default browser for your device:</p> <ul style="list-style-type: none"> • All iOS devices (iPhone, iPad) - any browser • All Android devices - any browser
Mobile Inspection Application:	<p>The BridgeStation Mobile application allows you to inspect your structures on a mobile device.</p> <ul style="list-style-type: none"> • Android 5.0 (Lollipop) and newer • iOS 10.3 and newer <p>More Info: here</p>
Bandwidth Requirements	<p>For simple activities such as logging in, record search, editing, and report exports, a minimum bandwidth of around 10 Mbps download speed is generally considered sufficient.</p>
Display	
Screen Resolution	<p>Super VGA (1024x768 resolution) or higher with colour quality of at least 256 colours.</p>

APPENDIX B: Data Integrity and Safety

The approach to data protection issues to ensure personal data is protected whilst still enabling the authority to utilise and share information stored on the system.

FSW IT Solutions shall comply with all of its obligations under the Data Protection Act 1998 and, if Processing Personal Data (as such terms are defined in section 1(1) of that Act) on behalf of the Authority, shall only carry out such Processing for the purposes of providing the Services in accordance with the Contract and shall act in accordance with instructions from the Authority.

FSW IT Solutions acknowledges that the Authority:

- is subject to the FOI Legislation and agrees to assist and co-operate with the Authority to enable the Authority to comply with its obligations under the FOI Legislation; and
- may be obliged under the FOI Legislation to disclose Information without consulting or obtaining consent from FSW IT Solutions.

FSW IT Solutions doesn't act as a data controller of sensitive personal information but are registered with the Information Commissioner's Office (ICO). Non-Sensitive PII is collected in the form of Name and Email Address. This is necessary for the login system and is stored.

ICO Reference Number
ZA929603

FSW IT Solutions adhere to the principles and advice/guidance from The Nation Cyber Security Centre (NCSC).

FSW IT Solutions maintain Cyber Essentials Certification (whole organisation) annually. 2873bfb7-637b-479d-9627-f16a0d5e02c2. Recertification: 2026

Any legislative changes that must be included in the software will be developed and deployed with no cost to the authority.

The supplier ensures digital preservation with respect to data media and formats of data held within the hosted service.

BridgeStation Web Edition is designed with a **security-first approach**, ensuring your information is both **safe** and **secure**.

- **Safety & Security:** We implement comprehensive, industry-standard physical and logical security measures, including **access controls**, continuous **monitoring**, and robust **backup and disaster recovery** protocols to protect against unauthorized access, loss, or corruption.
- **Resilience:** Backups are geographically separated to improve availability, and stand-by servers are can be brought online.
- **Encryption:** All data, both **in transit** (between your device and our servers) and **at rest** (stored on our servers), is protected using strong, modern **encryption** standards (e.g., TLS/SSL and AES-256). This renders your sensitive information unreadable to any unauthorized party.

BridgeStation holds two set of records.

1. Database records and
2. File documents stored in document management system.

All processes are automated and tested regularly. For the document management system, the BridgeStation Help Desk can follow the preservation policy adopted by the authority. This ensures that file formats chosen are retrievable by client's systems for at least the next 10 years. The Following risks are mitigated by the current preservation policy.

- Loss of data in the event of disk failure, error, or disaster:
 - Store copies of each digital object across multiple sites and use backups, integrity checking and detailed disaster recovery planning to ensure bitstream preservation.
- Available resources not sufficient to address the problem adequately
 - Preservation processes will be automated where possible
 - Collaboration, external funding and existing tools will be utilised where appropriate
 - On demand rendering and other preservation techniques increase efficiency
 - Additional resources will be sought if necessary
- Inaccuracy or unavailability of Representation Information may compromise ability to render objects in the long term
 - Opportunities to share/evaluate Representation Information will be explored
 - Relationships will be developed with software vendors to gain access to proprietary file format information

Requesting a system restore or data recovery

Authorities may request a data recovery operation via the BridgeStation Support Department. In coordination with the authority an appropriate backup will be selected for comparison.

Final restoration of data will be with the authority's approval.

Separation and segregation between differing authorities

Each BridgeStation authority subscriber receives their own database instance and individual web portal to access the service. This is an example of a software layer.

Multiple authorities subscribe and make use of the BridgeStation infrastructure, but these are fully segmented from each other. Each authority is also provided its own distinct a separate data folder for upload of bridges and structure files to the system.

The database area is not attached to the Internet, and resides in a secure region – a DMZ. This is protected from the web server by a dedicated firewall and very restricted access. Access to the database server area is only available from well-defined IP addresses, or externally via secure VPN connection.

Separation and segregation between Testing, Training and LIVE Environments

Any testing or training environment will be implemented on its own database instance and individual web portal to access the service.

It will be made clear via visual cues and other labelling that the environment is a test or training one.

Supply Chain Separation

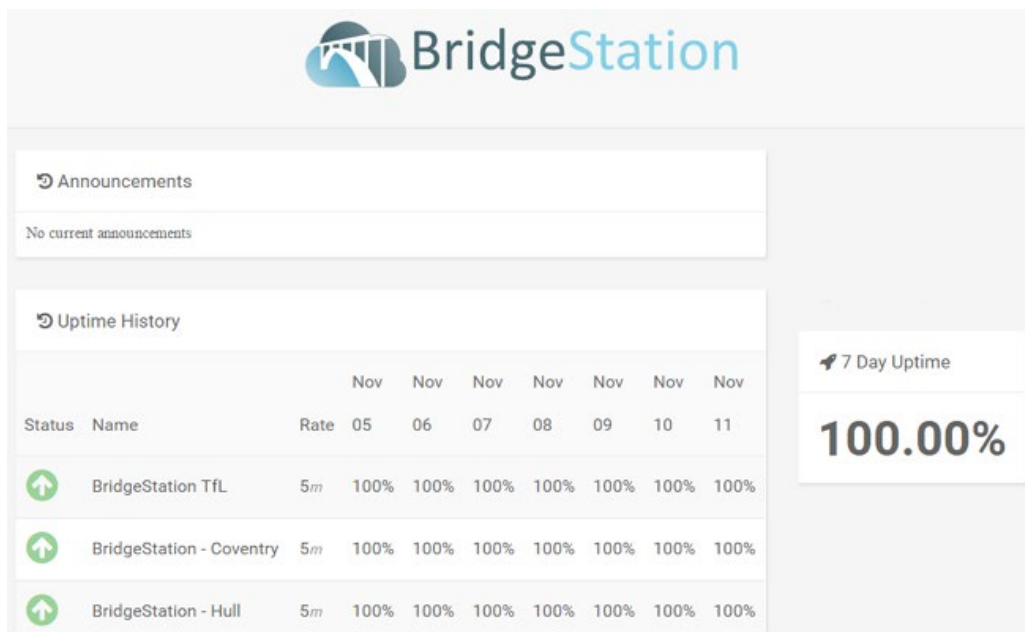
Third parties included in the supply chain are separated via application firewalls. The hosting infrastructure is ISO27001 accredited.

Operating at the required performance levels over the authority's Internet link.

FSW IT Solutions can confirm that BridgeStation Web Edition will operate fully over the authority's internet link.

For simple activities such as logging in, record search, editing, and report exports, a minimum bandwidth of around 2 Mbps download speed is generally considered sufficient. Local Authority connections are regularly as high as 100 Mbps.

Additionally, the BridgeStation Help Desk makes use of monitoring tools to confirm system response times. The current uptime and availability status is always available to the user via the BridgeStation Online Support Portal: <https://www.bridgestation.co.uk/Support>



Users can click on the **Uptime Status** link to view the public dashboard, including uptime and response time statistics for the last week. Hourly statistics are also available for the last 24 hours.

We aim to achieve a minimum of 95% daily service availability for the Hosting Services.

News and updates on any planned maintenance and outages can be sought out here on the Support Portal's News page: <https://www.bridgestation.co.uk/news>. If there any issues with the support portal, then email alerts will be sent.

The support portal includes

BridgeStation Web Edition can currently deal with the extra capacity of the authority bridges team without any appreciable change in response time.

The BridgeStation Support Service reviews the hardware specifications every 6 months and secures appropriate upgrades when required.

Internal Performance Management and Capacity Management

Capacity Monitoring tools have been implemented to help predict increased hardware needs in a timely fashion.

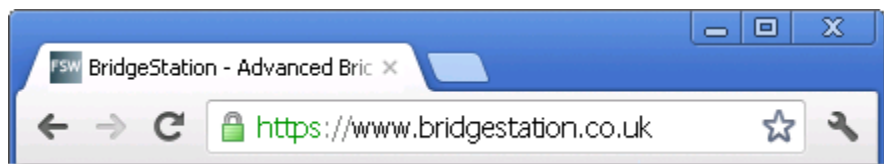
FSW IT makes use of performance monitoring software. This enables the BridgeStation Help Desk to monitor metrics (like CPU and memory usage and thread count) and make decisions on how to scale the application's capacity (based on memory utilization and CPU usage).

FSW IT can drill down on reports from the dial graphs to see the detailed performance statistics using the granular reports and act on the findings.

The software also provides email alerts if any thresholds are exceeded, allowing the BridgeStation Help Desk to respond.

Secure Transmission of Data

BridgeStation uses https to **secure the transmission of data**. You will see a padlock symbol somewhere in your address bar (depending on the browser you are using). This means a SSL security certificate is being used on your site.



SSL is a type of protocol that adds a level of security to online transactions. A security certificate will help protect the structure information that the user enters on the website. When the user enters information on BridgeStation, it is sent over the Internet to be updated by the system. While this information in transit the unscrupulous can intercept it and then make use of it. In order to keep private information from fraudsters SSL encrypts it.

Using encryption the SSL turns that information into random letters, numbers and symbols. When someone intercepts it, the information looks garbled and useless. In addition to turning sensitive information into useless information, the SSL certificate also issues a key that can decode the message. Only the program or server that has the proper key can turn the useless information back into usable information.

BridgeStation currently uses an organizational SSL and Cloudflare Inc as its certificate authority. Cloudflare uses Google Trust Services (GTS) as one of its primary Certificate Authorities (CAs) for issuing SSL/TLS certificates. Cloudflare also partners with multiple public CAs to ensure redundancy. If one CA has an outage, Cloudflare can instantly switch to another to keep BridgeStation online.

FSW IT is responsible for the purchase of the certificate and will manage the certificate. FSW IT is responsible for generating CSRs. The certificate is included in the service at no additional cost.

The system uses Universal Certificates (Server Certificates) and does not use Client Certificates for authentication. Client certificates are not required for this application.

Details of network protocols used are as follows:

- Hypertext Transfer Protocol over SSL/TLS (HTTPS) – Port: 443
- Connection - TLS 1.2, AES with 256 bit encryption (High); ECDH with 384 bit exchange
- Certification Authority – Cloudflare Inc ECC CA-3 – SHA256 – G2

Secure Storage of Data

Authority data is hosted on secured file storage on the Azure platform. This involves using Server-Side Encryption (SSE) with a Platform-Managed Key (PMK).

This ensures that your data is encrypted at rest when stored in Azure services like Azure Blob Storage or Azure Files. Azure automatically manages the creation, rotation, and protection of the encryption keys (the PMK), providing a robust, simple-to-implement layer of security that meets compliance requirements and protects against unauthorized access to the underlying storage media.

Secure Email

BridgeStation Web Edition sends system emails to assist with password recovery and module notifications. The email infrastructure is designed to ensure email deliverability and protection against spoofing, phishing, and spam. We adhere to industry-leading email authentication protocols: DKIM, DMARC, and SPF.

- We have configured SPF records
- We have implemented DKIM signing
- We have implemented of a DMARC policy

Additional Web Security

BridgeStation makes use of the Cloudflare network to provide additional performance and security to the service. The performance tools are used to provide a faster application.

The service also provides protects from malicious activity like DDoS attacks, malicious bots, and other nefarious intrusions. The strategies include:

- DDoS mitigation
- DNSSEC
- Web Application Firewall
- Encryption Certificates
- Bot Management

Reviewing Evolving Threats

Evolving cyber security threats require a continuous review process to stay ahead of attacks. As such the BridgeStation Support Department regularly reviews:

- Penetration Test Results
- Monitoring Reports
- Supply Chain Threats
- Potential Insider Threats
- Cyber Essentials Certification
- Employee Training

Access control systems

BridgeStation Subscribers can make use of the BridgeStation Access Control system or enable Single Sign On (SSO). With SSO you can then configure Multi Factor Authentication (MFA). SSO is configured to work with Azure AD / Microsoft Entra.

The BridgeStation Access Control System uses modern authentication standards including; time-limited access tokens. The application never directly accesses the user's credentials.

Access control methods

BridgeStation uses named user accounts to define its user base. This means that each member of staff who wishes to use the application must have an account created and validated against their email. The full set of information required to create an account is as follows:

- Name
- Email Address
- Organisation Name
- Job Title
- Telephone number
- Account Expiry date

We will coordinate with the authority's primary contact to build up a list of initial users. From there the primary contact will be made a user administrator on the system and will be able to manage the leaving process themselves.

The initial list of users is developed in conjunction with the authority's primary contact. The BridgeStation Support Department will create the initial set of user accounts via the User Administration system.

New users are sent a unique link to the supplied email address. Following this link allows the user to setup their own password and activate their account. The user must also setup a security answer as an additional layer of security for future password resets.

Permitted users (termed administrators) from the authority will be able to manage and maintain the access and permission levels for the other users. BridgeStation includes a User Administration module to achieve this. Administrators can:

1. Create new users and initiate generation of passwords.
 - The system emails the user at their registered email address with a unique link to the website to reset password.
2. Update existing users access rights for the different BridgeStation modules.
3. Generate a report of all users with their access rights and their last login time.
4. View reports on User Accounts and the permission profile
5. Generate a report of Failed Login attempts
6. Initiate the reissue of login and password details.
 - System emails the user at their registered email address with a unique link to reset their password.
7. Set an expiry date on current user logins; for example a consultant might need access to structural information, but the authority would want this access to only last for a limited period.

		Unlock	Activated	Name
Edit	Reset		<input checked="" type="checkbox"/>	example editor
Update Cancel	Reset		<input type="checkbox"/>	example fullaccess
Edit	Reset		<input checked="" type="checkbox"/>	example readonly



8. Deactivate user accounts, suspending access to the system.
9. Archive any deactivated user accounts that are no longer needed.

The User Administration module also includes a number of reports on the user base. Including:

- User account details and history (including date created, and created by)
- User permission profile report (includes the user's permission levels)
- Security Activity Report (including account expiry, lockout, reset events)
- Login Log

Secure Configuration Changes

Each authority will have a main point of contact with whom user account creation will be coordinated with. Other system configuration changes will always be completed in coordination with the authorities main contact.

The main point of contact will be identified through email and via a memorable answer security question. This applies to the BridgeStation Support Department.

Password Policy

The BridgeStation password policy is as follows:

- Passwords must be changed at least every 40 days (configurable by the authority).
- The password must meet the following minimum requirements:
 - Must be at least 8 characters long, (the password length can be configured to meet organisation's requirements)
 - Must contain characters from three of the following four categories:
 - English uppercase characters (A through Z)
 - English lowercase characters (a through z)
 - Base 10 digits (0 through 9)
 - Non-alphabetic characters (for example, !, \$, #, %)
 - Must be different to the previous 8 passwords
 - Must not contain 3 or more characters in the same order as they appear in the network login user name
 - Passwords must not be reused within a minimum of 8 cycles.
- After 5 failed attempts to login the system will lock the users account and no further login attempts can be made until the system is reset. This may be via the IT Help Desk or passwords may be reset using an automated process based on the use of pre-advised questions and answers.

Password Storage

Passwords are encrypted and hashed with SHA256 before being stored.

Password Resets

Password resets and new account activations use a unique link mechanism. Passwords are not emailed to users in any circumstance. The System emails the user at their registered email address with a unique link to reset their password. Passwords are reset using an automated process based on the use of pre-advised questions and answers.

A user may start a password reset by using the Forgotten Password functionality, or a User Administrator can initiate a reset manually on the user administration module.

Access Levels and Permissions

There are controls in place to ensure users are only able to access certain authorities, features and modules of BridgeStation. Included are:

- Separate permission profiles for each authority managed by the client.
- Within each profile a set of permissions to cover each feature and module
- Each permission has multiple levels, for example:
 - Read only
 - Read / Edit
 - Read / Edit / Add

With this arrangement, read-only accounts can be created, or in the scenario where a consultant is hired to complete structure inspections you could create an account with mostly read-only access, but with edit rights to the inspection's module.

Logs of user activity are maintained by the system. These audit logs can be exported in spreadsheet format. Activity logged includes:

- Successful and unsuccessful login attempts with IP address
- Structure record edits

BridgeStation System Timeouts

There is an activity timeout set for the users of the system. This is configurable by the authority. Once the timeout is reached the user must login again to maintain access.

Configuration standards and updates policies, in particular, update policies for anti-virus software and security patch management.

Anti-virus updates: Daily
Security patches: Weekly

Updates and patches are applied out of business hours to minimise any potential disruption.

Configuration Management is maintained by:

- Automating Deployment and Provisioning: Changes to the code and configuration are automatically built, tested, and deployed. This is to minimize human error and ensures a consistency across all sites.
- A central repository tracks all critical configuration items.
- All configuration changes follow a defined change control process, including review, approval.

To keep our systems resilient and up to date, we utilize a comprehensive vulnerability management and automated patching platform. This allows us to identifying security gaps and remediating them in real-time.

The platform allows us to scan at different intervals, and then push updates immediately.

Device Scans – Every 12 hours

OWASP Scans – Every night overnight

SSL Scans - Daily

Vulnerability Scanning - Daily

Secure development Standards (SDL)

Our coding practice closely follows the Microsoft Security Development Life Cycle (MSDL) as and when applicable. As the size of our application and team is small, the steps followed to ensure security standards are relatively straightforward and very strict which may not be possible for larger applications. i.e. each web page is locked with security wrapper which checks the user's identity and permission level for each module before giving access. Also we do not offer public APIs for very same reason to increase security. All modules/sub-applications follow the same security standards to maintain the integrity of the software. We cannot provide the documentation for each MSDL step without disclosing our security strategy, however you may not need such detail at this stage.

We operate a release management framework. All new features are scoped with clients and users. Each of these undergoes a risk assessment to ensure there isn't an impact on the systems own stability and performance. We work with bridge engineers to scope these changes. This also involves sign off from the bridge engineers who act as project sponsors.

Developers use automated tools to test the new code. A test environment is always used to check integration testing as well as User Acceptance Testing, using the bridge engineers as project sponsors. We are able to carry out an automated rollback if an issue is detected.

After a new release there is always a final check carried out with the project sponsor before the changes are made public.

Coding languages – the application has been developed in .NET using mostly C#.

Release notes and version history is available. The version history can be seen on the site itself and is available to logged in users. This means users can see which updates and fixes have been made and when they were made available.

Accessibility Standards

BridgeStation's interface is designed with Web Content Accessibility Guidelines (WCAG) principles as a guideline. Accessibility tools are used during development to ensure compliance. External validation has not been achieved.

Asset Management Policy (Hardware and Equipment)

Hardware that is used to provide the service is promptly decommissioned and replaced according to the asset management policy. Hardware and equipment that has reached the end of its life-cycle or that is no longer supported is scheduled for decommission.

Secure destruction of any data held on the device is carried out if required, including; Block-overwrite software to purge client data.

All software and hardware are checked and authenticated to ensure that it is genuine and has not been tampered with. Software is only procured through official application stores or partnered services such as Microsoft Gold Partners.

Includes regular review of suppliers and equipment. Services are updated or upgraded if any risks are identified.

Secure Supply Chain

Before onboarding a supplier, such as a hosting supplier, we demand evidence of relevant certifications, such as **ISO 27001**, along with their **Data Processing Agreements (DPAs)**.

We conduct periodic, automated reviews and re-assessments, ensuring that our suppliers maintain their certifications and immediately address any non-compliance issues to secure our entire supply chain.

We keep a log of the vendor certifications such as ISO 27001 and their **expiration dates**. And have alerts to ensure they renew them promptly.

Penetration testing schedules for applications.

Independent application penetration testing is not carried out.

Penetration testing schedules for infrastructure.

Penetration testing and network scans for the hardware is scheduled by FSW IT's hosting supplier for every year.

Compliance as a data processor on behalf of the authority as a data controller under the Data Protection Act.

The BridgeStation security policy is as follows:

1. The BridgeStation Advanced Bridge Management System is divided into two separate server areas, the database area containing the database server and the web server area containing the web servers and resource servers. The database area is not attached to the Internet, and resides in a secure region – a DMZ. This is protected from the web server by a dedicated firewall and restricted access. Access to the database server area is only available from well-defined IP addresses, or externally via secure VPN connection.
2. Access from the web server to the database area is restricted with respect to port access. Only

Microsoft SQL Server access to dedicated port with secure access is permitted, running well defined queries.

3. Access to the Microsoft SQL Server database is protected with username/password.
4. Data for the database is supplied to a resource server by participating clients.
5. Documents, drawings and photographs are uploaded to BridgeStation server by secured web
6. application. Users without appropriate authentication rights are not allowed access this area.
7. Log on to the servers in the web server area is only possible from known IP addresses or VPN connection. Access to the web servers from the Internet is through a Firewall.
8. Administration of the database server, the web servers and operating environments is carried out by fully trained IT personnel. Part of their professional training is an understanding of the legislation relating to the data that is held on the systems.
9. Administrators regularly check system logs, Internet logs and FTP logs to ensure that the system is running as anticipated, and that no unusual or unpredictable events are taking place. Any irregularity found in the running logs is actively investigated.
10. Active system monitoring tools have been implemented to proactively find system irregularities and help the IT personnel take corrective action. Capacity Monitoring tools have been implemented to help predict increased hardware needs in a timely fashion.
11. Currently the database area contains a replication database server which will allow quick cut over to an up-to-date database server in the case of database failure.
12. All data belongs to and is the responsibility of the providing Client. The Service Provider provides the infrastructure in which that data is structured and provided to the Web. The Service Provider carries out its responsibility to the data provided by the Authority in accordance with the Data Protection Act.
13. All administrative access is via username/password. User rights of access and administration is role based allowing access on a need-to-know basis.
14. Administration access is protected by a timeout of 30 minutes. This is over and above local authority rules regarding leaving terminals unattended.

Answering Freedom of Information enquiries that relate to information held within the hosted service.

FSW IT Solutions acknowledges that the Authority:

- is subject to the FOI Legislation and agrees to assist and co-operate with the Authority to enable the Authority to comply with its obligations under the FOI Legislation; and
- may be obliged under the FOI Legislation to disclose Information without consulting or obtaining consent from FSW IT Solutions.

Record retention schedules with respect to the information held within the hosted service.

In terms of keeping structure records, BridgeStation Web Edition only allows users to archive structures that are on your inventory. Restoration of archived structures by the user is also possible. This means that structures can be removed from the main listing, but their data and attachments are still maintained on the BridgeStation server.

Structure records must be treated as permanent records whilst the asset is still in service. For defect records these must be kept long term, at least 15 years. It is advised that given these timelines that the records are treated as permanent.

While GDPR allows individuals to request data deletion, this does **not** apply to the bridges and structures data. Public safety and statutory requirements for maintaining safe infrastructure override individual "Erasure" requests in this specific context.

Maintenance of a secure audit trail of access to the hosted service.

The user administration module keeps a record of all login attempts made to the site. This is accessible to the user administrators. Each login attempt is time and date stamped. This log can be exported as Excel files or CSV.

Additionally, a log is kept of failed login attempts and any changes made to a user's account, such as:

- forgotten password request
- account reaches expiry date
- password reset by an administrator
- failed login lock-out
- deactivation by an administrator

There is also a Structure Record audit feature in BridgeStation. This feature logs selected edits and events made to the structure records and records a user and date-time stamp for each of these. The location of the logged in session can also be determined. This would provide sufficient information to an investigative body if required.

This Change Log is available to the users on the Structure menu of each structure record. Additionally, there are plans to allow users to subscribe to certain records, and then receive email notifications when the Change Log is updated. The change log has no appreciable impact on the performance of the system.

The change log is included in the main Backup Strategy and so will be retained along with all other data.

The change log cannot be edited by users. There is no editor function enabled on the site. The change log cannot be deactivated for certain periods.

If a user wishes to purge a change log item, this can only be done by the BridgeStation Support Department in coordination with an authority's system administrator.

The system does not include third-party tracking such as Google Analytics.

Ensuring that loss or misuse of client information is promptly reported to the authority – Responding to security incidents (Incident Management Approach)

FSW IT Solutions will inform their contact at the authority within one working day of any misuse or abuse of the system. The authority primary contact will be emailed by their account manager.

Any confirmed breaches will be within scope.

If a user is able to detect a vulnerability this can be reported to the BridgeStation Support Department where it will be addressed. To carry this out the authority's primary contact can alert the supplier via:

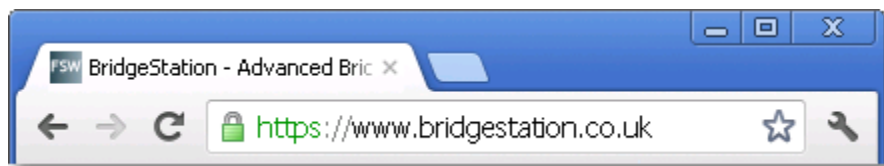
By email: tickets@bridgestation.co.uk

By Phone: 020 3551 9320

Please document the findings including what was seen, when this happened and who was affected.

Confidentiality and integrity of data in transit each way between the authority and the hosted service.

BridgeStation uses https to secure the transmission of data. You will see a padlock symbol somewhere in your address bar (depending on the browser you are using). This means a SSL security certificate is being used on your site.



SSL is a type of protocol that adds a level of security to online transactions. A security certificate will help protect the structure information that the user enters on the website. When the user enters information on BridgeStation, it is sent over the Internet to be updated by the system. While this information in transit the unscrupulous can intercept it and then make use of it. In order to keep private information from fraudsters SSL encrypts it.

Using a special process the SSL turns that information into random letters, numbers and symbols. When someone intercepts it, the information looks garbled and useless. In addition to turning sensitive information into useless information, the SSL certificate also issues a key that can decode the message. Only the program or server that has the proper key can turn the useless information back into usable information.

BridgeStation currently uses an organizational SSL and Cloudflare Inc as it's certificate authority.

Process for granting access to the hosted service.

As stated above certain permitted users (termed administrators) from the authority will be able to manage and maintain the access and permission levels for the other users. BridgeStation includes a User Administration module to achieve this.

The BridgeStation Help Desk can assist with user account maintenance. However, the user administration module is there so that authorities can follow their own processes for granting access.

The BridgeStation Help Desk will be on hand to offer advice to the administrators on permission levels and other aspects of the module.

Ensuring data safety.

The BridgeStation security policy is as follows:

1. The BridgeStation Advanced Bridge Management System is divided into two separate server areas, the database area containing the database server and the web server area containing the web servers and resource servers. The database area is not attached to the Internet, and resides in a secure region – a DMZ. This is protected from the web server by a dedicated firewall and very restricted access. Access to the database server area is only available from well defined IP addresses, or externally via secure VPN connection.
2. VPN connections are secured via Microsoft AD and multi-factor authentication.
3. Access from the web server to the database area is restricted with respect to port access. Only Microsoft SQL Server access to dedicated port with secure access is permitted, running well defined queries.
4. Access to the Microsoft SQL Server database is protected with username/password.
5. Data for the database is supplied to a resource server by participating clients.
6. Documents, drawings and photographs are uploaded to BridgeStation server by secured web application. Users without appropriate authentication rights are not allowed access this area.
7. Log on to the servers in the web server area is only possible from known IP addresses or VPN connection. Access to the web servers from the Internet is through a Firewall.
8. Administration of the database server, the web servers and operating environments is carried out by fully trained IT personnel. Part of their professional training is an understanding of the legislation relating to the data that is held on the systems.
9. Administrators regularly check system logs, Internet logs and FTP logs to ensure that the system is running as anticipated, and that no unusual or unpredictable events are taking place. Any irregularity found in the running logs is actively investigated.
10. Active system monitoring tools have been implemented help to proactively find system irregularities and help the IT personnel take corrective action. Capacity Monitoring tools have been

implemented to help predict increased hardware needs in a timely fashion.

11. Currently the database area contains a replication database server which will allow quick cut over to an up-to-date database server in the case of database failure.
12. All data belongs to and is the responsibility of the providing Client. The Service Provider provides the infrastructure in which that data is structured and provided to the Web. The Service Provider carries out its responsibility to the data provided by the Authority in accordance with the Data Protection Act.
13. All administrative access is via username/password. User rights of access and administration is role based allowing access on a need-to-know basis.
14. Administration access is protected by a timeout of 30 minutes. This is over and above participating authority rules regarding leaving terminals unattended.

Retention of ownership and copyright of information assets developed and/or stored within the hosted service.

FSW IT Solutions can confirm that once the data is migrated to the BridgeStation Web Edition application it remains the property of the authority. FSW IT Solutions acknowledges the Authority's ownership of Intellectual Property Rights which may subsist in the Authority's data. FSW IT Solutions shall not delete or remove any copyright notices contained within or relating to the Authority's data.

A copy of the data held on behalf of the authority is available on request.

Integration with other client information systems.

BridgeStation Web Edition is built upon industry standard technologies including:

- Windows® Server
- Microsoft SQL Server

Data can be transferred between BridgeStation and the authority information systems via:

- **Scheduled Transfers** – Periodic export/import processes using custom scripts
- **Real-Time Data Exchange** – Live feeds via API web services

Exact requirements can be discussed between the BridgeStation Help Desk and the authority's corporate IT department. The integration work will be example of a Low-Code integration.

Common integration projects include; connecting to works-ordering systems and providing information for corporate GIS. If the authority wishes to develop additional interfaces the BridgeStation Support Department will work with the authority to implement those.

An Authority may wish to enhance any public web mapping to include Structure Details. This would be discussed in detail with the authority before being implemented. Often a subset of Structure Details is selected for inclusion on any public facing web-mapping.

The BridgeStation API is available as a RESTful API using HTTP methods like POST, GET, PUT, and DELETE.

APIs are secured via an API Key supplied to the authority for their exclusive use. Keys are issued with a minimum length of 128 bits. Keys are transmitted via an HTTPS header for extra security and are a mix of alphanumeric characters.

Transmission is considered secure as it's included in the application's Secure Socket Layer (SSL). Customer addresses can be whitelisted for an extra layer of security.

The APIs are triggered for the authority by the BridgeStation Support Department in coordination with the authorities IT team.

Sample API documentation is available here:

https://www.bridgestation.co.uk/Demo_WebAPI/Help

There aren't additional costs included in providing the API connections.

The BridgeStation API will adhere to the principle of API backward compatibility. New API versions will be introduced via an incremental versioning scheme.

Other principles include:

- Maintaining existing, stable endpoints, parameters, or fields.
- Only adding new optional fields or new endpoints within an existing major version.
- Maintaining and supporting stable prior major API versions for a defined period (e.g., 24 months) after a successor version is released to give customers adequate time to migrate.

Enabling the release of data held within the hosted service into the public domain if required.

FSW IT Solutions acknowledges that the Authority:

- is subject to the FOI Legislation and agrees to assist and co-operate with the Authority to enable the Authority to comply with its obligations under the FOI Legislation; and
- may be obliged under the FOI Legislation to disclose Information without consulting or obtaining consent from FSW IT Solutions.

Ensuring the return or verified destruction of information and other assets should the supplier cease trading or at the end of the hosted service contract.

The BridgeStation Help Desk can arrange for either verified destruction or the return of the authority's data.

- Block-overwrite software is used to purge client data from hard drives.
- For any data destruction a certificate of destruction will be forwarded to the authority.
- A full backup of the authority's database will be available for transfer on request (Data will be returned within 30 days).
- Data will be transferred to the client via an encrypted HDD.

Successor Local Government organisation(s) will have the right to any assets or services associated with this contract. This could include a local government "wholly owned company".

FSW IT Solutions can confirm that successor organisations will be given the same rights and access to the BridgeStation Web Edition service.

The data and information inputted to any Bridge Management system is the sole property of the authority and remains so if at a future date the contract is terminated or if FSW IT are no longer able to trade or enter into receivership:

FSW IT Solutions can confirm that once the data is migrated to the BridgeStation Web Edition application it remains the property of the authority. FSW IT Solutions acknowledges the Authority's ownership of Intellectual Property Rights which may subsist in the Authority's data. FSW IT Solutions shall not delete or remove any copyright notices contained within or relating to the Authority's data.

BridgeStation reduces vendor lock-in by utilizing industry-standard and easily portable data formats, and by offering transparent, documented procedures for data export and migration. You will retain full ownership and control of your data, allowing for flexibility and a straightforward handover if the authority needs it.

FSW IT Solutions and the Authority shall each take reasonable precautions (having regard to the nature of their other respective obligations under Contract) to preserve the integrity of the Authority's data and to prevent any corruption or loss of the Authority's data.

Upon termination FSW IT Solutions shall, at no further cost to the Authority:

- take all such steps as shall be necessary to agree with the Authority an Exit Plan for the orderly handover of Services to the Authority (or its nominee), such that the Services can be carried on with the minimum of interruption and inconvenience to the Authority and to affect such handover; and
- on receipt of the Authority's written instructions to do so (but not otherwise), arrange to remove all electronically held information by a mutually agreed date, including the purging of all disk-based information and the reformatting of all disks; and
- work with the Authority to provide the data in a format that is convenient to the Authority, working with the authority's timelines where we are able.

APPENDIX C: Upgrades and Release Frequency

FSW IT Solutions will carry our regular upgrades to BridgeStation Web Edition. There are usually 2-3 upgrade releases per calendar year.

The release itself requires minimal downtime and will be conducted outside of working hours to minimise disruption to the authority.

There are no additional costs to the authority for access to the updates.

APPENDIX D: Staffing and Training

Staff Checks

FSW carries out Right to Work Checks for employees. FSW also completes basic Disclosure and Barring Service (DBS) checks.

Revoking access

Staff who leave are subject to the Password and Accounts Policy – Leavers, Movers, Joiners. Passwords are deleted and accounts removed for staff who: retires, quits, reassigned, released or dismissed.

There is a process to handover roles and responsibilities as well as any equipment and devices.

Suitability for security roles

Administration of the database server, the web servers and operating environments is carried out by fully trained IT personnel. Part of their professional training is an understanding of the legislation relating to the data that is held on the systems.

Data Protection and Security Awareness Training

All staff are made aware of the accounts and password policy, which includes security awareness briefing and best practices.

All staff are aware of the cyber security roles and responsibilities

Assessing Information Security Risks

Security risks are reviewed regularly every 6 months.

Risk Assessment of Insider Threat

A risk assessment of insider threat has been undertaken.

APPENDIX E: Backup Strategy and Disaster Recovery

The BridgeStation Web Edition backup strategy is as follows:

Key business processes and the agreed backup strategy for each are listed below. Industry standard backup tools and scheduling software is used to provide the strategy.

The database is run in Full Recovery Mode with full logging of transactions to provide a Point-In-Time restore capability. Transaction logs are also backed up as described below.

Servers, Files and Databases

Region	Provider	#	Process	Frequency	Backup/Redundancy Type	Retention	Encryption
UK	Azure - UK South (Onsite)	1.1	File Storage	Continual	LRS	Continual	SSE with PMK
		1.2	Virtual Machines - Web Server	Daily	VM Snapshot	30 days	SSE with PMK
		1.3	Virtual Machines - DB Server	Twice-Daily	VM Snapshot	30 days	SSE with PMK
		1.4	Database – Transaction logs	Every 1 hours	Transaction log backup	24 hours	256-bit AES
		1.5	Database	Daily - Azure Container	Full backup	7 days	256-bit AES
		1.6	Database	Daily - Local	Full backup	7 days	256-bit AES
	Google Cloud - London (europa-west2) (Offsite)	2.1	File Storage	Weekly (Sat, midnight)	Incremental backup	Permanent	Google-managed
		2.2	Database – Transaction logs	Every 1 hours	Transaction log backup	7 days	256-bit AES
		2.3	Database	Daily (23:00)	Full backup	90 days	256-bit AES
		2.4	Database	Monthly (1oM midnight)	Full backup	Currently permanent	256-bit AES

Disaster Recovery Testing:

The BridgeStation Support Department tests the disaster recovery plan on an annual basis. Restores are tested every two months.

Risk Management

There are many potential disruptive threats which can occur at any time and affect the normal business process. We have considered a wide range of potential threats and the results of our deliberations are included in this section. Each potential environmental disaster or emergency situation has been examined. The focus here is on the level of business disruption which could arise from each type of disaster.

Potential disasters have been assessed as follows:

Potential Disaster	Probability Rating	Impact Rating	Brief Description Of Potential Consequences & Remedial Actions
Fire	3	4	Very Early Smoke Detection Apparatus (VESDA) or alternative sophisticated detection technology is installed in every facility. Systems are designed to minimize any disruption and ensure that any minor problem remains localised.
Hurricane	5	1	Switch to standby system, restore offsite backup (48 hours turn around)
Flooding	5	3	Switch to standby system, restore offsite backup (48 hours turn around)
Act of terrorism	5	3	Switch to standby system, restore offsite backup (48 hours turn around)
Act of sabotage	5	3	Switch to standby system, restore offsite backup (48 hours turn around)
Electrical power failure	3	4	To ensure continuous operation, our data centres have access to redundant high-capacity power supplies, scalable for future expansion and UPS Systems.
Loss of communications network services	4	4	IPMH service integrates IP services from six Tier 1 providers and six WAN redundancy, voice network resilience
Hardware Failure	2	2	Switch to standby server and load offsite backup (48 hours turn around)

Probability: 1=Very High, 5=Very Low

Impact: 1=Total Destruction, 5=Minor Annoyance

APPENDIX F: Privacy Policy

We are committed to adhering to the principles of the General Data Protection Regulation (GDPR).

Our service respects your data privacy, and as such, we maintain a comprehensive **Privacy Policy**. This policy details:

- **What** personal data we collect.
- **How** we use and process that data.
- **Your rights** regarding your personal information.

We encourage all users to review our Privacy Policy for full details on our data protection practices. This is available as a link on the login pages of any service we supply.

Introduction

This notice applies across all websites and services we provide, including BridgeStation, FloodStation and PipeStation, and any other apps or services we may offer (for example, events or training). These are referred to as 'services'.

'Personal data' refers to identifiable information about you, like your name, email, address, telephone number, support queries, community comments and so on. If you can't be identified (for example, when personal data has been aggregated and anonymised) then this notice doesn't apply.

Who are 'we'?

When we refer to 'we' (or 'our' or 'us'), that means FSW IT Solutions Limited. Address details are available on our contact us page.

We provide a Bridge Management System known as BridgeStation, a Drainage Management System known as FloodStation and a Pipe Subway Management System known as PipeStation. If you want to find out more about BridgeStation check the BridgeStation Website.

Our principles of data protection

Our approach to data protection is built around four key principles. They're at the heart of everything we do relating to personal data.

Transparency: We take a human approach to how we process personal data by being open, honest and transparent.

Enablement: We enable connections and efficient use of personal data to empower productivity and growth.

Security: We champion industry leading approaches to securing the personal data entrusted to us.

Stewardship: We accept the responsibility that comes with processing personal data.

How we collect your data

When you visit our websites or use our services, we collect personal data. The ways we collect it can be broadly categorised into the following:

Information you provide to us directly: When you visit or use some parts of our websites and/or services we might ask you to provide personal data to us. For example, we ask for your contact information when you sign up for a demo account, create an account for you, participate in community forums, join us on social media, take part in training and events, contact the support department. If you don't want to provide us with personal data, you don't have to, but it might mean you can't use some parts of our websites or services.

Information we collect automatically: We collect some information about you automatically when you visit our websites or use our services, like your IP address and device type. We also collect information when

you navigate through our websites and services, including what pages you looked at and what links you clicked on. This information is useful for us as it helps us get a better understanding of how you're using our websites and services so that we can continue to provide the best experience possible (e.g., by personalising the content you see).

Some of this information is collected using cookies and similar tracking technologies. If you want to find out more about the types of cookies we use, why, and how you can control them, refer to our cookie notice.

Information we get from third parties: The majority of information we collect, we collect directly from you. If you're someone who doesn't have a relationship with us, but believe that a BridgeStation user has entered your personal data into our websites or services, contact support@bridgestation.co.uk

How we use your data

We use your personal data to operate our websites and provide you with any services you've requested, and to manage our relationship with you. We also use your personal data for other purposes, which may include the following:

To communicate with you. This may include:

- providing you with information you've requested from us (like training or support materials) or information we are required to send to you
- operational communications, like changes to our websites and services, security updates, or assistance with using our websites and services
- asking you for feedback or to take part in any questionnaires we are conducting (which we may engage a third party to assist with).

To support you: This may include assisting with the resolution of technical support issues or other issues relating to the websites or services, whether by email, in-app support or otherwise.

To enhance our websites and services and develop new ones: For example, by tracking and monitoring your use of websites and services so we can keep improving, or by carrying out technical analysis of our websites and services so that we can optimise your user experience and provide you with more efficient tools.

To protect: So that we can detect and prevent any fraudulent or malicious activity, and make sure that everyone is using our websites and services fairly and in accordance with our terms of use.

To inform: We may send you service announcements and information on updates and new features – there are no marketing communications sent to you through our own websites and services or through third party websites and their platforms.

To analyse, aggregate and report: We may use the personal data we collect about you and other users of our websites and services (whether obtained directly or from third parties) to produce aggregated and anonymised analytics and reports, which we may share publicly or with third parties.

How we can share your data

There will be times when we need to share your personal data with third parties. We will only disclose your personal data to:

- third party service providers and partners who assist and enable us to use the personal data to, for example, support delivery of or provide functionality on the website or services

- regulators, law enforcement bodies, government agencies, courts or other third parties where we think it's necessary to comply with applicable laws or regulations, or to exercise, establish or defend our legal rights. Where possible and appropriate, we will notify you of this type of disclosure

International Data Transfers

When we share data, it may be transferred to, and processed in, countries other than the U.K. These countries may have laws different to what you're used to. Rest assured, where we disclose personal data to a third party in another country, we put safeguards in place to ensure your personal data remains protected.

Where your personal data is transferred, it will only be transferred to a third party where we have approved transfer mechanisms in place to protect your personal data – i.e., by entering into the European Commission's Standard Contractual Clauses, or by ensuring the entity is Privacy Shield certified (for transfers to US-based third parties). For further information, please contact us using the details set out in the Contact us section below.

Security

Security is a priority for us when it comes to your personal data. We're committed to protecting your personal data and have appropriate technical and organisational measures in place to make sure that happens. For more information about security, check out the security pages.

Retention

The length of time we keep your personal data depends on what it is and whether we have an ongoing business need to retain it (for example, to provide you with a service you've requested or to comply with applicable legal, tax or accounting requirements).

We'll retain your personal data for as long as we have a relationship with you and for a period of time afterwards where we have an ongoing business need to retain it, in accordance with our data retention policies and practices. Following that period, we'll make sure it's deleted or anonymised.

Your rights

It's your personal data and you have certain rights relating to it. When it comes to emailed communications, you can ask us not to send you these at any time – just follow the unsubscribe instructions contained in the emailed communication, or send your request to support@bridgestation.co.uk.

You also have rights to:

- know what personal data we hold about you, and to make sure it's correct and up to date
- request a copy of your personal data, or ask us to restrict processing your personal data or delete it
- object to our continued processing of your personal data

You can exercise these rights at any time by sending an email to support@bridgestation.co.uk.

If you're not happy with how we are processing your personal data, please let us know by sending an email to support@bridgestation.co.uk. We will review and investigate your complaint, and try to get back to you within a reasonable time frame. You can also complain to your local data protection authority. They will be able to advise you how to submit a complaint.

How to contact us

We're always keen to hear from you. If you're curious about what personal data we hold about you or you have a question or feedback for us on this notice, our websites or services, please get in touch.

As a technology company, we prefer to communicate with you by email – this ensures that you're put in contact with the right person, in the right location, and in accordance with any regulatory time frames.

Our email is support@bridgestation.co.uk.

APPENDIX G: Hosting Infrastructure – General Information and Location

Microsoft Azure – UK South Region

Hosting Facility overview

Microsoft Azure is a cloud computing service created by Microsoft for building, testing, deploying, and managing applications and services through Microsoft-managed data centres. It provides software as a service (SaaS), platform as a service (PaaS) and infrastructure as a service (IaaS) and supports many different programming languages, tools and frameworks, including both Microsoft-specific and third-party software and systems.

Location

UK South Region

Server Environments

Azure Virtual Machines - Standard E2bds v5 (2 vcpus, 16 GiB memory))

<https://learn.microsoft.com/en-us/azure/virtual-machines/ebsdsv5-ebsv5-series>

Power

Details not available

Cooling and Climate Control

Climate control is a fundamental component of the critical infrastructure within a datacenter and is utilized to monitor and maintain optimized conditioned spaces for both staff and equipment/hardware. Heat-load (as a byproduct of energy consumption) and humidity need to be managed to ensure suitable operational conditions through mechanical intervention. Local climate conditions, various regulatory requirements, and constraints will dictate the most efficient way for it to be achieved.

Temperature and humidity levels are maintained in accordance with the environmental requirements of the IT hardware that is expected in each datacenter. Microsoft datacenters maintain an operating level agreement with their customers such that optimal efficiency is met while maintaining minimum environmental requirements. The temperature and humidity levels are monitored continuously by the datacenter's Building Management System (BMS). Critical Environments (CE) team members monitor the BMS from the Facilities Operations Center (FOC), so that they can manage the temperature and humidity within the datacenter before any alarm points are exceeded. BMS is configured to notify the CE team when certain markers are reached, who then investigate and make adjustments to remediate the climate issue. Acceptable ranges for temperature and humidity are consistent with American Society of Heating, Refrigerating, and Air-conditioning Engineers (ASHRAE) guidelines or similar locally applicable guidelines. Datacenter humidity is measured by Relative Humidity percentage, Non-Condensing with the current range between 40%-55%. Temperature range is typically between 18 degrees Celsius and 27 degrees Celsius (between 64.4 degrees Fahrenheit and 80.6 degrees Fahrenheit).

Fire Detection & Suppression

Microsoft employs state-of-the-art fire detection and suppression systems within each datacenter facility. Fire prevention systems are supported by an independent energy source to ensure protection of Microsoft employees and infrastructure if there is a fire. Datacenter facilities are also protected from water damage by water sensors placed in areas deemed to have leakage risk. These water sensors quickly notify

appropriate personnel if there is a water-related emergency. Water shutoff valves are designed to be accessible, and employees are trained in their operation and location.

Microsoft datacenters implement robust fire detection mechanisms including photoelectric smoke detectors installed below the floor and on the ceiling, Xtralis Very Early Smoke Detection Apparatus (VESDA) systems in each colocation, pull station fire alarm boxes installed throughout the datacenters, fire extinguishers located throughout the datacenters, security staff patrols in all building areas multiple times every eight-hour shift, and fire detection/suppression and emergency lighting systems are wired into the datacenter backup power systems providing a redundant power source. Areas containing sensitive electrical equipment are protected by double interlock pre-action (dry pipe) sprinkler systems.

The CE team does a daily site walk-through (DSWT) to check each room and many component parts within them to ensure all fire watch requirements are being met.

Microsoft employs fire detection devices/systems for the information system that activate automatically and notify datacenter personnel along with emergency responders if a fire occurs. If one of the fire detection mechanisms is activated in any colocation space, the local fire department and the Global Security Operations Center in Redmond, Washington are automatically notified. Fire protection and detection systems are tied into the security system notifying the local facility and security staff.

Microsoft provides water/leak detection in areas with a risk of water leakage. Fire suppression systems also have leak detection alarms that are monitored. The water/leak detection system is integrated with the facility alarm and notification system, and sprinkler systems within the datacenters are zoned. The CE and Datacenter Management teams are familiar with the emergency procedures requiring the use of the water shutoff valves and their locations. Sprinkler risers can be shut off individually or as a group via gate valves. All sprinklers in the critical space are double interlock pre-action type sprinklers that require two forms of activation before flow is initiated. The pressure of the sprinkler system is monitored and alarmed against water leakage.

Security

<https://learn.microsoft.com/en-us/compliance/assurance/assurance-datacenter-physical-access-security>

Physical security at datacenters is in alignment with the defense-in-depth principle. Multiple security measures are implemented to reduce the risk of unauthorized users accessing data and other datacenter resources.

- **Perimeter security:** Microsoft datacenters are nondescript buildings with perimeter fencing and 24-hour exterior lighting. Tall fences made of steel and concrete encompass every inch of the perimeter and all entry to the datacenter campus must go through a well-defined access point. Camera-monitored entrance gates and security guard patrols ensure entry and exit are restricted to designated areas. Bollards and other measures protect the datacenter exterior from potential threats, including unauthorized access.
- **Entering the datacenter:** The datacenter entrance is staffed with professional security officers who have undergone rigorous training and background checks. Security officers routinely patrol the datacenter and video feeds from cameras inside the datacenter are always monitored.
- **Inside the datacenter:** Upon entering the building, two-factor authentication with biometrics is required to continue moving through the datacenter. Once authenticated, access is granted to the authorized portion of the datacenter and only for the time approved. Within the datacenter, areas designated as highly sensitive require additional two-factor authentication.

- **Datacenter floor:** The datacenter floor can only be accessed with prior approval and after a full body metal detection screening at the time of entry. To reduce the risk of unauthorized data entering or leaving the datacenter, only approved devices can make their way onto the datacenter floor. Additionally, video cameras monitor the front and back of every server rack. When exiting the datacenter floor, all individuals are subject to an additional full body metal detection screening.
- **Leaving the datacenter:** To leave the datacenter facility, each person must go through a final security checkpoint and all visitors must surrender their temporary badges. After collection, all visitor badges have their access levels removed before they are reused for future visits.

Building Management System

Details not available

Connectivity

Backbone - Connected to Microsoft's global high-speed fiber network

Availability Zones - 3 zones with redundant metro fiber ring

Latency - <1 ms (intra-zone), \~1.5 ms (cross-zone), \~5 ms (UK South)

Bandwidth - Up to 200 Gbps (depending on VM family)

Private Connectivity - ExpressRoute, vWAN, VPN, Private Link, VNet Peering

Security Controls - NSGs, ASGs, DDoS, private IPs, traffic analytics

Tooling - Network Watcher, NPM, Log Analytics, Azure Monitor

Accreditations

ISO 22301

International Standard for Standardization 22301

ISO 22301 is the international standard for Business Continuity Management (BCM). It provides a practical framework for setting up and managing an effective business continuity management system.

ISO 27001

International Standard for Standardization 27001

ISO/IEC 27001 is the world's best-known standard for information security management systems (ISMS).

ISO 9001

International Standard for Standardization 9001

ISO 9001 sets out the criteria for a quality management system. This standard is based on a number of quality management principles including a strong customer focus, the motivation and implication of top management, the process approach and continual improvement.

PCI DSS

Payment Card Industry Data Security Standard

The Payment Card Industry Data Security Standard (PCI DSS) is an information security standard used to handle credit cards from major card brands.

SOC 1

System and Organization Controls 1

System and Organization Controls 1, or SOC 1, aims to control objectives within a SOC 1 process area and documents internal controls relevant to an audit of a user entity's financial statements.

SOC 2

System and Organization Controls 2

SOC 2 is an auditing procedure that ensures your service providers securely manage your data to protect the interests of your organization and the privacy of its clients.

SOC 3

System and Organization Controls 3

A report that outlines information related to a service organization's internal controls for security, availability, processing integrity, confidentiality and privacy.

APPENDIX H: The BridgeStation Support Portal and Help Desk

A BridgeStation Web Edition subscription includes access to the BridgeStation Help Desk.

The service is available between the hours of 09.00 to 17.00 on business days. Calls will be answered personally. If Support Agents are unavailable an answer phone service will be available. Messages left on answer phone will be responded to by 10.00 on the next working day.

The online support portal is available 24/7, 365 days a year. Here users can raise support tickets, read the user manual in the form of a knowledge base and read service updates on the news page.

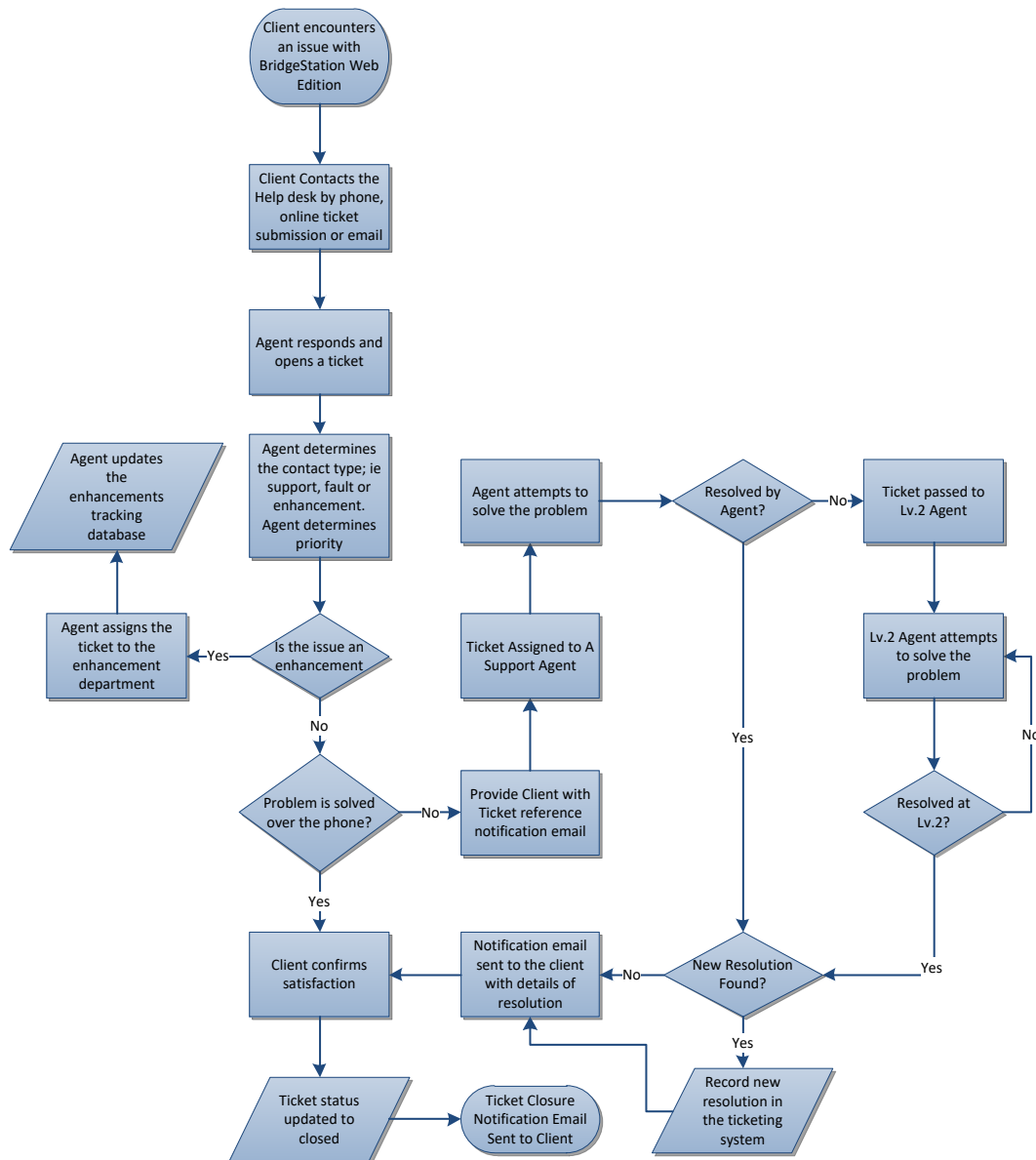
The support tickets can be raised by email, over the phone or by using the BridgeStation Support site.

By email: tickets@bridgestation.co.uk

By Phone: 020 3551 9320

Online Portal: www.bridgestation.co.uk/support

The support ticket process is detailed below:



The online support portal includes a knowledge base which users can consult for instructions on system operation and advice. The knowledge base is a searchable user manual and context specific support link icons are available at the top right of each page which will direct the user to the correct article. The knowledge base can be retrieved at <http://www.bridgestation.co.uk/Support/KB/c1/bridgestation-knowledge-base.aspx>

New module or versions of modules are accompanied by an update to the knowledge base. Knowledge base articles are also reviewed periodically and improved according to user feedback.

The help desk priority levels and target time-scales for response are as follows:

Priority Level	Description	First Response	Work around our Temporary Fix	Resolution
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Urgent	A serious fault which prevents use of a <i>critical aspect of the system</i> (" System Down ")	Within 1 working hour	6 working hours	2 working days
High	A serious fault with needs to be dealt with quickly	Within 1 working hour	6 working hours	5 working days
Medium	A fault which does not cause System Down but does cause serious inconvenience for users	Within 1 working hour	2 working days	8 working days
Low	A minor fault which causes little disruption or a request for information	Within 1 working hour	5 working days	15 working days or as agreed

APPENDIX I: Contract Management

Main Point of Contact

FSW IT Solutions are able to offer a main point contact for the life of the contract:

Jonathan Wheatley
FSW IT Solutions Limited
T: +44 (0) 20 3752 2871
M: +44 (0)7827 340 082
E: jonathan.wheatley@fswit.co.uk
25 Wilton Road, Victoria, London, SW1V 1LW
www.fswit.co.uk

FSW IT Solutions are also able to offer secondary supplier contact as backup:

Bhavin Shah
FSW IT Solutions Limited
T: +44 (0) 20 3544 3755
M: +44 (0)7827 340 085
E: bhavin.shah@fswit.co.uk
25 Wilton Road, Victoria, London, SW1V 1LW
www.fswit.co.uk

Client Catchup Meetings

FSW IT are able to offer multiple client catchup meetings as part of the contract, per year. These are using held via web-conference but can be held in person. The catchup meetings can be used to raise concerns or even can be use to conduct a training session for the authority's staff.

BridgeStation User Group

BridgeStation also holds an annual user group meeting for current subscribers. At this meeting ideas for enhancements and extensions to the functionality are discussed. This if offered as an in-person meeting with Remote option for those who wish to join via web-conference.

Complaints Procedure

If you have a complaint, please contact us as soon as possible by [phone/email/in writing] using the BridgeStation Support Department contact details below:

By email: tickets@bridgestation.co.uk
By Phone: 020 3551 9320
Online Portal: www.bridgestation.co.uk/support

Please provide as much detail as possible, including:

- * Your name and contact details
- * A clear description of the complaint
- * Any relevant dates, names, or other information
- * What you would like us to do to resolve the complaint

Upon receiving your complaint, we will:

1. Acknowledge receipt of your complaint within 1 business days.
2. Investigate your complaint thoroughly.
3. Keep you informed of the progress of our investigation.
4. Provide a written response with our findings and proposed resolution within 3 business days.

The escalation procedure below is also available to complainants.

Escalation Procedure

FSW IT Solutions will also provide the following escalation procedure:

Contact	Phone Number	Email Address
Ryan Finn - Account Manager and Lead Support Technician	+44 (0)20 3544 9320	Ryan.Finn@fswit.co.uk
Bhavin Shah - Software Developer and Support Technician	+44 (0)20 3544 9320	Bhavin.Shah@fswit.co.uk
Jonathan Wheatley - Test Engineer and Support Technician	+44 (0)20 3544 9320	Jonathan.Wheatley@fswit.co.uk

APPENDIX J: Provision of training

The following training courses are available:

1. Getting Started with BridgeStation (Introductory Training)
2. BridgeStation Refresher
3. Element Hierarchies and Inspections
4. Consistent Element Hierarchies
5. SAMPT/SAVI – Asset Valuation and Life Cycle Plans
6. Maintenance Prioritisation - VfM

The introductory training course is included in any migration activity undertaken for new subscribers.

Training Method

The BridgeStation training will be provided in interactive fashion on a training website. Each user will be given an account and structure record to work with so that they can follow along with the training steps. FSW will provide one trainer per training session. Most training is via web-conference and can accommodate a large number of attendees. It is still worth restricting each session to around 25 attendees or less.

Training Platform and Environment

BridgeStation Training can be completed via web-conference software such as MS Teams. FSW can create the Teams event and supply calendar invites and links.

Training will be completed on a dedicated training website environment. This will be based upon a recent backup of the LIVE site to provide recognisable data. The training environment will be taken offline shortly after the sessions are complete, but can be kept running on request.

Training Credentials

FSW will provide all logins required for completion the training courses. Users will not need to supply their own credentials such as using LIVE environment credentials.

Training Programme and Scheduling

A sample introductory programme consisting of a pair of 2-hour sessions is provided below. For introductory training it is recommended that the two sessions are scheduled in for two consecutive mornings.

The second session described below focusses on management and admin functions. The organisation may want to have a sub-set of users attend this session.

Training Documentation and Materials

FSW will provide the training programme prior to the session, any PowerPoint materials and recordings will also be forwarded to the attendees upon completion.

Training Recordings

With attendee permission a recording of the training session will be made via the web conferencing platform. A recording link will be sent upon completion. The recording link will be set to expire after a few months.

An example training programme from 1. Getting Started with BridgeStation is shown below:

1A - BridgeStation Training: Getting Started with BridgeStation (Structure Records)

Timing	Training Programme
15 mins	Introduction <ol style="list-style-type: none"> 1. Introduction and session housekeeping 2. Course content overview
5 mins	Logging in and the Interface <ol style="list-style-type: none"> 1. Logging in and forgotten passwords 2. Changing password and security information 3. Menus and task bar
10 mins	Opening Structures <ol style="list-style-type: none"> 1. Using search terms 2. Using filters to narrow results Structure Summary and Structure Details <ol style="list-style-type: none"> 1. Archiving structures 2. Editing Structure Details
10 mins	Structure Files <ol style="list-style-type: none"> 1. Template folders and document types 2. Uploading, deleting and moving files

Timing	Training Programme
30 mins	<p><u>Structure Elements</u></p> <p>Element hierarchy modification options</p> <ol style="list-style-type: none"> 1. Editing an element hierarchy <ol style="list-style-type: none"> a. Making basic element edits 2. Creating a multi-span element hierarchy <p>Carried and Crossed Elements</p> <ol style="list-style-type: none"> 1. Adding carried and crossed elements and updating the relative position 2. Editing other route information <p>Span elements and the dimension details</p> <ol style="list-style-type: none"> 1. Editing dimension details for a span 2. Viewing this information on structure details 3. Updating overall structure length <p>Construction elements and form and material fields</p> <ol style="list-style-type: none"> 1. Accessing the relevant elements 2. Updating form and material fields
30 mins	<p><u>Structure Inspections</u></p> <p>Inspection Proforma</p> <ol style="list-style-type: none"> 1. Adding new inspection proformas 2. Updating data and saving the inspection 3. Managing Multi-Defects with the inspection proforma 4. Recording Remedial Works with the inspection proforma 5. Changing your element hierarchy and viewing an updated proforma 6. Dealing with archived elements and profomas 7. Generating Defects from a proforma <p>Inspection Signoff</p> <ol style="list-style-type: none"> 1. Submitting an inspection – inspection signoff 2. View in the sign off history
5 mins	<p>Inspection Programme</p> <ol style="list-style-type: none"> 1. Locating Planned/Draft inspections

Timing	Training Programme
10 mins	Structure Condition (BCI) <ol style="list-style-type: none"> Proposed BCI Condition Latest Condition information Condition History
2 mins	Structure Maintenance <ol style="list-style-type: none"> View a list of outstanding maintenance
2 mins	Structure Restrictions <ol style="list-style-type: none"> Viewing/Adding restrictions to a structure
20 mins	Structure Load Capacity <ol style="list-style-type: none"> Structures not requiring assessment Design loads and Structural Reviews Assessment results and interim measures Recording strengthening and a new load capacity
2 mins	Structure Incidents/Events <ol style="list-style-type: none"> Recording an incident/event against a structure
5 mins	<u>Reports and Maps</u> Standard Reports <ol style="list-style-type: none"> Reviewing pre-built reports Data Gap Report <ol style="list-style-type: none"> Updating data on the Gap Report Maps <ol style="list-style-type: none"> Standard map themes
5 mins	Getting help and support <ol style="list-style-type: none"> Support Portal <ol style="list-style-type: none"> Accessing the knowledge base Searching the support portal Submitting a support ticket Using the integrated help icons Phone support

1B - BridgeStation Training: Getting Started with BridgeStation (Actions Menu)

Timing	Training Programme
15 mins	Introduction <ol style="list-style-type: none"> 3. Introduction and session housekeeping 4. Course content overview
5 mins	Logging in and the Interface <ol style="list-style-type: none"> 4. Logging in and forgotten passwords 5. Changing password and security information 6. Menus and task bar
10 mins	Dashboard <ol style="list-style-type: none"> 1. Using the Dashboard Gauges 2. Viewing the inventory summary
10 mins	Structures <ol style="list-style-type: none"> 1. Using Open Structure to search for records 2. Adding a new structure
20 mins	Inspection Programming and Scheduling <ol style="list-style-type: none"> 1. Working with the Inspection Programme 2. Using the Inspection Scheduler to add new inspections – the 6-year programme 3. Introduction to Inspection Planning
20 mins	Maintenance Management (Introduction) <ol style="list-style-type: none"> 1. Generating Defects from Inspections 2. Latest Inspection Results 3. Draft Work Items 4. Maintenance Backlog 5. Work Packaging and Forward Work Plan
30 mins	Life Cycle Planning (Introduction) <ol style="list-style-type: none"> 1. Developing Life Cycle Plans (SAMPT) 2. Carrying out maintenance prioritisation and developing schemes 3. Structural reviews, assessments and sub-standard structures
5 mins	Asset Valuation (Introduction) <ol style="list-style-type: none"> 1. Developing an Asset Valuation Return 2. Filling Data Gaps
30 mins	Reports <ol style="list-style-type: none"> 2. Data Gap Report 3. Standard Reports 4. Reports Builder
5 mins	Maps <ol style="list-style-type: none"> 1. Standard map themes

Timing	Training Programme
5 mins	Getting help and support <ul style="list-style-type: none">4. Support Portal<ul style="list-style-type: none">a. Accessing the knowledge baseb. Searching the support portalc. Submitting a support ticket5. Using the integrated help icons6. Phone support

APPENDIX K: Environmental Commitment

The following is an excerpt from FSW IT's environmental commitment document:

FSW will always work to minimise our impact on the environment.

We will;

1. Reduce air, land and noise pollution from our own activities.
2. Reduce the need to travel and encourage and promote walking, cycling, improved and integrated public transport amongst our staff.
3. Work hard to preserve, restore and enhance the built and natural environment and make it safe, healthy, attractive and accessible for all.
4. Reduce the consumption of goods and materials, avoid waste, conserve, re-use or recycle resources, as appropriate.
5. Use the most environmentally responsible goods and services consistent with good performance and encourage all our contractors and suppliers to do the same.
6. Use our influence to prevent or limit environmental accidents.
7. Train key staff and educate all our staff about their environmental responsibilities and our priorities and programmes.
8. Comply with all relevant legislation, regulation and policy commitments.
9. Encourage all individuals, organisations and agencies over whom we have influence to adopt, wherever practicable, similar policies and practices.
10. Set up a framework for monitoring, reviewing and updating environmental objectives and targets.