



An Roinn Iompair,
Turasóireachta agus Spóirt
Department of Transport,
Tourism and Sport

Bridge Asset Management Project

Bernard Sweeney

12th September 2019

Sheraton Hotel Athlone

PART A - GUIDELINES

BRIDGE INVENTORY SURVEY



FOUR PARTS TO BAMP

- A. **GUIDELINES** —————> Bridge Inventory Survey (BS)
Maintenance Inspections (BC)
Engineering Inspections (GS)
- B. **PROCUREMENT**
- C. **SOFTWARE** —————> Android Application & PMS (SS)
- D. **TRAINING** —————> Level 1 & Level 2 (MS)



1. Introduction

2. Health and Safety

3. Bridge Inventory Survey

4. Maintenance Inspections

5. Engineering Inspections

6. Non-site Bridge Data

7. Conservation Principles

Appendices – EI Rating Guide and App User Guide



BRIDGE ASSET MANAGEMENT SYSTEM

FOR REGIONAL AND LOCAL ROADS

*Guidelines for the creation of an inventory of structures and
for performing inspections*

An Roinn Iompair,
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Department of Transport,
Tourism and Sport

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BRIDGE INVENTORY SURVEY (BIS)

GUIDELINES

CHAPTER 3

“The Bridge Inventory Survey (BIS) has been developed to capture the most important pieces of information in relation to the national asset of structures, namely, the amount, type and location”

plus.....



DATA
COLLECTED
– by User –
– by App –

- 📡 Type
- 📡 Material
- 📡 Number of Spans
- 📡 Total Span
- 📡 Max Span
- 📡 Min Span
- 📡 Structure Length
- 📡 Structure Width
- 📡 Height of Opening
- 📡 Photographs

X,Y

Road Number

Structure Number



- Hazards
- Culvert
- Structure Name
(Plate and Alias)
- Principal Function
- Over or Under
- Skew Angle
- Restrictions
- Flood Relief Openings
- Services Present?
- Comments

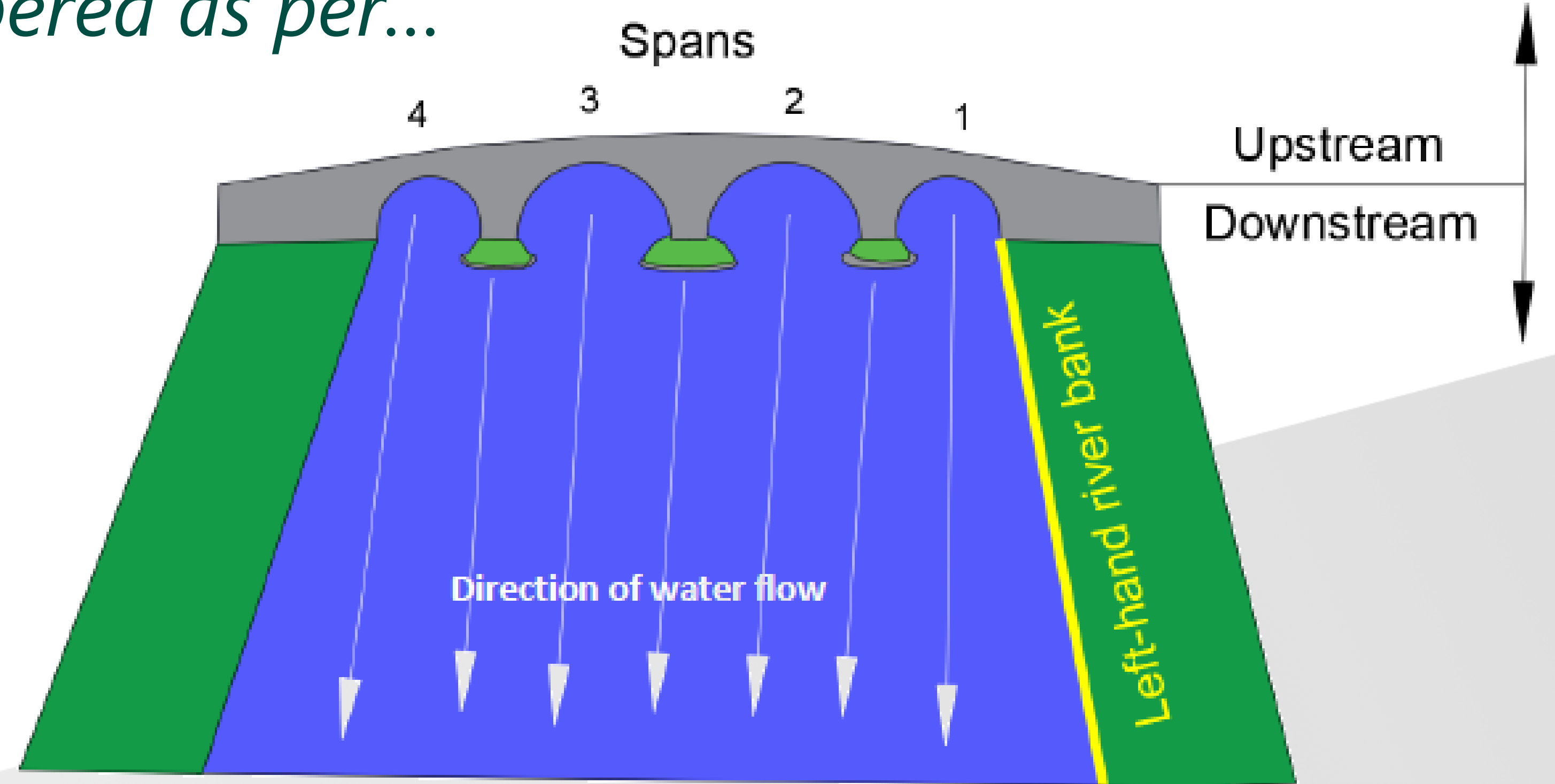


All dimensions in meters

Spans numbered as per...

GUIDELINES

CHAPTER 3

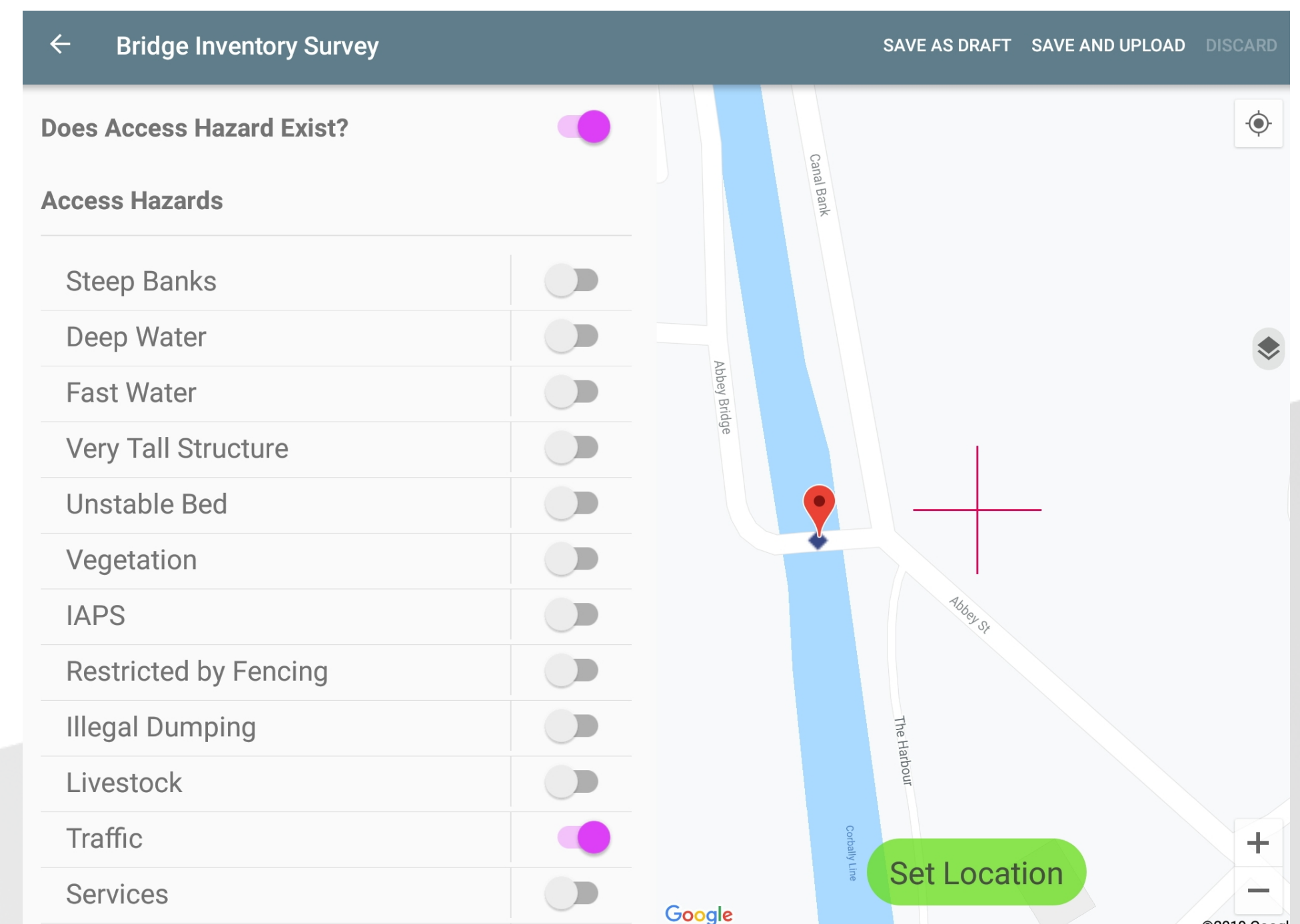




Access Hazards

ACCESS HAZARDS

- Things that make it difficult or dangerous for you to carry out a safe survey
- Multiple selection





*Structure Type

See Table 3.1 – Structure Types

STRUCTURE TYPE

- Main construction type
- If extended, select Composite and comment
- ‘Not Surveyed’ if access difficulties exist and inhibit identification

A screenshot of the 'Bridge Inventory Survey' mobile application. The background shows a form with fields for 'Is Culvert?', 'Structure Material' (Masonry, Concrete, Metal, Timber, Plastic), 'Captured Location' (Lat: 53.21963, Lon: -), and 'Road Number' (XXXXX). A 'Select type' dialog box is open in the foreground, listing options: Arch, Beam, Slab, Truss, Pipe, Box Culvert, Composite, Clapper, Other, and Not Surveyed. The 'Structure Type' field in the background form is highlighted with a yellow box, and the 'Arch' option in the dialog is also highlighted with a yellow box. A 'CANCEL' button is visible at the bottom right of the dialog, and a 'Set Location' button is at the bottom right of the app screen.



THE BRIDGE ASSET MANAGEMENT PROJECT – OVERVIEW – GUIDELINES - BIS

**LOCATION,
ROAD NUMBER,
STRUCTURE
NUMBER
(CALCULATED)
&
STRUCTURE
NAME
(PLATE &
ALIAS)**

← Bridge Inventory Survey SAVE AS DRAFT SAVE AND UPLOAD DISCARD

Captured Location
Lat: 53.22693, Lon: -6.63256

Road Number
L6036

*** Structure Number (Calculated)**
KE-L6036-B-000

Structure Name (Plate) (15/50)
KE-L6036-001.00

Structure Name (Alias) (19/50)
Fishery Lane Bridge

*** No. of Spans**
1

Google ©2019 Google



STRUCTURE MATERIAL

*Structure Material

- main construction material(s) within the superstructure (deck) of the bridge
- E.G. Masonry abutments and steel beams supporting concrete deck = select Masonry and Concrete and state deck material in comments.

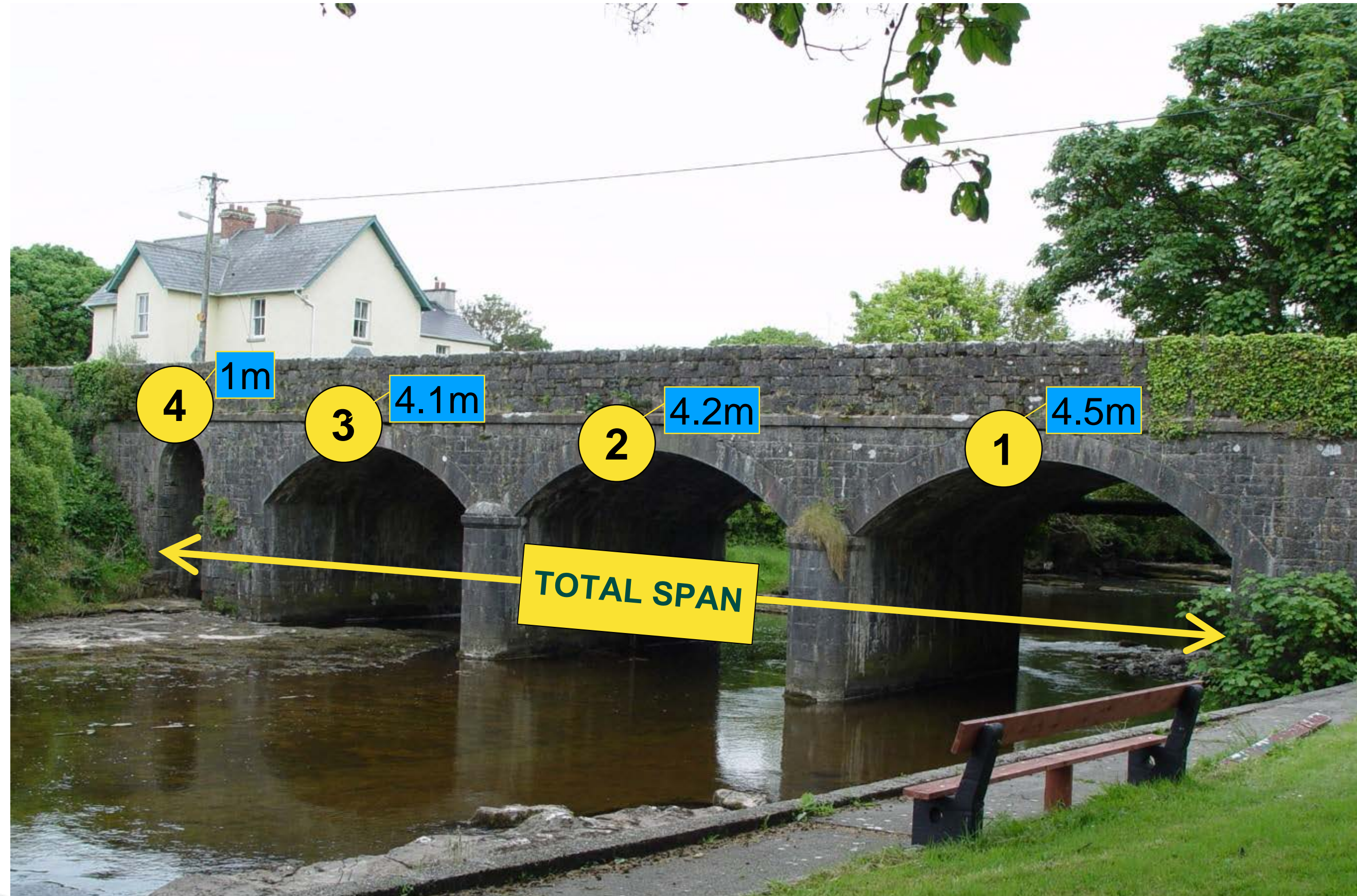
The screenshot shows the 'Bridge Inventory Survey' app interface. On the left, there is a form with the following fields:

- Is Culvert?** (toggle switch, currently off)
- * Structure Type** (dropdown menu, currently 'Composite')
- * Structure Material** (checkbox list):
 - Masonry (checked)
 - Concrete (checked)
 - Metal (unchecked)
 - Timber (unchecked)
 - Plastic (unchecked)
- Captured Location** (text field, 'Lat: 53.21963, Lon: -6.66666')
- Road Number** (text field, 'XXXXX')

On the right, there is a map showing the location of the bridge. A red location pin is placed on the map. A green button labeled 'Set Location' is visible at the bottom right of the map area. The map shows a canal and a street labeled 'Abbeey St'.



SPAN INFORMATION



*Number of Spans	4
*Total Span	13.8m
*Max Span	4.5m
*Min Span	1m

1

4

Only activated if no. spans > 1



SPAN INFORMATION

← Bridge Inventory Survey SAVE AS DRAFT SAVE AND UPLOAD DISCARD

Structure Name (Plate) (15/50)
KE-L2996-001.00

Structure Name (Alias) (12/50)
Abbey Bridge

* **No. of Spans**
4

* **Total Span (m)**
13.8

* **Max Span (m)**
4.5

* **Min Span (m)**
1

Google ©2019 Google



STRUCTURE LENGTH





“Where retaining walls are continuous with the bridge abutments, with or without parapets on top, the overall structure length shall include the retaining (wing) walls”

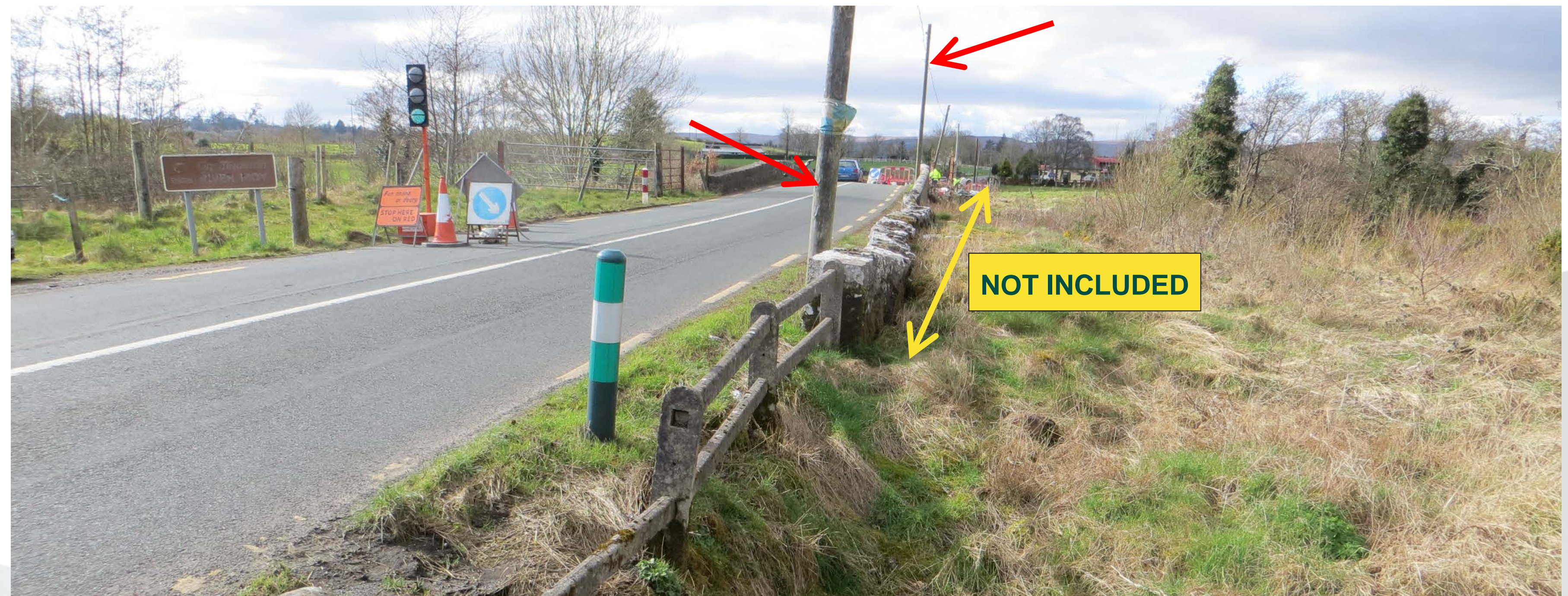
STRUCTURE LENGTH





“Parapets that butt up to the bridge parapets, but which do NOT have a structural/retaining function shall not be included in the overall length of the bridge structure”

STRUCTURE LENGTH





This is the width of the structure, including any extensions or widening. On a masonry arch it will generally be the width of the arch. It does not include wing walls or cut waters.

STRUCTURE WIDTH





Taken at the midpoint of the span, measured from the river bed to the soffit, the bottom of keystone for arches, for others it will be the slab or lowest beam. For multi-span structures, the tallest opening is chosen

HEIGHT OF OPENING



THE BRIDGE ASSET MANAGEMENT PROJECT – OVERVIEW – GUIDELINES - **BIS**



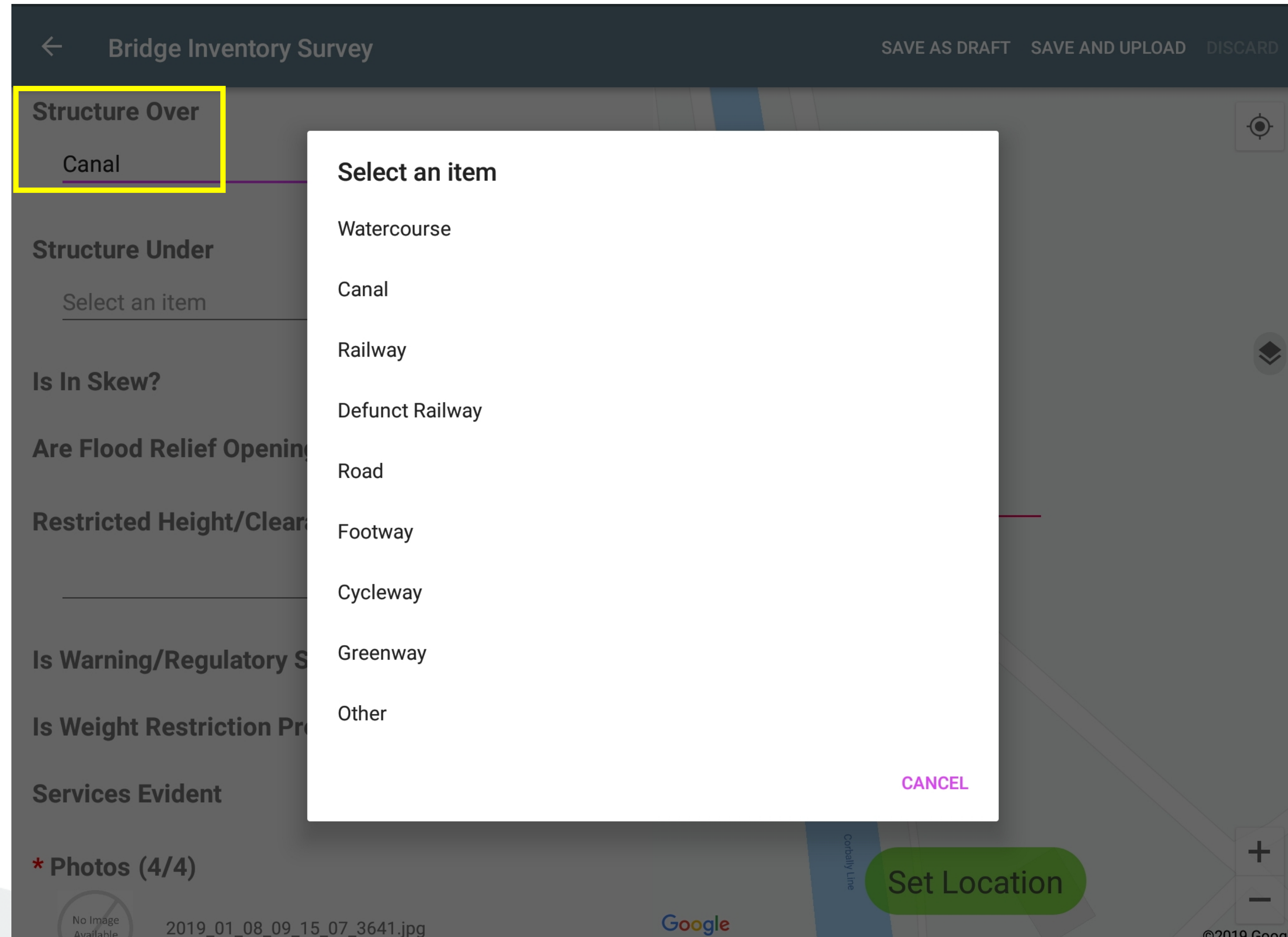
**STRUCTURE
OVER
or
UNDER
and
PRINCIPAL
FUNCTION**

Over	WHAT THE BRIDGE SPANS OVER	Road
		Rail
		Footway / Cycleway
		Canal
		Other
Under	WHAT THE BRIDGE PASSES UNDER	Road
		Rail
		Footway / Cycleway - e.g. Abandoned rail lines/greenways
		Canal
		Other

Principal Function	WHAT THE BRIDGE IS DOING
---------------------------	---------------------------------



**STRUCTURE
OVER
or
UNDER
and
PRINCIPAL
FUNCTION**





THE BRIDGE ASSET MANAGEMENT PROJECT – OVERVIEW – GUIDELINES - BIS

← Bridge Inventory Survey SAVE AS DRAFT SAVE AND UPLOAD DISCARD

* Min Span (m)
1

* Structure Length (m)
36

* Structure Width (m)
6

* Height of Opening (m)
4

Principal Function
Public Road

Structure Over
Canal

The map displays a canal with a bridge labeled 'Abbey Bridge'. A red location pin is placed on the bridge. A red crosshair is visible on the map. The map includes labels for 'Canal Bank', 'Abbey St', 'The Harbour', and 'Corbally Line'. A green button labeled 'Set Location' is overlaid on the map. The Google logo and copyright information are visible at the bottom of the map.



THE BRIDGE ASS

ES - BIS

SKEW
ANGLE

44.6°
(135.4°)

Bridge Asset Management System

Bridge Asset

DTAS So

SAVE

©2019 Google - Imagery ©2019 Maxar Technologies



RESTRICTIONS (HEIGHT & WEIGHT)



- Should be the height displayed on Regulatory Sign
- Verify during survey
- Advise signage be updated if required



RESTRICTIONS (HEIGHT & WEIGHT)



- Consider erecting/replacing advance warning signage



Pig truck driver gets €300 fine over bridge collapse

RESTRICTIONS (HEIGHT & WEIGHT)



- Should be the weight displayed on Regulatory Sign
- Verify during survey
- Advise signage be updated if required

<https://www.independent.ie/irish-news/pig-truck-driver-gets-300-fine-over-bridge-collapse-26343821.html>



FLOOD RELIEF OPENINGS

- Isolated flood openings
- Note separately, do not include as spans
- Dry arch directly adjacent should be included
- DO include in overall length of the bridge



SERVICES



- Simply record if there are services evident at or attached to the structure





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VIDEO 1

THE BRIDGE ASSET MANAGEMENT PROJECT – OVERVIEW – GUIDELINES - BIS



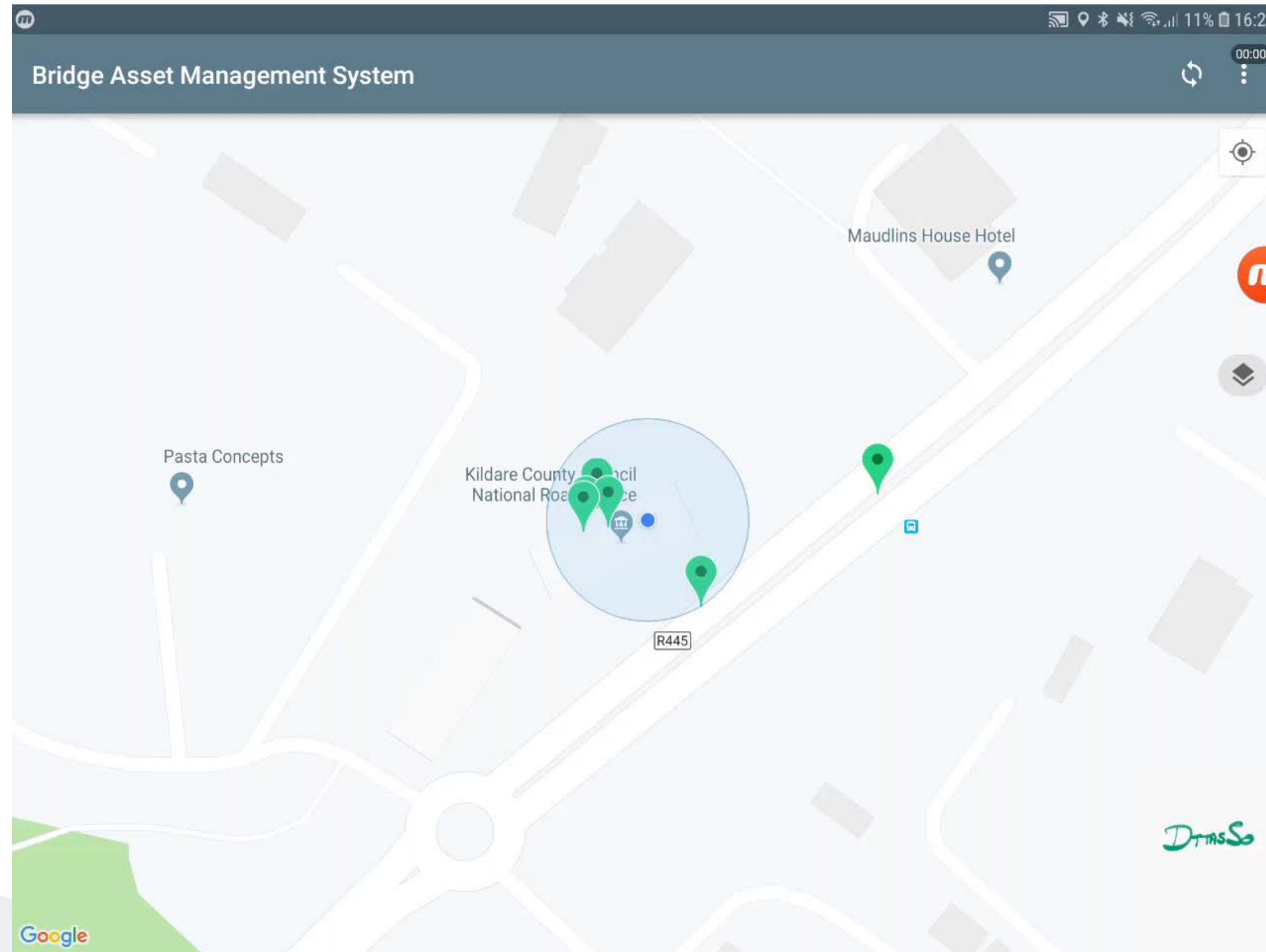
The screenshot shows the 'Bridge Inventory Survey' mobile application interface. At the top, there is a navigation bar with a back arrow, the title 'Bridge Inventory Survey', and three action buttons: 'SAVE AS DRAFT', 'SAVE AND UPLOAD', and 'DISCARD'. The status bar at the very top shows the time as 16:08 and 18% battery. The main content area is split into two panels. The left panel contains a form with the following fields: 'Structure Under' (with a 'Select an item' dropdown), 'Is In Skew?' (toggle), 'Are Flood Relief Openings Present?' (toggle), 'Restricted Height/Clearance (as surveyed) (m)' (text input), 'Is Warning/Regulatory Sign Present?' (toggle), 'Is Weight Restriction Present?' (toggle), and 'Services Evident' (toggle). Below these is a section for photos, labeled '* Photos (4/4)', showing three photo thumbnails with their respective file names: '2019_01_08_09_15_07_3641.jpg', '2019_01_08_09_15_31_7022.jpg', and '2019_01_08_09_16_13_1153.jpg'. The right panel displays a map of a canal area with a red location pin and a green 'Set Location' button. The map shows 'Canal Bank', 'Abbey Bridge', 'Abbey St', and 'The Harbour'. The Google logo is visible at the bottom of the map. A 'DTMS So' logo is also present in the bottom right corner of the map area.



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VIDEO 2

THE BRIDGE ASSET MANAGEMENT PROJECT – OVERVIEW – GUIDELINES - **BIS**





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Thank You

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Next Up – Maintenance Inspections with Brian Cross

