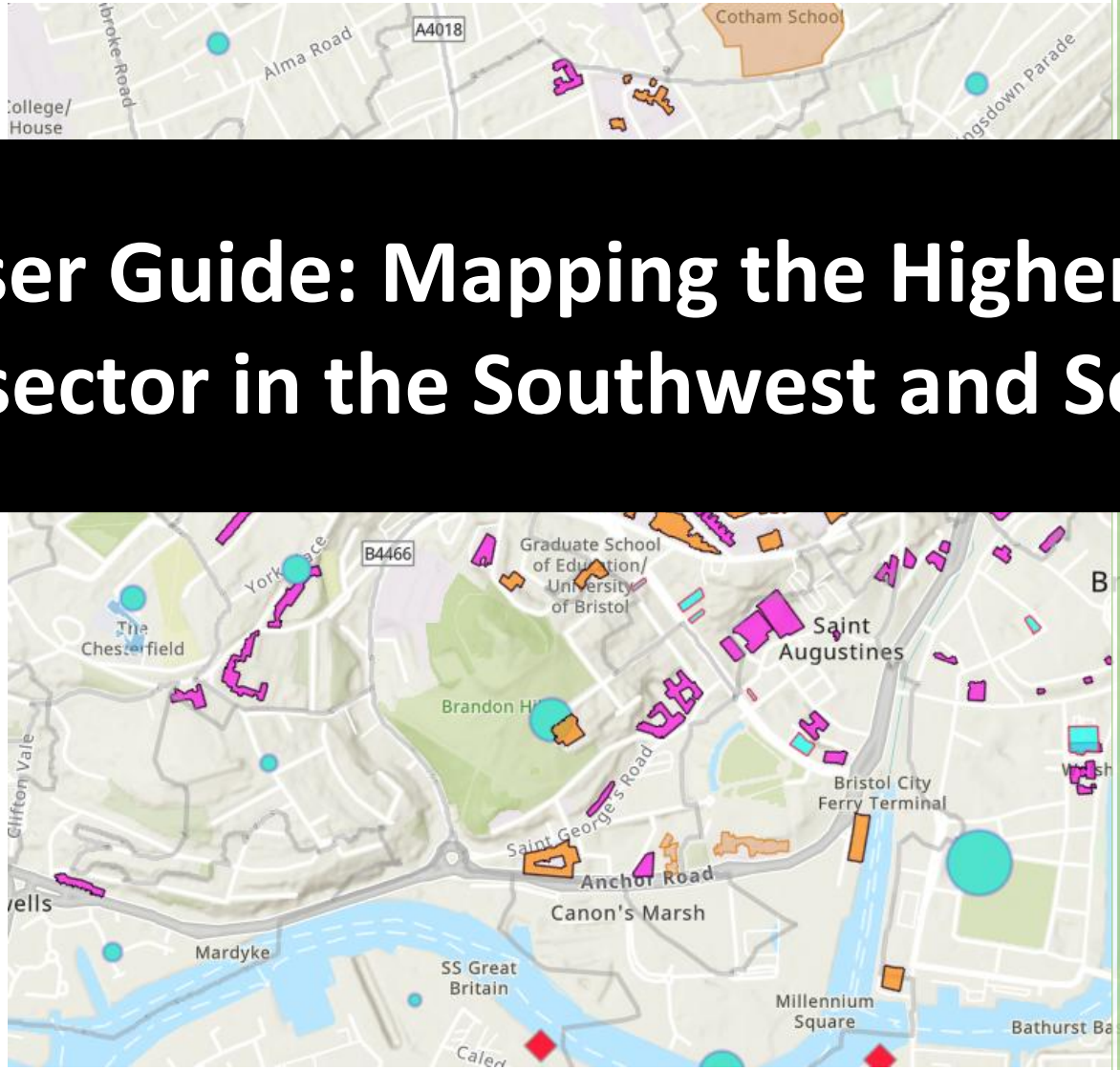
2025

User Guide: Mapping the Higher Education sector in the Southwest and South Wales



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1/1/2025

Introduction

This is a user guide to the App created by Roland Shanks Consulting Ltd for the University of Bath.

The App is located here https://www.arcgis.com/apps/instant/portfolio/index.html?appid=23fbe15dd8bf4a0d8ff6fbb45460c889

Contents

General map navigation tools

This section describes general map controls common to all the maps. It uses the first map (HEI statistics) to illustrate them.

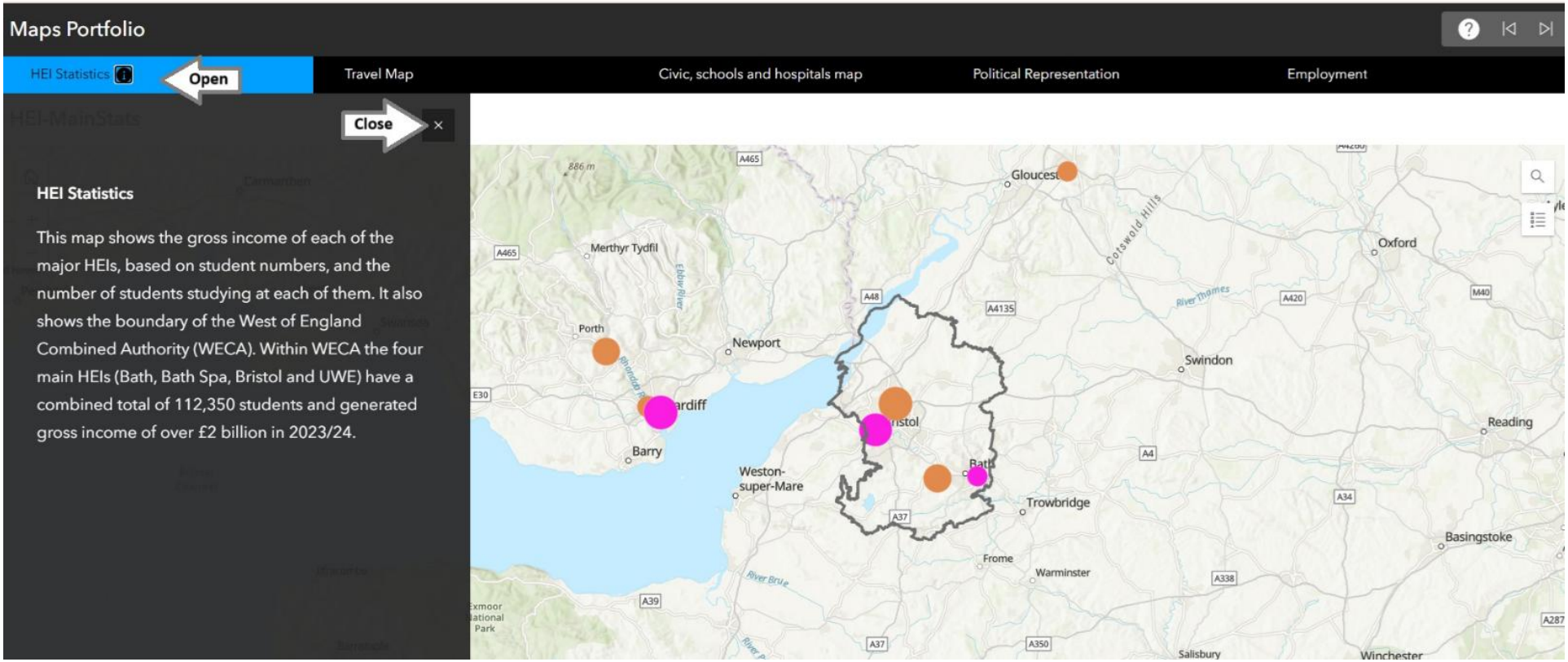


Figure 1

Descriptions of the maps can be opened and closed as above.

Controls

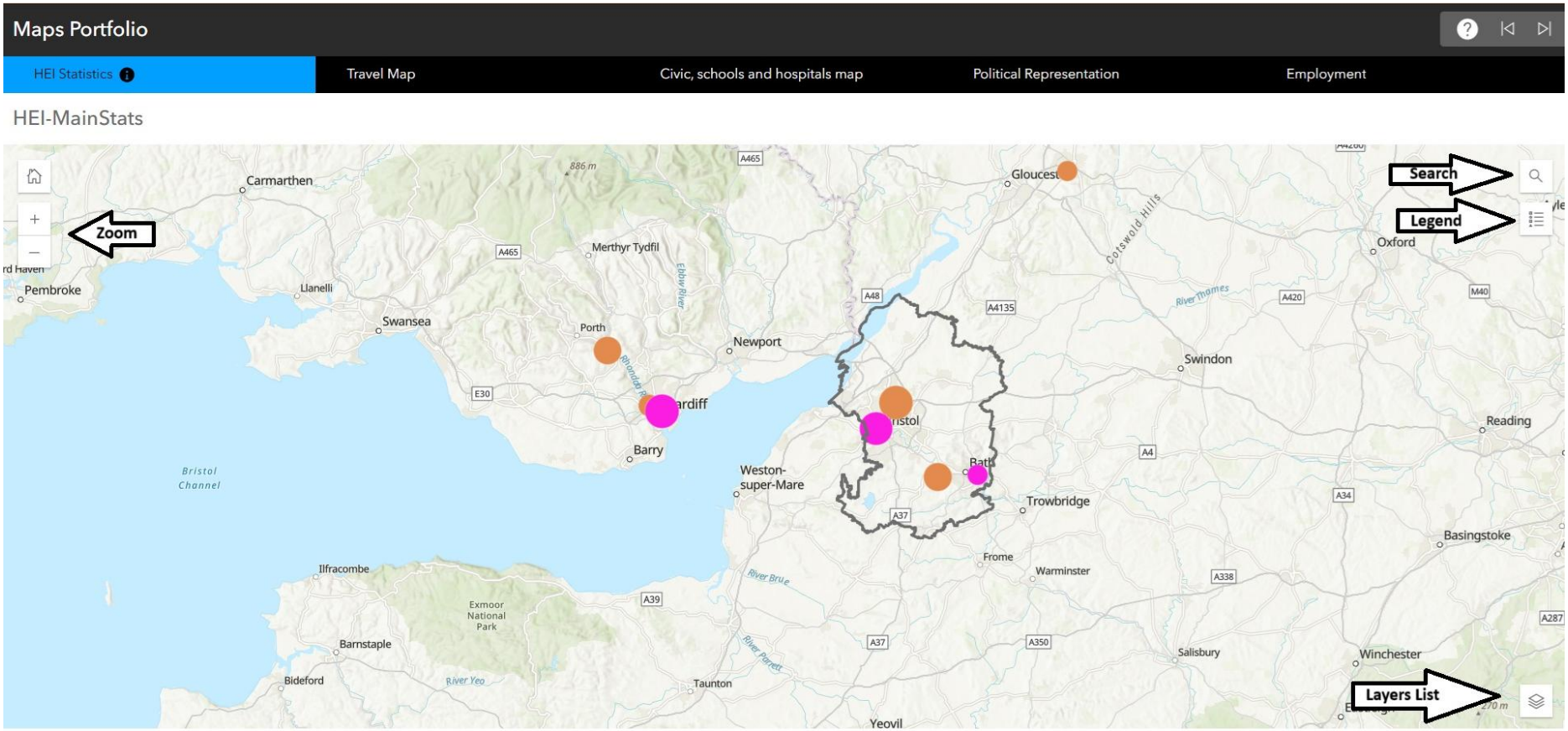
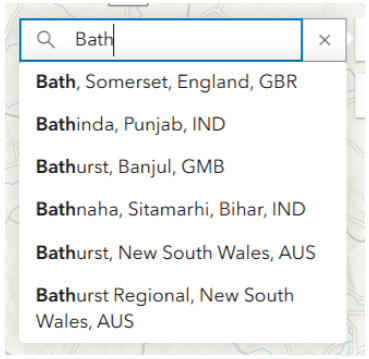


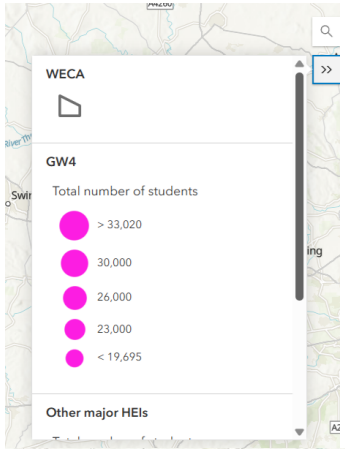
Figure 2

Zoom (top left): Increases or decreases magnification. On some maps, layers only become visible when zoomed in. This to ensure that the maps are legible. Details on this are included in the information specific to individual maps.

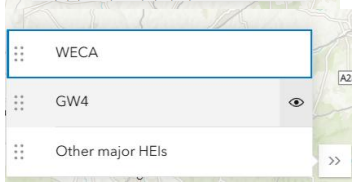
Search (top right): If you know what area you want to explore, you can use the search function to zoom into that area.



Legend (top right): This tells you how to interpret the visual information. In this case, the size of the circles tells you how many students attend that HEI



Layers Lists (bottom right): This tells you what the different layers are and allows you to turn them on and off by clicking on the eye icon to the right.



Pop Ups

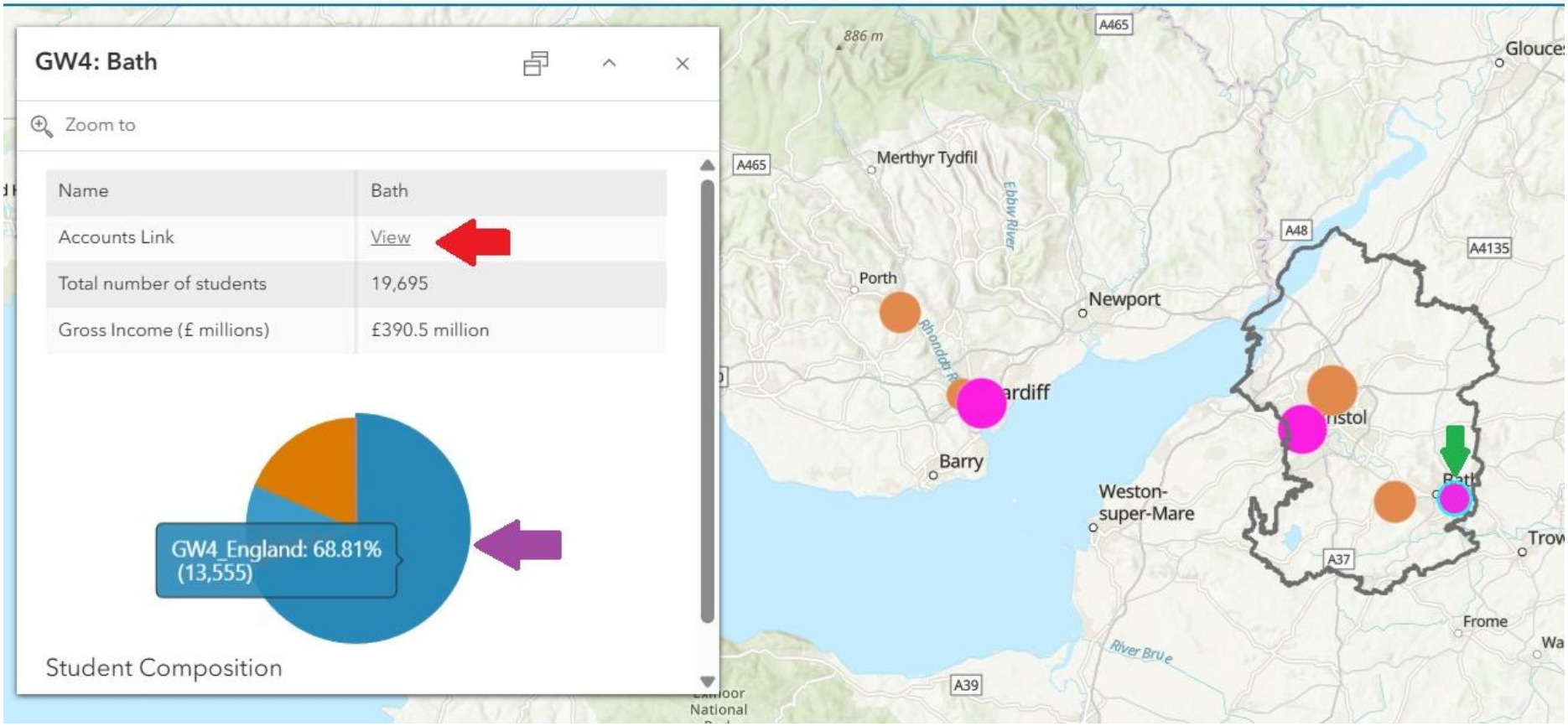


Figure 3

Clicking on the Purple Circle for Bath (green downward arrow- Figure 3) brings up details about the institution in a pop-up box in the top left of the screen.

The links to financial accounts (see red arrow-Figure 3), opens a link in another window (all links on all maps open a separate window).

The Pie Chart shows the student composition of the Institution by origin. Moving the mouse over the Pie Chart (purple arrow) will bring up details. This is the same on other maps where pop ups include either Pie or Bar charts.

Travel Map

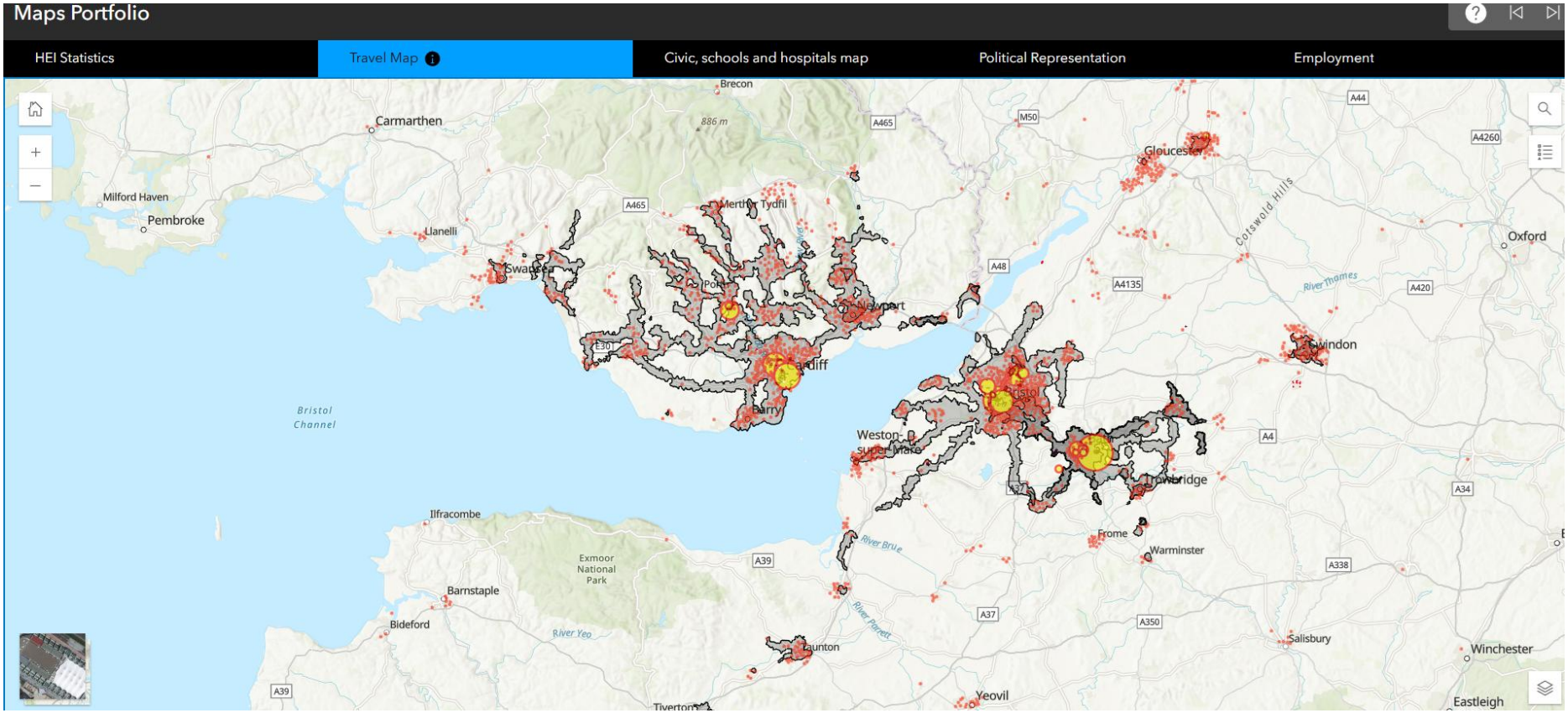


Figure 4

The initial Zoom level shows the areas that are within 90 minutes travelling time of one of the GW4 Universities. These are the areas shaded in grey.

The initial Zoom level also shows Circles that show the number of students that live in specific LSOAs, with the size of the circle representing how many students there are.

This layer (as with all the layers) can be toggled on and off through the Layers List (as per below)

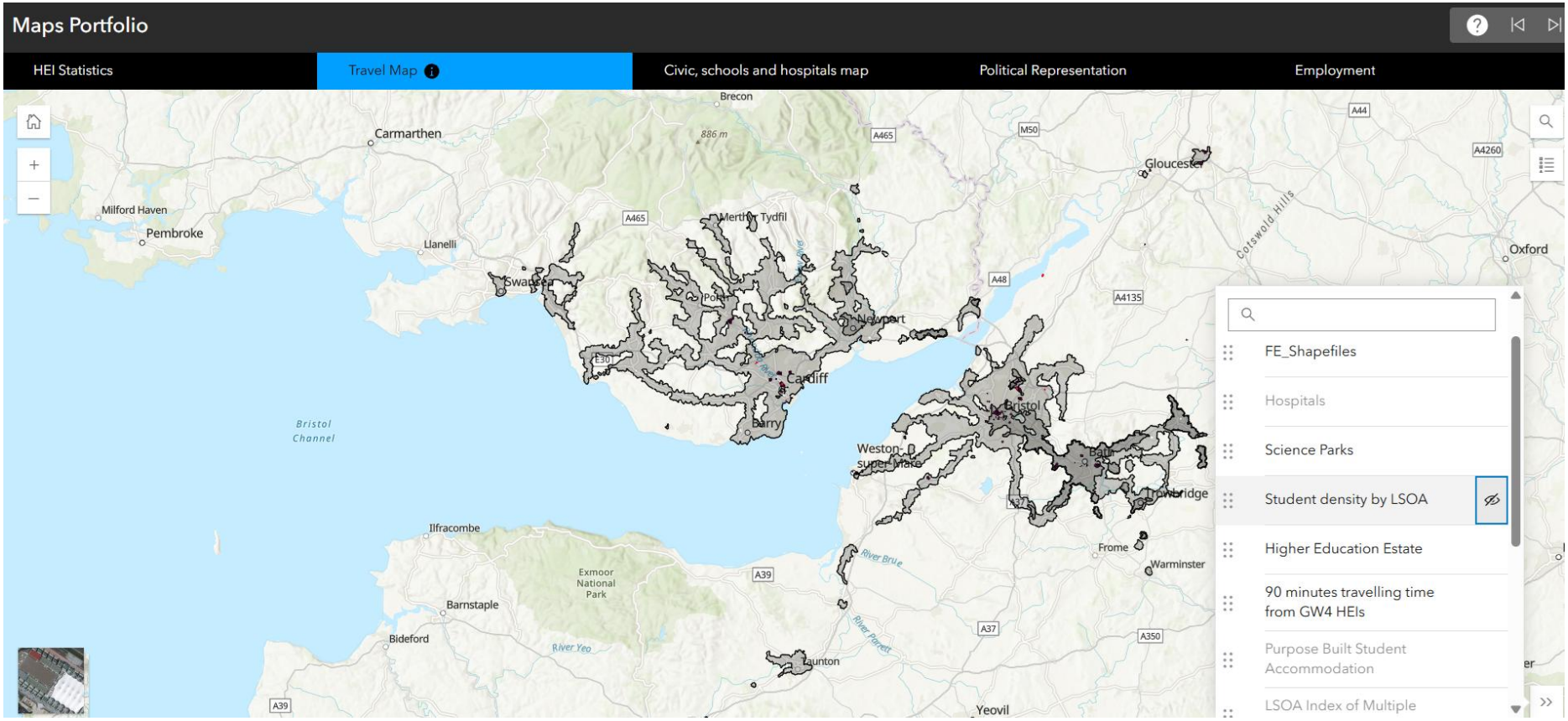


Figure 5

There are a range of other layers that have been turned off when the map loads but can be manually turned on through the layers list. In the case below travel isochrones for all HEIs in the study area have been turned on.

Clicking on Newport then has a pop-up which shows that there are 5 HEIs within 90 minutes travelling time (see green arrow below- Figure 6). To look at which these are you can click on the scroll arrows (see purple arrow-Figure 6).

Top Tip: On many pop ups, the area clicked will have several layers associated with it. To reach the information you want, scroll through the different options. If you want to promote one layer above another (bring it to the top, so that it is not obscured by other layers), you can drag layers up or down in the layers list.

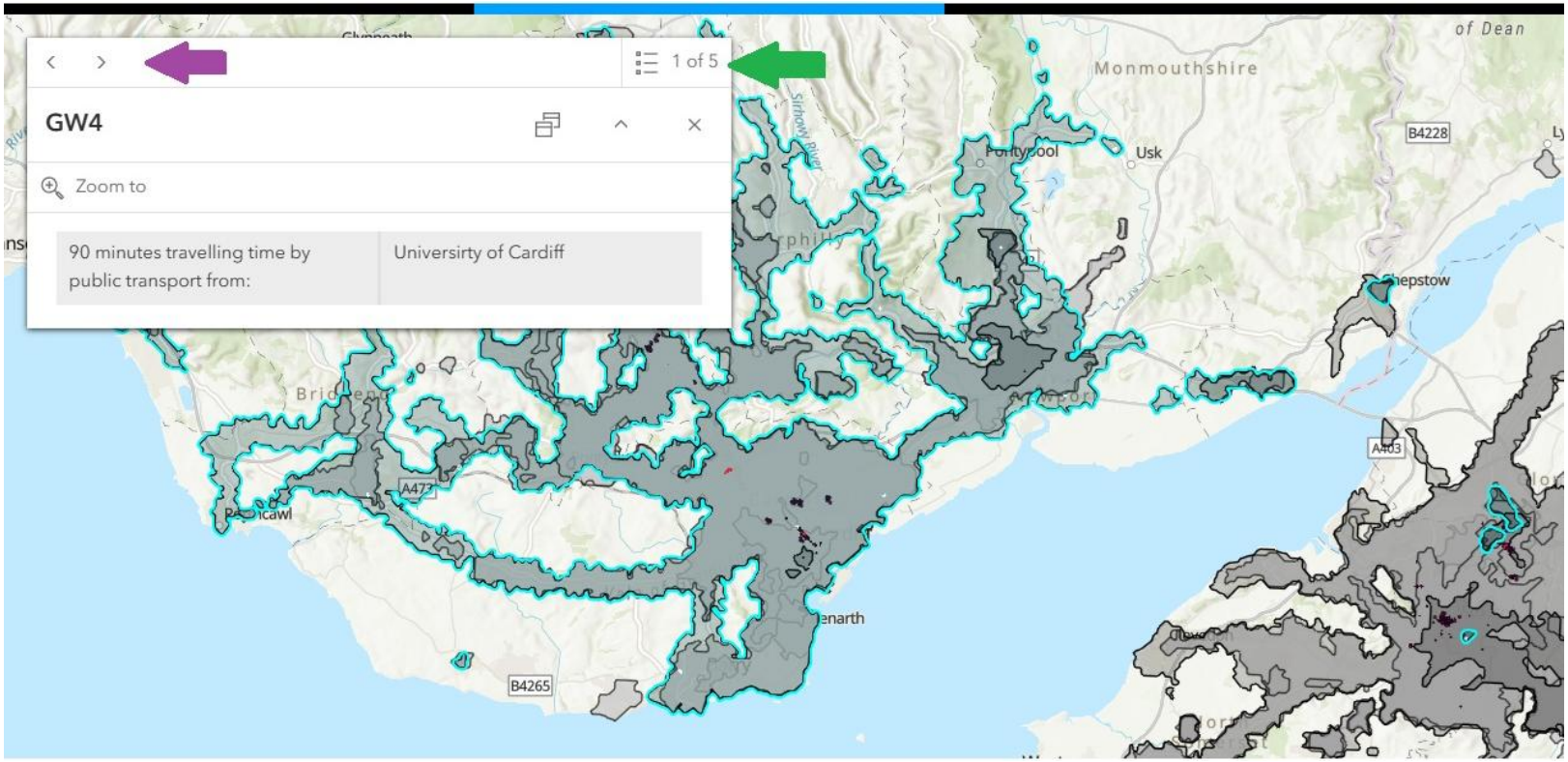


Figure 6

Zooming in to see other layers:

Zooming in shows additional layers. In this case all LSOAs with students living in them has the IMD (Index of Multiple Deprivation) shown. There are ten deciles of IMD with 1 being the most deprived (the darkest colour) and 10 the least (the lightest colour).

In the case below the LSOA in which the University of Bristol city campus is located, has been selected. The pop-up shows that the area has a resident student population of 3,052 and is in the sixth decile of the IMD. The pie chart shows that 85% of the students living in this LSOA are studying at the University of Bristol.

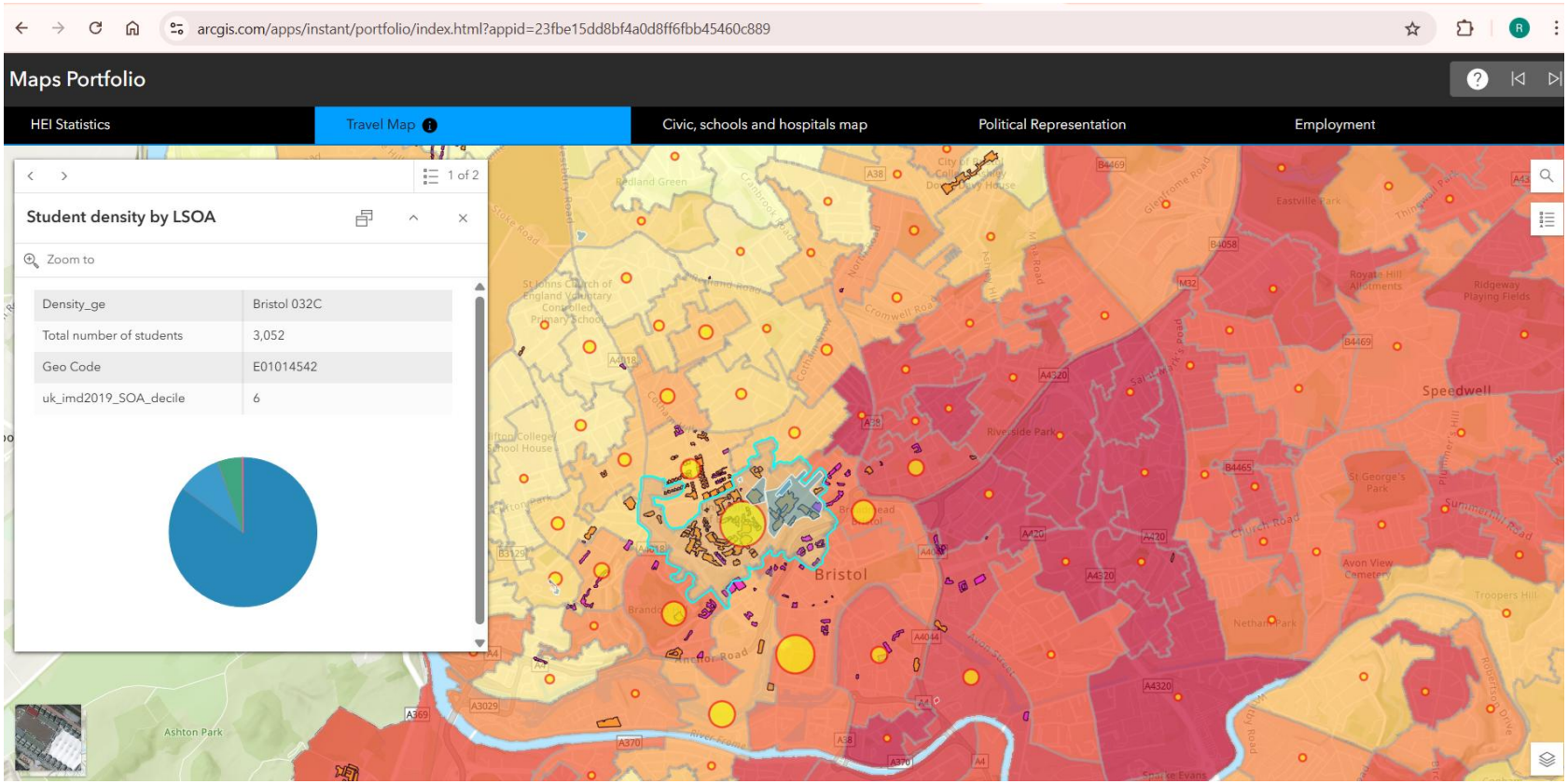


Figure 7

Zooming in further, the LSOA layer disappears so that the building layers, showing the HEI estate and PBSA (Purpose Built Student Accommodation), can be seen more clearly. The HEI buildings are coloured orange and the PBSA purple. Clicking on a building will bring up a range of information about that building.

In the case below the Wills Physics Laboratory has been chosen.

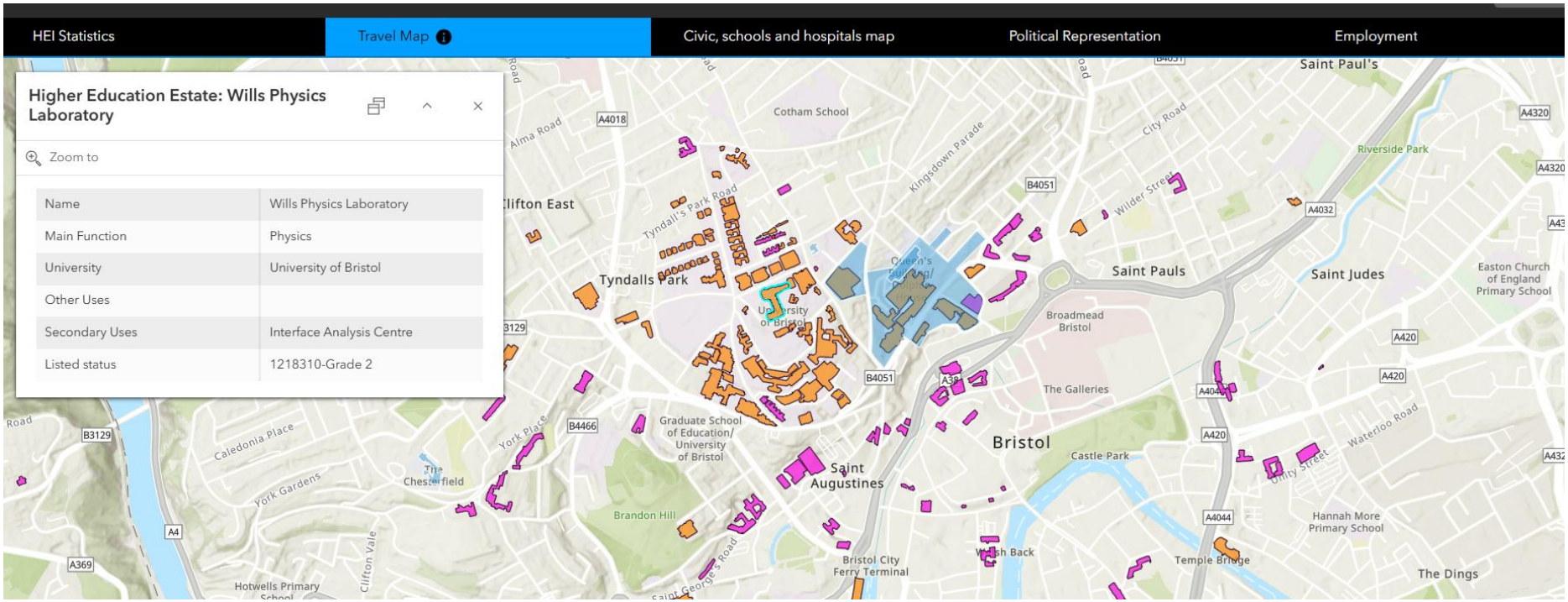


Figure 8

Neighbours and regeneration

This map shows NHS Hospitals, Schools (state funded with sixth forms), Further Education Colleges, Art Galleries, Theatres and Museums. It also shows HEI regeneration areas and major estate projects, together with Enterprise areas.

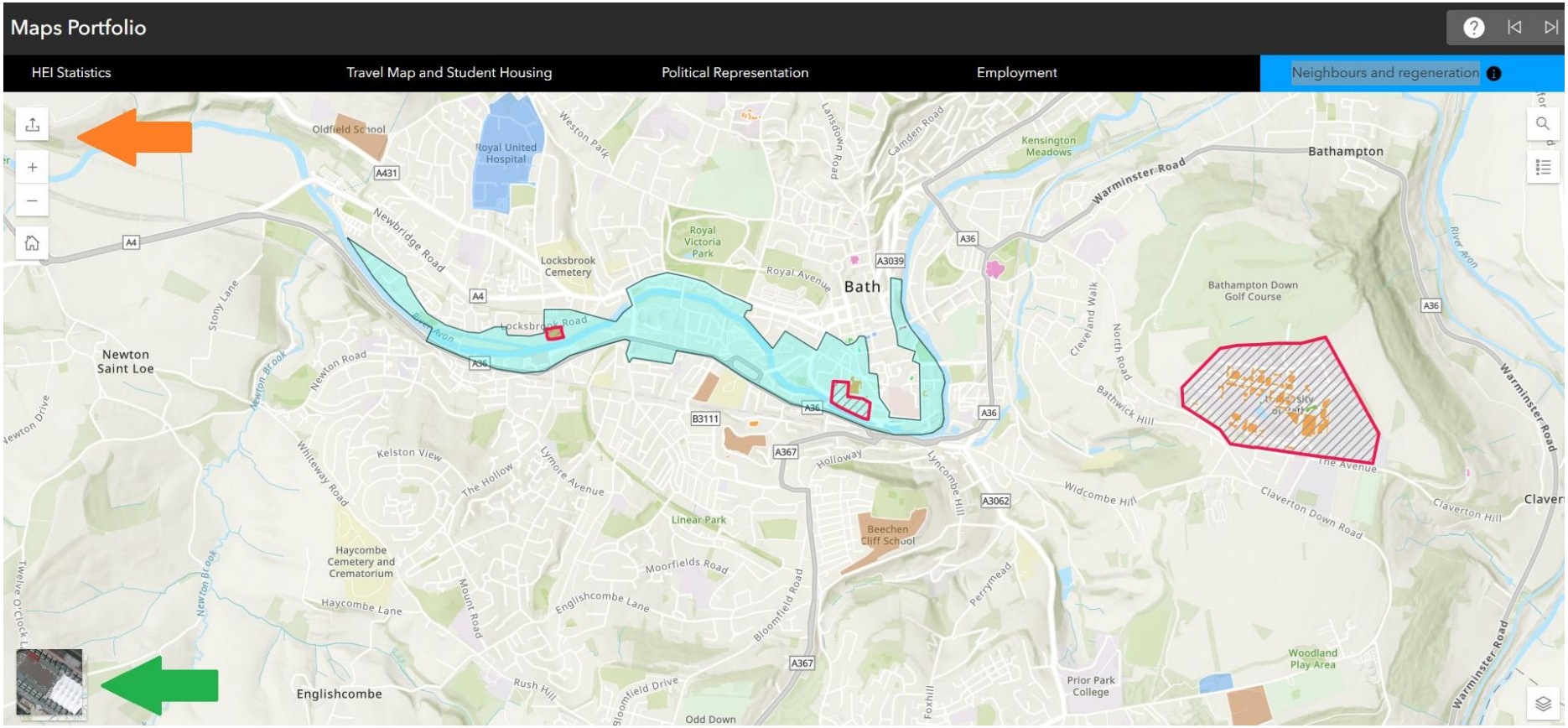
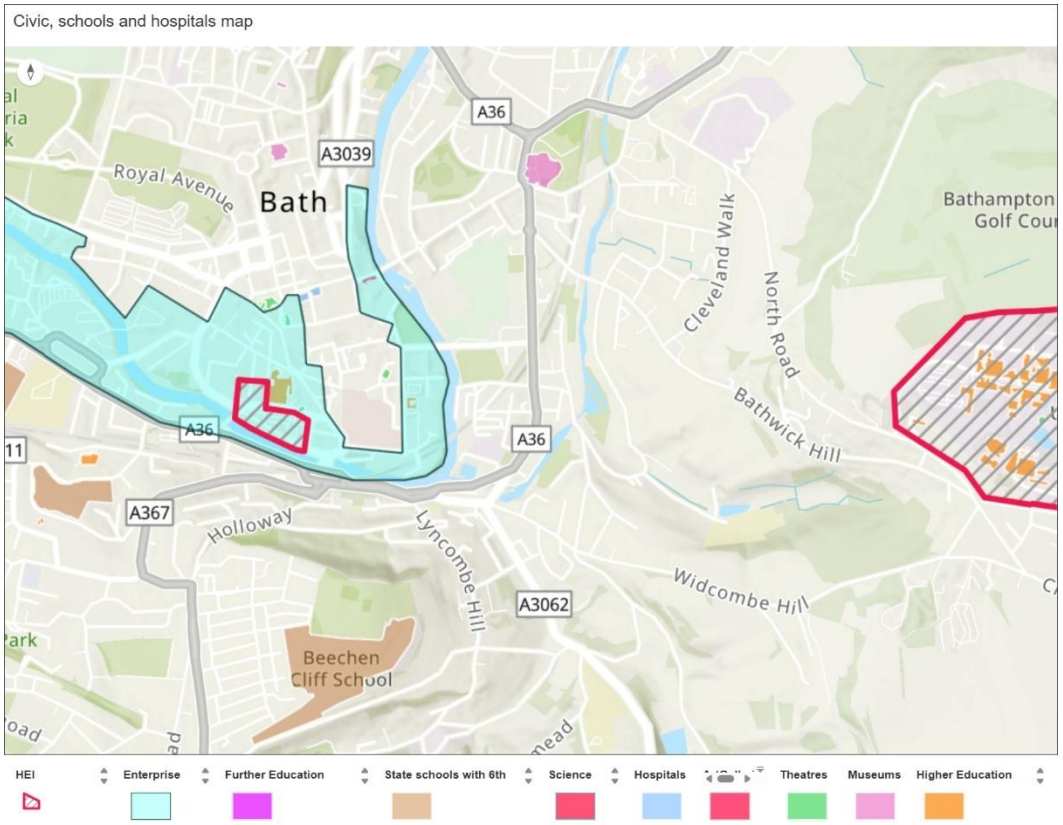


Figure 9

There are two additional features. Firstly, there is the opportunity to change the Base Map to a satellite view (see green arrow-Figure 9).

Secondly, it is possible to create a screenshot of your current view, together with a legend (see orange arrow-Figure 9).

This creates a pdf or a jpeg as per below:



Political Representation

This map shows the General Election results for 2024.

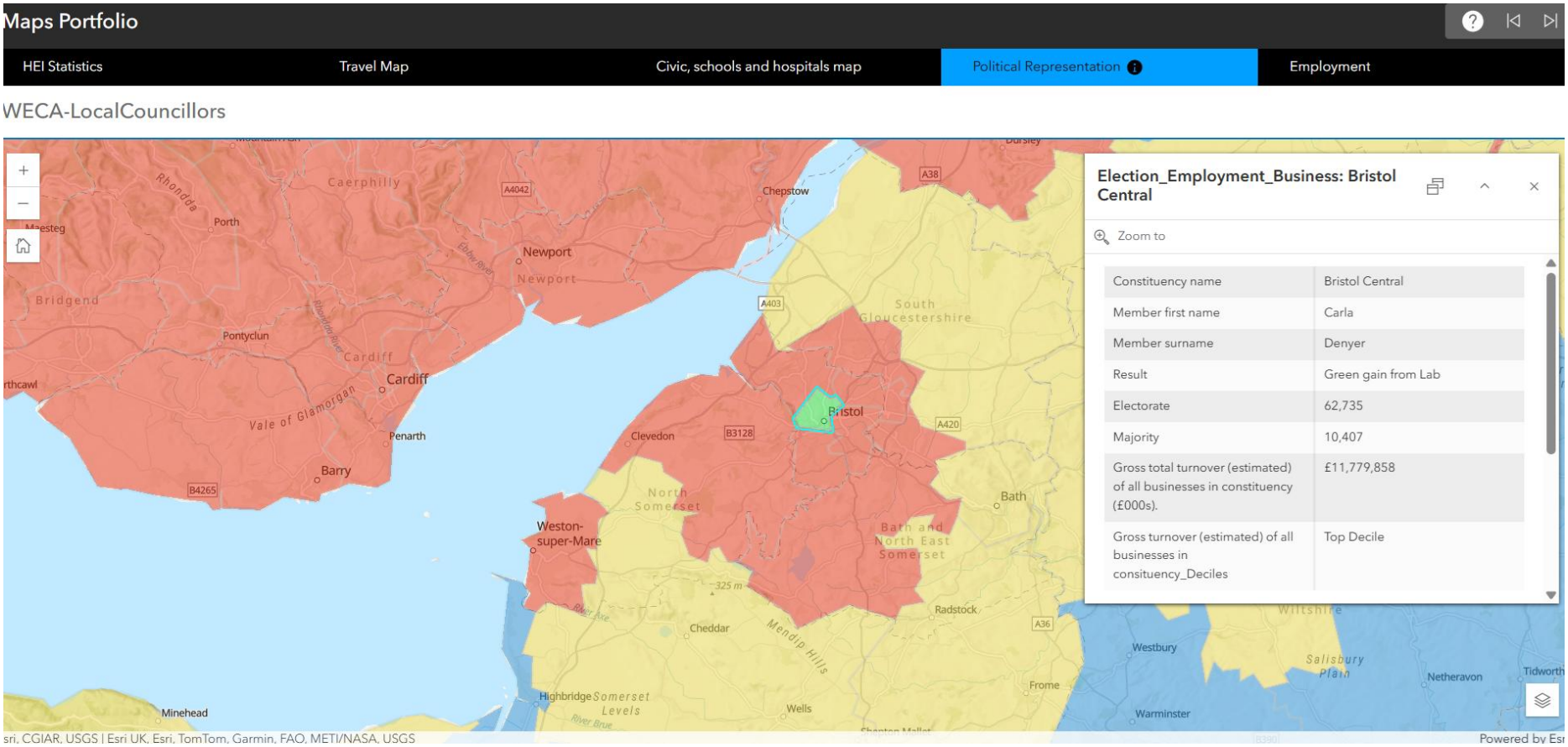


Figure 10

Scrolling to the bottom of the Pop UP shows a bar chart with the results (see next image):

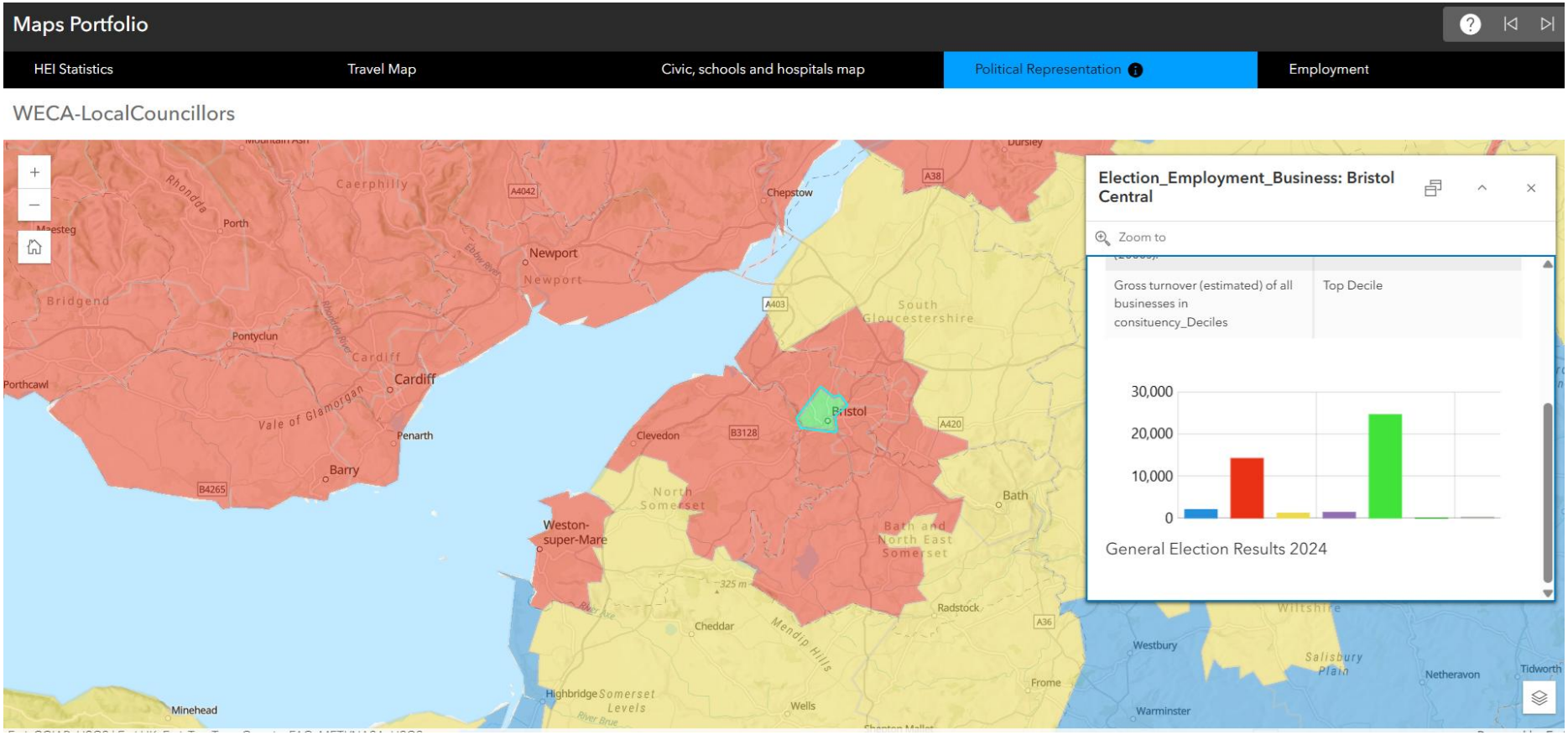


Figure 11

Zooming in further shows local councillors by electoral ward. A link in the pop up takes you to a website where you can find their contact details by entering in details of the ward.

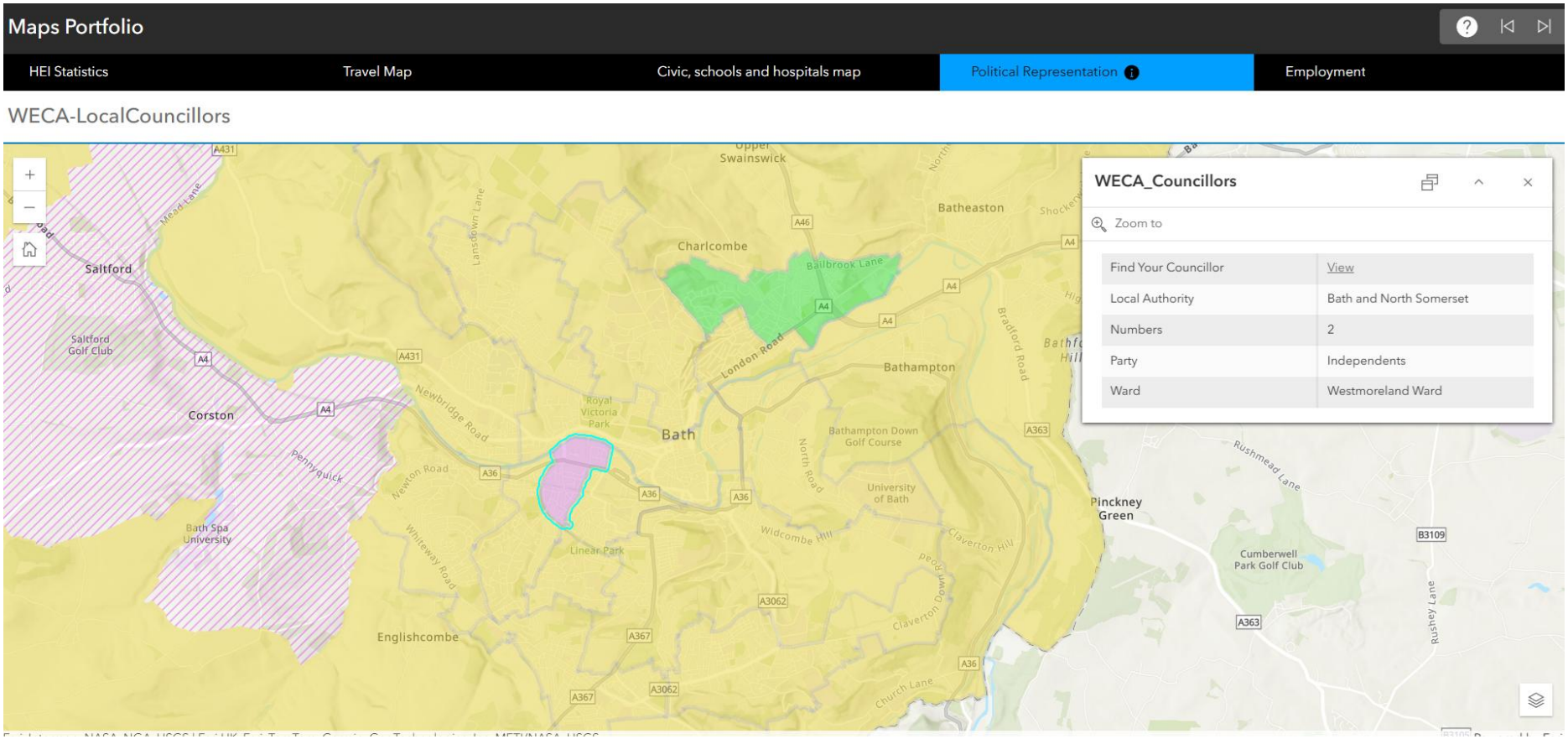

Maps Portfolio
HEI Statistics
Travel Map
Civic, schools and hospitals map
Political Representation
Employment
WECA-LocalCcouncillors
WECA_Councillors
Zoom to
Find Your Councillor
View
Local Authority
Bath and North Somerset
Numbers
2
Party
Independents
Ward
Westmoreland Ward
Saltford
Saltford Golf Club
Corston
Pennyquick
Bath Spa University
Newton Road
Newbridge Road
Englishcombe
Whiteway Road
Linear Park
Bath
Royal Victoria Park
Charlcombe
Lansdown Lane
Upper Swainswick
Batheaston
Bailbrook Lane
London Road
Bathampton
Bathampton Down Golf Course
North Road
University of Bath
Widcombe Hill
Claverton Hill
Claverton Down
Bradford Road
Pinckney Green
Rushmead Lane
Cumberwell Park Golf Club
Rushey Lane
Church Lane
A431
A4
A36
A46
A363
A3062
A367
B3109

Figure 12

Employment

This map shows business activity by parliamentary constituency. Extrapolated statistics from SIC (Standard Industry Classification) data show the combined gross turnover of all businesses within parliamentary constituencies, with those shaded darker producing the greatest turnovers (dark red to light yellow). The *Notes on Methodologies* section (pages 21-22) provides details on how this data was calculated.

Pop Ups show the number of businesses in each constituency by SIC category, as shown below. It is also possible to turn on and off individual SIC categories within the layers list, showing the number of businesses within the different categories. These are shown by circles of different sizes. The screenshot shows Professional Technical and Scientific businesses.

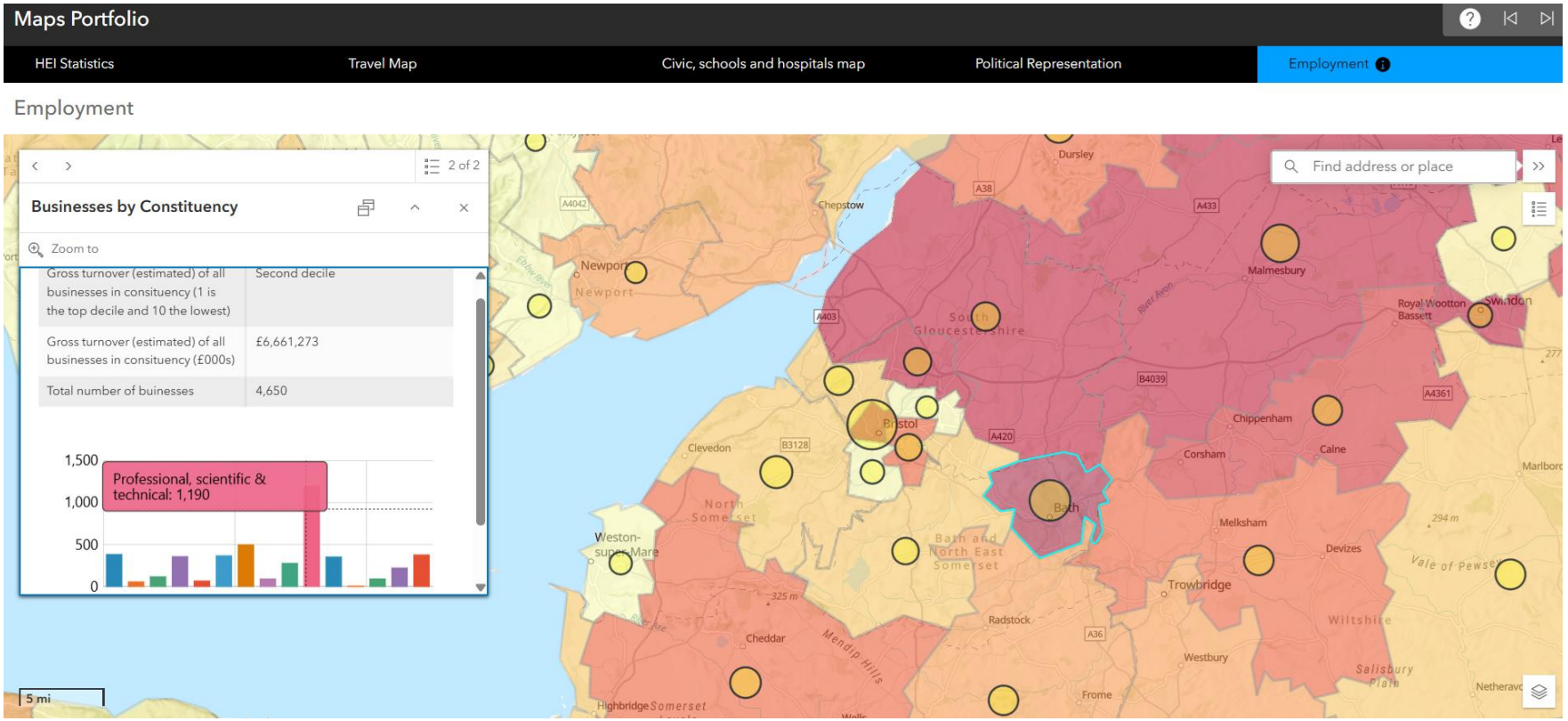


Figure 13

Layers List

Name	Source(s)			Notes
Higher Education Estate	1	FrancisCampus_Gloucester.pdf	University of Gloucester	The Higher Education Estate layer was mainly created by extracting data manually from Campus Maps on university websites. This was supplemented by searching both for University Centres (which were included as HEIs) and for smaller HEIs. There are just under 500 buildings mapped.
	2	hardwick-campus-map-handout-nov23.pdf	University of Gloucester	
	3	Oxstalls-Campus-Map-Jan-23-Gloucester.pdf	University of Gloucester	
	4	Gloucester_Campus_Map.pdf	University of Gloucester	
	5	USW-A4-Campus-Map---Treforest.pdf	USW	
	6	USW-A4-Campus-Map---Cardiff.pdf	USW	
	7	streatham-campus-map.pdf	University of Exeter	
	8	penryn-campus-map.pdf	University of Exeter	
	9	/st-lukes-campus-map.pdf	University of Exeter	
	10	university-campus-map-bath.pdf	University of Bath	
	11	Frenchay-Campus-Map.pdf	UWE	
	12	bower-ashton-map.pdf	UWE	
	13	glenside-campus-map.pdf	UWE	
	14	campus_map-oct_2018_Bristol.pdf	University of Bristol	
	15	Langford Campus Map	University of Bristol	
	16	Newton-Park-Campus.pdf	Bath Spa University	
	17	locksbrook-campus-map.pdf	Bath Spa University	
	18	Cyncoed Campus Map A5 - 09.23 ENGLISH - with logo	Cardiff Metropolitan	
	19	Llandaff Campus Map A5 - 09.23 ENGLISH - with logo	Cardiff Metropolitan	
	20	CU_Location2022_ENG_Web.pdf	Cardiff University	

PBSA	University websites and ANUK	Information about private developers came through ANUK (including information about the date they were registered and bedspaces). Information about university owned and nominated bedspaces was extracted directly from the university websites. The *Notes on Methodologies* (pages 21- 22) section provides details on how rents were calculated Just under 200 developments were mapped.
Planned PBSA	Bristol Open Gov website	Detailed information (from September last) year for Bristol planned PBSA
Train Stations, Museums, State Schools with 6th forms, Hospitals, Museums and Art Galleries	Open Street Map used with QGis.	Using QGIS to search through Open Street Map for buildings under different categories was mostly successful. However, there was a considerable amount of filtering needed (especially on the school's layer). Some anomalies have been picked up when checking the maps and manually corrected.

SIC Data	ONS https://commonslibrary.parliament.uk/constituency-data-businesses/ ONS Shapefiles	The data was downloaded, analysed, then linked to Westminster Parliamentary Constituency shapefiles.
IMD data	https://data.cdrc.ac.uk/dataset/index-multiple-deprivation-imd	Because of the slight difference between English and Welsh IMD, I used the harmonised 2019 version.
Westminster Election Results	https://commonslibrary.parliament.uk/research-briefings/cbp-10009/	Linked to Westminster Constituency shapefiles
Local Ward Boundaries	https://www.ordnancesurvey.co.uk/election-maps/gb/	Used for WECA map
Further Education Colleges	Google searches and AI	Manual searches
Science Parks	Google searches and AI	Manual searches
GW4 and Other Universities	HESA public data on student numbers	Open data available from HESA. Additional data could be mapped I necessary. Links to accounts found through Google searches
HEI Estate Projects	Google searches	Information displayed only refers to new buildings/construction rather than the upgrading of existing buildings.

Students By LSOA	HESA termtime address data (paid for data) LSOA shapefiles: https://www.data.gov.uk/	HESA data is under licence and will expire in one year. Full details are included under the Licences section. There are other ways that the data could be mapped.
Travel Isochrones	Produced using the Travel Time plugin in QGIS	Sense checked on some locations and broadly found to be accurate.

Glossary of acronyms

GW4	"The GW4 Alliance (also known as GW4) is a consortium of four research intensive universities in Southwest England and Wales."	https://gw4.ac.uk/
Set Squared	"SETsquared is a unique enterprise partnership and a dynamic collaboration between the six leading research-led UK universities of Bath, Bristol, Cardiff, Exeter, Southampton and Surrey. As a world-leading business incubator, we provide a wide range of highly acclaimed support programmes to help turn ideas into thriving businesses."	https://www.setsquared.co.uk/
WECA	"The West of England Combined Authority was set up in 2017 to make decisions and investments that benefit people living and working in Bath and North East Somerset, Bristol and South Gloucestershire. Together, our aim is to deliver economic growth for the region and address some of our challenges, such as productivity and skills, housing and transport."	https://www.westofengland-ca.gov.uk/
IMD	Index of Multiple Deprivation: The Index of Multiple Deprivation is a relative measure of deprivation.	https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019
SIC	Standard Industry Classification: The UK Standard Industrial Classification of economic activities, abbreviated as UK SIC, is a five-digit classification providing the framework for collecting and presenting a large range of statistical data according to economic activity.	Link

LSOA	Lower Super Output Area: LSOA stands for Lower Layer Super Output Area. It's a statistical area used by the Office for National Statistics (ONS) in England and Wales to report data, particularly from the census. LSOAs are designed to be relatively small and homogeneous, with populations typically between 1,000 and 3,000 people.	Link
HESA	Higher Education Statistics Agency	https://www.hesa.ac.uk/

Notes on Methodologies

SIC data:

Data on how many businesses by SIC code and Parliamentary constituency was easily available. However, calculating the gross turnover of all businesses was problematic.

The SIC data includes a section on how many businesses within a constituency are in which band of turnover, as per below).

	Turnover Size Band (£000's)									
	Band 1	Band 2	Band 3	Band 4	Band 5	Band 6	Band 7	Band 8	Band 9	Band 10
	0-49	50-99	100-249	250-499	500-999	1000-1999	2000-4999	5000-9999	10000-49999	50000+
E14001131 : Bristol Central	895	1,140	1,885	930	590	430	330	140	125	45

To calculate the estimated gross turnover of all businesses, I took the midway point of each category. So, for the smallest category:

(0+49)/2=24.5

I then multiplied this figure by the number of businesses within the constituency within that category. So, for Bristol Central:

(24.5*895)*1000= £21,927,500

This is transparent but not very accurate as within each constituency there may be more businesses at the lower or higher level of a band. They are unlikely all to average out at exactly the midpoint. The last category of business with the highest turnover also doesn't have a midpoint as it is £50,000 +.

Initially, I tried to find a pattern in terms of the banding levels. So, for example, the following bands all doubled in size:

1, 2, 4, 5, 6 and 8.

However, bands 3 and 8 increased by a factor of 2.5, whilst band 9 increased by a factor of 4. In the end, I settled on band 10 increasing by a factor of 2.5 as I had to include something. When this formula was applied the results nationally appeared intuitively to be broadly accurate, at least as far as deciles are concerned. However, they are estimates based on some guesswork rather than statistically valid.

IMD data: Because English and Welsh IMD datasets are calculated separately, I needed to use a harmonised dataset. The CRDC has the following to say about this dataset:

"Simple (non-reweighted) combination of the English IMD 2019, Welsh IMD 2019, Northern Irish MDM 2017 and the Scottish IMD 2020 deciles. For each country, 10% of areas fall in each decile. Each country's IMD is calculated according to slightly different criteria, and ranked within the country only, so deciles cannot be compared between countries. The shortcomings of this approach are acknowledged, nevertheless the approximation is still useful for some other CDRC products which use it, e.g. handling cross-border moves in CDRC Residential Mobility and Deprivation (RMD). Local authority districts are LAD19CD".

PBSA data: Annual maximum and minimum rents were for the minimum length of tenancy available that would correspond to a year's study. Universities generally offer tenancy lengths of 38-44 weeks, whilst private developers more typically offer 51–52-week tenancies.

Rent data was collected at the beginning of 2024. There are some developments that have since announced rents for 2025-2026 that are between 3-5% higher, except for Exeter where rents appear to have either held steady of been reduced.