

Development Unit Projects

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Land Management System

Introduction

Land management is an interdisciplinary field crucial for the sustainable stewardship of land resources. It encompasses a wide array of strategies, policies, and practices aimed at ensuring responsible land use, conservation, and administration. At its core, land management seeks to strike a delicate balance between meeting human needs and preserving ecological integrity. This involves integrating various perspectives, including economic development, environmental conservation, social equity, and cultural preservation. Through careful planning, regulation, and engagement with stakeholders, land management endeavours to promote sustainable outcomes that support both human well-being and ecological resilience. By addressing challenges such as land degradation, habitat loss, and climate change, effective land management plays a vital role in fostering resilient and prosperous societies while safeguarding natural resources for future generations.

Description about the Project

Previous Land Management

Before introducing the new land management system, land management in Sri Lanka relied on manual data collection and storage methods. Each district across the country submitted land-related data to the designated paraplegic officer, who was responsible for overseeing land management activities in their respective areas. This data, which included information on land use, ownership, transactions, and other relevant details, was compiled and stored in separate Excel sheets.

However, this manual process presented several challenges. Firstly, the data received from each district was stored in individual Excel sheets, making it cumbersome to aggregate and analyze information across the entire country. This fragmented approach hindered the ability to gain a comprehensive understanding of land-related trends and issues at the national level.

Moreover, the monthly data received via email added another layer of complexity to the process. Each month, the officer had to sift through numerous emails containing Excel attachments, extract the relevant data, and manually input it into the corresponding Excel sheet. This manual data entry process was not only time-consuming but also prone to errors, as it relied heavily on human intervention.

Furthermore, the reliance on Excel sheets for data storage posed significant risks. If the Excel files were damaged or corrupted for any reason, retrieving and recovering the data became a daunting task. This lack of robust data management systems made it challenging to ensure the accuracy, reliability, and integrity of land-related information.

Additionally, the person responsible for managing the data had to invest considerable time and effort into maintaining and organizing the Excel sheets. This manual data management process not only consumed valuable resources but also diverted attention away from other critical land management tasks.

In summary, the previous land management system, characterized by manual data collection, storage, and management using Excel sheets, was inefficient, labour-intensive, and prone to errors and data loss. Recognizing the limitations of this approach, the decision was made to implement a new, more streamlined, and technologically advanced land management system to overcome these challenges and improve the efficiency and effectiveness of land management practices in Sri Lanka.

Newly Developed Land Management

Before delving into the functionalities of the system, it's essential to understand the overarching objectives and benefits of each module. The following descriptions provide a concise overview of each component:

1. Manage User Roles:

This module centralizes user management tasks, allowing administrators to efficiently oversee user accounts, assign roles and permissions, and maintain system security. By streamlining user authentication and authorization processes, administrators can ensure

that only authorized individuals have access to sensitive data and functionalities. Additionally, empowering users to input data directly into the system promotes efficiency and time management.

2. Manage permissions:

The "Manage Permissions" section empowers super administrators to precisely control access to system functionalities and data by assigning permissions to different user roles. By granularly assigning permissions, administrators can enforce security protocols, prevent unauthorized access, and maintain data integrity. This section allows the super administrator to assign permissions to roles and create new permissions and modify the permissions that have been created and remove those permissions from the system.

3. Manage Lands:

This function serves as a comprehensive platform for managing land-related data within the system. It encompasses managing both acquired and unacquired lands, enabling users to input, view, and track detailed information about land parcels. Additionally, the feature to generate PDFs of land data enhances accessibility and facilitates the sharing of land information with stakeholders.

4. User Activity Log:

The "User Activity Log" provides administrators with a detailed overview of all data changes and user interactions within the system. By maintaining a comprehensive record of user actions, the activity log enhances transparency, accountability, and auditability within the system. Administrators can leverage this information for tracking user behaviour, identifying security breaches, and ensuring regulatory compliance.

5. Changing Languages:

Also, English as well as Sinhala language is used here and can be used to provide data and change the languages of the available data.

Process and Guide the System

When the user logs into the website, the welcome page first appears like this.



Figure 1 - Welcome Window

Then press the Login Button as shown in the image above. Then the Login and Registration Page will appear like this.

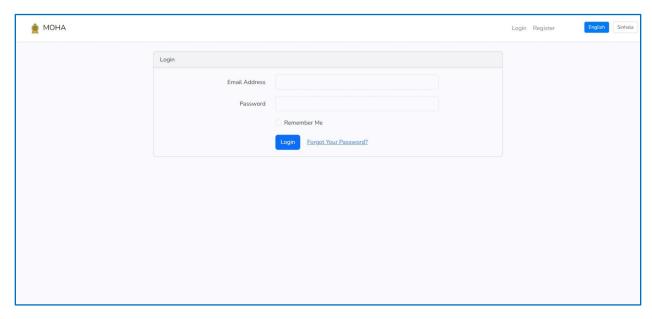


Figure 2 - Login Page

If a user has already created an account, User can log in by giving the Email Address and Password here. Or newly user can create an account using Register. Below is the registration page. There you can create an account by giving Name, Email Address, Password and Confirm Password.

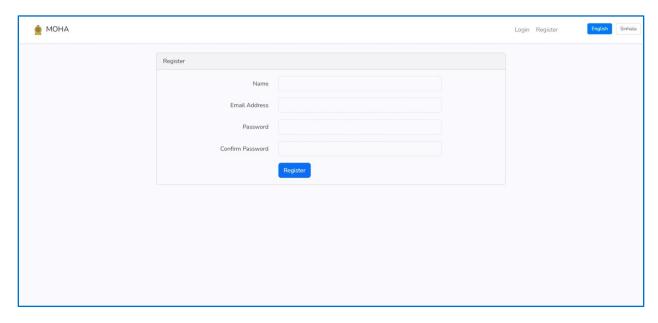


Figure 3 - Registration Page

When a new user logs in for the first time through a new account, you have to request to get the permissions to access the Land Management System. A message appears. The user has to request permission to use the account. Click Request Permission for that. Then a message appears to the user as your request has been submitted successfully. Then your request is pending. Another message will appear as please wait until it's approved. Then Super Admin will check the account and give permission to the account.

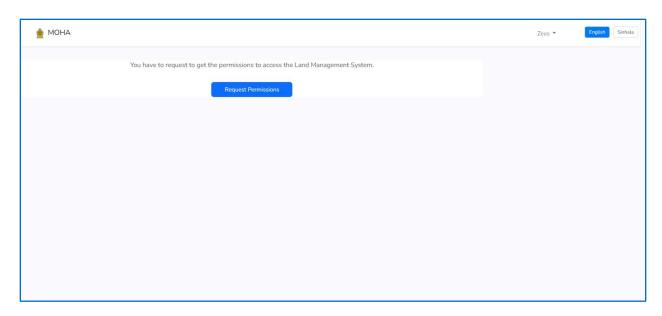


Figure 4 - Request Permissions

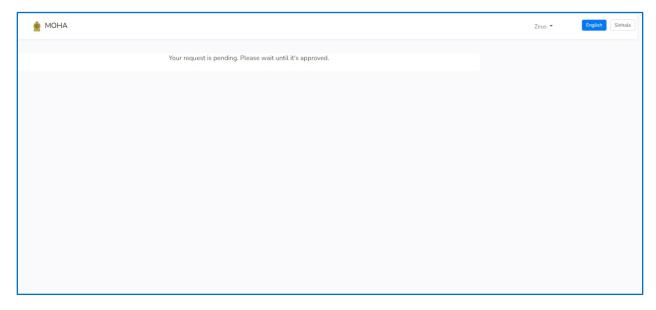


Figure 5 - Pending Request

This shows the Super Admin Interface. The buttons shown here are navigation for each function. First, super admin needs to assign roles to the newly created user. So go to Manage User Roles for that. The orange color here shows the users who are currently waiting for permission.

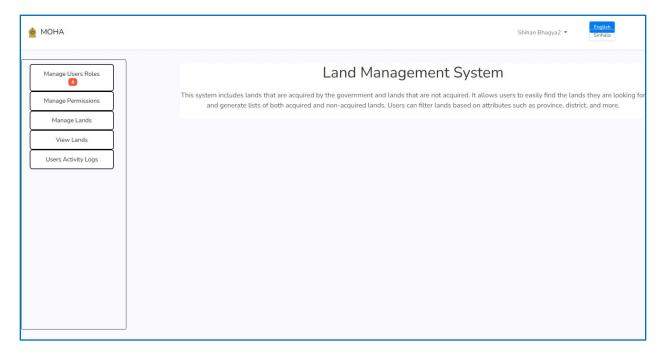


Figure 6 - Super Admin Interface

This is the page that appears after clicking Manage User Roles. Here are the users who are currently assigned roles. Here, Requested for User Role shows the people who are currently waiting for Roles. They are blocked from logging into the system until the Super Admin gives them the respective Roles.

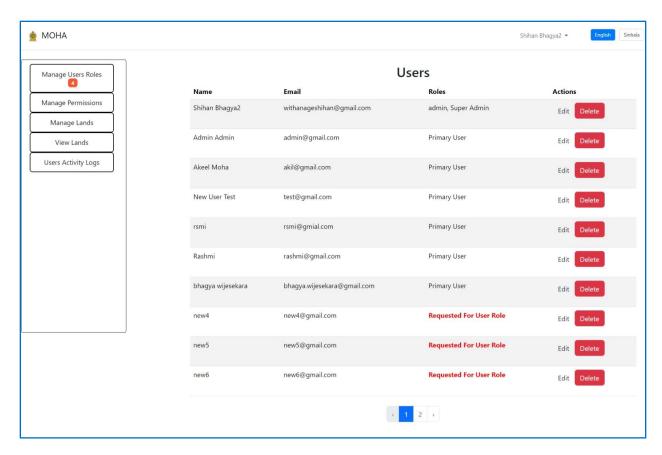


Figure 7 - User Management

This is the request of the new user.

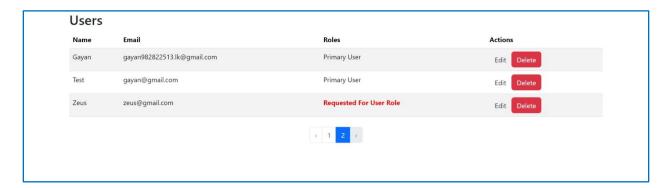


Figure 8 - New Created User Request

Click Edit to assign Roles to the new user. Or you can remove the new user from the system. Then Roles can be given to the user through Assign Role. Here Primary User can be given or the new member can also be appointed as an admin. Also, the user's role can be removed through Remove Role.



Figure 9 - Role Assigning to User

After giving Role to Primary User, related buttons and other things will be displayed on his interface. Below are the permissions given to the new user by a given role.

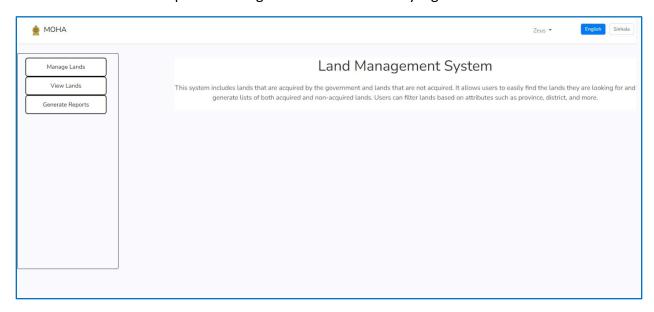


Figure 10 - Primary User Role

Primary User has Manage Lands, View lands and Generate Reports features. Manage Lands has Create Land and View Acquired Estate.

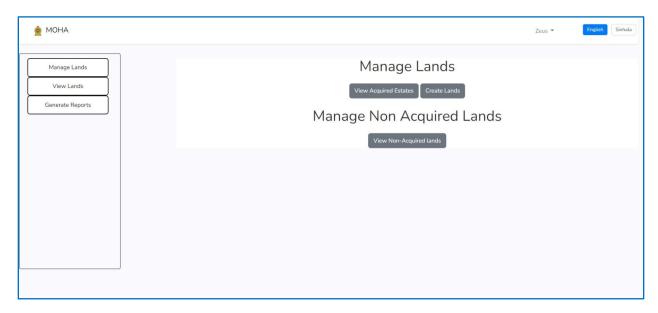


Figure 11 - Manage Lands

Admin, Super Admin and Primary User can be specified as User Type in Manage permissions in Super Admin's Interface. The Assigned Permissions column shows the Permissions currently used for those Roles. You can add more permissions by selecting the remaining permissions in the Select Permissions and clicking the Assign Permissions button. This provides security that allows users to log in and not log in.

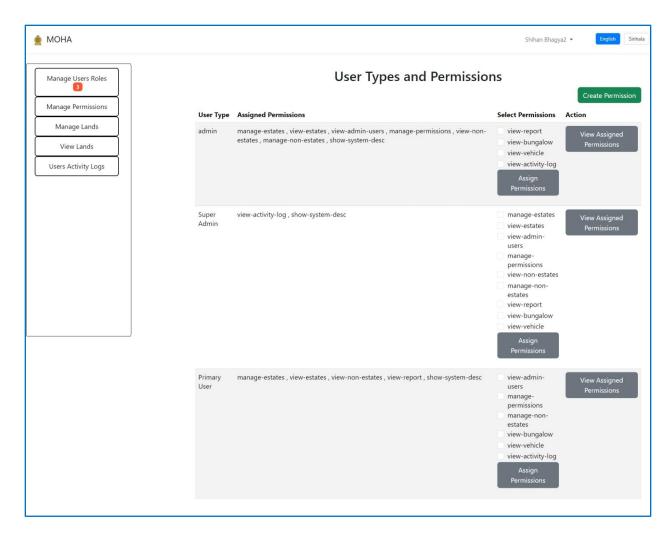


Figure 12 - Permission Page

And the View Assigned Permissions available in the Action provides the necessary facilities to view the currently granted Permissions and to Update Permissions. An option to Delete Permissions is also provided here.



Figure 13 - Permissions Edit Page



Figure 14 - Edit Permission

The Create Permission provided here also facilitates the creation of new Permissions.



Figure 15 - Create Permission Page

There is a Manage Lands, View lands section for a user to update the data about the lands they need in the system. Here, there is this section to directly enter data about a certain land into the system by Create Lands under Manage Lands.

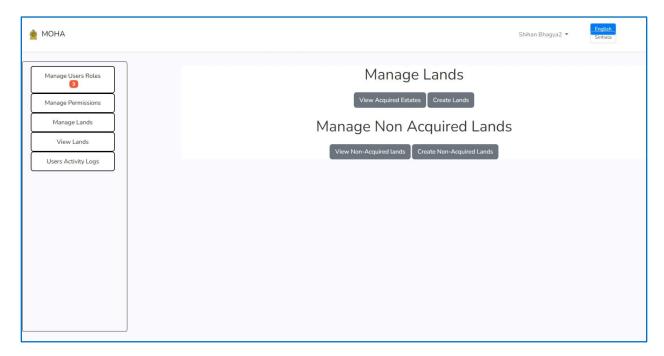


Figure 16 - Manage Lands and View Land Page

And after creating a Land, press the View Acquired Estate button to view it in the data system. Then automatically moves to the database. Or you can go to this section from the main menu.

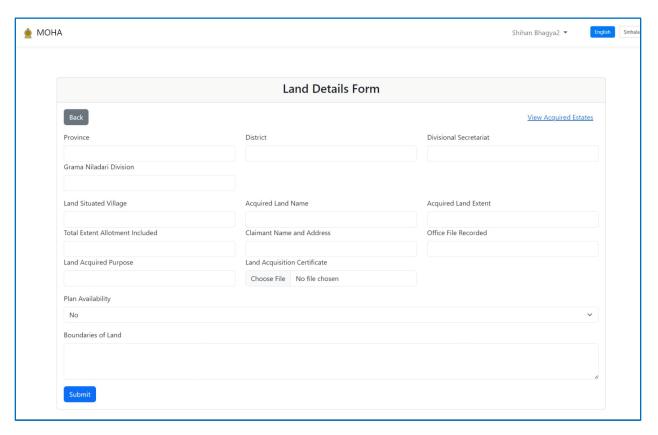


Figure 17 - Create Land Page

Below is the View Acquired Estate section. Filters have been used to find the required land data and thus the data of the districts can be obtained separately. Also Land Acquisition Certificate and Plan Image can be downloaded from Acquired Land Details. Also, by pressing the show button in the Action, a complete description of the data can be taken and it can be updated. The data can also be removed by Delete. You can also get details and update the data through View Full.

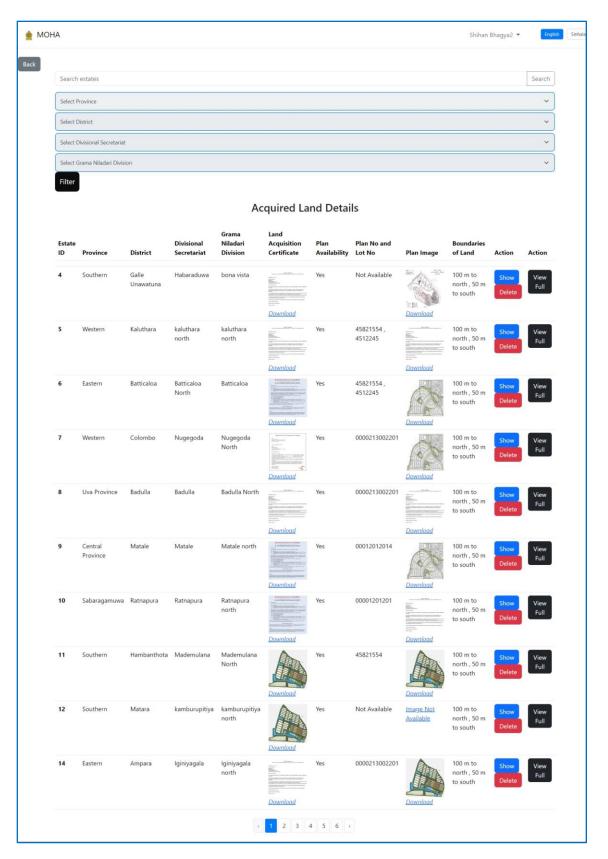


Figure 18 - View Acquired Estate

Also, facilities have been provided to download the data obtained by using filters to download the data related to a particular district.

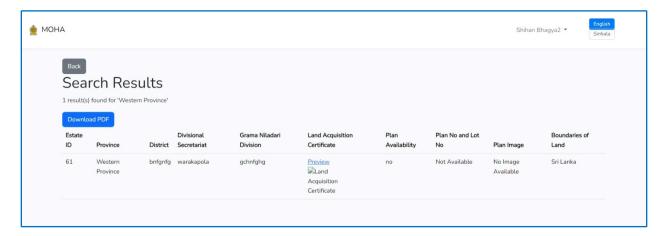


Figure 19 - Filtering Details and Downloading Details as PDF

The next section is Manage Non Acquired Lands. Let's first consider Create Non-Acquired Lands. Users can also enter Create a Non-Acquired Land into the system.



Figure 20 - Create Non-Acquired Land

Below is the Non Acquired Land Details section. Here, like Acquired Land, you can Edit, Delete, and View Full to get a complete description of the data as well as update the data.

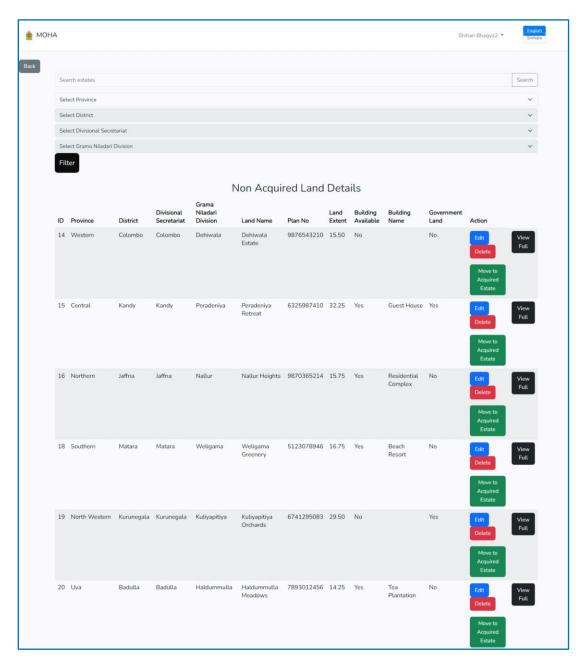


Figure 21 - Non Acquired Land Details

Also for this section, the user is also allowed to download the selected data in PDF format using filters.

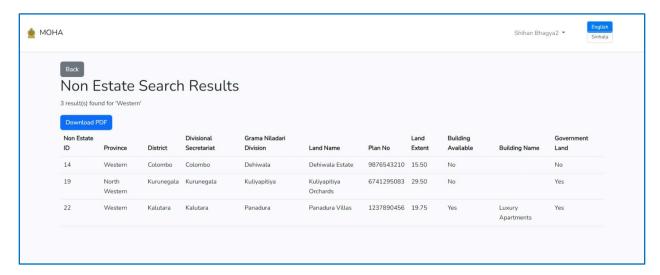


Figure 22 - Filtering and Download Details as PDF Format

Also, there are facilities to send from Non-Acquired Land to Acquired Land. For that purpose, the Move to Acquired Estate button in the Non Acquired Land Details section has provided facilities to send the relevant data to Acquired Land by providing and submitting the data required to be updated.

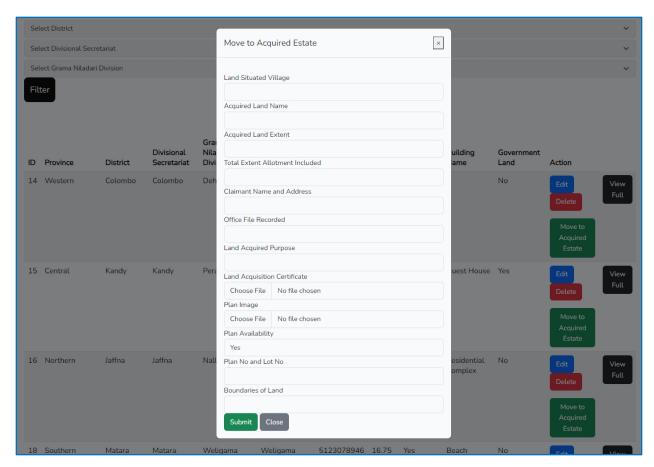


Figure 23 - Move to Acquired Estate

Also, Users Activity Logs have been used to monitor certain activities performed by users in the system. This allows monitoring of all processes in the system.

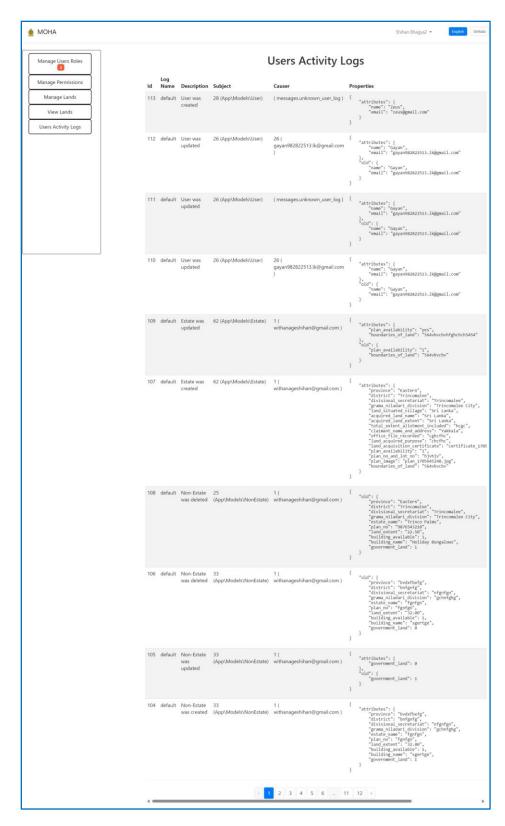


Figure 24 - User Activity Logs