

APPENDIX II-A

Web User Manual

1.0 Webpage Navigation

Navigate to <https://roadwatch-rsfd.moit.gov.bt/#/public-dashboard>

As soon as you navigate to this link, you will land on the Bhutan RoadWatch website. Click on the 'Open RSFD' button to login to RSFD System as shown in *Figure 1.0*

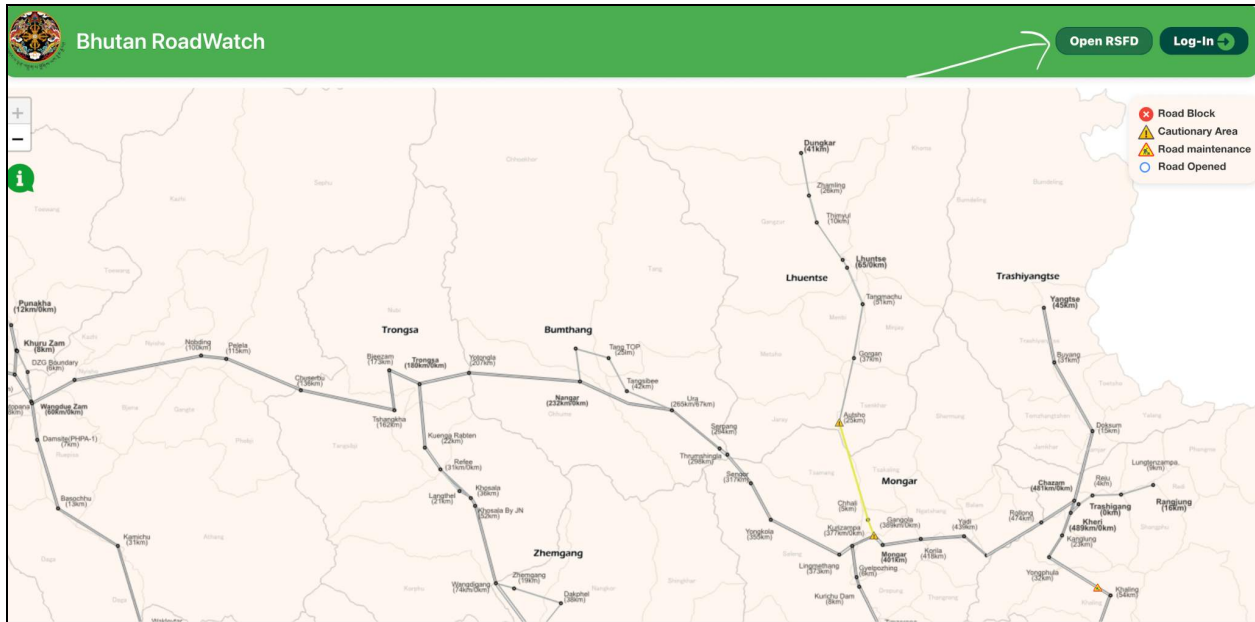


Figure 1.0 : Bhutan RoadWatch Webpage

After clicking on the button, the following page will appear. It will display the login page of the RSFD system as shown in *Figure 1.2*. Click on the 'Continue as Guest' button to navigate the system as a guest user.

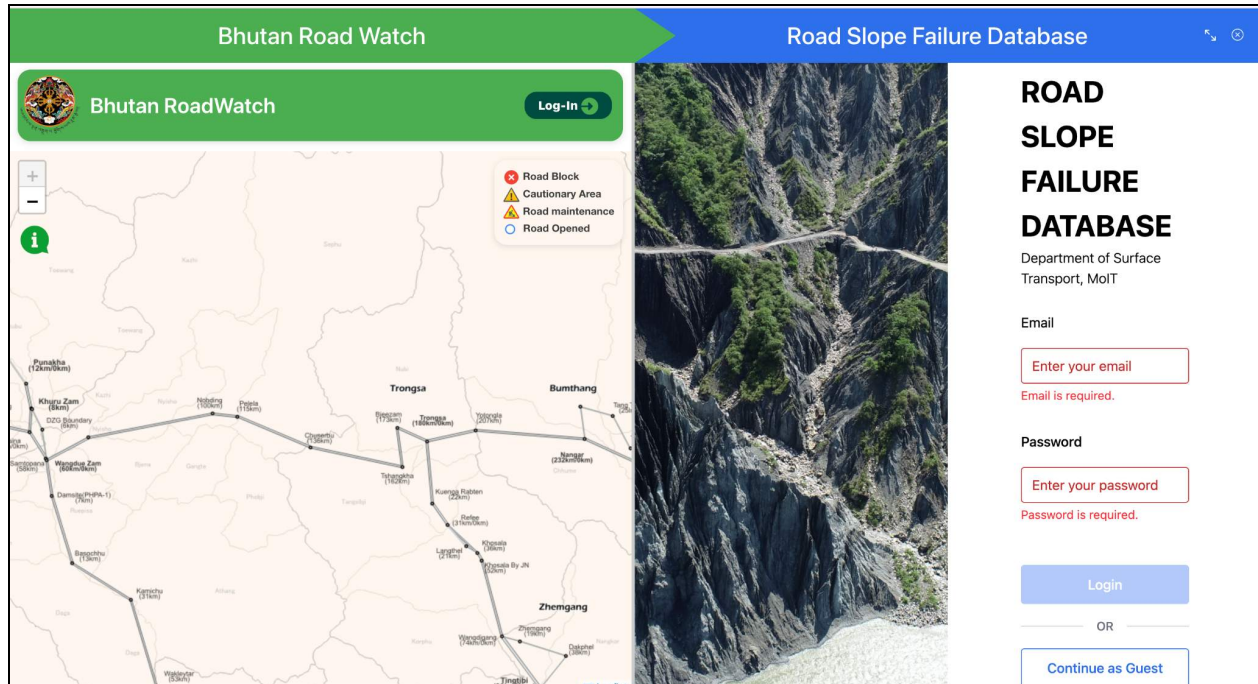


Figure 1.2 : Login Page - RSFD

2.0 Guest View

As a Guest user, your view is limited to Summary page and Failure list.

2.1 Dashboard

- As a Guest User, by default you land In Summary page under Dashboard tab as displayed in *Figure 2.0*
- In this view KPIs such as Total Slope Failure, High Risk Sites, Pending Inspections, Highest Slope Failure in terms of RO, RO based failure number and Cumulative Data failure data can be viewed.

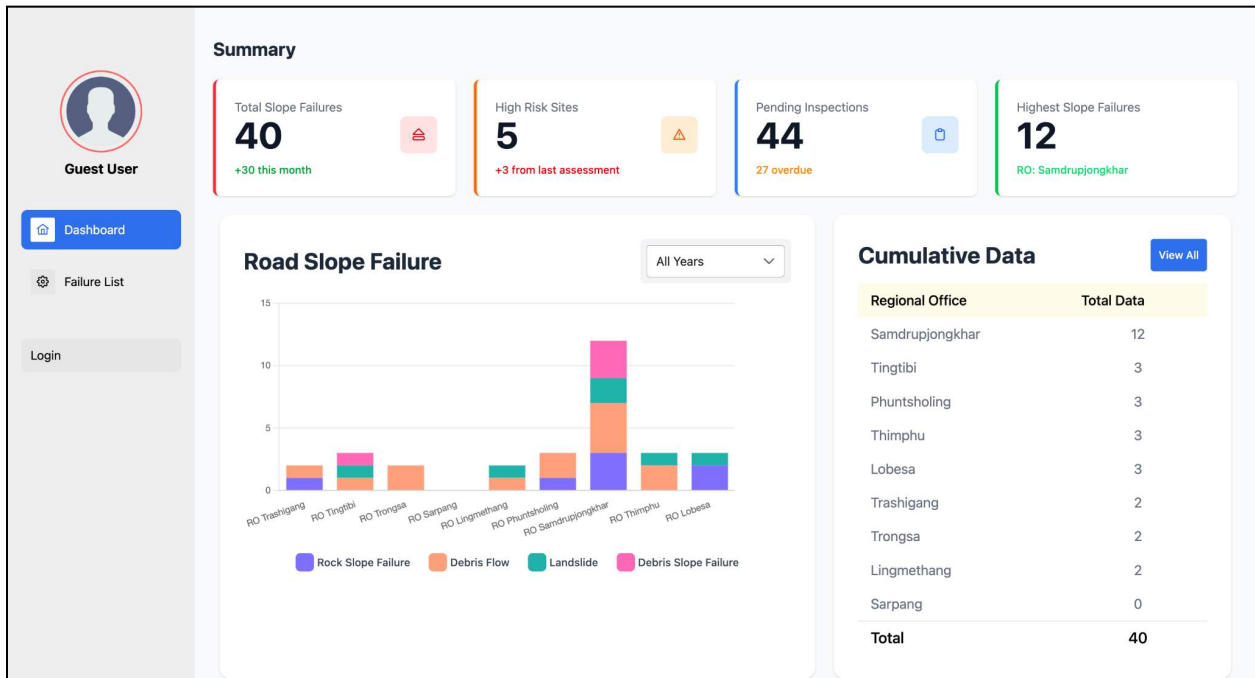


Figure 2.0 : Dashboard - Summary Page View

- Click on Filter under the Road Slope Failure graph as shown in *Figure 2.1*.
- This filter feature helps filter slope failures created in the system based on year and this same filter is applied to all other KPIs under Summary page.
- Clicking on All Years resets the filter.

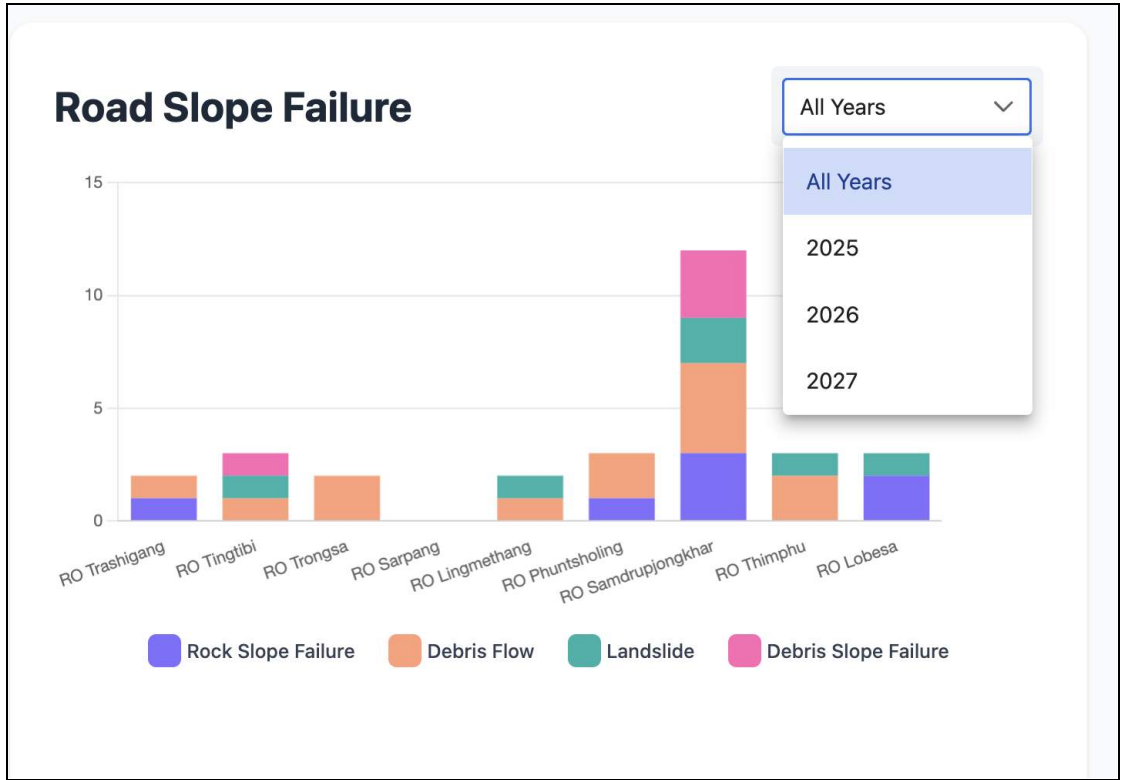


Figure 2.1 : Dashboard - Filter View

- **View All** button under the Cumulative Data shown in Figure 2.2 helps you redirect to the Failure lists under Failure Tab.

Cumulative Data [View All](#)

Regional Office	Total Data
Samdrupjongkhar	12
Tingtibi	3
Phuntsholing	3
Thimphu	3
Lobesa	3
Trashigang	2

Figure 2.2 : Dashboard - View All Button

- Scrolling down in the Summary Page leads to an Open Street Map view (shown in *Figure 2.3*) which by default displays the pinned location of all slope failures in the country.
- The color of the Pin is based on the criticality rank of the slope. Red for Rank 1, Yellow for Rank 2 and Green for Rank 3.

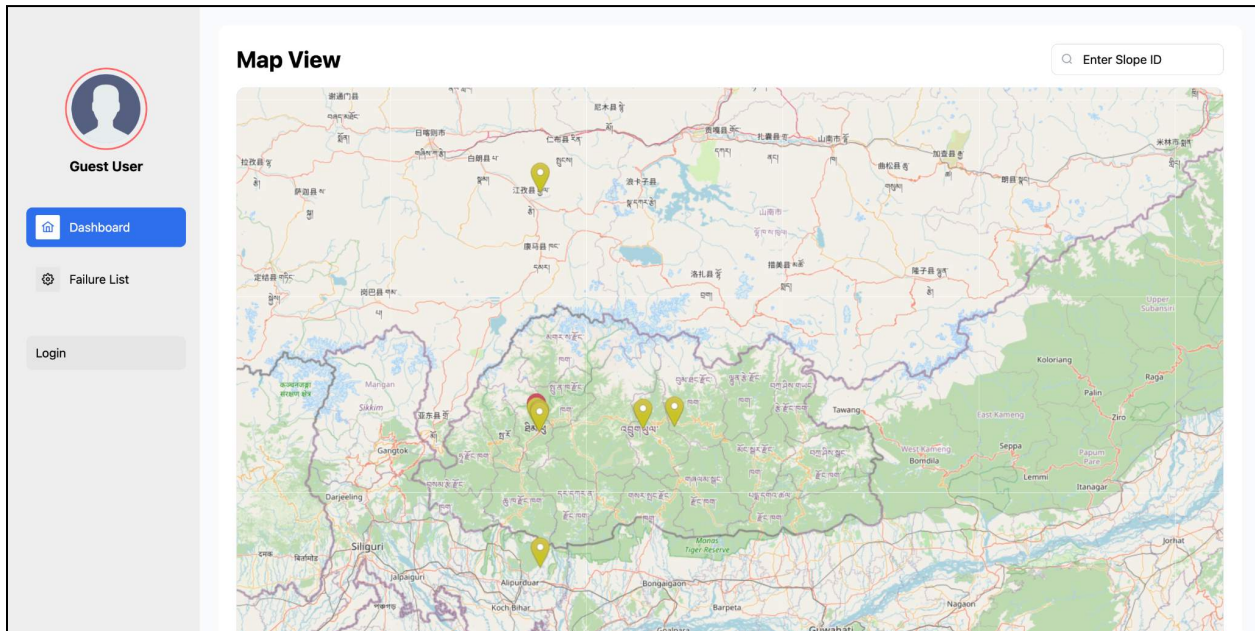


Figure 2.3 : Dashboard - Map View

- Copy paste a slope failure ID in the search field of the map as shown in *Figure 2.4* and it zooms in the pinned location of that particular failure.
- Click on the pin and it displays basic information of the slope failure

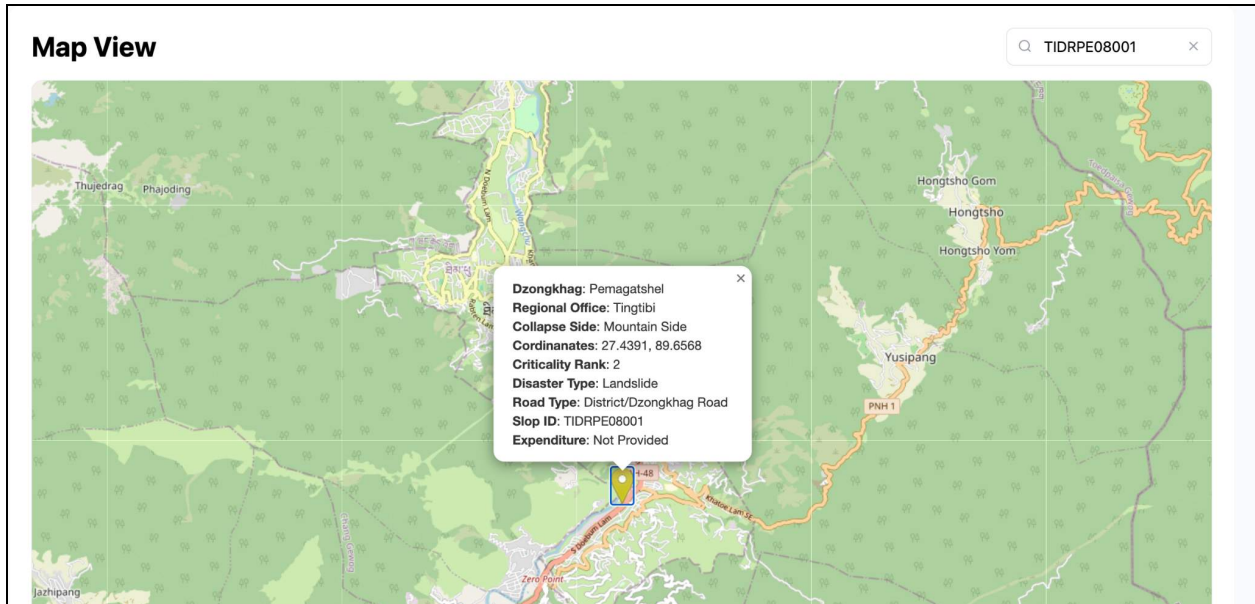


Figure 2.4 : Dashboard - Map Pin Pop-up View

2.2 Failure List

- The Failure List tab displays a list of all failures created so far in the system under respective ROs (Figure 2.5)
- Failure lists are also color coded based on criticality rank. Red for Rank 1, Yellow for Rank 2, and Green for Rank 3.
- Guest users cannot view the details of the failure nor can export the data.
- The Map icon at the end of the row redirects to external google map link.
- Click on Login button on the side tool bar of Guest view and it will redirect to Login page

Slope ID	Name	Regional Office	Dzongkhag	Failure Type	Rank	Next Check Date	Map
THDRPA08001	Test	Thimphu	Paro	Debris Flow	1	01 Oct 2025	📍
TIARMO09001	app debris flow	Tingtibi	Mongar	Debris Flow	2	01 Oct 2025	📍
FRBUCH02002	fdasfasdf	-	Bumthang	Debris Flow	2	01 Oct 2025	📍
TIDRLH04001	ndhs	Tingtibi	Lhuentse	Debris Slope Failure	1	01 Oct 2025	📍
PHPNH02A003	trtyv	Phuntsholing	Gasa	Rock Slope Failure	1	01 Oct 2025	📍
SJDRCH04001	notification	Samdrupjongkhar	Chhukha	Debris Slope Failure	2	01 Oct 2025	📍
FRCHCH03001	6.0 test 2	-	Chhukha	Rock Slope Failure	3	-	📍
LODRCH02001	6.0 kc test	Lobesa	Chhukha	Rock Slope Failure	3	-	📍
SJDRDA03001	Landslide	Samdrupjongkhar	Dagana	Landslide	1	01 Oct 2025	📍
FRDAGO04001	RSF	-	Dagana	Rock Slope Failure	3	-	📍

Figure 2.5 : Failure List View

3.0 Super Admin/DoST HQ View

- Login as Superadmin or DoST HQ from login page using your credentials
- For these two users, the web screen will be the same as shown in *Figure 3.0*

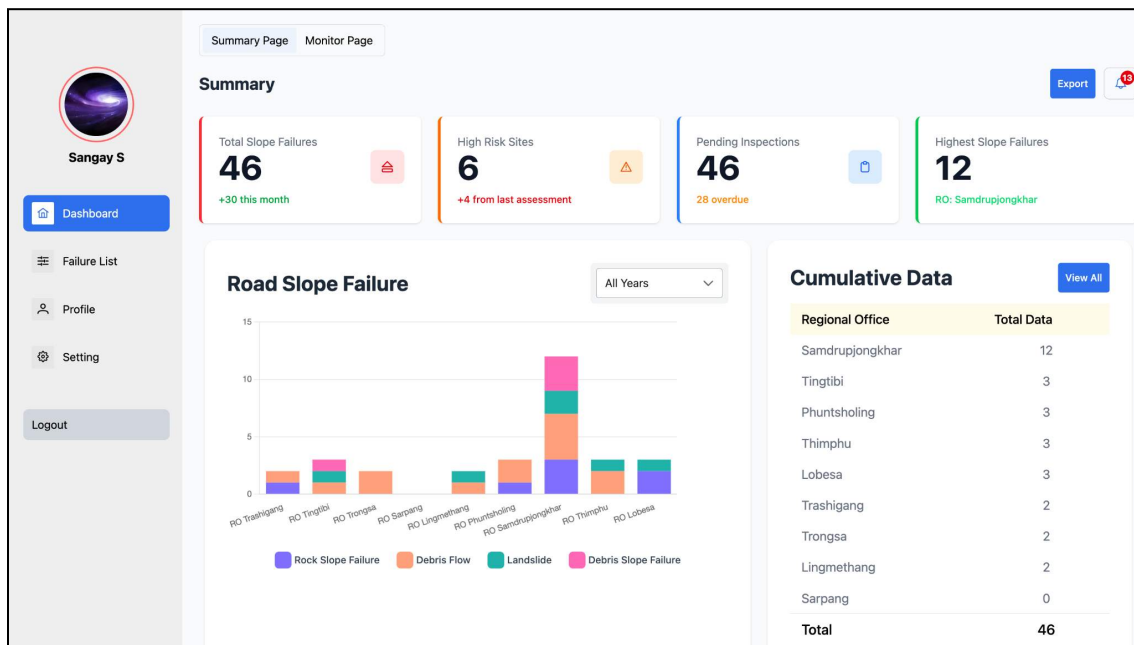


Figure 3.0 : Default Dashboard Landing

3.1 Dashboard view

3.1.1 Summary page:

- It will be the same as Guest view except that as Superadmin or DoST HQ, the summary page can be exported in PDF format.
- Click on the Export button and PDF of the report will be downloaded as shown in *Figure 3.1*
- This is how the PDF export looks like. If the map view needs to display certain slope ID details, then enter slope ID in the search field, click on the Pin and then export again.

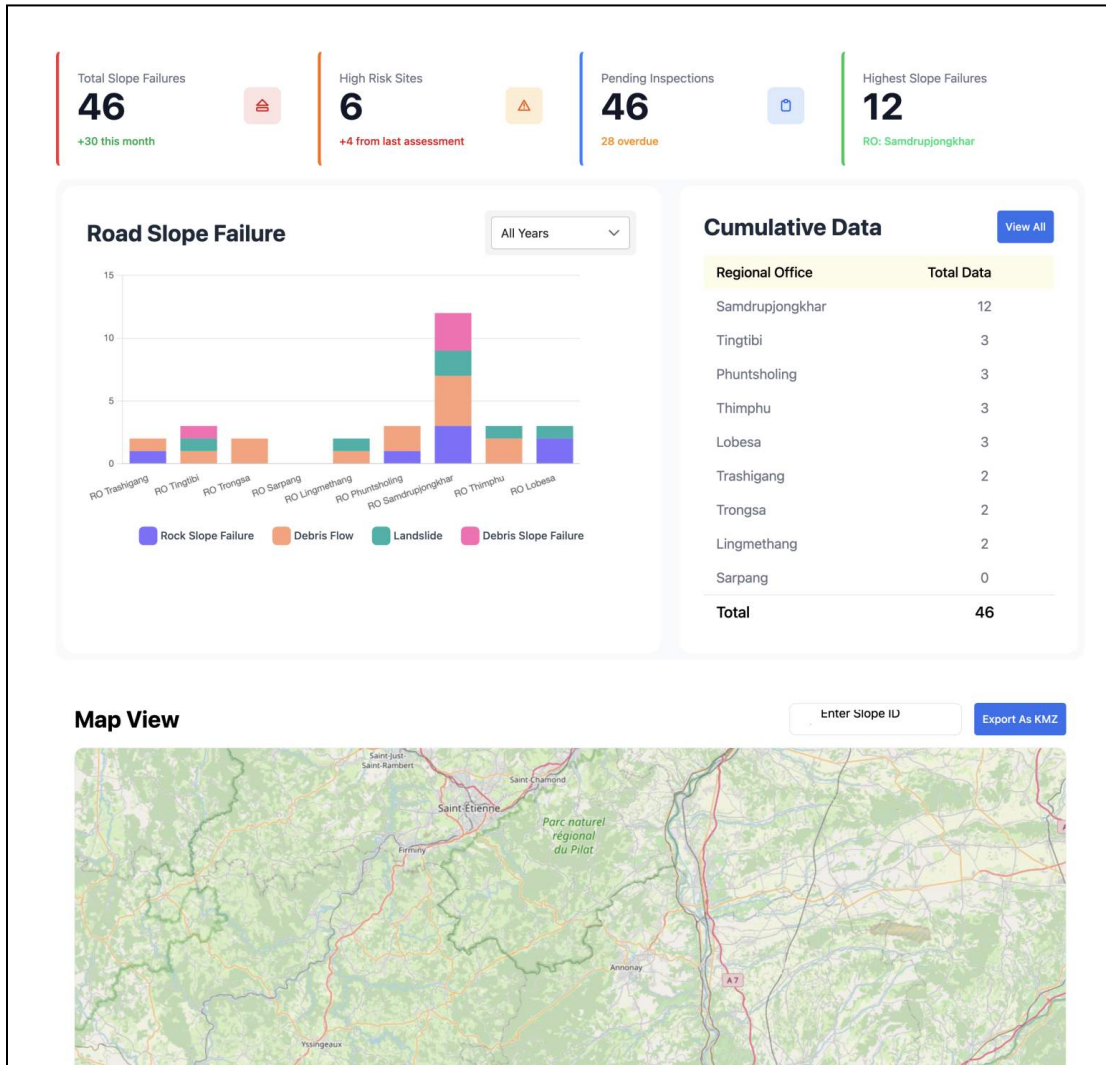


Figure 3.1 : PDF Export of Summary Page

3.1.2 Monitor Page

- Monitor page displays Regional wise data on all failure types as shown below in *Figure 3.2*
- The first Tab under Monitor page is **DoST Regional Office** which shows RO wise slope failure data for every sub-division and failure type.
- Hover the mouse onto the graph and it will show the sub-division wise number of failures for each failure type such as Landslide, Debris flow, Debris slope failure and Rock slope failure.

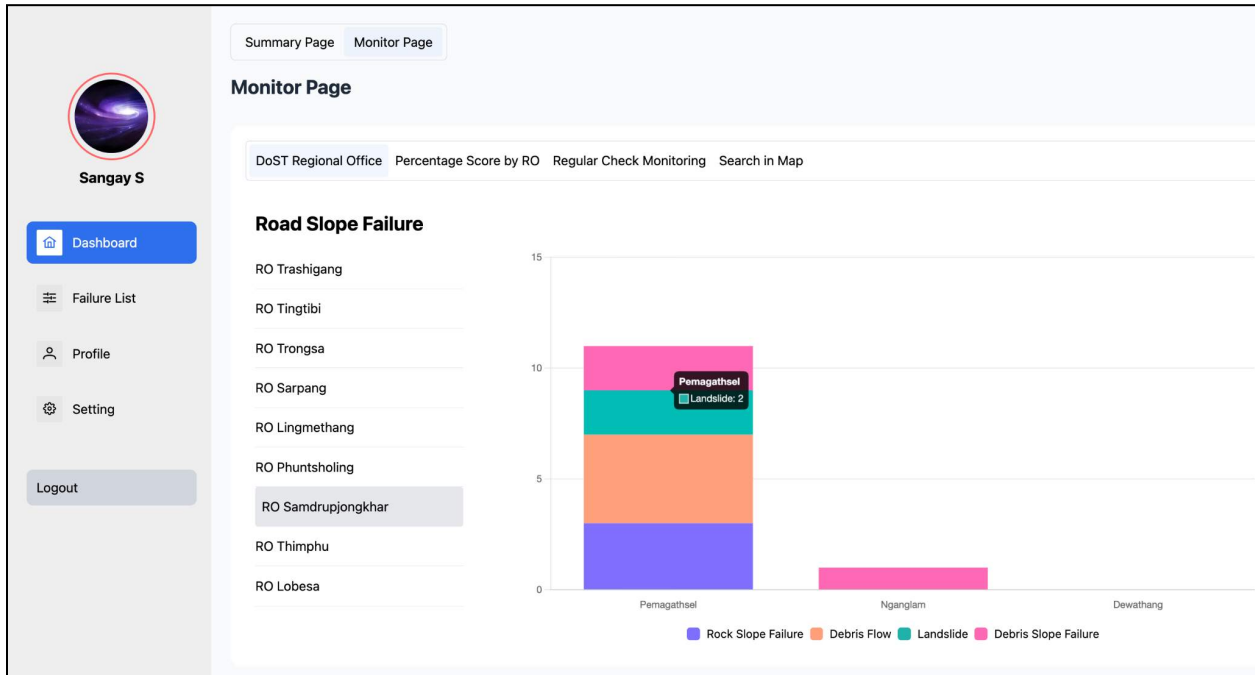


Figure 3.2 : Monitor Page View - DoST Regional Office Tab

- The second tab is **Percentage Score by RO** which shows the regular check completion score by each RO (*Figure 3.3*)
- If in a year there are 3 regular checks and if all have been completed then the score for that regional office will be 100%.

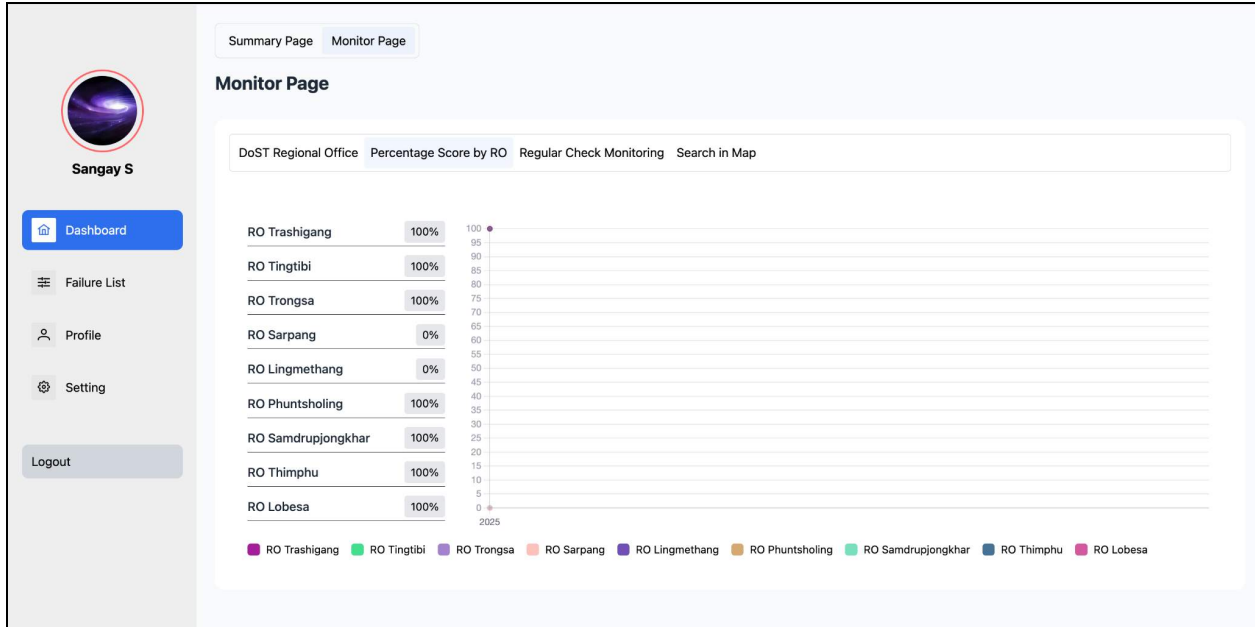


Figure 3.3 : Monitor Page View - Percentage Score by RO Tab

- The third tab is **Regular Check Monitoring** which displays regular check updates based on each slope failure as shown in *Figure 3.4*
- The **Regular Check** column shows colored boxes for every regular check. In a year, three regular checks are created (January, April, October). If a slope failure was created after January then 1 grey box meaning no regular check for January. Yellow meaning regular check is Pending, Red meaning it's overdue, and Green meaning it's Completed.
- The last column is to SEND notification to respective RO's if regular check is pending or overdue.
- The list can be filtered based on individual ROs from the drop down in the right corner.

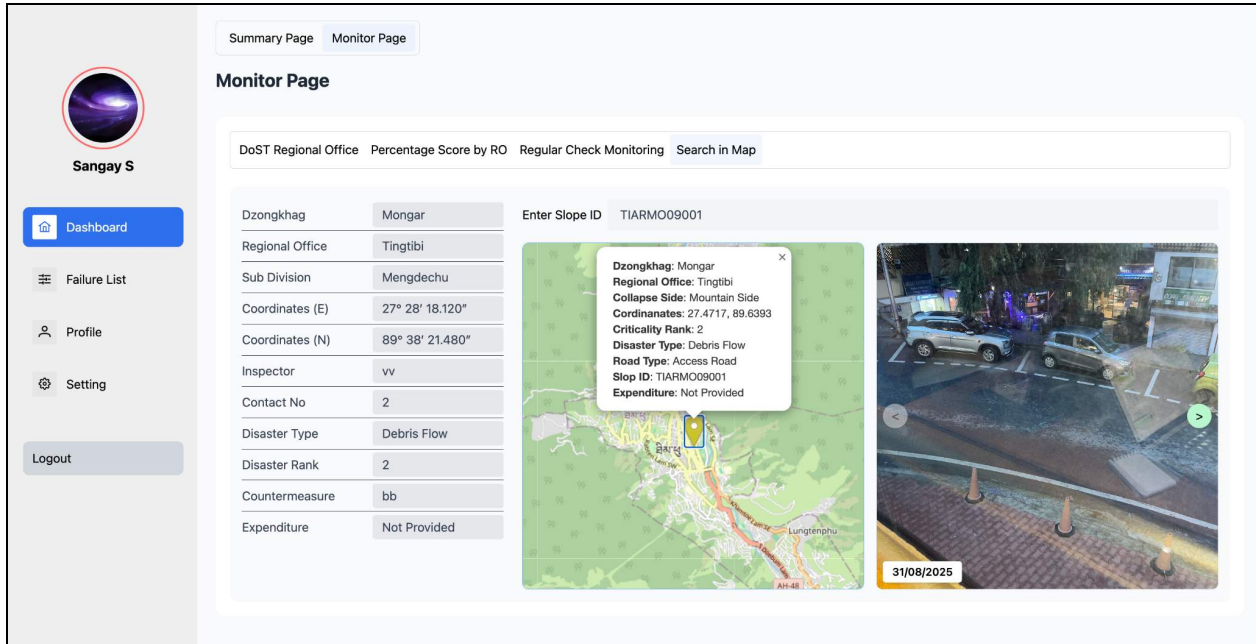


Figure 3.5 : Monitor Page View - Search in Map Tab

3.2 Failure List

- Second feature for Superadmin and DoST HQ is slope failure list and creation.
- There is an option to Edit or Delete the failure specific to only Superadmin and DoST HQ.
- Edit is allowed only for the general information.

Slope ID	Name	Regional Office	Dzongkhag	Failure Type	Rank	Next Check Date	Map	Action
FRGALU03007	dfg	-	Gasa	Debris Flow	3	-	📍	Delete Edit
FRGALU03006	dfg	-	Gasa	Debris Flow	2	01 Oct 2025	📍	Delete Edit
FRDAGE02001	fgdsgf	-	Dagana	Debris Flow	2	01 Oct 2025	📍	Delete Edit
FRCHBO01002	dfsg	-	Chhukha	Debris Flow	2	01 Oct 2025	📍	Delete Edit
FRCHBO01001	dfsg	-	Chhukha	Debris Flow	3	-	📍	Delete Edit
THDRPA08001	Test	Thimphu	Paro	Debris Flow	1	01 Oct 2025	📍	Delete Edit
TIARMO09001	app debris flow	Tingtibi	Mongar	Debris Flow	2	01 Oct 2025	📍	Delete Edit
FRBUCH02002	fdasasdf	-	Bumthang	Debris Flow	2	01 Oct 2025	📍	Delete Edit
TIDRLH04001	ndhs	Tingtibi	Lhuentse	Debris Slope Failure	1	01 Oct 2025	📍	Delete Edit
PHPNH02A003	trtyv	Phuntsholing	Gasa	Rock Slope Failure	1	01 Oct 2025	📍	Delete Edit

Figure 3.6 : Failure Listing View

- There is a filter icon that opens a list of filter options for the failure list as shown in *Figure 3.7*
- Choose a filter, example, **Criticality rank 1**, and click the **Apply filter** button. The failure list will be filtered and show all Rank 1 failures.
- Multiple filters can be applied at once.
- Some of the filter fields such as highest expenditure, Hours or road block and Frequency of road blocks have guidance messages when hovering the mouse over them.
- A **Reset Filter** button will appear to reset the filter and start fresh.

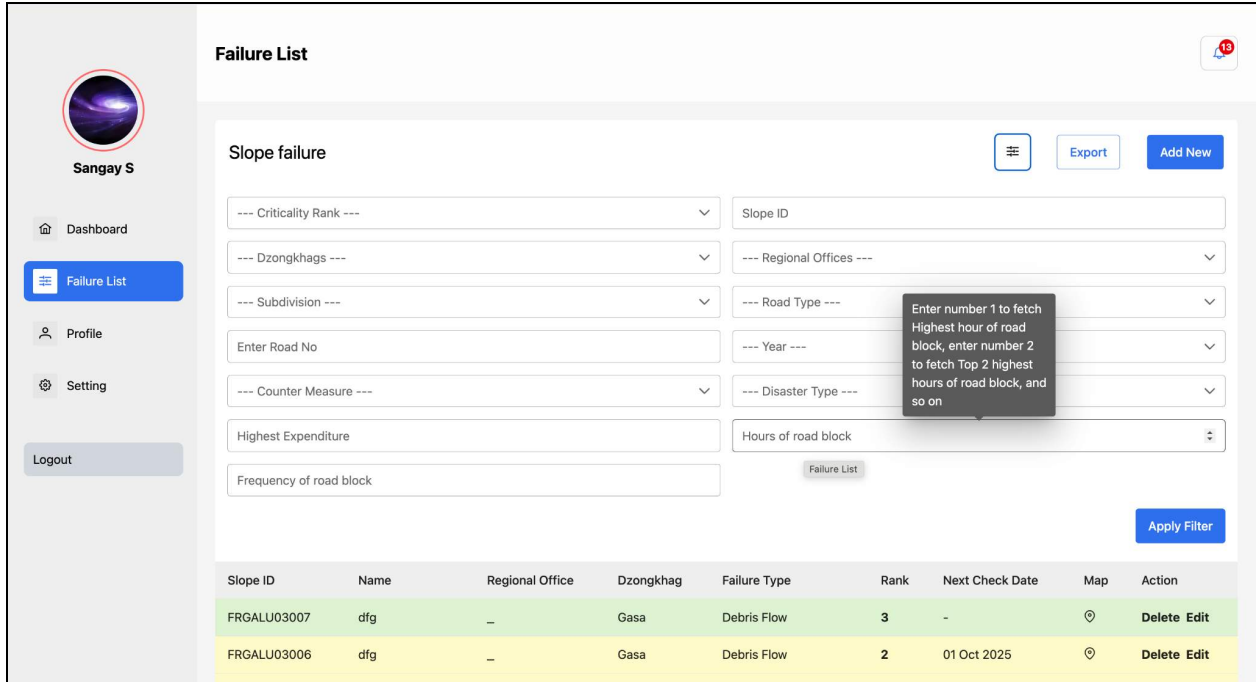


Figure 3.7 : Failure List - Filter Icon

- The **Export** feature helps export failure lists in PDF, Excel and KMZ format (Figure 3.8)
- If a filter is applied on the list and the Export button is clicked, then the filtered list gets exported in chosen format.

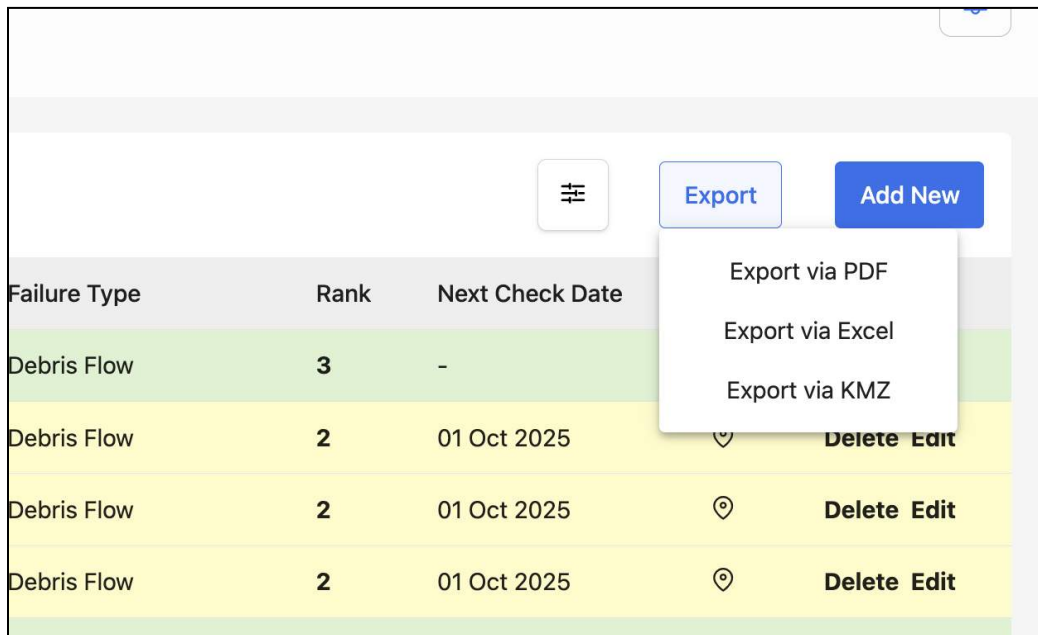


Figure 3.8 : Failure List - Export Function

- Clicking on the **Add New** button allows creation of new slope failure and as a user, you have to fill up series of information under General Info and Evaluation tab as shown in *Figure 3.9*
- A failure is created after filling the evaluation form which is the second tab.
- The failure then gets listed in the table and clicking on which the detail page of the failure is displayed as shown in *Figure 3.10*

The screenshot displays the 'New Failure Entry' form. On the left is a sidebar with a user profile for 'Sangay S' and navigation links: Dashboard, Failure List, Profile, Setting, and Logout. The main content area has a title 'New Failure Entry' and a notification icon. Below the title are tabs: 'General Info' (active), 'Evaluation', 'Regular Check', and 'Any Files', along with an 'Export' button. The form is split into two steps: '1 Basic' and '2 Situation'. The 'Basic' step contains:

- Slope Disaster Name: Name
- Road Type: --- Select ---
- Road Number: Please First Select Road Type
- Dzongkhag: --- Select ---
- Regional Office: --- Select ---
- Subdivision: --- Select ---
- Section: (empty field)

 The 'Situation' step contains:

- Distance from Start Point(km): 00.00
- Coordinate Latitude: 00 ° 00 ' 00 " N
- Coordinate Longitude: 00 ° 00 ' 00 " E
- Elevation(m): 00.00
- Inspector (Person): Inspector Name
- Contact Number: Number

Figure 3.9 : Failure List - Failure Creation Flow

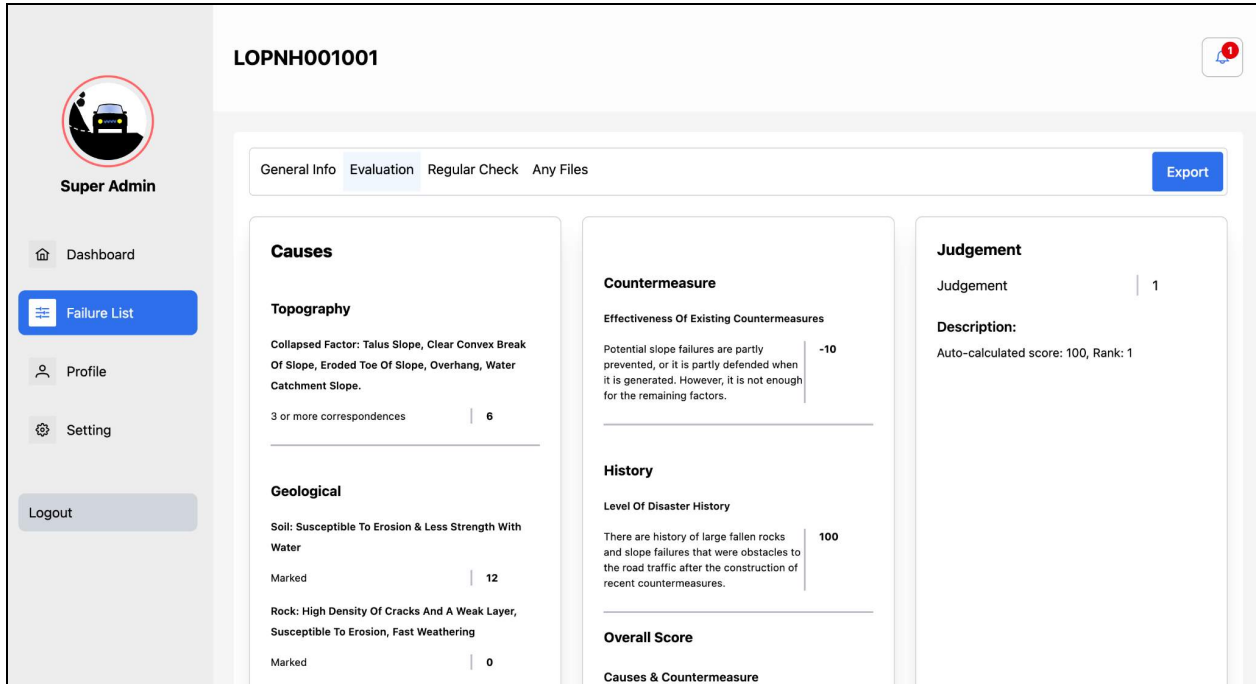


Figure 3.10 : Failure List - Failure Detail Page

- From the detail page, clicking onto the Regular **C**heck tab will display the details on regular checks to perform for this failure (Figure 3.11).
- If the failure has been created in the past, for every year, three regular checks will be created. Each for January, April and October
- If Failure is created middle of the year, then only October regular check is generated by the system.

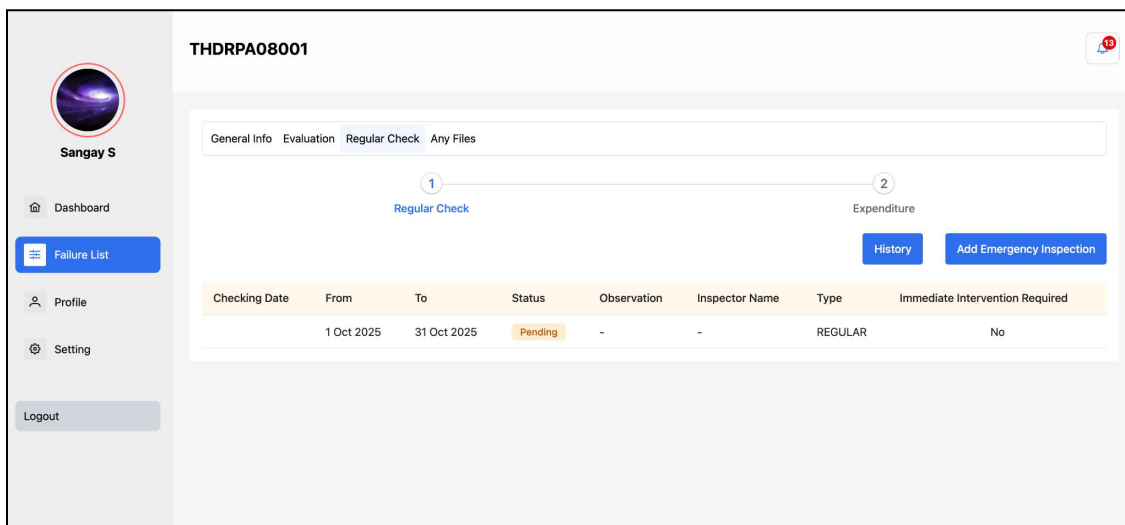


Figure 3.11 : Failure List - Regular Check Flow

- Clicking on the Regular check (*Figure 3.12*), on the left hand side will be the details of the vulnerability checkpoints and sketch that was uploaded during the creation of the failure.
- On the right hand side are the fields to enter the new details from regular inspection.
- Once completed and submitted, Regular checks are not editable.
- The status changes from Pending to Completed.
- If the regular check is not completed within the checking date, then status gets turned into Overdue and superadmin and admins get notified.

Figure 3.12 : Failure List - Regular Check Form

- The **History** tab will list past one year regular checks completed (*Figure 3.13*)
- As soon as the year ends in December, the previous year's regular checks will be automatically put under the history tab. And new regular checks for the year will be created.

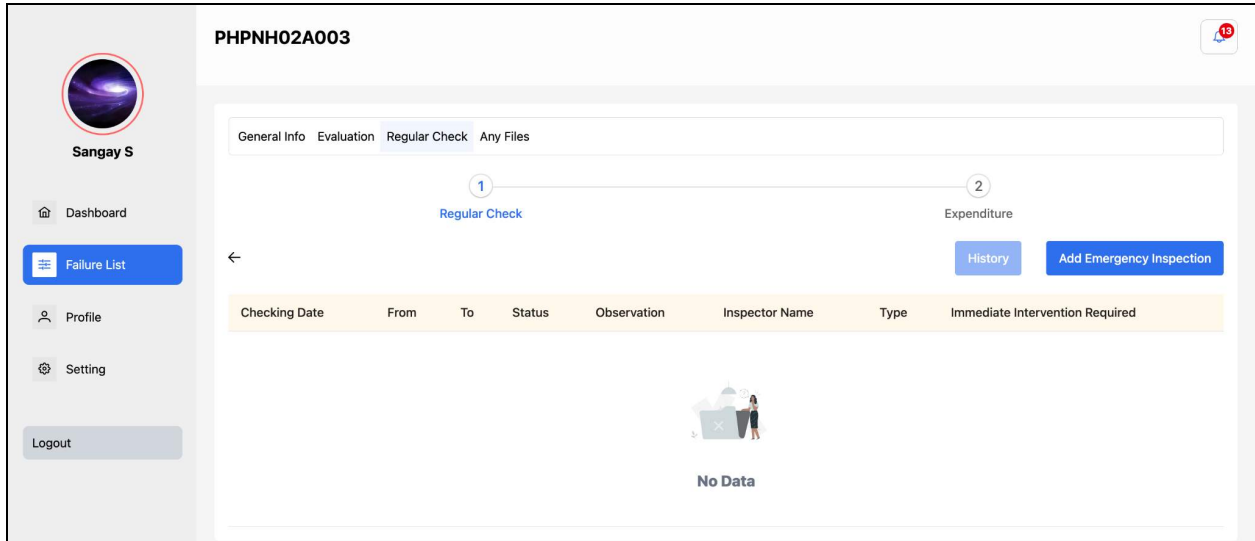


Figure 3.13 : Failure List - HistoryTab

- Clicking on the Emergency Inspection button will list a new Emergency inspection list as shown in *Figure 3.14*.
- If the emergency inspection is created before the first regular check, the initial vulnerability details will be listed in the emergency form.
- Emergency inspections are done during the time of emergency for that particular slope failure. And when added, will get listed with the rest of the regular checks and non editable afterwards.
- Any new check points created for the emergency, are then displayed for reference for the regular check that happens afterwards.

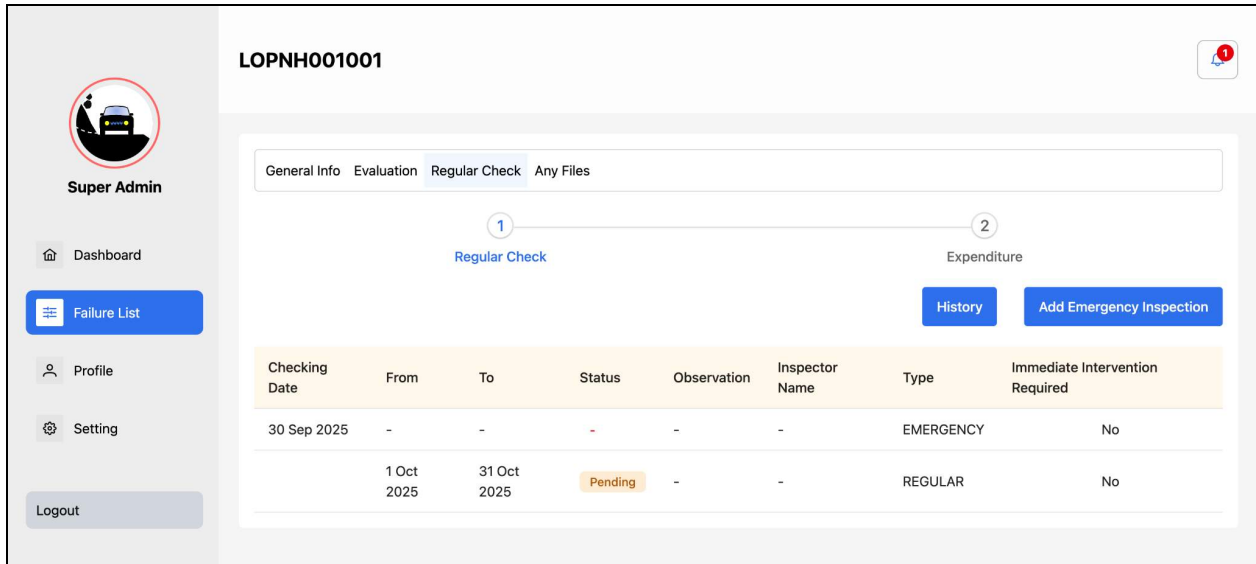


Figure 3.14 : Failure List - Add Emergency Button

- Clicking on the **Expenditure** opens a modal to enter all the expenditure incurred for that particular failure (Figure 3.15).
- You will be able to add Slip Clearing and Counter Measure costs.

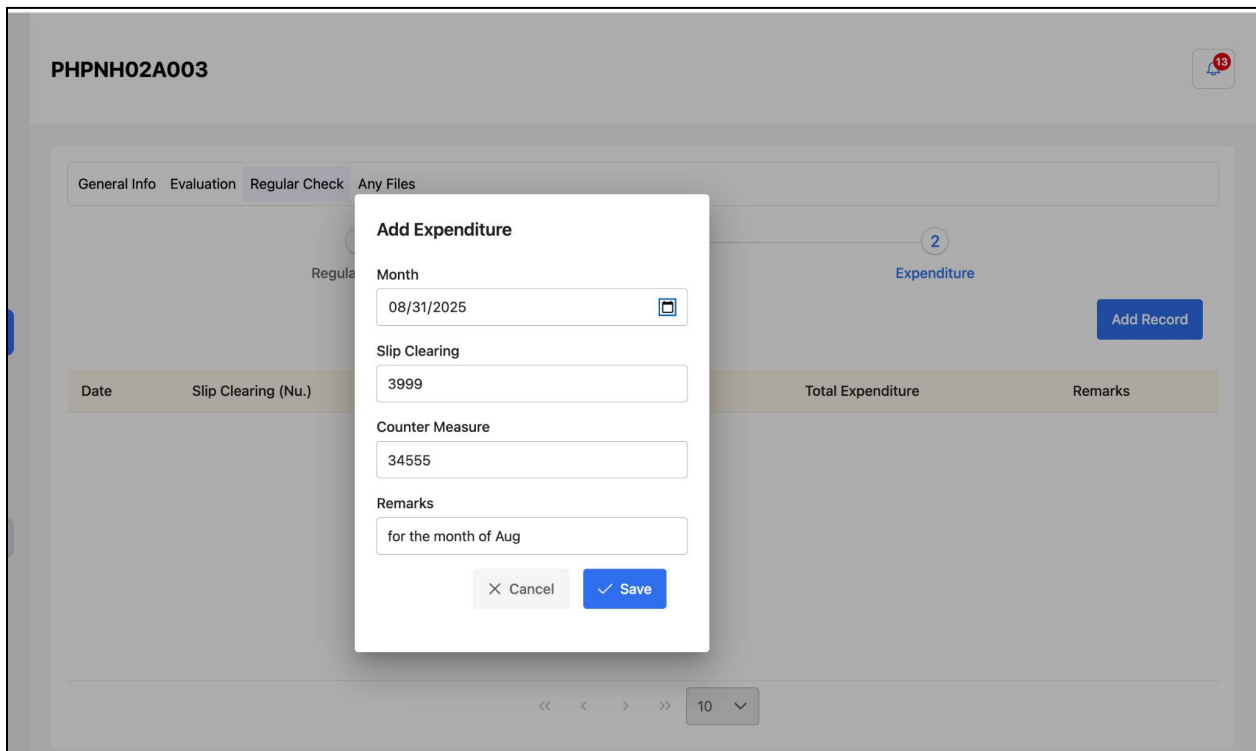


Figure 3.15 : Failure List - Add Expenditure Button

- Under Any files tab, images, pdfs and documents can be added with description for each file (*Figure 3.16*)
- The file uploaded is listed with date of upload and option to download it.

PHPNH02A003

General Info Evaluation Regular Check **Any Files**

File Upload(pdf/csv/img)

[+ Choose](#)

File Description

Description

[Submit](#)

Files

DJI_0161-min.JPG

Description: This is final image for the failure

Date Uploaded: 31 Aug 2025

[Download](#)

Figure 3.16 : Failure List - Add Any Files

3.3 Profile

- Click on Profile tab and you will be able to see the profile details as shown in *Figure 3.17*.
- As a Superadmin and Admin can edit their names, images and CID.
- Super Admin user has to be created from the backend.

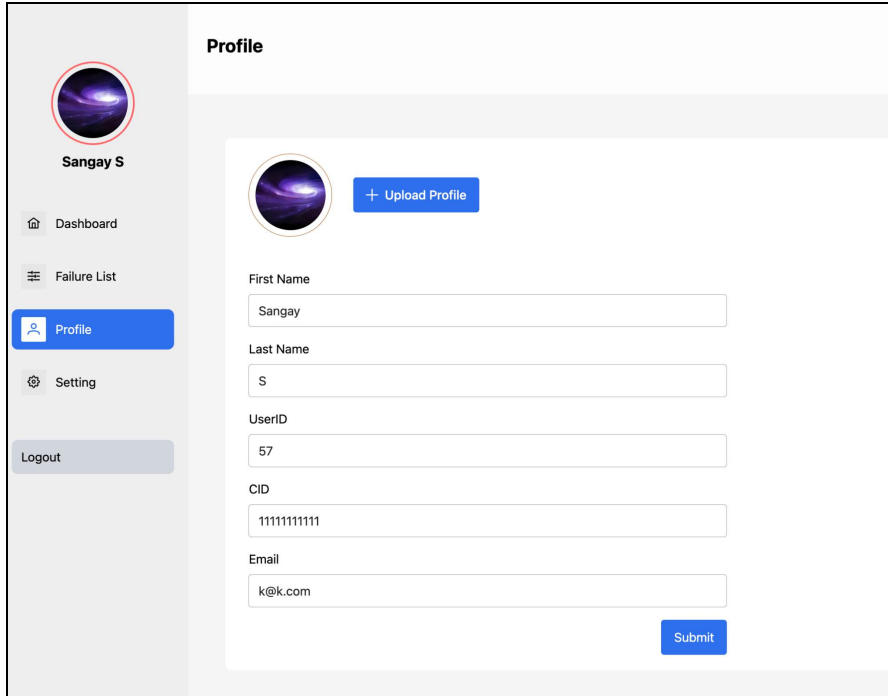


Figure 3.17 : Profile Tab

3.4 Setting

- Under setting, superadmin and DoST HQ will see roles and user lists under each role as shown in *Figure 3.18*.
- Superadmin user is created from the backend, but DoST HQ user and RO users can be added from the system

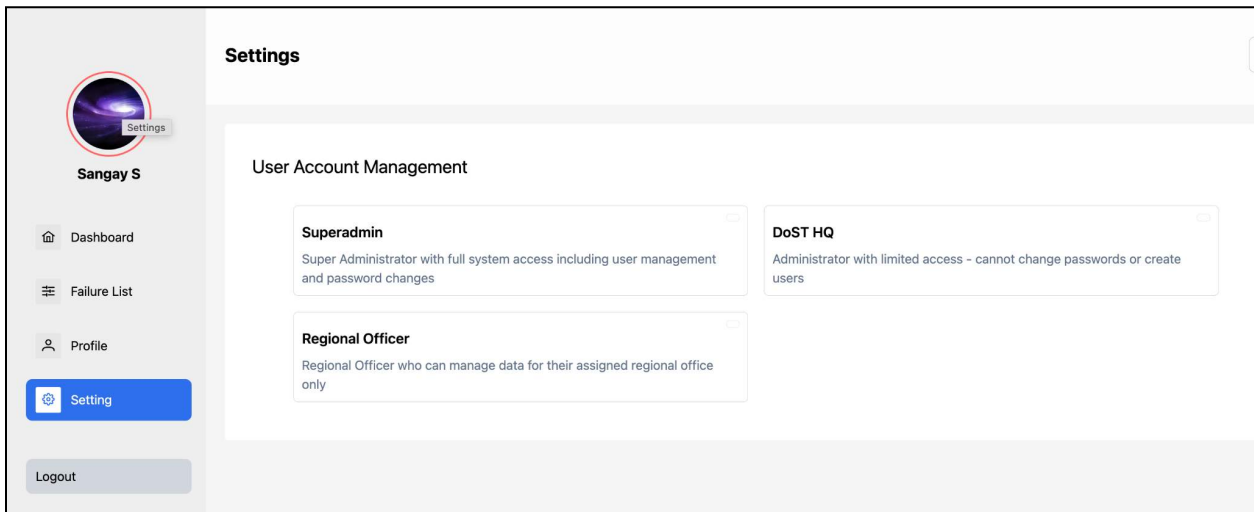


Figure 3.18 : Setting Tab

- Click on one of the roles and the user listing page will be displayed (*Figure 3.19*) for respective roles in a tabular format.
- Each user's details can be edited including their password.
- Archive button will archive the user who will no longer be able to use the system and will be put under the archived list. From the archived list, the user can be permanently deleted.
- Quick actions tab shows the details of what permissions each role can perform.

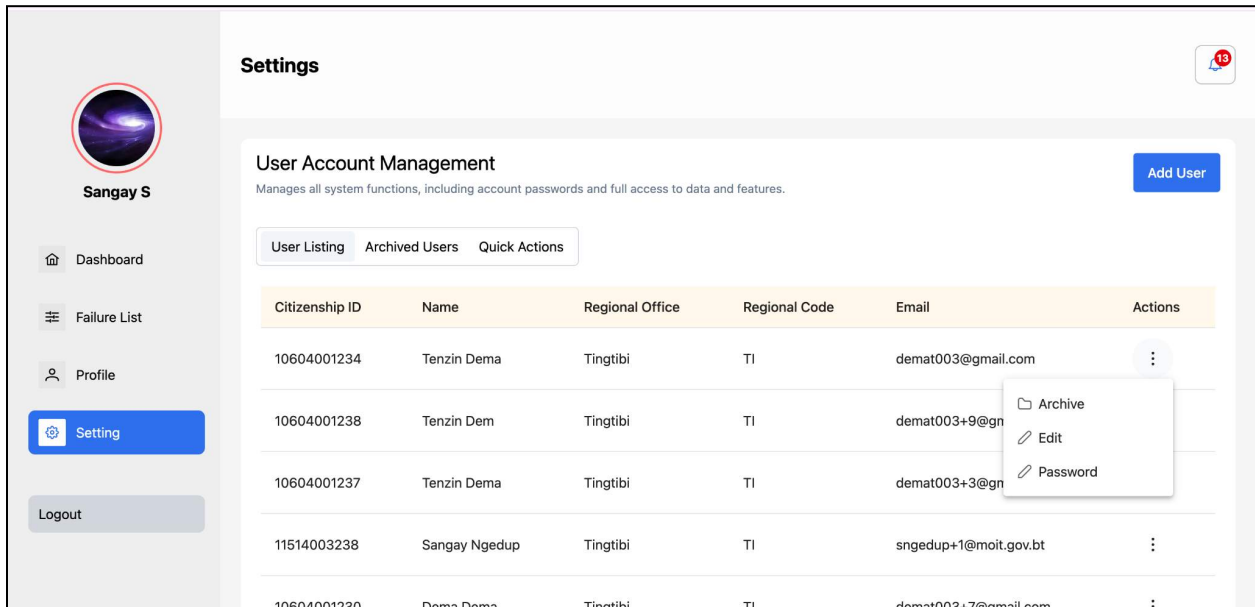


Figure 3.19 : Setting Tab - User Listing

- Clicking on the **Add User** button opens a modal to enter user details (*Figure 3.20*).
- The user receives an invitation to their email where they can set up their password and start using the system.

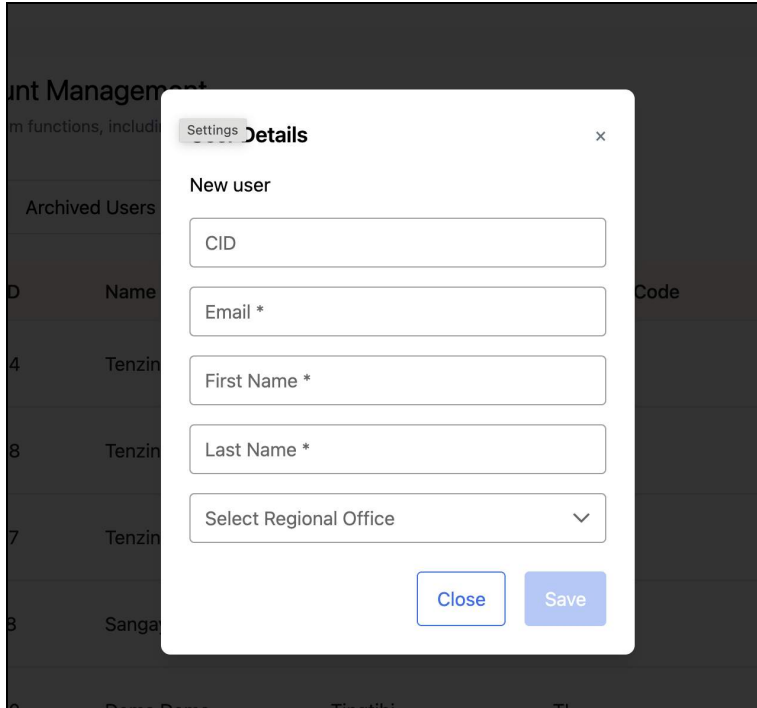


Figure 3.20 : Setting Tab - User Creation Flow

3.5 Notification

- The last feature is the Notification for the system (*Figure 3.21*).
- Notification is triggered when there is a new failure created, a failure is deleted from the system, a user is archived or deleted from the system, regular checks are generated for the year and when emergency inspection is created.
- Clicking on **Mark as read** button will mark all the notifications in the current page as read.
- Clicking on the **Mark as all read**, will mark the whole system notification as read.

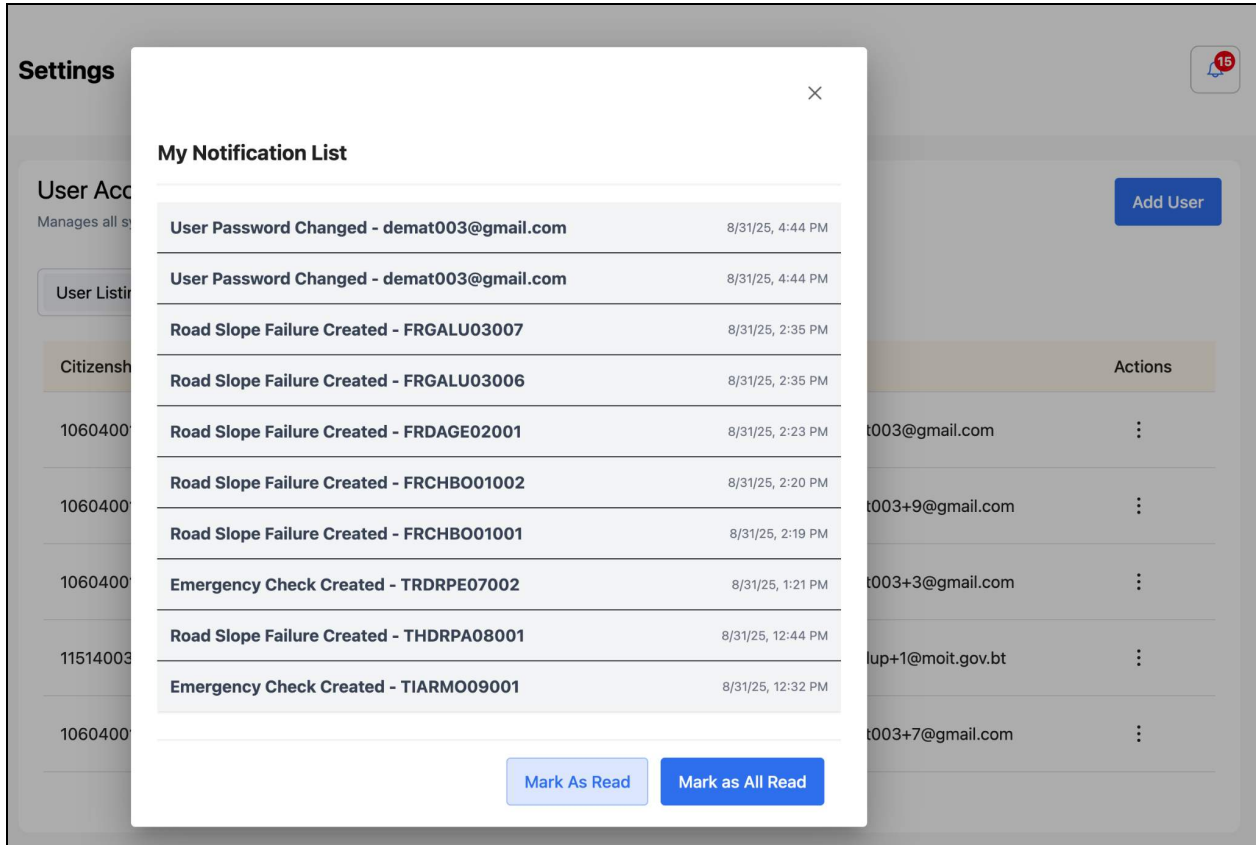


Figure 3.21 : System Notification

4.0 Regional Officer View

- Login as Regional officer, the data will be restricted only to the respective RO data.

4.1 Dashboard

- The Summary dashboard will show all information as the rest of the users (Figure 4.0).
- However, the Monitor dashboard will have data only for that particular RO.

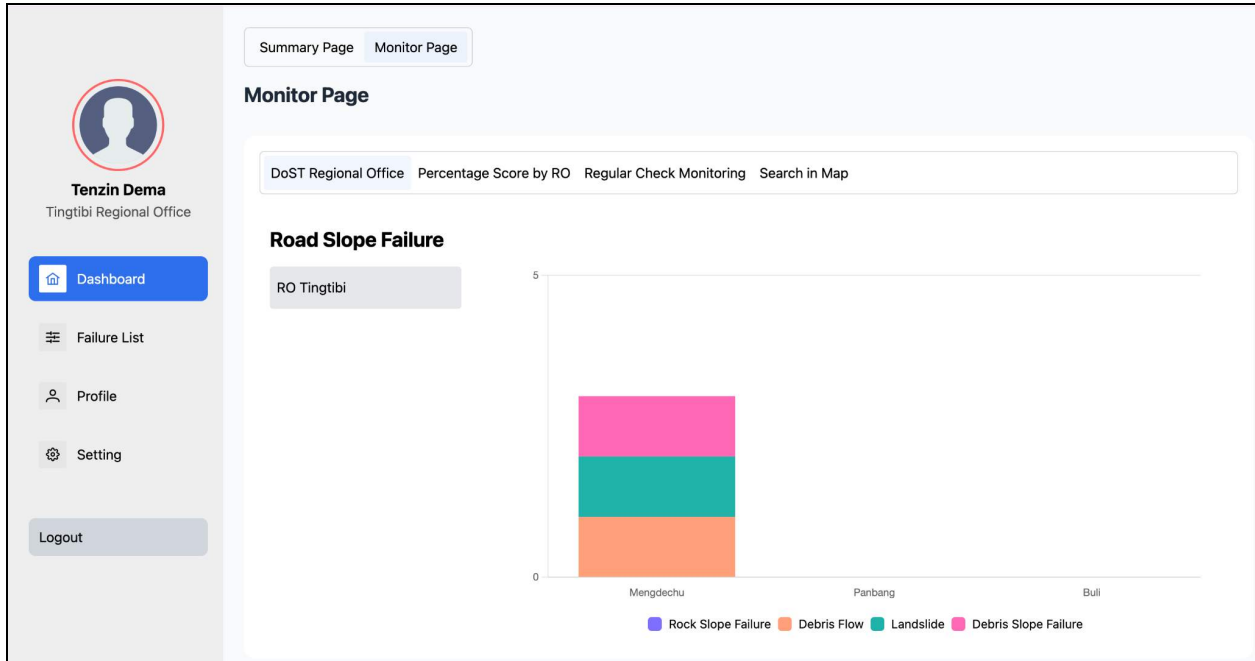


Figure 4.0 : Dashboard - Monitor Page

4.2 Failure List

- The RO user will see all the failures of that particular RO and will not be able to see other RO failures (Figure 4.1)
- New failure can be created from the web or mobile app as well.

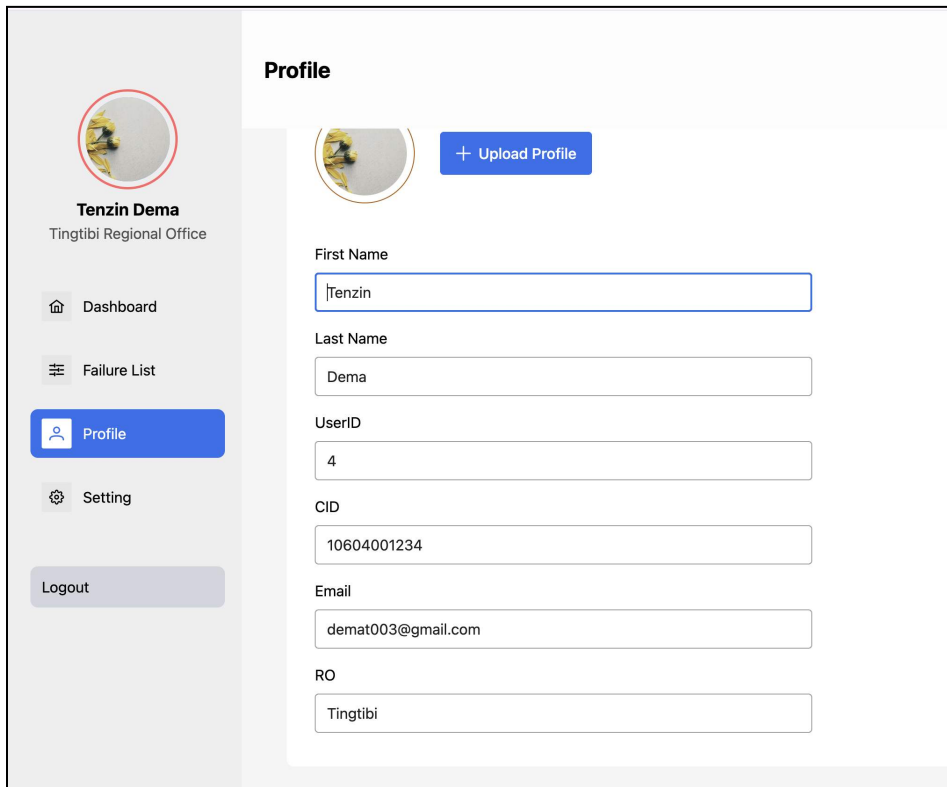
The 'Failure List' page for Tenzin Dema (Tingtibi Regional Office) displays a table of slope failures. The table has columns: Slope ID, Name, Regional Office, Dzongkhag, Failure Type, Rank, Next Check Date, and Map. There are three entries in the table, all from the Tingtibi Regional Office. The table also includes a search filter 'Slope failure', an 'Export' button, an 'Add New' button, and a pagination control showing page 1 of 10.

Slope ID	Name	Regional Office	Dzongkhag	Failure Type	Rank	Next Check Date	Map
TIARMO09001	app debris flow	Tingtibi	Mongar	Debris Flow	2	01 Oct 2025	📍
TIDRLH04001	ndhs	Tingtibi	Lhuentse	Debris Slope Failure	1	01 Oct 2025	📍
TIDRPE08001	app landslide flow	Tingtibi	Pemagatshel	Landslide	2	01 Oct 2025	📍

Figure 4.1 : Failure List

4.3 Profile

- Under profile the RO user will be able to update their pictures but will not be able to update any other information (*Figure 4.2*).
- If a password is forgotten, the RO user has to inform superadmin and admin to create a new password for them.



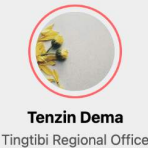
The screenshot displays the 'Profile' page of a user interface. On the left, a sidebar contains navigation options: Dashboard, Failure List, Profile (highlighted in blue), Setting, and Logout. The main content area is titled 'Profile' and features a user profile for 'Tenzin Dema' from the 'Tingtibi Regional Office'. The profile includes a circular profile picture with a '+ Upload Profile' button. Below the picture are several input fields for user information:

Field	Value
First Name	Tenzin
Last Name	Dema
UserID	4
CID	10604001234
Email	demat003@gmail.com
RO	Tingtibi

Figure 4.2 : Profile Page

4.4 Setting

- Under settings, RO users will directly see the list of users under their RO and not the entire users of the system (*Figure 4.3*).
- They cannot archive, edit, delete or add new users.



Tenzin Dema
Tingtibi Regional Office

- Dashboard
- Failure List
- Profile
- Setting
- Logout

Settings

User Account Management

Manages all system functions, including account passwords and full access to data and features.

User Listing
Archived Users
Quick Actions

Citizenship ID	Name	Regional Office	Regional Code	Email
10604001234	Tenzin Dema	Tingtibi	TI	demat003@gmail.com
10604001238	Tenzin Dem	Tingtibi	TI	demat003+9@gmail.com
10604001237	Tenzin Dema	Tingtibi	TI	demat003+3@gmail.com
11514003238	Sangay Ngedup	Tingtibi	TI	sngedup+1@moit.gov.bt
10604001230	Dema Dem Settings	Tingtibi	TI	demat003+7@gmail.com

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Figure 4.3 : Setting Page

APPENDIX II-B

Mobile App User Manual

1.0 Guest View

- After installing the app, the login page will appear as shown in *Figure 5.0*. Click on 'Continue as Guest' to view the guest user screen.

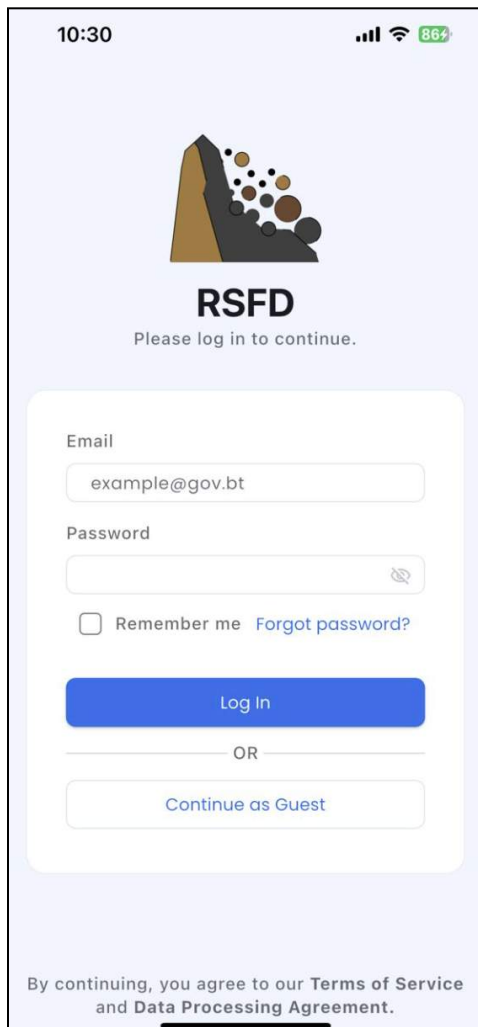


Figure 5.0 : Mobile App Login Page

1.1 Home Page

- The Home page will have three short-cut icons (Figure 5.1). Slope list, map and Help.
- The top left corner has a hamburger menu clicking on which, side tool bar will appear (Figure 5.2) with the same options and a signout button, to signout from the guest view.
- All the features of the guest user remain the same for phones as well.

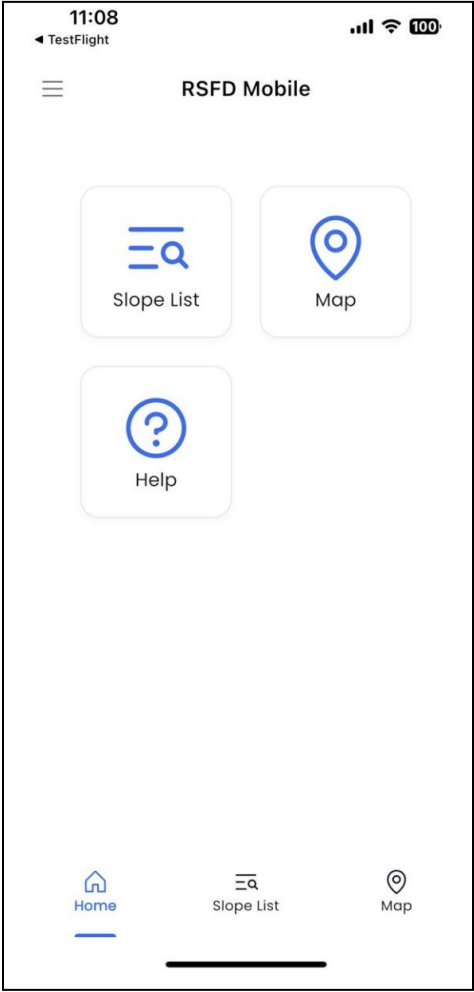


Figure 5.1 : Mobile App - Home Page

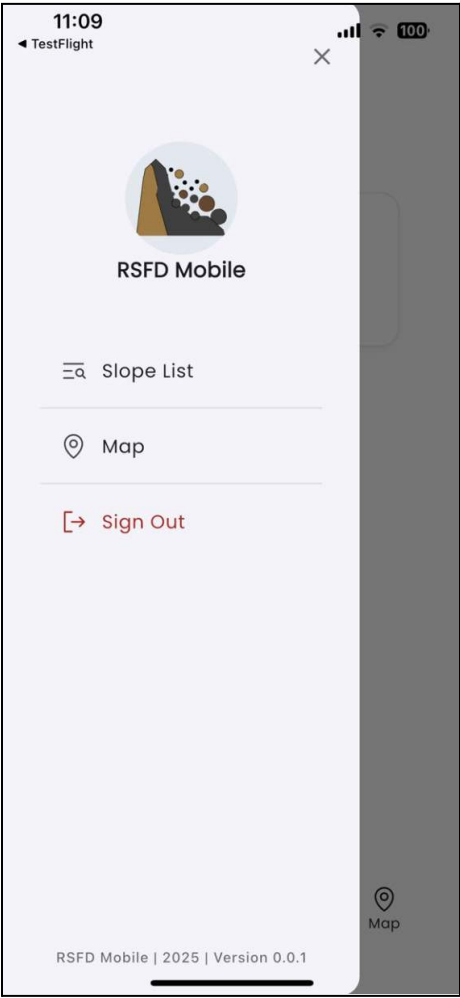


Figure 5.2 : Mobile App - Side tool bar

- Clicking on the help icon leads to a screen with contact information details which are fixed texts and no action required (*Figure 5.3*)

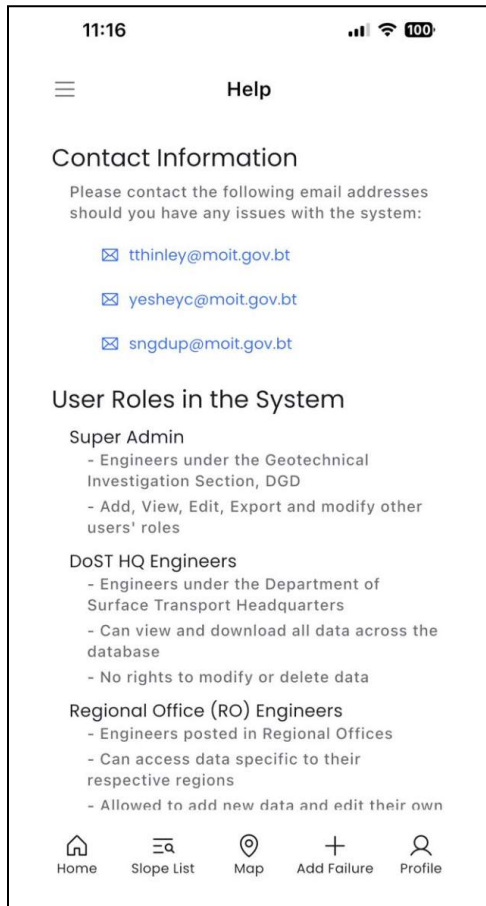


Figure 5.3 : Mobile App - Info Page

1.2 Slope Listing

- The slope list in the app is however grouped together based on ROs (*Figure 5.4*).
- Farm road failures are listed under Farm Road category as they are not assigned to any Regional office.

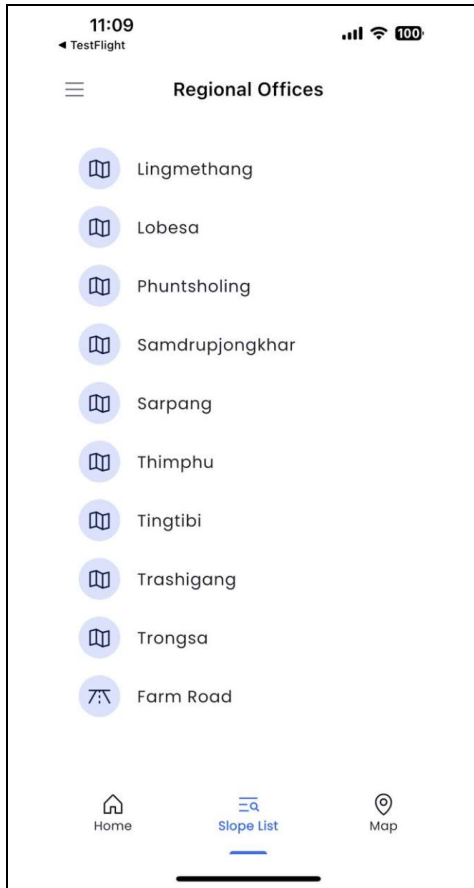


Figure 5.4 : Mobile App - Slope List Page

- Clicking on each RO will lead to the failure listing page in a card format as shown in *Figure 5.5*.
- This page shows every failure under the respective RO. Detail page is not available for Guest users.
- Each card has a copy icon that copies the slope ID which can be used on the search field above or in map view.
- The map icon redirects to the map page with zoomed in pin location of that particular failure.

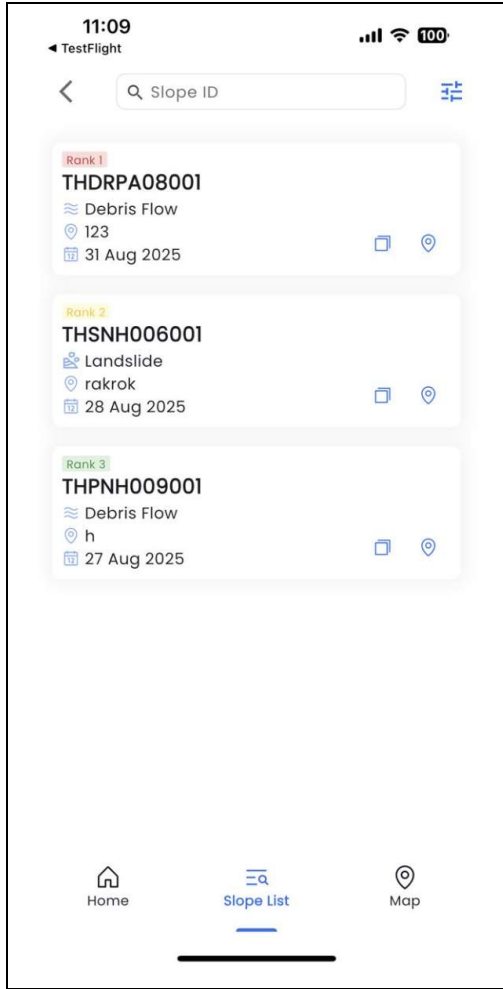


Figure 5.5 : Mobile App - RO Specific Slope Listing Page

- The filter beside the search field shows all the filters the same as the web.
- The filter fields appear from the bottom of the page as shown in Figure 5.6
- The functionality applied here works same as the web.

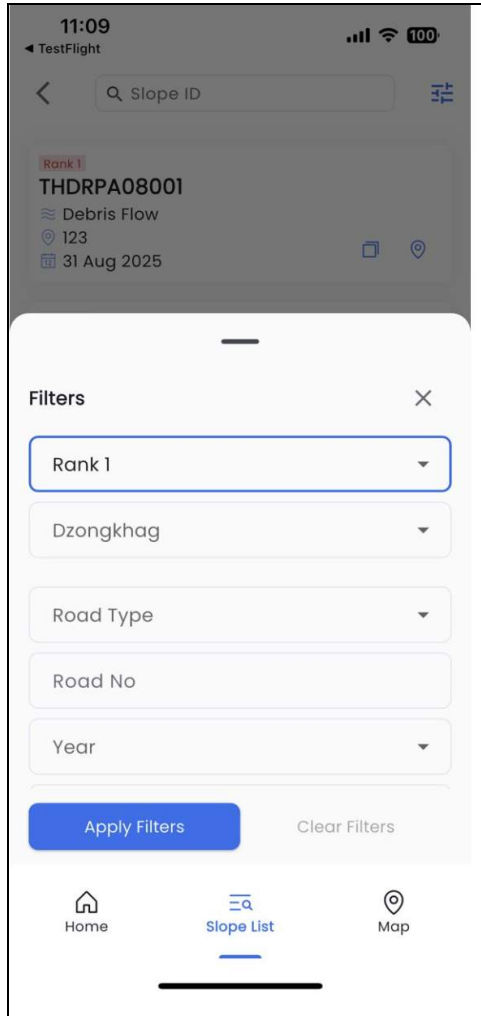


Figure 5.6 : Mobile App - Slope Filter

1.3 Map View

- The map view also functions the same as the web. The slope ID that is copied can be pasted in the search field and the slope location appears as zoomed in (Figure 5.7).
- Click on the pin and details are displayed as shown in the image.

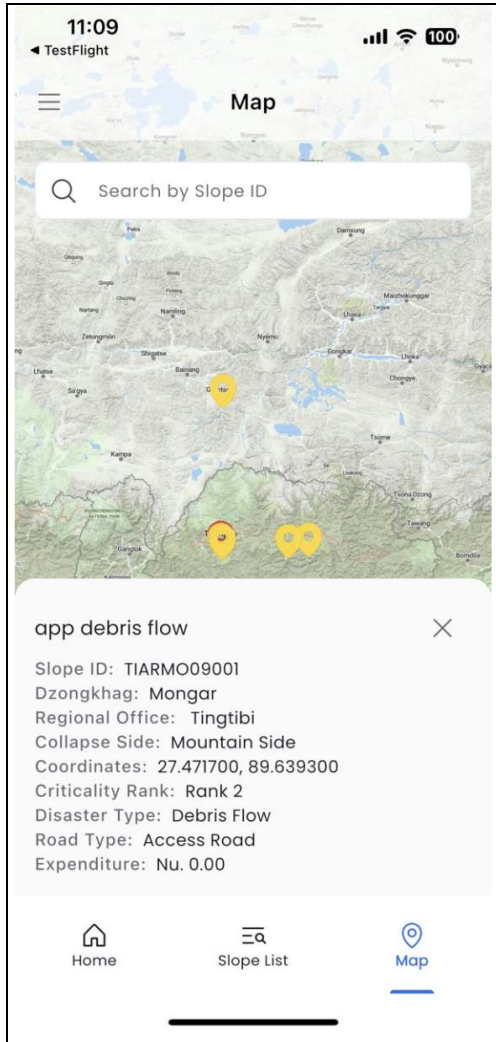


Figure 5.7 : Mobile App - Map View

2.0 Superadmin/DoST HQ & RO

- Login as the Super admin or DoST HQ or RO user.
- The view of the home page is the same for all of the three users.
- However, the inside view of these features differ for RO users.

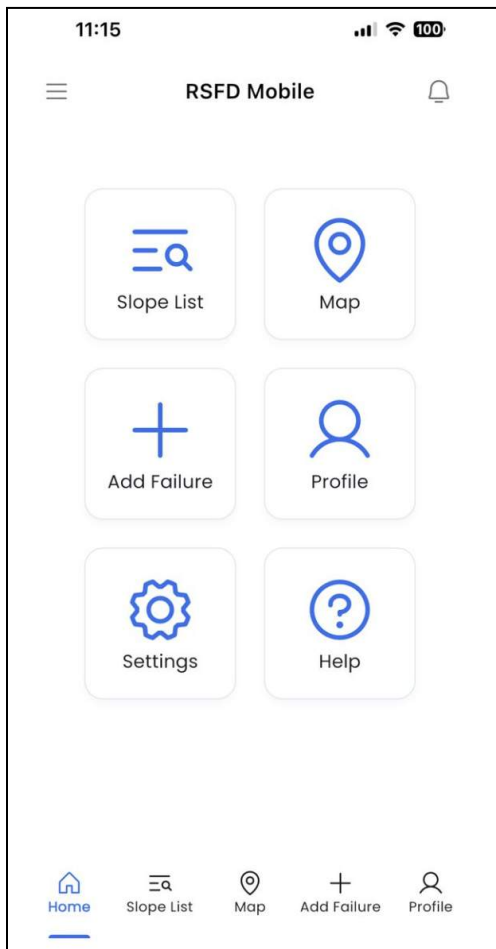


Figure 6.0 : Mobile App - Home Page

2.1 Create Failure

- For superadmin, DoST HQ and RO users, there's an option to create slope failure.
- The flow and steps are the same as the web (*Figure 6.1*).

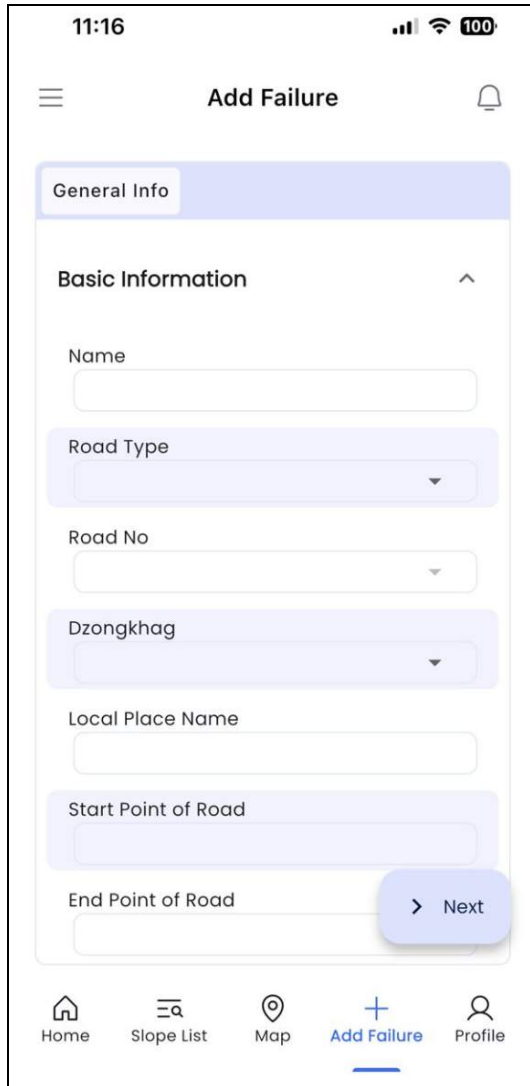


Figure 6.1 : Mobile App - Slope Failure Creation Flow

2.2 Setting

- When it comes to setting the page, the admin and DoST HQ sees the role breakdown as shown in *Figure 6.2*.
- However, the RO users directly see users instead of roles under Setting (*Figure 6.3*).
- In the app, there is no user creation, edit and delete function.

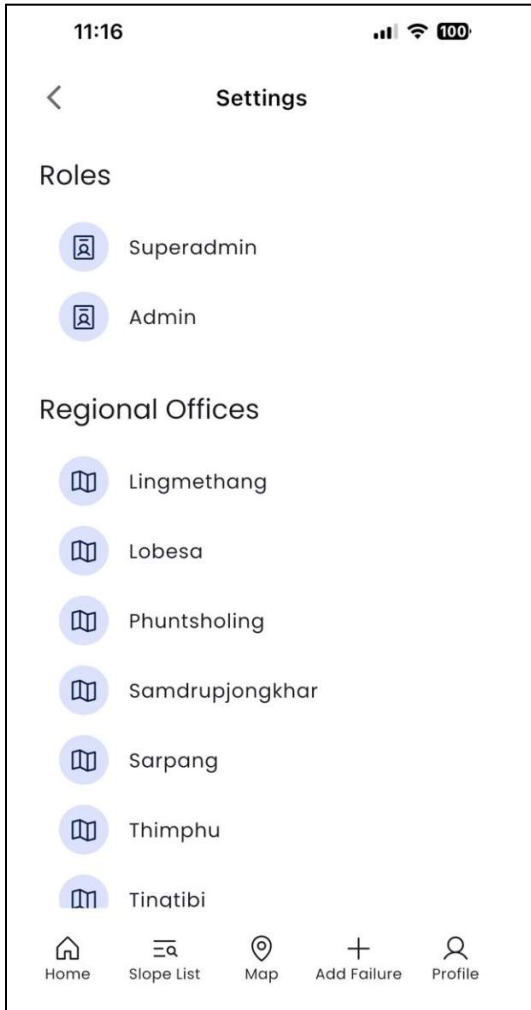


Figure 6.2 : Mobile App - Settings Page

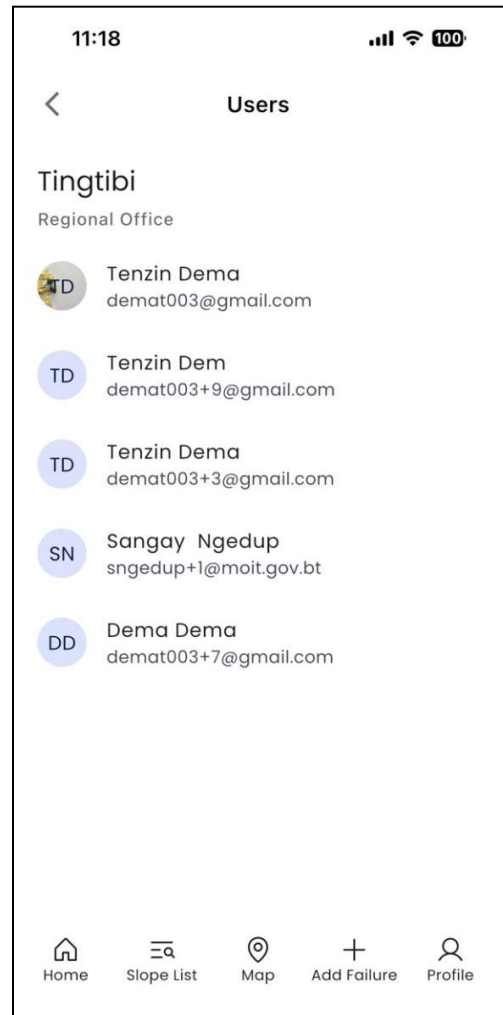


Figure 6.3 : Mobile App - User Listing

2.3 Notification

- On the top right corner of the app, there is a notification bell icon.
- Clicking on the icon opens a side tool bar from the right of the screen as shown in *Figure 6.4*
- Superadmin and DoST HQ will receive all the notifications.
- However, RO users can see notifications related to RO like failure creation for the RO, deletion, emergency inspection, regular check and password change.

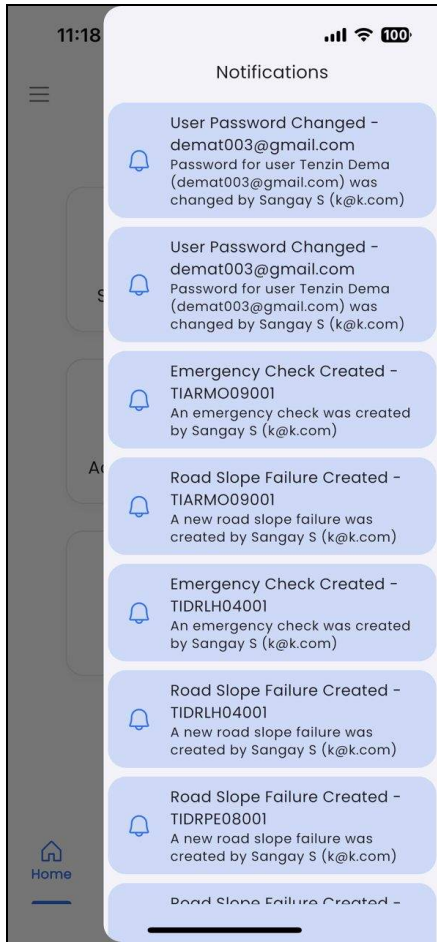


Figure 6.4 : Mobile App - Notification