



## ANALYSIS OF HOUSING PATTERNS OF NUWARA ELIYA LANDSCAPE

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**Abstract:** Studies on Landscape mainly done in early history by using Carl O. Sauer's Morphological Approach to landscapes, but after that Kniffen's study on Louisiana housing types played a major role in empirical studies on landscapes. These ideologies opened a new entrance to study Cultural landscape as a representation upon Natural landscape. However with the modern technology and resources, studies on landscape become more accurate and easier to for geographers to analyse and represent their findings. Therefore this study based on perceiving Nuwara Eliya Landscape by using field exercises to analyse its housing plan and structure covering the most settlement dense areas. For that used spatial tools with data analysing tools such as Satellite Images, Google Earth pro, Arc GIS and Ms Excel. Also this is one of the most recent (2019 June) study of representing the modern cultural landscape and its evolution in Municipal Council Area of Nuwara Eliya. Due to these reasons this study is important for decision making in urban planning and management in Nuwara Eliya as a catalogue to distinguish and separate areal diversity in Urban Cultural Landscape of Nuwara Eliya.

**Keywords:** Morphological Approach; Cultural Landscape; Natural Landscape; Nuwara Eliya

### 1. Introduction

Under the studies of man-made landscape, reading a landscape has become more important than observing a landscape. Therefore recent studies of urban and cultural landscape started to focus on field-based empirical studies rather than considering map based or remote sensing based studies. Nuwara Eliya is one of the most tourist attracted cities in Sri Lanka due to its natural beauty as a hill station. It is also called 'Little England' because of the influence of British colonial Era. Nuwara Eliya urban landscape is very dynamic comparing to other cities due to its multi-cultural society and multi-dimensional economic activities.

Therefore this study focuses on reading one of the most dynamic urban landscapes in Sri Lanka by considering its housing patterns and structure. In the beginning of the paper, author discusses about the evolution of Nuwara Eliya urban landscape to get an idea about reasons behind the making of this landscape. After that, author hopes to interpret about the recent urban landscape of Nuwara Eliya municipal council area by using the data taken from the field exercises on June 2019. The latter part of this paper focuses on findings of the study with critical discussions about those finding and their practical applications in decision making process.

The main objective of this study is to analyse the spatio-temporal changes of Nuwara Eliya urban landscape by perceiving it, not only as a physical structure but also as a human involving process. Therefore this study is important to urban development planning and management activities in Nuwara Eliya municipal council area as a study which represents the spatial diversity of the settlements by covering whole the urban landscape as samples.

## 2. Methodology

### 2.1 Study Area

Nuwara Eliya municipal council area is located in Eastern side of Nuwara Eliya District, Central Province of Sri Lanka. It has become home to approximately 6900 families and 49000 of population, including 670 business places, 08 quality hotels and 41 holiday homes.

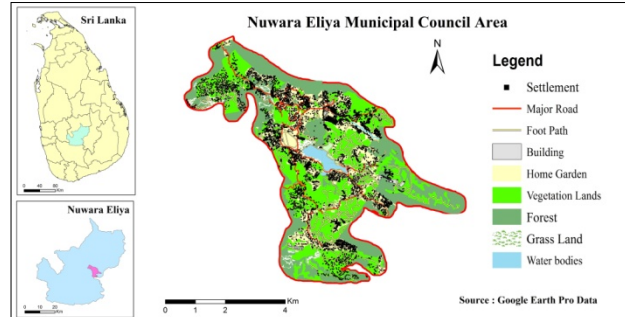


Figure 1: Study Area

### 2.2 Methodology

As the first step settlement distribution map was created for Nuwara Eliya municipal council area by using Google Earth Pro data as data source. Then by using ArcGIS, ArcMap10.5 spatial analyst tools, point density, made the settlement density map of the area to find out the densest areas within the municipal council boundary.

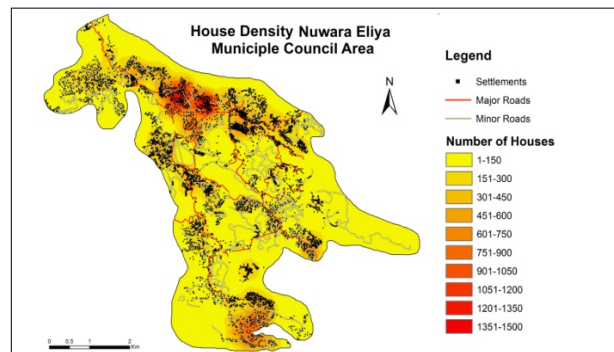


Figure 2: Settlement Density Map

From the settlement density map choose six (06) core areas with high settlement density by covering whole municipal council area and from the core to 0.5Km radius distance area has taken as the sample of the study.

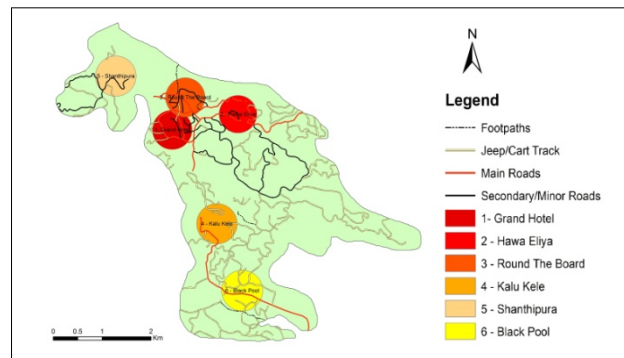


Figure 3: Sampled Areas of the study

After that, from a certain road housing pattern and structure data recorded by including roof, door, window, gate and garden to survey sheets by covering all six sampled areas.

Those data analysed by using analysis tools such as SPSS, Ms Excel, ArcMap and Ms Word to identify landscape patterns. Finally those data represented individually and collectively with brief interpreta-

tions and comparisons for making decisions on urban planning and management in Nuwara Eliya municipal council area. Due to the limitation of pages all the result tables, figures, maps and charts are not included in this paper.

### 3. Results and Discussion

#### 3.1 Natural landscape of Nuwara Eliya

Nuwara Eliya was gifted by the Mother Nature one of the most beautiful natural environments due to its elevation and climate. Natural Landscape of Nuwara Eliya was considered by following main four (4) parameters as geomorphologic, climatic, hydrologic and biologic components.

Nuwara Eliya city is one of the highest plains in the Central Highland of Sri Lanka which is surrounded by mountain ranges such as Pidurutalagala (2,524m) and Kikiliyamana (2,240m) with 1,868m altitude from mean sea level. It consists with numbers of waterfalls, cliffs, plain areas, valleys, mountains and Red-Yellow Podzolic soil.

It has Subtropical Highland Climate with average temperature 16°C which ranges from 11-20°C and 70- 225mm monthly rainfall with 1900mm annual rainfall. Humidity level is between 65%- 87%, mist and speedy winds are common. This area is the coldest area in Sri Lanka all over the year.

This area is abundant with natural springs and streams in micro watersheds. Waterfalls such as Deon fall, St. Clears fall, Lovers Leap, Glen Falls and Bakers Falls make this area rich in natural beauty. Also the most of high level streams in the country are starting from this region.

Nuwara Eliya has a unique ecological zone of wet Patana grassland (Horton Plains) and cloud forest (Haggala) with rich biodiversity-habitat for various kinds of flora and fauna. Land area was dominated by cloud forests or mountainous rainforests.

**a. Cultural landscape and its evolution**

Evolution of Nuwara Eliya cultural landscape can be divided in to four (4) main time periods as Pre-colonial era (before 1815), Colonial era (1815-1948), Period of after independence (1948-1977) and Period after the open economy (1978 to today).

According to Sauer (1925), cultural landscape consists with four main forms including population, housing, production and communication. Therefore in this study focuses on above forms according to four main time periods by considering Nuwara Eliya cultural landscape.

Table 1: Cultural landscape in Pre-colonial era

Forms	Pre-colonial era (before 1815)
Population	<ul style="list-style-type: none"> <li>No Population</li> </ul>
Housing	<ul style="list-style-type: none"> <li>No settlements</li> </ul>
Production	<ul style="list-style-type: none"> <li>Thick forest</li> </ul>
Communication	<ul style="list-style-type: none"> <li>City has governed by Kandyan kingdom</li> <li>Agency –‘Kaddupulle’</li> <li>Used Elephants and Buffaloes for transport</li> </ul>

Table 2: Cultural landscape in Colonial era

Forms	Colonial (1815-1948)
Population	<ul style="list-style-type: none"> <li>Identified in 1815 by British</li> <li>Declared as a city in 1848</li> <li>Pop: Growth- 1878, 1897</li> <li>Declared as a MC -1949</li> <li>William Gregory and Foreign merchants arrival</li> </ul>
Housing	<ul style="list-style-type: none"> <li>Holiday homes, shelters</li> <li>Barnes hall, Keena ,Carlton, St. Andrews Hotels</li> <li>1910- 2 Sri Lankan owned houses</li> <li>Tudor style Architecture</li> <li>Bakers ward</li> </ul>
Production	<ul style="list-style-type: none"> <li>Tea, Coffee , Cinchona</li> <li>Oats, barley and Gem industry</li> <li>William Horton- Vegetables and animal farming</li> <li>Baker’s Agricultural Farm</li> </ul>
Communication	<ul style="list-style-type: none"> <li>Indian Tamils were Familiar with English</li> <li>Sound system- work hour, conch</li> <li>Post service, train mailing</li> <li>Railway construction-Edward Barnes</li> <li>Cow cart used by Robert London</li> </ul>

Table 3: Cultural landscape after independence

Forms	After independence (1948-1977)
Population	<ul style="list-style-type: none"> <li>• Increased after world war 1 -1918</li> </ul>
Housing	<ul style="list-style-type: none"> <li>• Increased after world war 1 -1918</li> </ul>
Production	<ul style="list-style-type: none"> <li>• Tea and Coffee</li> <li>• Vegetables and fruits</li> <li>• Animal Farming</li> </ul>
Communication	<ul style="list-style-type: none"> <li>• Letters</li> <li>• Train mailing</li> <li>• Telecommunication</li> </ul>

Table 4: Cultural landscape after open-economy

Forms	Open Economy (1978 to today)
Population	<ul style="list-style-type: none"> <li>• Increased the population</li> <li>• Current- 49000 of population</li> </ul>
Housing	<ul style="list-style-type: none"> <li>• Line Houses, Hotels, Holiday homes, Restaurants</li> <li>• Business places</li> <li>• Government offices</li> </ul>
Production	<ul style="list-style-type: none"> <li>• Tea, coffee</li> <li>• Vegetables and Fruits</li> <li>• Ornamental farming</li> <li>• Dairy production and animal husbandry</li> <li>• Home gardens</li> <li>• Tourism industry, Food</li> <li>• Warm Clothes</li> </ul>
Communication	<ul style="list-style-type: none"> <li>• Postal ,telecommunication</li> <li>• TV and radio transmission towers</li> <li>• State communication</li> <li>• Main roads and railway development</li> </ul>

Due to these changes housing patterns and structures in urban landscape of Nuwara Eliya is dynamic spatially.

### 3.3 Housing patterns and Structure

In here findings and interpretations of this study has presented individually according to six sample areas.

#### 3.3.1 Grand Hotel Area

This area is dominated by the earliest settlements of Nuwara Eliya which belong to colonial era such as Grand Hotel, Post Office, Hill Club and Queen's Cottage. Most of these houses have converted to tourist hotels with the least modifications on outer housing structure.

These houses were built adapting to cold environmental conditions with thick walls, small windows with chimneys on the roofs. Housing structures are showing a same historical pattern and new built houses are modernized, (Araliya Grand Hotel) but older houses are modifying by protecting their historical value. Land cover has dominantly taken by flower gardens to represent a royal view. Comparing to other urban areas these lands are very expensive but they use for increasing the beauty of the area and not for economic activities.

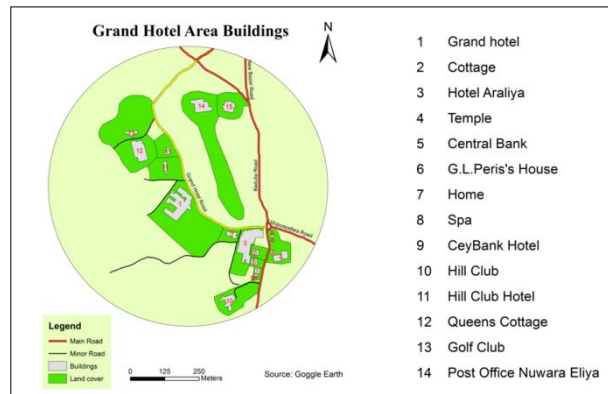


Figure 4: Grand Hotel Area

Houses in this area look like some of the houses in England. There-foreassume that British Colonial effect has directly or indirectly caused to make this landscape. However due to this historical beauty tourists are attracting to this area rather than other areas in Nuwara Eliya city. As a result of that historical landscape is still maintaining by the people and the government.

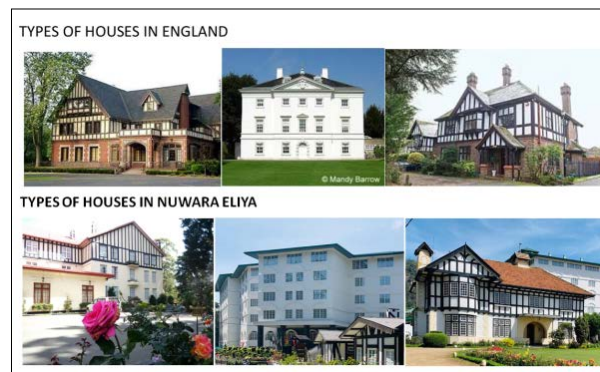


Figure 5: Comparison of houses in England and Nuwara Eliya

### 3.3.2 Hawa Eliya Area

According to the housing characteristics, this area does not have any colonial housing structures and the most of the buildings are new-built ones according to their own housing structures.

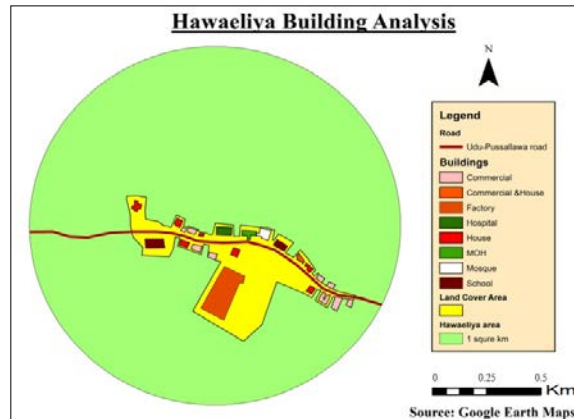


Figure 6:HawaEliya Area

Only 5% of houses are old houses with small doors and chimneys, public buildings such as school, hospital, MOH office have taken a large land area. Houses are common with small attached shops by showing a growing commercial area. Comparing to NuwaraEliya town built- areas are less in this region and shows sub-urban characteristics of an emerging urban landscape.

### 3.3.3 Round the Board Area

Here focuses about the building types and housing structures of Bandaranyake Road - Udaopussallawa Road near to Nuwara Eliya town as the highest settlement dense area in the municipal council. The area almost all covered by built-areas including commercial, government and private sector buildings.

80% of buildings have more than one storey with flat-shaped concrete roofs and glass windows towards the main road. Most of these buildings are commercial buildings and extend without any space among buildings.

Land cover only can see in government sector lands, but private sector and commercial lands are dominated with concrete floors. This area consists with high building density and higher number of economic activities inside those buildings. According to these character-

istics this area is highly urbanized landscape in Nuwara Eliya municipal council area.

### 3.3.4 Kalukele Area

This area has two types of housing patterns and structures, some of them are luxury houses and others are ordinary houses. Luxury house type distributes near to the Lake Gregory with box shaped small windows, triangular green colour chimney roofs, white colour walls with black strips and flower gardens surrounded by concrete fences under the influence of British housing structure.

But ordinary house type distributes away from the Lake Gregory with decorated windows, flat & slightly triangular roofs, multi-colour walls such as pink, white, gray & yellow, generally without concrete fences and less flower gardens with high vegetable gardens in the land cover.

This area is a mixture of historical and rural housing patterns and structures rather than urban housing structures.

### 3.3.5 Shanthipura Area

Shanthipura is the highest village in Sri Lanka from the mean sea level. The area mainly consists with four kinds of housing structures such as estate line houses, tea factories with offices, Bungalow or castle type hotels and individual houses.

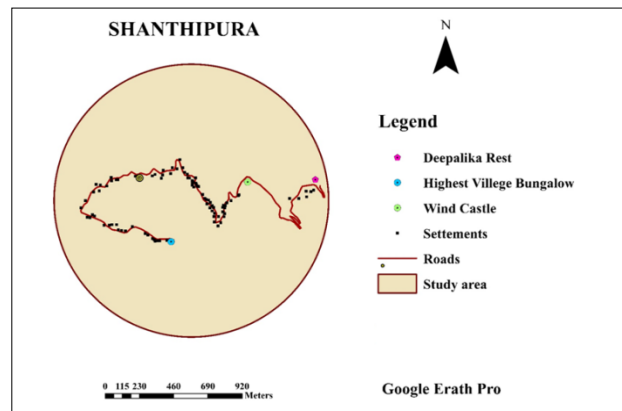


Figure 7:Shanthipura Area

Estate line houses are dominant in the area with 62% comparing to other housing structures. They spread throughout Oliphant estate and hilly area near to tea factory. Mainly distributed as linear and cluster



settlement patterns. Houses are attached to each other and roofs are made of iron sheets with the least comfortable facilities.

Tea factory is located in the middle of the estate near to the estate bungalow which located upon a little hill. Factory consists two storey and estate bungalow made by following cold climate housing structure. Due to the recent tourist attraction new hotels take place in the area and some of them look like castles.

Individual houses spread all the area randomly without any specific pattern, but according construction materials they are different from line houses.

### **3.3.6 Black Pool Area**

This area is dominated by tea and vegetables cultivation. Houses are distributing with a considerable distance from each other and surrounded by own vegetable gardens and tea plantations. Most of houses have one storey but the houses which have built for economical purposes such as hotels and shops have more than one storey. Housing pattern is mixture cluster and linear pattern.

Built-area is very less comparing to other areas and it gives a close look of rural settlement area.



Figure 8: A house in Block Pool Area

## **4. Conclusion**

Housing patterns and structure in municipal council area of Nuwara Eliya spatially dynamic mainly due to British colonial effect, Economic activities such as tea industry and tourism and government influence. Therefore it consists with,

- Historical housing pattern in Grand Hotel area landscape.
- Sub-urban housing pattern in Hawa Eliya area landscape.

- Fully-urbanized housing pattern in Round the Board area landscape.
- Historical and rural mixture housing pattern in Kalukele area landscape.
- Estate and line-settlement housing pattern in Shanthipura area landscape.
- Rural housing pattern in Black Pool area landscape.

This spatial variation is questioned the demarcating of urban areas by the government without respecting to their urban characteristics. However in urban planning and management activities ‘identify the different characteristics in different regions’ is important in decisions making process to implement the most suitable alternatives to certain areas for sustainable urban development. Therefore this study provides a guideline to understand those different characteristics in different regions of Nuwara Eliya municipal council area. Finally according these findings can state that Nuwara Eliya urban landscape is one of the most dynamic urban landscapes in Sri Lanka.

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