# Reflection Report on Cartographic Practices

1. Personal Background

I hold a degree in Physical Geography with a research focus on dendroclimatology. My practical experience with mapping was limited to basic ArcGIS usage, so I began this course with minimal hands-on skills in digital cartography.

2. Description of Lab Maps

Lab 1: Map Composition

In the first week, I used QGIS to create a map focusing on composition and layout. The task involved loading contour and road datasets, adjusting symbology, and organizing map elements like titles, legends, and scale bars, as shown in **Fig. 1.** This lab improved my skills in data organization and symbology while highlighting areas for improvement, such as ensuring alignment and using consistent text sizes.
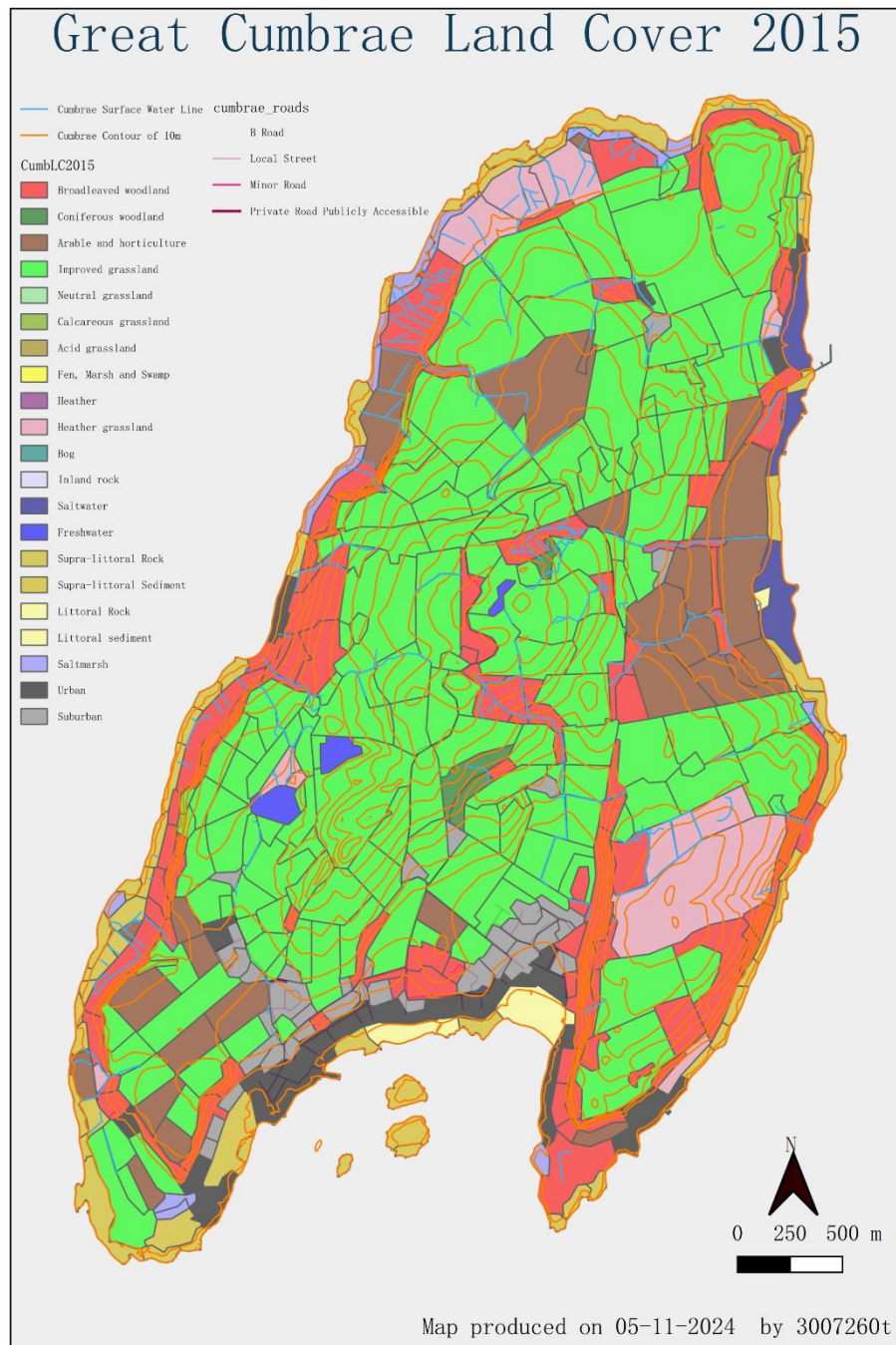
**Fig. 1** Great Cumbrae Land Cover 2015

Lab 2: Symbol Design and Labelling

This week focused on symbol design and labeling. I selected Greenock for its coastal
location, diverse features like roads, residential areas, and open spaces, and appropriate

scale. The sea area provided space for placing the legend, keeping the layout clean. This lab enhanced my ability to create multi-layered symbology and use labeling tools effectively. Later, I refined the map by adding named place labels and locator, unifying fonts, and adjusting legend placement for better balance. **Fig. 2(a)** is the original map while **Fig. 2(b)** shows the improved version.
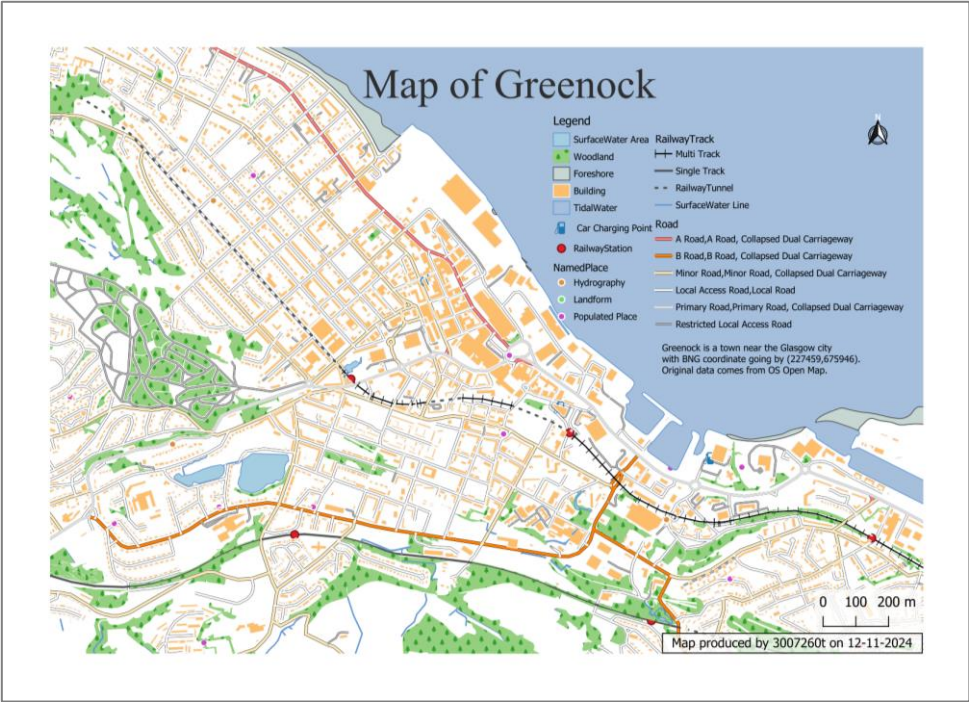
Fig. 2(a) Map of Greenock
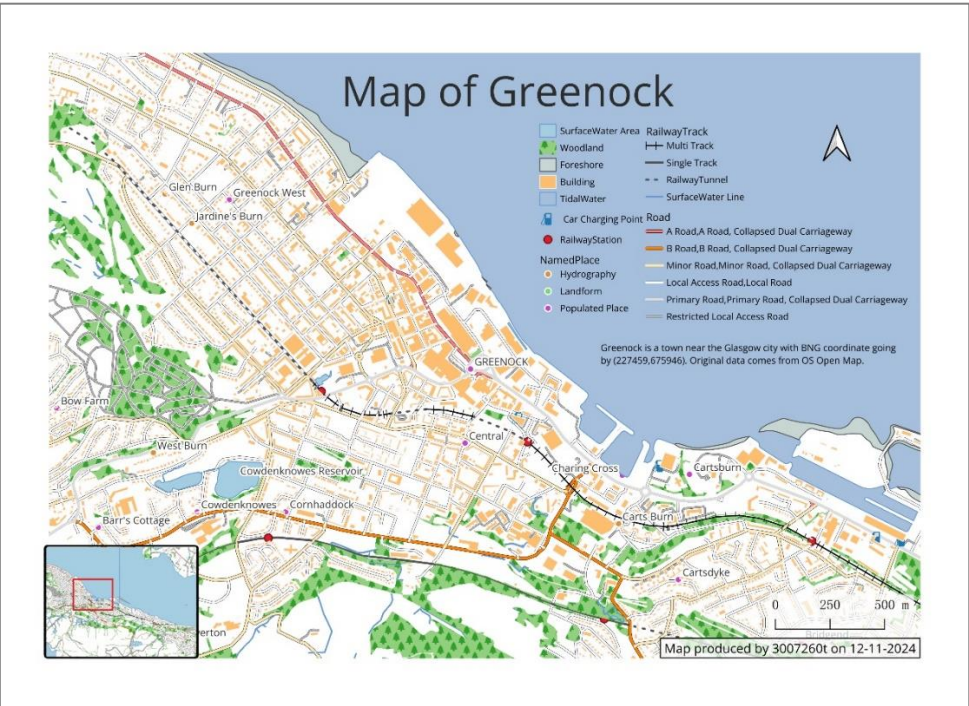
Fig. 2(b) Map of Greenock – Refined Version

Lab 3: Terrain Mapping

In this lab, I used QGIS to create a terrain map with Digital Terrain Models (DTM). I applied a green gradient to represent elevation and added hillshading for depth, alongside labeled contour lines. These methods helped balance detail and readability, especially for steep terrains around Gourock, as shown in **Fig. 3.**

Fig.3 Hillshade Terrain Map of Gourock with The Surrounding Area

Lab 4: Statistical Mapping

I created six statistical maps visualizing Glasgow's income deprivation, including choropleth, dot density, and proportional symbol maps, as shown in **Fig. 4**. By applying classification methods like equal interval and natural breaks, I effectively represented spatial patterns and deepened my understanding of statistical mapping techniques.
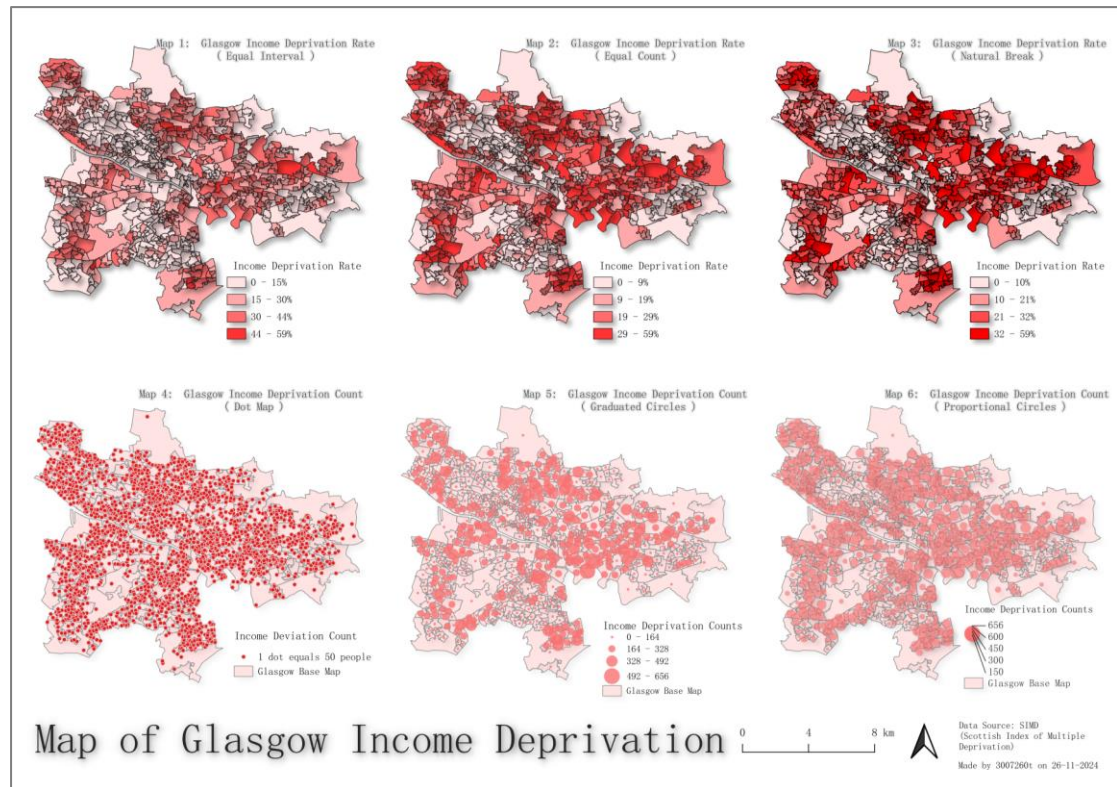
Fig.4 Map of Glasgow Income Deprivation

Lab 5: Python Mapping

This lab introduced Python-based mapping in Google Colab. Using GeoPandas and Plotly, I created static and interactive maps with classification methods and proportional symbology, as shown in **Fig. 5**. This provided valuable experience in automating map production and adding interactivity, such as hover functionality to display detailed data.

Fig.5 Four Maps of Glasgow Income Deprivation

3. Reflection on Progress and Learning

From Week 1 to Week 5, my maps improved greatly, showing clear progress in technical skills and understanding of design. In the **first week,** while the map layout was neat, the title was not descriptive enough, and the fonts did not fully match the design. By the **second week**, I improved in symbol design and labeling, producing clear symbology for Greenock's different features. However, issues like misaligned legends and missing named place labels affected the map's overall balance.

In **Week 3**, the terrain map combined contours, hillshading, and elevation gradients to create a detailed and useful visualization. However, the contrast between mid and high elevations could have been clearer, and the lack of a locator map reduced the map's context. By **Week 4**, the statistical maps had better color consistency and looked more balanced, though overlapping symbols in the proportional circle map needed improvement. In **Week 5**, Python mapping made the workflow faster by automating tasks, but there is still room to improve features like legends for dot density maps.

4. Further Improvements and Actions:

4.1 Title Improvement: Following Keates (1989), I plan to make map titles more specific and descriptive by including details like the map's content and time, such as changing "Map of Cumbrae" to "Great Cumbrae Land Cover 2015."

4.2 Color and Symbol Optimization: As suggested by Brewer and Harrower (2003), I will use stronger and more thematic color schemes, like red-blue gradients, to highlight differences and make patterns clearer.

4.3 Layout Balance: To make layouts better, I will group legends logically, adjust spacing between elements, and reduce overlaps for a cleaner and clearer design, following MacEachren (1982).

4.4 Data Narration and Interpretation: Based on Keates (1989), maps should tell a story. I will add short notes to highlight data trends and important areas, like "High income deprivation in the east," to make the map more useful.

4.5 Integration of Maps and Background: Including small locator maps or other geographic details will give better context, such as showing where Greenock and Gourock are within the UK.

4.6 Cartographic Method Innovation: I will try advanced ideas like using color gradients in proportional circle maps to show more data and improve the depth of the analysis.

5. Summary of My Reflection.

From the first to the fifth week, I went from basic knowledge about mapping to learning cartographic principles and gaining useful skills in QGIS, as well as some experience with coding-based mapping.

Over this time, I improved not only in technical skills but also in how I approach learning. I got better at designing maps, using symbology, and creating balanced layouts. These skills helped me make maps that are both clear and easy to use. At the same time,

I learned the importance of paying close attention to small details, like margins and alignment, which could have avoided some mistakes in earlier tasks. This reflection encourages me to take more care with future work and make sure I meet all the requirements.

In the future, apart from improving technical skills such as creating specific titles, using clear and strong color schemes, and enhancing layout clarity, I will continuously explore new mapping techniques, including refining the integration of mapping with Python and experimenting with innovative methods.

6. References

- Brewer, C.A., & Harrower, M. (2003). ColorBrewer.org: An Online Tool for Selecting Colour Schemes for Maps. Available at: https://colorbrewer2.org/ (Accessed: 10 December 2024).
- Foster, M. (2019). 'Statistical Mapping (Enumeration, Normalization, Classification)', The Geographic Information Science & Technology Body of Knowledge (2nd Quarter 2019 Edition), John P. Wilson (Ed.). DOI: 10.22224/gistbok/2019.2.2.
- Golebiowska, I., Korycka-Skorupa, J., and Slomska-Przech, K. (2021). 'Common Thematic Map Types', The Geographic Information Science & Technology Body of Knowledge (2nd Quarter 2021 Edition), John P. Wilson (Ed.). DOI: 10.22224/gistbok/2021.2.7.
- ICA (2020). The World of Maps. Available at: https://icaci.org/publications/the-world-of-maps/ (Accessed: 10 December 2024).
- Keates, J.S. (1989). Cartographic Design and Production. Longman Scientific & Technical, Harlow, UK.
- Slocum, T., McMaster, R., Kessler, F., & Howard, H. (2009). Thematic Cartography & Geovisualization. Chapters 14-19. Prentice Hall, Upper Saddle River, NJ.