

Technical Development of “Local Living” Mapping at the Highland Council

1. Introduction

An interactive mapping tool was created to support the provision of the Evidence Base for the delivery of a new Highland Wide Local Development plan. This document explains the approach taken to achieve the output deliver as an ArcGIS Online map here:

<https://highland.maps.arcgis.com/apps/instant/interactivelegend/index.html?appid=61119b67e8264086a5f25394c67190d7>

The mapping is intended to give the public and policymakers a better understanding of **the availability of selected services and their accessibility within a 10 minute (800 metre) walk distance**. This was carried out for the Settlement Development Areas (SDAs) and Growing Settlements defined and described in the existing Highland Council Local Development Plans.

The output below shows a snapshot of the mapping which, when described in the simplest of terms: The **dark green areas have the highest level of walkable services** with those areas shaded red and grey have the lowest levels.

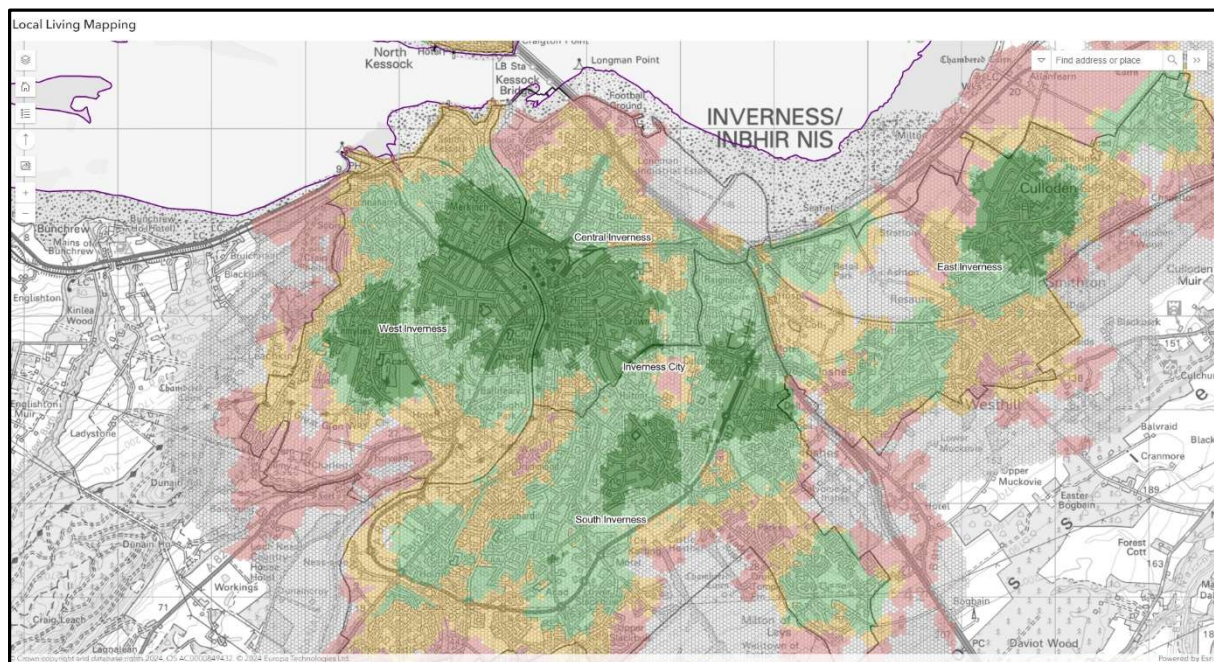


Figure 1. Overview of mapping

The underlying information used in this modelling is interrogatable at individual "cell" level and a "Total" score and individual service access score is allocated to each 50m cell. A pop-up box appears when a cell is selected by a mouse click as in Figure 2. Below. Each score displayed is relevant to the walkability of the service from this grid cell.

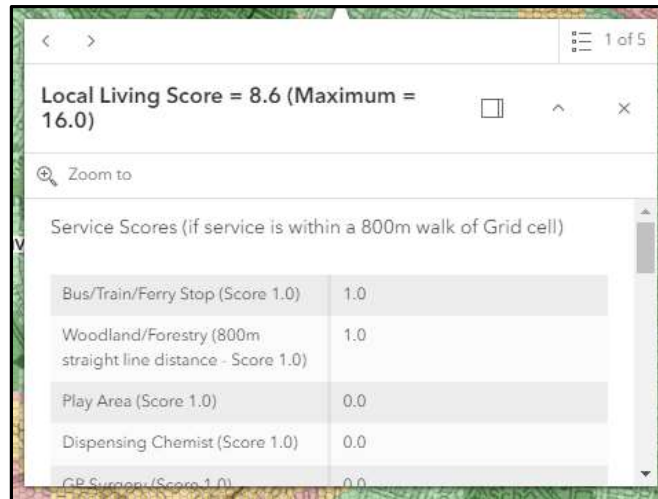


Figure 2. Cell pop-up box

As the user zooms into the mapping points representing the **individual service themes** used in the modelling become visible. These can be turned on and off individually or as a complete set within the **Individual Services** menu. (Figure 3.)

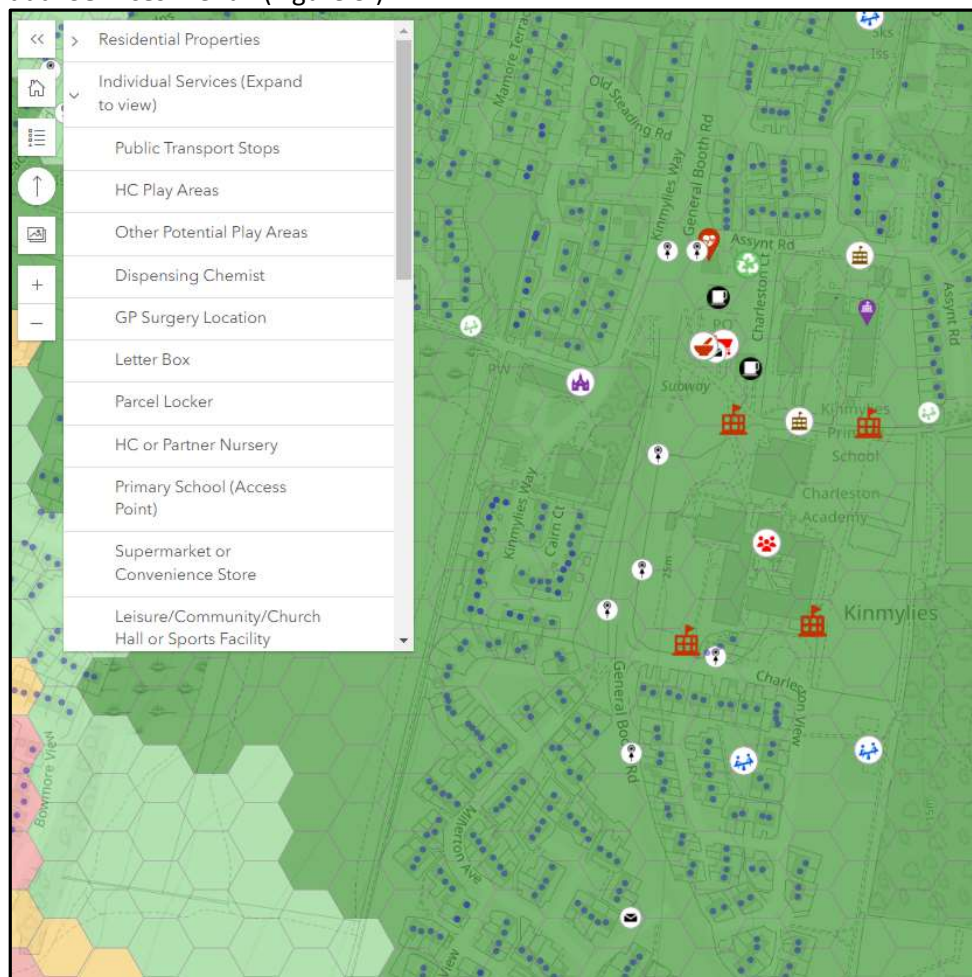


Figure 3. Individual Services

Zooming in further to the mapping tool and the Total walkability score (to a Maximum of 16.0) is displayed as a label for each cell allowing some comparison between areas (Figure 4.)

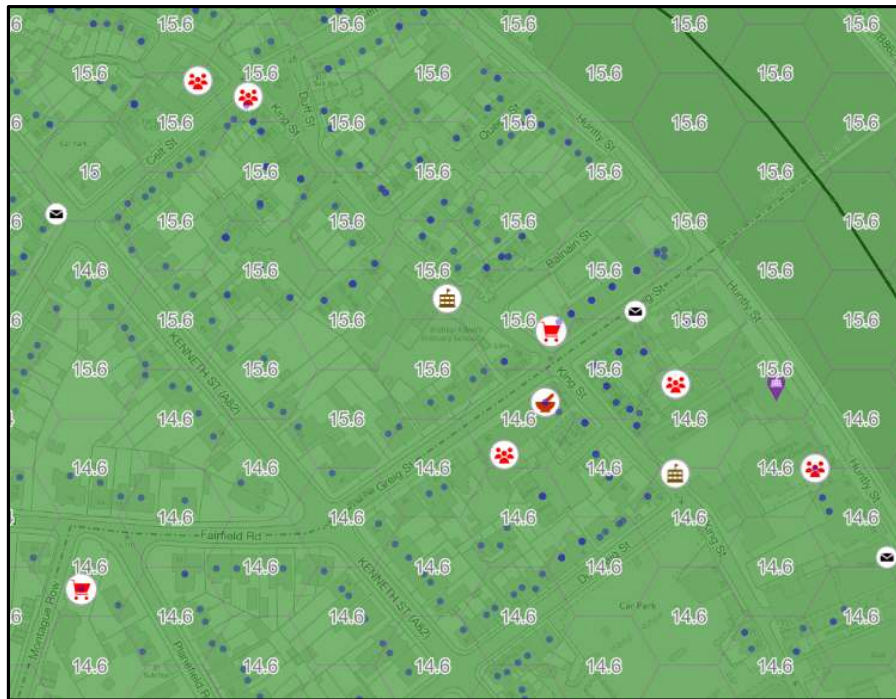


Figure 4. Cell Total Walkability Scores

The 800m buffers representing the walkability areas for each service are also available (but are turned off in the mapping by default to avoid clutter). Expanding the **800m Walk Buffers** group layer allows individual service areas to be turned on/off for inspection as required. Figure 5. Shows the Dispensing Chemist 800m walkability area.

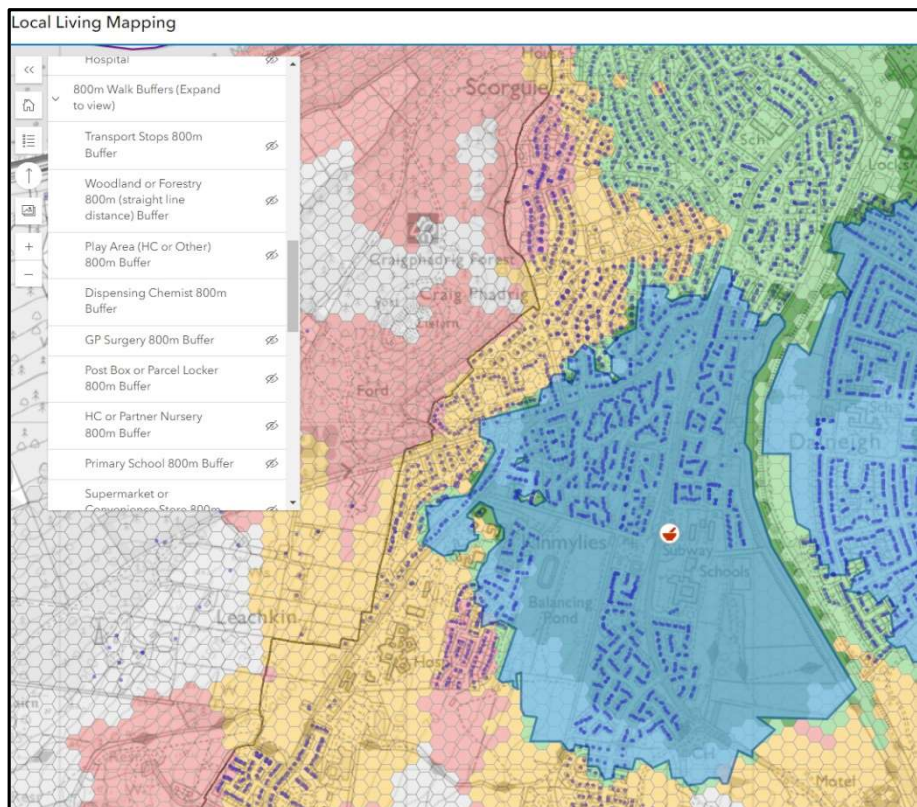


Figure 5. Dispensing Chemist 800m walkability area

The Legend is contextual to depending upon the content of the mapping screen, and changes with different zoom levels as features appear (i.e. it will display the symbology for features visible in the map). It is interactive meaning features can be turned on and off through the legend, as well as through the Layers list.

2. Methodology

The aim of this work was to enable easy identification and comparison of locations based upon availability of different services within a 10 minute walk (800 metre walking distance). A study of approaches taken elsewhere and a literature review was carried out including considering work by Local Authorities in Leeds, Fife, Falkirk, Manchester and Salford and Edinburgh and others in an attempt to identify a methodology appropriate for Highland Council area settlements.

Areas covered in this study are the Settlement Development Areas (SDAs) in the three Highland Council area Local Development Plans as follows:

- Caithness and Sutherland Local Development Plan (CASPLAN)
- West Highlands and Islands Local Development Plan (WESTPLAN)
- Inner Moray Firth Local Development Plan (IMFLDP2)

SDAs have defined boundaries and an 800 metre buffer was created outside these boundaries to be used to limit the areas included for this modelling.

Areas known as **Growing Settlements** were also included in the assessments. These do not have fixed external boundaries so a general area (above the Mean High Water mark for coastal areas) was chosen that includes the majority of existing residential housing in these described areas.

The Cairngorm National Park Authority (CNPA) produces its own Local Development Plan and is not included in this assessment however datasets have been collected and cleansed in the SDAs defined in the CNPA plan area.

3. Data Sourcing and Validation

There are several available "points of interest" type datasets that can be sourced that claim to provide the appropriate data for this type of study. These have typically been found to be based upon very historic snapshots of data with varied and often limited maintenance - especially relevant in less populated areas.

At the local level across the Highland Council area such shortcomings are very noticeable due to the very limited availability of some services. For this reason we considered that a comprehensive exercise to create a good baseline for the services themes chosen using validated and checked data was essential for this work.

Activities required included:

- identifying potential sources of data
- comparing and confirming the best source (typically the most current and accurate) for our purposes
- cleansing and updating the data to be used

- consideration of maintenance and updating of datasets going forward (including matching to the Council Corporate Address Gazetteer)

It was recognised that a pragmatic approach to some datasets would be required with an area as geographically extensive as the Highland Council area as service provision changes continually and no formal notification of such change is made for many closures and openings.

A variety of services are Highland Council or Hi-Life Highland provided (Libraries, Education etc.) for which data was available. Some service location listings are available from external service providers (NHS Open Data for GPs and Dispensing Chemists, Post Offices from Post Office Ltd, ATMs from the Link Network and Letter Boxes and Parcel Lockers from provider location finder tools). Other categories required data creation and collection, some of which was already underway (Highland Council Play Areas and Retail Audits) and some required cleansing using the Councils Corporate Address Gazetteer or Open Street Map data as a base for checking other sources against. The use of Google Maps (for shops and food outlets especially) and Google Streetview (where recent street capture was available) was valuable as an addition to base mapping and aerial photography for checking, cleansing and updating.

NOTE: Due to the constant change in some of the services (especially shops, takeaways and some other facilities) and the large amount of data involved (over 10,000 point features) it is accepted that some changes and errors in locations, services offered and site omissions are likely. Resource is not available to make this data 'realtime', instead it will be reviewed annually/at an appropriate frequency for each service.

The table in **Appendix 1** gives a description of the themes and their content for each layer used in the Local Living modelling and mapping. It also includes a count of features identified.

Representative point locations of "Residential Housing" in September 2023 are also included as a reference layer.

4. Mobile Services

The lack of indicated fixed points for the delivery of services within this mapping does not necessarily mean those services are not available in an area. The Highlands of Scotland and other more remote areas across the UK benefit from a range of services delivered as mobile services. In the Highland Council area these include:

- Fishmonger, Butcher and Groceries
- Libraries
- Cinema
- Hairdresser
- Banking
- Health Services
- Food/takeaway vehicles
- Etc.

Although some of these services have regular stops on a scheduled circuit, many are very difficult to track down and can change frequently with little widely advertised notice. For the purposes of this study such mobile services are NOT included at this point.

5. Measuring Walkability

Using the service delivery points as start locations - a 800m walking service area for each was created using Network Analyst tools in GIS. These service area polygons create a representation of the walkable area served by each.

The network used for this purpose was the Ordnance Survey NGD Transport Paths Network released in Autumn 2023. This includes a network paths and roads network that through initial testing was considered suitable for use in this exercise. With an area the size of the Highland Council area it is recognised that no dataset representing "paths" will be perfect and maintenance will always be limited and this dataset was used as supplied by Ordnance Survey without additional modification/editing.

In the case of the proximity to "Woodland" layer - all OS Mastermap Topo polygon features with Descriptive Group description containing the word "Coniferous" were used. An 800m buffer around the merged features was created. This is the only layer for which a "crow flies" distance of 800m was used as the computation of all possible walking routes from these polygon extents is overly complex.

6. Scoring approach

A target grid was created of hexagons 50m across covering the areas of Settlement Development Areas (plus an 800m buffer zone) for the three Highland Local Development Plan areas along with a selection of further areas described as "Growing Settlements" in the relevant local plans. The Cairngorm National Park Area is not covered by this work.

Where the target grid is overlapped by a service area polygon - this is considered to be a walkable (i.e. within 800m) grid cell and the relevant score for that category is applied (see weighting in table below).

In most cases - simply intersecting the walkable polygon gains the score however, in the case of "Other Shops" category, multiple overlapping walking catchments are considered scoring 0.2 each up to "5 or more" scoring 1.0. This gives an indication of walkable areas with access to a choice of multiple other shops.

7. Weighting

The range of services included were based on a review of other studies carried out in Academia, Government and used by other Local Authorities and the requirements identified in NPF4 guidance as a baseline. Weightings were considered (again based upon the work of others, especially the Leeds City Council study) identifying from those services considered important, which services and themes were the **most** important to exist locally within a walkable distance. The weightings used range from 1.0 (for those identified as essential) to 0.2 for other services identified as desirable but of a lower importance.

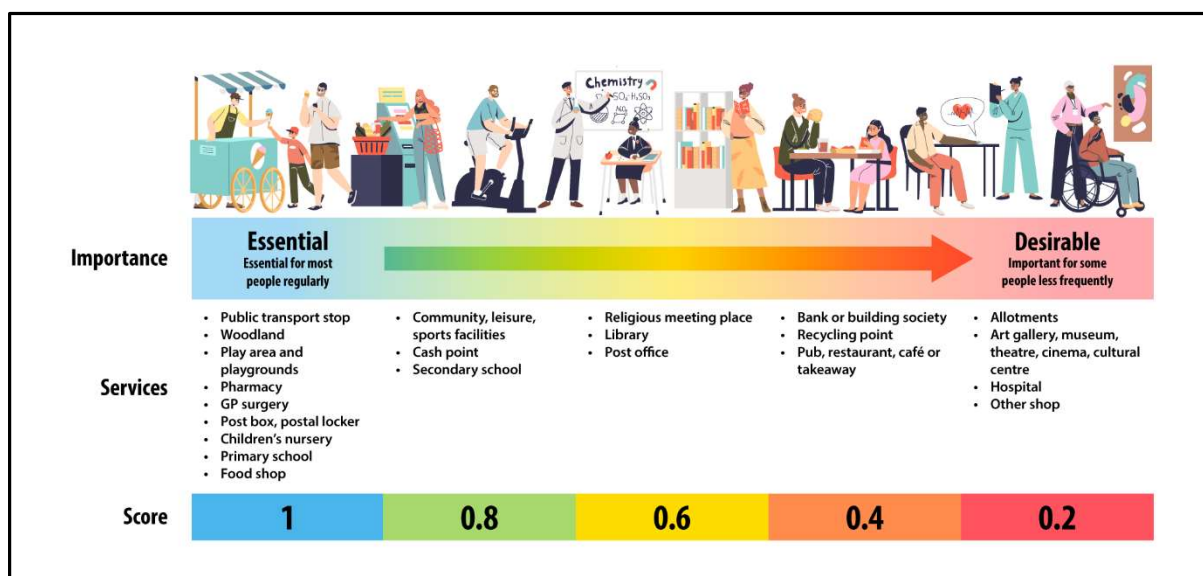


Figure 6. Weightings used

It is recognised that there are many wide-ranging views on both which services are important and the relative importance of each service. This applies especially at different life stages (young people, families, elderly etc.) and in different areas. How far such different needs are considered is an important question beyond the scope of this project, instead an approach attempting to cover a wide range of identified preferences was taken here. The modelled approach however can easily be re-used/amended to use different services and different weightings if this is required.

8. Outputs

To create a total or "Walkability Score" for each hex cell, the score applied to each service for hex cell was added together to create the TOTAL. Clicking on a cell in the Local Living Map exposes the individual scores per service and the Total. The thematic colour ramp applied is as follows:

Total Score	Description
12.0-16.0	Very High Level of Walkable Services
8.0-13.9	High Level of Walkable Services
4.0-7.9	Some Walkable Services
>1.1-3.9	Few Walkable Services
0-1.1	Very Few Walkable Services

Appendix 1.

Service Theme Name in Local Living Map	Count of Locations	Description of Service Theme Content	SOURCES
"Public Transport Stops"	3805	Transport stops taken from NAPTAN data April 2024 representing Bus Stops, Railway Stations and Ferry Landings.	NAPTAN
"HC Play Areas" and "Other Potential Play Areas"	481	322 Locations of Highland Council (HC) maintained Play Areas with equipment and potential non-HC Play areas (159) areas being audited - Summer 2024	Highland Council Playspace Audits and ongoing auditing Summer 2024
"Dispensing Chemist" (also shown as pharmacy)	81	The locations of "Dispensing Chemists" - from NHS Highland Open Data 21 locations operate from Health Centres or GP Surgeries.	NHS Open Data April 2024
"GP Surgery Location"	89	Locations of 89 GP Surgeries - From NHS Open Data - Dec 2023. Locations where surgeries are delivered.	NHS Open Data Dec 2023
"Letter Box" and "Parcel Locker" (also shown as post box)	943	Letter Boxes and Postal Lockers. Sourced from Royal Mail, Google Streetview, Open Street map and OS basemapping.	Locations identified from Google Streetview, Aerial Photography, Open Street Map, OS basemapping and Royal Mail Websites
"HC or Partner Nursery" (also shown as children's nursery)	186	Active Local Authority and Partner Nursery services Childcare services from Highland Council Education data	Highland Council Education data
"Primary School (Access Point)"	218	Primary School Entrances - Non-Denominational, Denominational and Gaelic Schools (171) . <i>Note that where there are multiple access points to larger sites these are included</i>	Highland Council Education data

"Supermarket or Convenience Store" (also shown as food shop)	220	The location of Large and Small Supermarkets and smaller stores that provide for typical daily needs shopping	Highland Council Corporate Address Gazetteer (CAG), Commercial Websites, Google Maps
"Woodland or Forestry 800m Buffer"	1 polygon	A combined polygon created using OS Mastermap Topo polygon data buffered to 800m to identify all areas within a straight-line distance of 800m from land with a Descriptive Term containing the word <i>"*Coniferous*"</i>	OSMM Topo Polygons
"Leisure/Community or Church Hall or Sports Facility"	700	Halls and centres including Public Halls/Village Halls/Other Community Facilities/Church Halls/Community Service Centres/Indoor Outdoor Leisure and Sporting Activity Centres and Health, Recreational/Social clubs.	Highland Council Corporate Address Gazetteer (CAG), Commercial Websites, Google Maps
"ATM"	199	Location of ATM/Cash machines both inside and outside shops	Link Network listings Jan 2024
"Secondary School (Access Point)"	69	Secondary School Entrances (to 29 Secondary Schools) - <i>Note that where there are multiple access points to larger sites these are included</i>	Highland Council Education data
"Religious Meeting Places"	439	Religious Meeting Places or places of worship for any religion	Corporate Address Gazetteer Open Street Map and OS Mapping with Google Streetview checks
"Library"	41	Fixed location public libraries	Hi-Life Highland Data
"Post Office"	115	Post Office locations from Post Office Ltd data	Post Office Listings
"Recycling Facility"	227	Recycling facilities locations	Highland Council Waste Team April 2024
"Bank or Building Society"	34	Banks and Building society fixed locations checked against supplier web sites in Spring 2024	Serve Supplier Web Sites and Google Streetview and Maps

"Pub, Restaurant, Café or Takeaway"	887	Place to eat, drink or takeaway food - this category attempts to identify "A place where a member of the public can walk to get food or a drink to either sit in and eat or take away".	Highland Council Corporate Address Gazetteer (CAG), Open Street Map, Web Sites, Google Maps
"Cultural"	135	Locations including Museums and Galleries, Cinemas, Theatres and Local Interpretive centres	Highland Council Corporate Address Gazetteer (CAG), Open Street Map, Web Sites, Google Maps
"Allotments"	24	Allotment Locations	Highland Council Allotment Site Data
"Other Shops"	1241	Selected other shops - this category is intended to cover places where walk-in shoppers would likely visit but excludes typical trade and bulky goods stores - often on industrial estates. It includes a mix of food and non-food shops such as gift/jewellery, butcher, toy shop, baker, general goods etc.	Highland Council Corporate Address Gazetteer (CAG), Open Street Map, Web Sites, Google Maps and Streetview Walkaround
"Hospital"	11	Locations of Hospitals with Emergency or Minor injury Services	NHS Open Data April 2024