

Chiswick Park Footbridge Post-Completion Study

What makes a successful infrastructure project? The Chiswick Park Footbridge was completed in 2019 to widespread acclaim, though little feedback on its impact on the local area. So, was it a successful project?



Figure 1 Chiswick Park Footbridge arch. Image Credit: Damian Eley

Inspired by the work of Bridges to Prosperity in capturing their project’s social value; Expedition Engineering and Useful Studio, the original designers, completed a pilot post-completion study of the footbridge. The study defined a framework to assess the impact of the footbridge on the local area and established a methodology to be reproduced. It aims to redefine what makes a project successful.

The footbridge post-completion study analyses the performance of an existing structure to guide improvements in the design processes of many future projects. It attempts to introduce a process that connects the final stages of current projects with the beginnings of the next. By capturing previous project data, iteration of good design is enabled between projects, building on past success, and learning from mistakes.

METHODOLOGY

The study started with research into current best practices for post-occupancy evaluations (POE) of buildings. Guidance and examples of infrastructure post-completion assessments are extremely limited, highlighting an industry gap. Typically, POE studies are extensive, with thorough data collection undertaken by a third party. Given time and budget constraints, the Chiswick Park footbridge pilot study intended to capture a snapshot of the bridge’s performance whilst establishing a methodology that could be developed further.

The proposed methodology comprised three phases:

1. Developing performance indicators using the original design intent, stakeholder mapping and research into sustainability indicators.
2. Collecting data to measure performance against the indicators.
3. Analysing and evaluating the data.

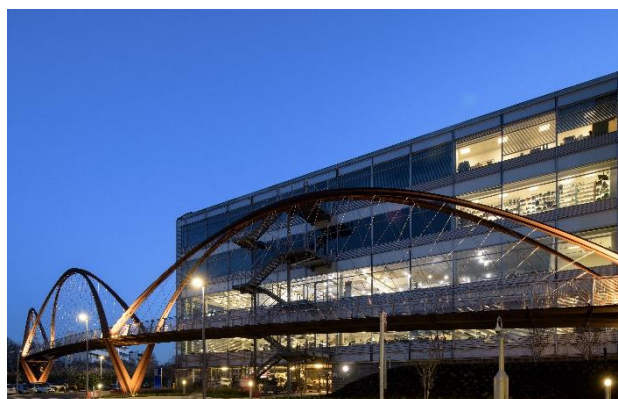


Figure 2 Chiswick Park Footbridge and offices at Chiswick Business Park. Image Credit: Jill Tate

PERFORMANCE INDICATORS

Chiswick Park footbridge is a three-span footbridge, crossing, rail, road and natural landscape. The network arch structure connects the north end of Chiswick Business Park with Chiswick Park Station.



Figure 3 Map of area surrounding Chiswick Park Footbridge. Image Credit: Google Earth

The footbridge had ambitions to improve the connectivity of the area, reduce congestion at nearby Gunnersbury Station, provide a safer route into the park and enhance the local quality of life. These aims were incorporated into the performance indicators developed for the POE. Ideally, these aims should have captured stakeholder needs from stakeholder mapping study conducted before the design brief was set. In the absence of such a study, a post-rationalised exercise of mapping local

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stakeholders was developed to identify their likely needs before construction. This exercise identified performance indicators capturing the stakeholder needs (Figure 4).

In the context of the climate and biodiversity crisis, industry sustainability metrics were captured within the indicators. A variety of frameworks, including the UN SDGs¹, TOMs Framework² and CEEQUAL Sustainability assessment³ were reviewed. Whilst all were useful in identifying the breadth of impacts, many were only applicable up to delivery or were too generic to apply meaningfully. Using the research, new project performance indicators were added to a framework based on the Construction

Innovation Hub's Value Toolkit⁴, with the targets adjusted to be more suited to footbridge projects, and to capture specific local needs. These indicators captured performance under four themes: natural, social, human and material.

Natural	Outcomes influencing the value of the local natural environment and addressing the global climate crisis.
Social	Outcomes influencing the shared experience of the asset and its surroundings, the equality across user experience and diversity of asset users.
Human	Outcomes affecting individuals, their: knowledge, skills, health and well-being and employment opportunities.
Material	Outcomes resulting in the use or generation of material goods, wealth and economic change. Operational and maintenance costs and material use.

Figure 5 Performance indicator themes

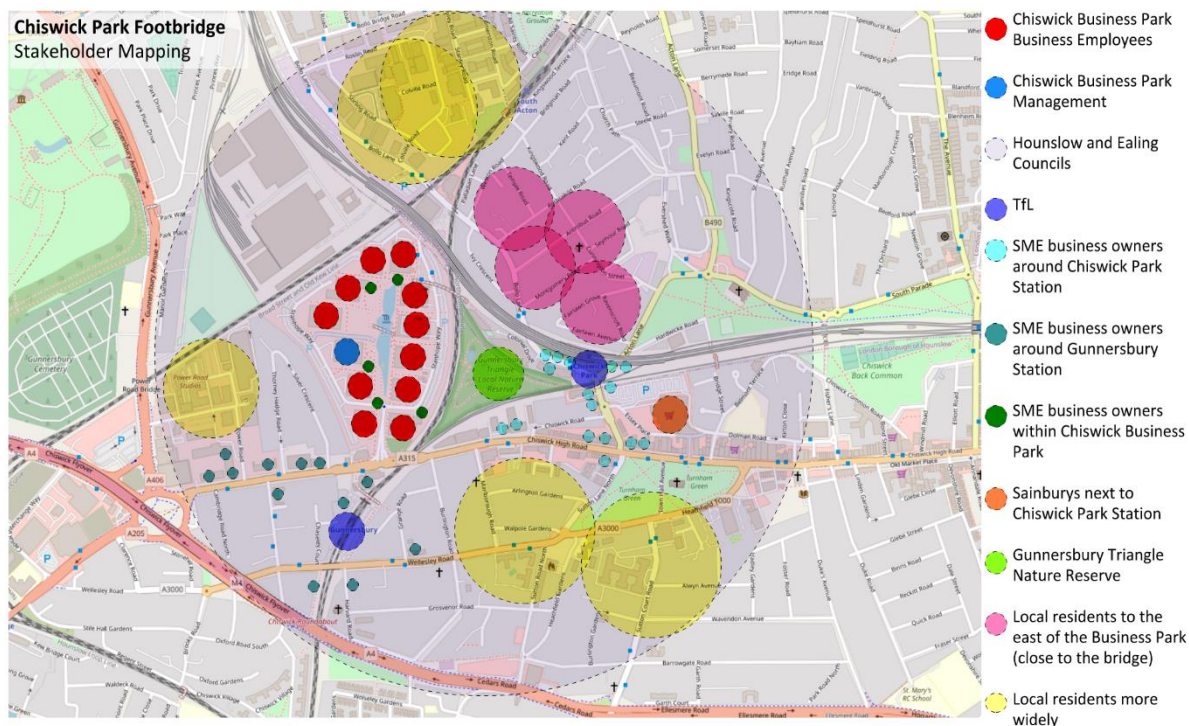


Figure 4 Chiswick Park Footbridge - Stakeholder mapping exercise. Image Credit: Kimberley Ertl

DATA COLLECTION

A user survey was written to collect data that could evidence the performance against some indicators. The first iteration of the survey received a mixed response, suggesting questions were leading or tricky to understand. In consultation with expert colleagues, the second iteration of questions developed were open and, where possible, collected responses on a scale bar to enable quantifying the results. Surveys on site over 5 different days captured 43 responses from local residents, members of the business park community and employees of the park.

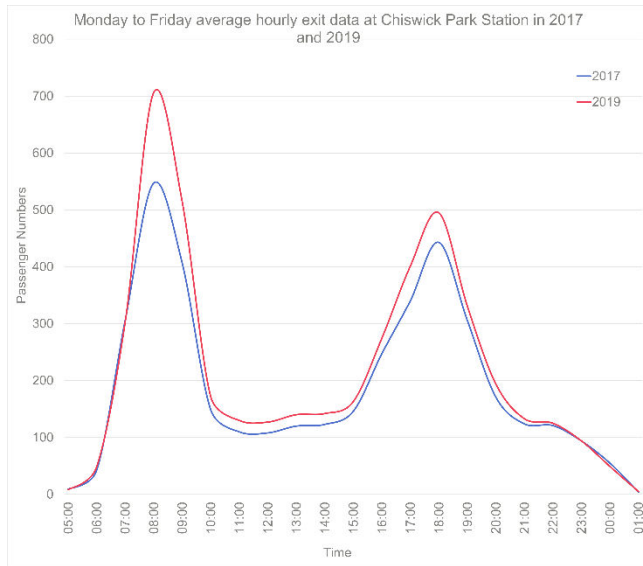
The team also contacted stakeholders to learn about the changes they experienced since the bridge opened. A desk study gathered data that captured the change in the local area following the bridge opening.

RESULTS

TfL passenger data collected in the desk study, and the user survey responses, provided useful insights into the bridge's performance.

Passenger numbers at Chiswick Park Station significantly increased between 2017 and 2019 following the opening of the footbridge. At Gunnersbury Station, numbers remained unchanged. These two passenger use profiles illustrate that the bridge was successful in preventing overcrowding at Gunnersbury following the opening of more offices in the business park.

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The survey responses captured performance against indicators such as user personal safety; to the question “How safe do you feel using the bridge”, 73% of respondents scored the bridge 10/10.

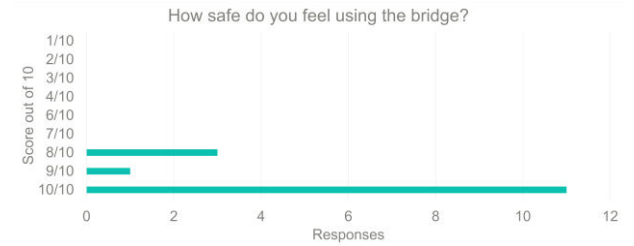


Figure 7 Graph of responses to user survey question "How safe do you feel using the bridge?"

User quotes were also recorded during the survey to give more insight and a personal aspect to the results.

“The area feels safer, it used to be a no-mans land around the car park”

Figure 8 Quote from bridge user, collected during survey

The survey endeavoured to collect as many quantitative responses as possible, so feedback could be easily presented graphically. Subsequent analysis of the data showed that many of the more interesting results, and those that the design team valued most, were those with qualitative answers. Responding to the open question “What would you change about the bridge”, the team were pleased to note the majority of respondents replied “Nothing”. Trends in the other responses provided will give useful insight on future projects.

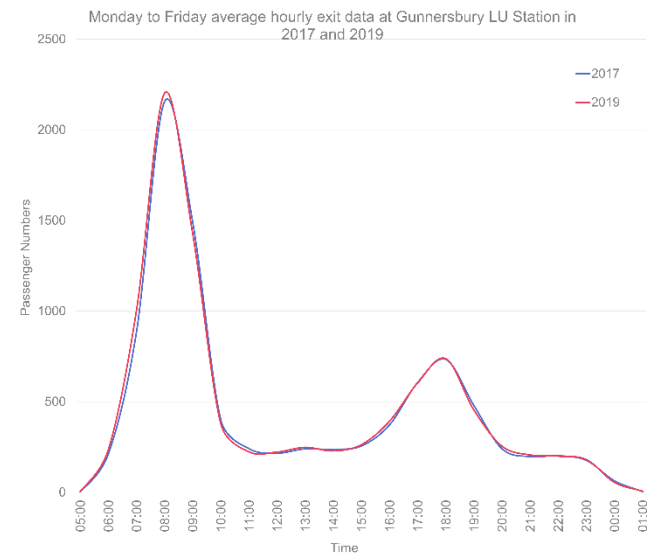


Figure 6 Graphs of passenger data from Chiswick Park and Gunnersbury London Underground Stations in 2017 and 2019

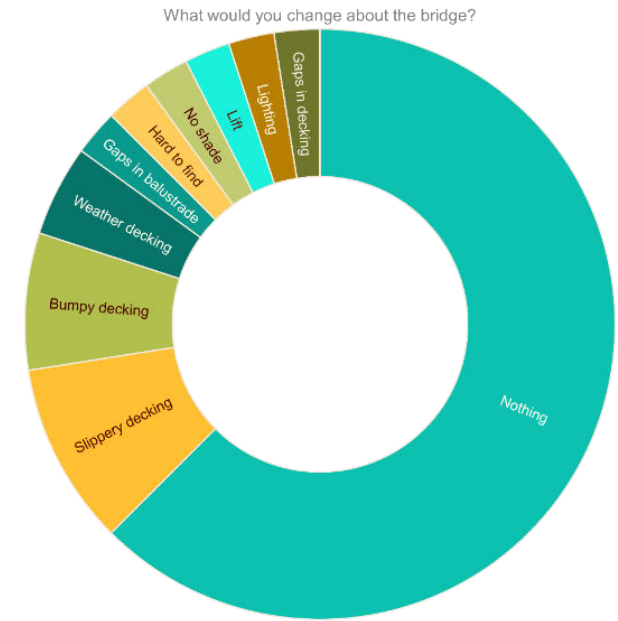


Figure 9 Pie chart of responses to the user survey question "What would you change about the bridge?"

The results of the desk study and user survey were used to score the performance of the bridge against the indicators (Figure 10). I conducted the scoring, using the evidence provided by the data, to judge whether the construction of the bridge had created a net positive, negative or no change to the area with regard to each indicator. For some indicators, no data was available.

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Figure 10 Scoring of Chiswick Park Footbridge against the post-completion study performance indicators.
Image credit: Kimberley Ertl

LIMITATIONS & REFLECTIONS

One of the main challenges during the study was accessing data through different stakeholders, in limited time. In future, this could be mitigated if post-completion analysis were a recognised project phase, with all stakeholders committed to collecting and providing information. This should be incorporated into design briefs, so design teams establish clear sustainability and social values targets, and measure baseline values for the indicators before construction.

Another clear limitation of this study was that the scoring is currently subjective. The design team can still however use the subjective results to better understand the changes they've made to a local area and can learn from the success and shortcomings identified. If post-completion studies were to become industry-wide practice, the rating system would need to be made more objective and easier to score to ensure a standard, repeatable, methodology.

In Invisible Women⁵, Caroline Criado-Perez describes how collecting sex-disaggregated data can identify trends in user response that may otherwise be missed when groups are bunched together. In the next iteration of this study, I hope to write a survey that captures more of the nuance in responses within different societal groups.

The UN SDGs were deemed too broad categories to be used in this study. On reflection, using an established framework would have allowed more direct comparisons with other sustainability assessments, accelerating and uniting our individual climate initiatives.

