Gqunsu ENGINEERING

A systems thinking approach to business challenges

RMSSOFT v1.0 SOFTWARE HELP DOCUMENTATION

by Bhekisizwe Mthethwa Pr. Eng

Gqunsu ENGINEERING

A systems thinking approach to business challenges

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00A	Inception	5 October 2018	B Mthethwa	Original release.
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ABBREVIATIONS

RMSSOFT	Rail Maintenance System Software
URL	Uniform Resource Locator
CSV	Comma-Separated-Values

1 Introduction

1.1 Identification

The current rail maintenance system software (RMSSOFT) is the first version of its kind and it is identifiable using the uniform resource locator (URL) https://www.rmssoft.co.za or https://rmssoft.co.za. This software version is version 1.0 and it is shown on the login page of the system together with the RMSSOFT Logo. Do not attempt to enter your details or access the system if the **https** prefix does not exist in the URL. The system under discussion will be identified as RMSSOFT v1.0 henceforth.

1.2 Document Purpose and Scope

The purpose of this document is to exhibit, to the end user, how the RMSSOFT v1.0 system operates. It covers the operational explanations as to how the following system modules operate:

- Login Password Management
- Manage System Settings
- Manage User Access Control
- Manage Wheel Measurements
- System Activity Logs Management
- Wheel Measurements Planning Report Management
- Wheel Re-profiling Data Management

2 Referenced Documents

Not Applicable.

3 Help Documentation

This section deals with the operational help documentation for the RMSSOFT v1.0 system.

3.1 General Functions

3.1.1 Login Page

To access the system login page, enter www.rmssoft.co.za in the address bar of your browser of your choice. Please note that RMSSOFT v1.0 is only compatible with the following browsers:

- Google Chrome version 66 and above
- Mozilla Firefox version 57 and above

You will not be able to login into the system if you are using an unsupported browser. The following Figure 1 shows the message and options you have when faced with an incompatible web browser.

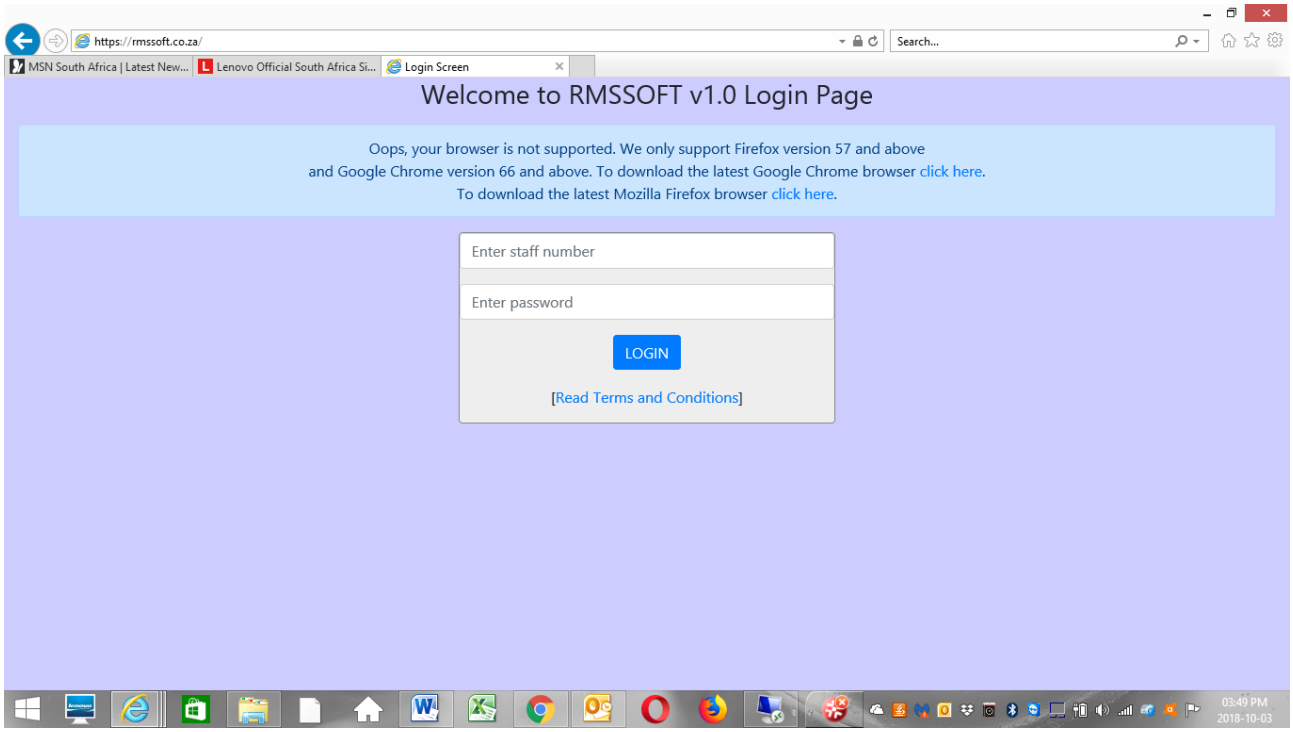


Figure 1, “Login Page showing browser incompatible message”

The user has the option of downloading the latest Google Chrome or Mozilla Firefox web browsers. The message seen above the login form has the direct links to the download pages for both web browsers.

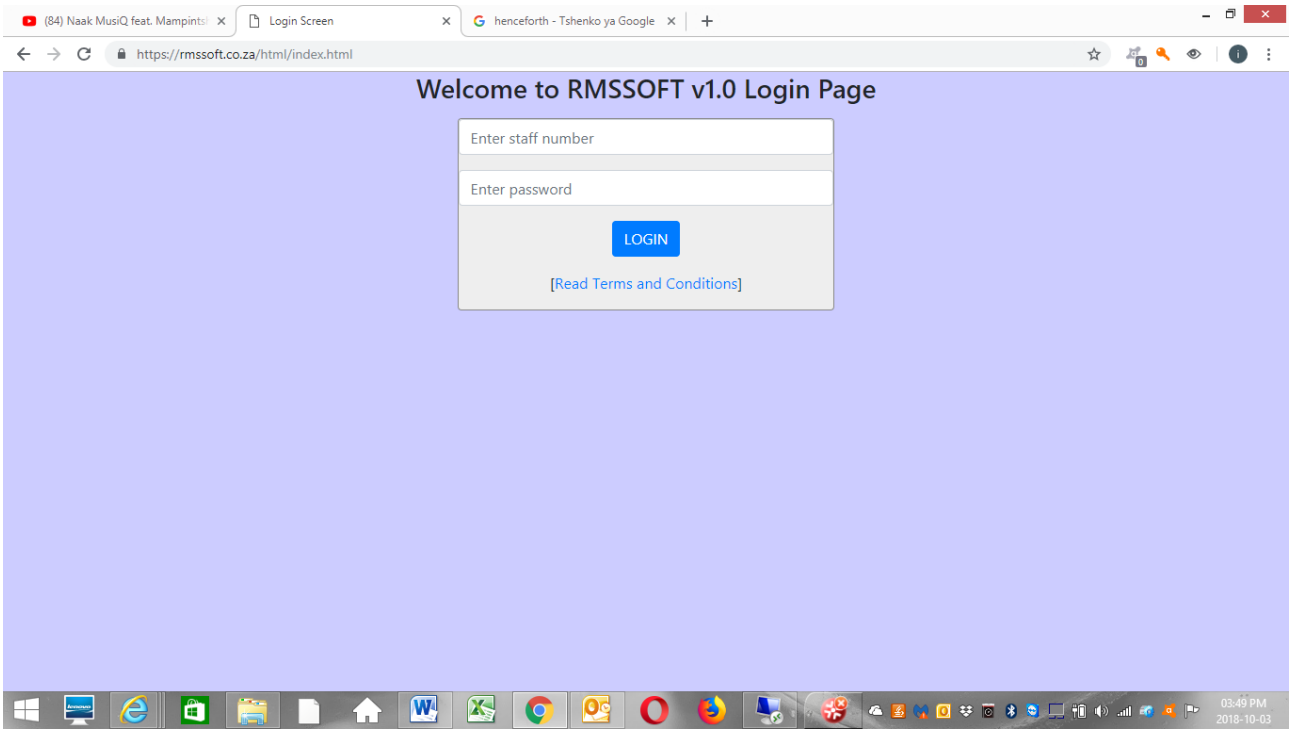


Figure 2, “RMSSOFT v1.0 login page”

Assuming the browser you are using is supported and compatible to RMSSOFT v1.0, Figure 2 shows the login page without the browser incompatibility message. In Figure 2, the login page form requests the completion of the following fields:

- Staff Number (At least 4 or more Alpha-numeric characters)
- Password (At least 8 or more Alpha-numeric characters)

The login page will not log you in if you do not meet the above requirements and you use incorrect login credentials. In order to login into the system, your administrator will create a user account for you and the system will automatically email you the login credentials and link to the RMSSOFT v1.0 system.

3.1.2 Terms and Conditions of Use Page

To view the terms and conditions of use of the RMSSOFT v1.0 system, click on the “Read Terms and Conditions” hyper-link below the LOGIN button shown in Figure 2.

3.1.3 Login Password Management Function

This section deals with the user password management for logging into the system. Figure 3 shows the fields that need to be completed. It also shows the profile details of the currently logged in user. This is where the user updates their login password by specifying the following fields:

- Current Password (At least 8 or more Alpha-numeric characters)
- New Password (At least 8 or more Alpha-numeric characters)
- Repeat New Password (At least 8 or more Alpha-numeric characters and must match new password)

After the above requirements have been met, you can update the password and an email will be sent to you with the new password.

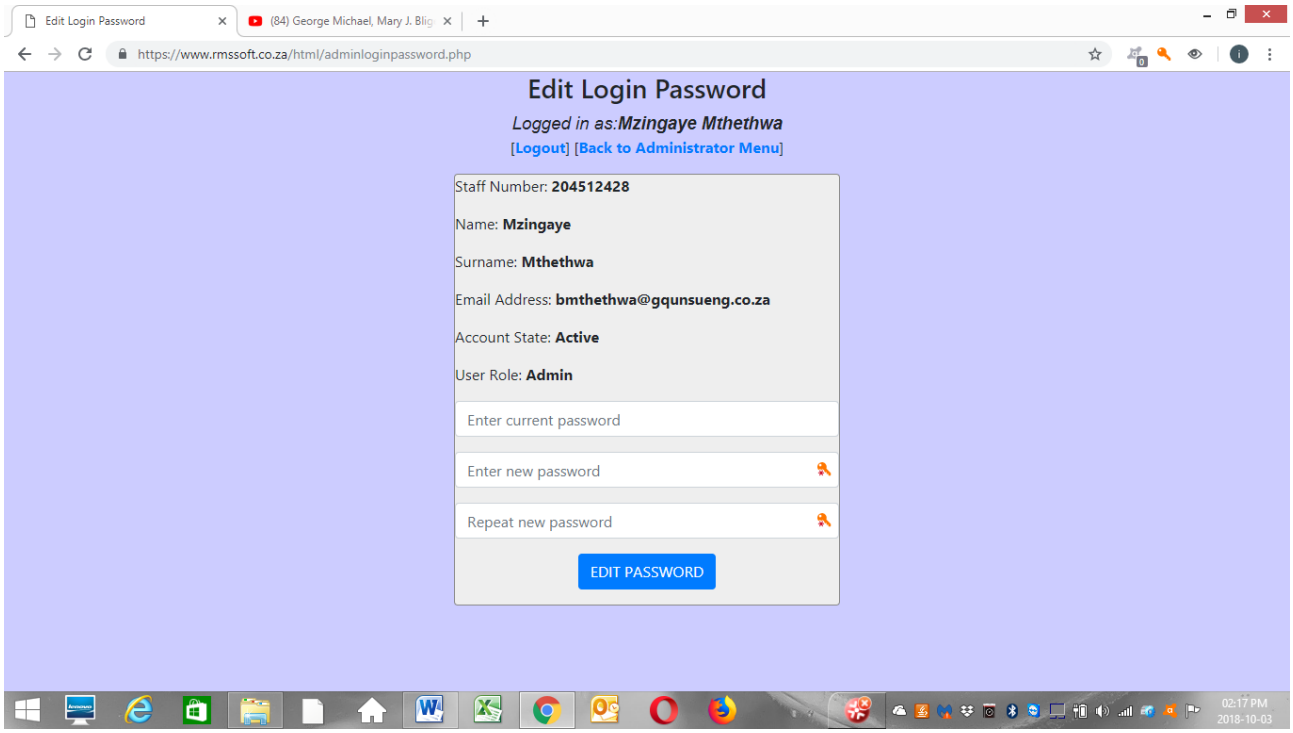


Figure 3, “Edit Login Password Screen”

3.2 Administrator Functions

This function is only visible to the system administrators who are assigned by the Super Administrator (RMSSOFT v1.0 System Developers) and/or the end user System Administrator. The non-administrator user roles do not have access to this functionality and therefore their menu will not show this module.

3.2.1 Manage User Access Control Function

This section deals with the management of user accounts, resetting of user passwords and management of user roles.

3.2.1.1 Reset User Password Function

To access the reset user password function, the administrator must click the “*Manage User Access Control>>Reset User Password*” links.

If a specific staff member has forgotten their system login password, the administrator can reset the staff member’s login password by entering the staff member’s staff number into the Password Recovery Form and clicking the RESET PASSWORD button as shown in Figure 4. The system will automatically generate a random new password and email the staff member the new password. If the staff number entered does not match a specific user account, the system will notify the administrator via a pop-up dialogue box.

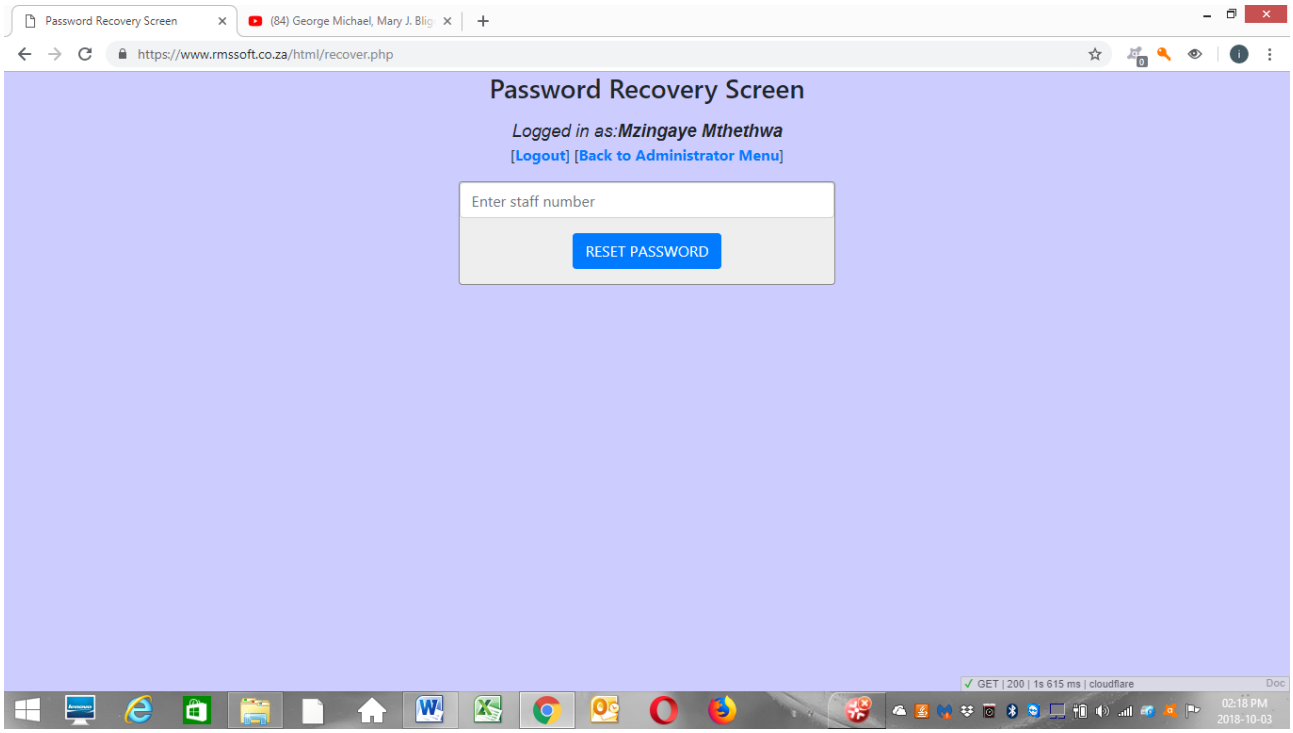


Figure 4, “Password Recovery Screen”

3.2.1.2 User Accounts Management Function

a. Create User Account

When the system administrator wants to add a user account into the system, they access the “create user account” page by clicking the links “*Manage User Access Control>>User Accounts Management>>Create User Account*”. Figure 5 shows the page that appears.

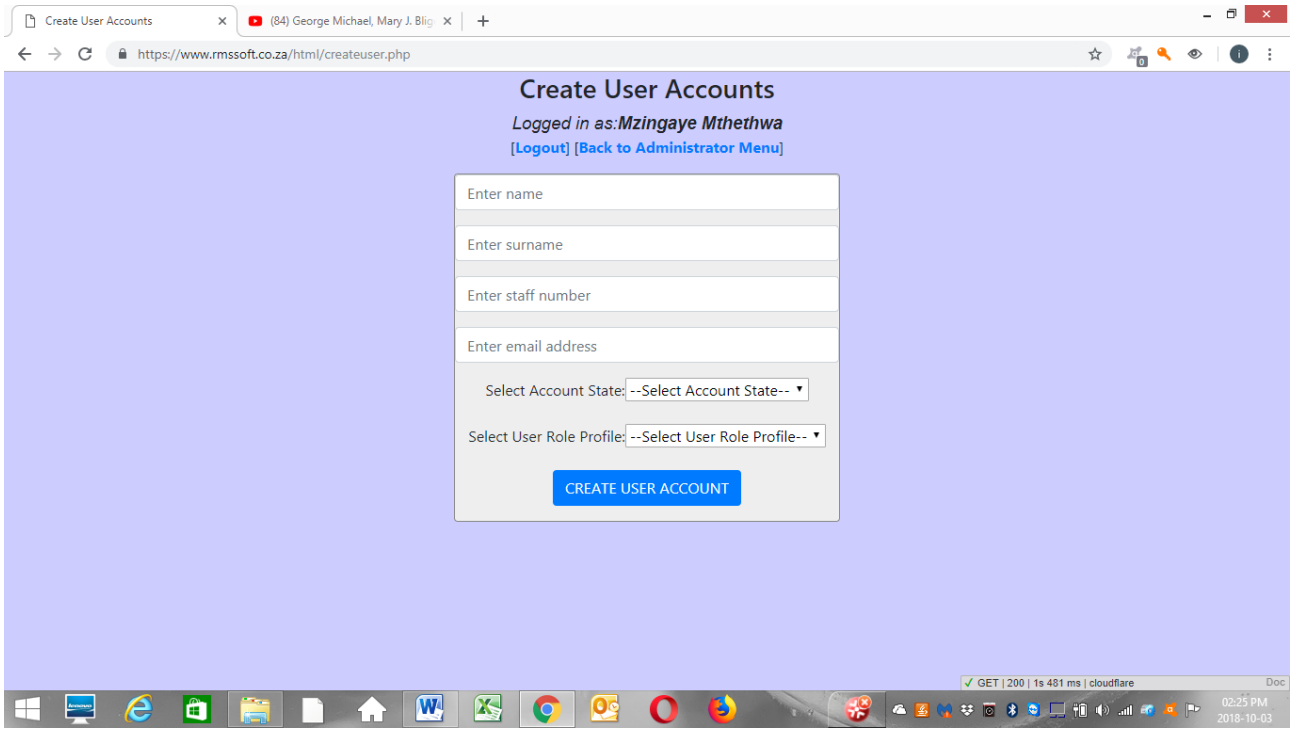


Figure 5, “Create User Accounts Screen”

The administrator then completes the following fields as shown in Figure 5:

- Name (At least Two or more characters, hyphens, space and letters only)
- Surname (At least Two or more characters, hyphens, space and letters only)
- Staff Number (At least 4 or more Alpha-numeric characters only, must be unique in system)
- Email Address (Valid Email address)
- Account State (Select Active or In-Active)
- User Role Profile (Select User Role Profile)

The user role profile defines the occupation of the staff member whose account is being created. The user role profiles need to be created first before assigning user accounts to the user role profiles. The staff number entered must be unique in the system, since duplicate staff numbers are not allowed. Please make sure that you enter the staff number correctly as it is not editable at a later stage.

After the successful creation of the user account, an email is automatically sent to the staff member notifying them that their account has been created and their system login credentials are stated in the same email. The password is randomly generated and the staff members are encouraged to update it to a password that can be easily remembered.

b. Edit User Account

When the system administrator wants to update a user account in the system, they access the "edit user account" page by clicking the links "*Manage User Access Control>>User Accounts Management>>Edit User Account*". Figure 6 shows the page that appears.

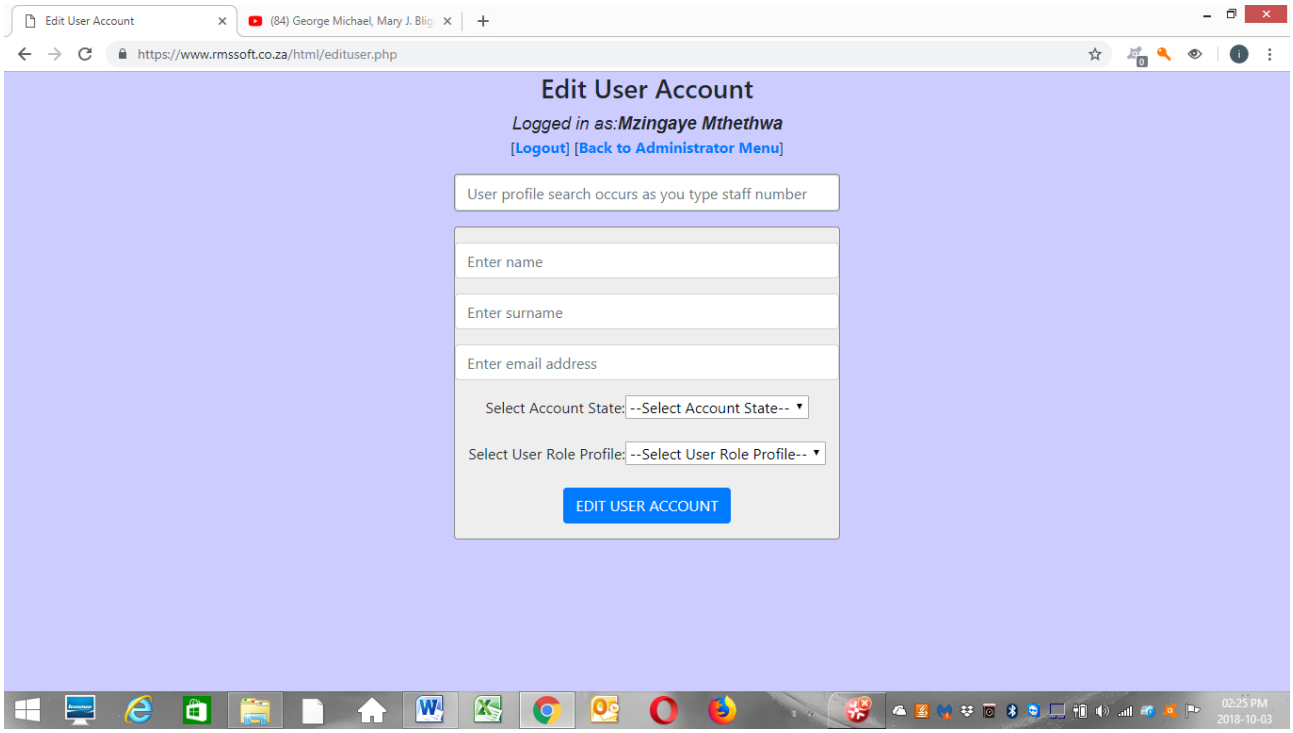


Figure 6, "Edit User Account Screen"

The administrator can then edit the following fields as shown in Figure 6:

- Name (At least Two or more characters, hyphens, space and letters only)
- Surname (At least Two or more characters, hyphens, space and letters only)
- Email Address (Valid Email address)
- Account State (Select Active or In-Active)

- User Role Profile (Select User Role Profile)

In order to pull up the details of the user account, the administrator enters the staff number, of the user account in question, in the search form above the “Edit User Account Form”. Make sure that the user account profile that appears is indeed the correct profile. After updating the details successfully, an email is sent to the account holder stating that their profile has been updated.

3.2.1.3 User Roles Management Function

a. Create User Role

When the system administrator wants to add a user role into the system, they access the “create user role” page by clicking the links “*Manage User Access Control>>User Accounts Management>>Create User Role*”. Figure 7 shows the page that appears.

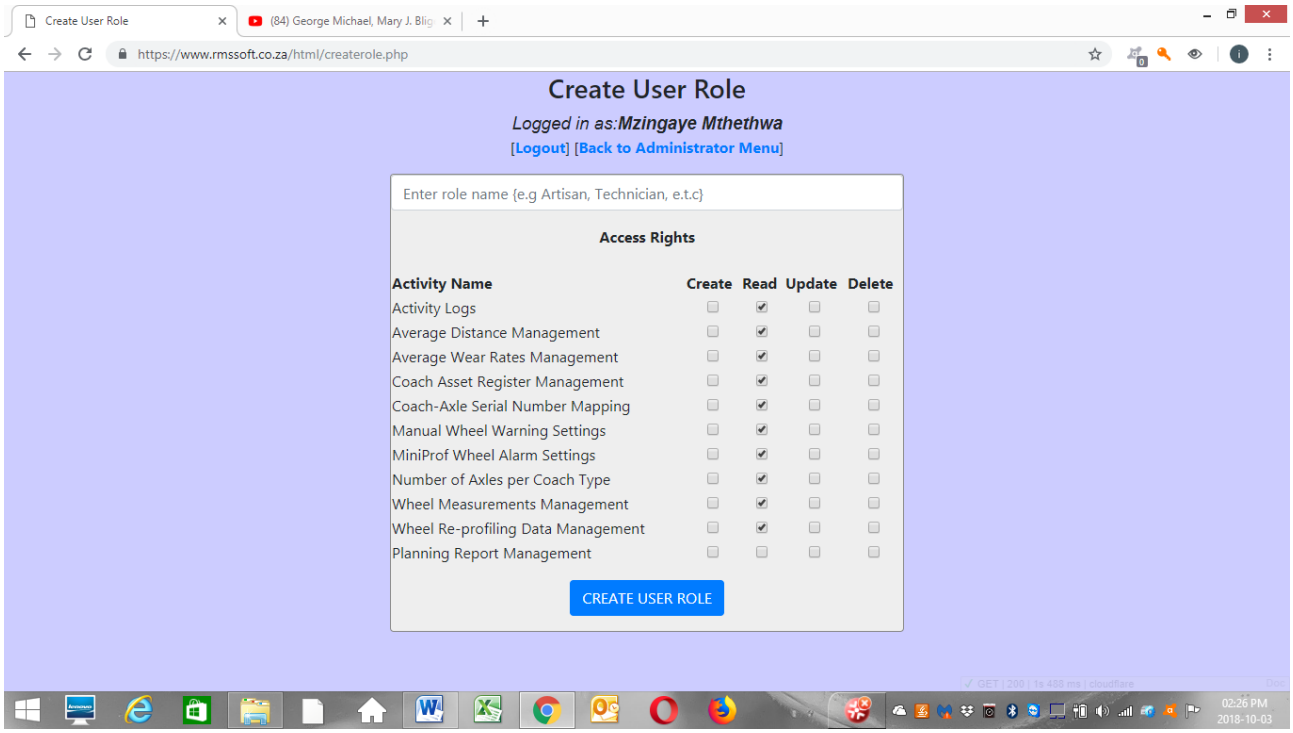


Figure 7, “Create User Role Screen”

The screen shows a field requesting the user role name that needs to be added. The system does not allow duplicate user role names. The page also shows the default access rights that will be assigned to the user role. The administrator is free to set the appropriate access rights for the user role they are creating.

Clicking on the Planning Report Management activity name “Read” access right checkbox automatically shows the planning report column names. This is where the administrator can specify what columns will be visible in the planning report for a specific user role. This information hiding is important if you do not want to share sensitive information with specific stakeholders or user roles. The default settings are that no columns are visible.

b. Edit User Role Access Rights

When the system administrator wants to edit a user role access rights in the system, they access the “edit user role access rights” page by clicking the links “*Manage User Access Control>>User Accounts Management>>Edit User Role Access Rights*”. Figure 8 shows the page that appears.

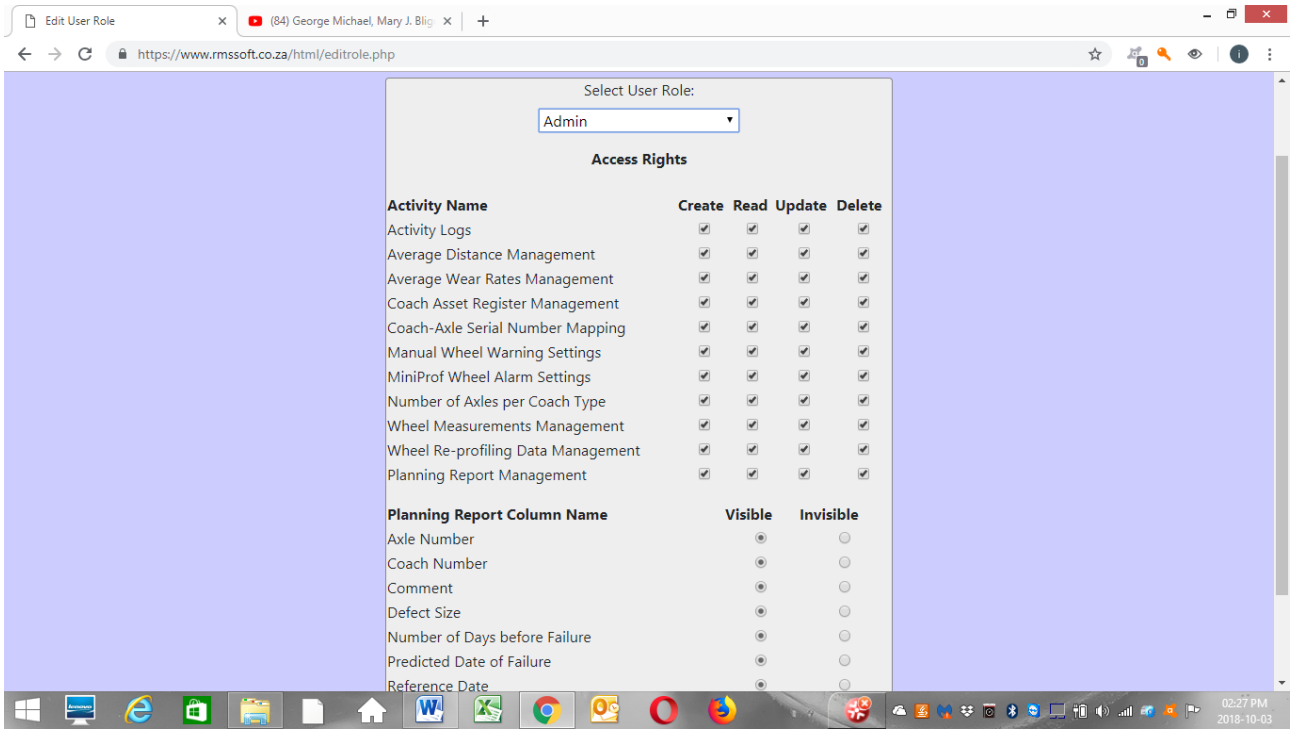


Figure 8, “Edit User Role Access Rights”.

The administrator is free to update the Create, Read, Update or Delete access rights for each system activity per user role. The administrator can select the user role in question from the dropdown menu. This will in turn pull up the access rights for that specific user and the administrator can change these previously assigned access rights. If a specific RMSSOFT v1.0 user falls under a specific user role that does not have access rights to perform the Create, Read, Update or Delete functions under a specific activity, and the user attempts to view or create or update under that activity, the system will prevent the actions from completion and they will be notified via a dialogue box that they do not have access rights to perform the actions.

3.3 User Functions

The functions in this section are common to both administrator users and non-administrator users.

3.3.1 Manage System Settings Function

This section deals with the setup of the system settings for proper functionality of the system. It is compulsory for the system settings to be set in order for the system to work. Please make sure you setup this system before attempting to import wheel measurements or generate planning reports.

3.3.1.1 Asset Register Management Function

a. Add Asset to System

When the user wants to add an asset to the asset register in the system, they access the “Add Asset to System” page by clicking the links “*Manage System Settings>>Asset Register Management>>Add Asset to System*”. Figure 9 shows the page that appears.

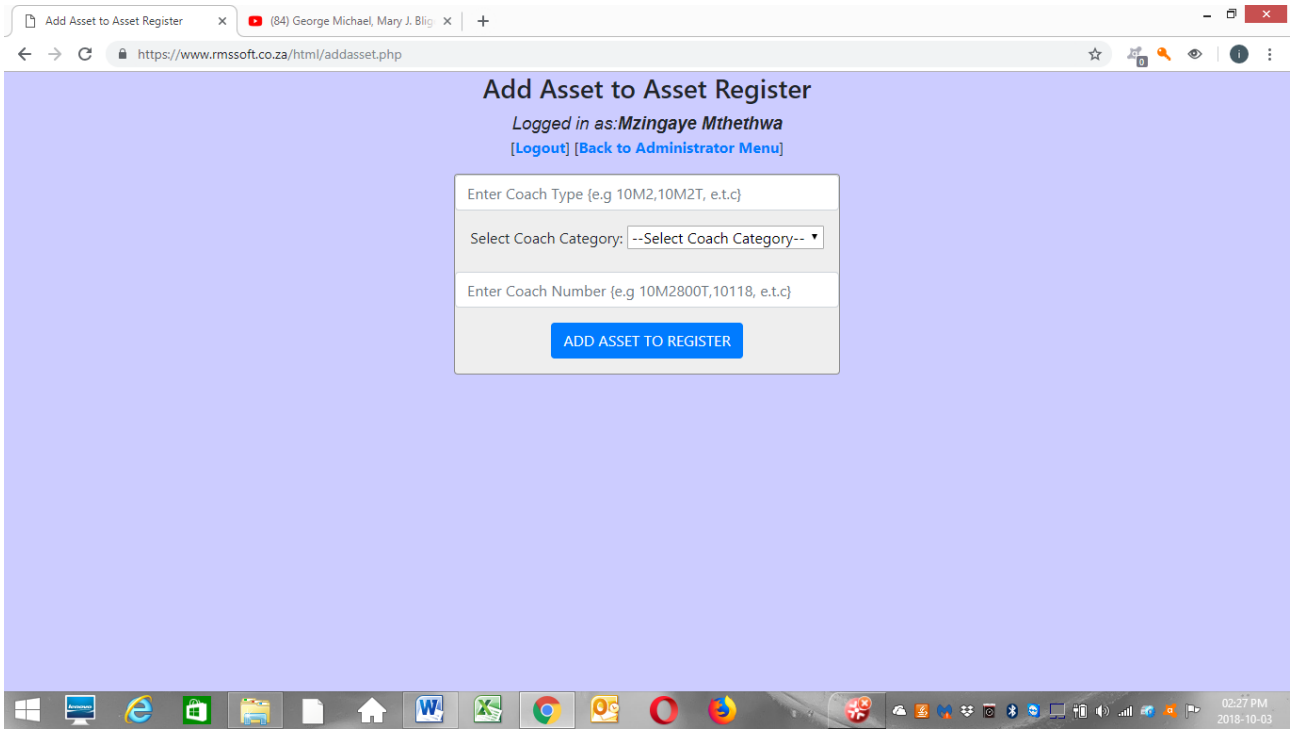


Figure 9, “Add Asset to Asset Register Screen”

The user must complete the following fields

- Coach Type (Two or more characters, i.e Only digits, letters, hyphens and spaces allowed)
- Coach Category (Select between a Wagon, Locomotive, Motor Coach or Trailer Coach)
- Coach Number (Two or more characters, i.e Only digits, letters, hyphens and spaces allowed, must be unique in the system)

The coach number must be unique in the system otherwise the system will prevent the addition of such an asset into the system.

b. Edit Asset in System

When the user wants to update an asset in the asset register in the system, they access the “Edit Asset in System” page by clicking the links “*Manage System Settings>>Asset Register Management>>Edit Asset in System*”. Figure 10 shows the page that appears.

As shown in Figure 10, the user must enter the coach number in the search form above the “Edit Asset Form”. The search form enables the user to pull up the asset record for that specific coach number. The search form searches for the asset record as you enter the coach number. The user is then free to edit the Coach Type and Coach Number for that asset.

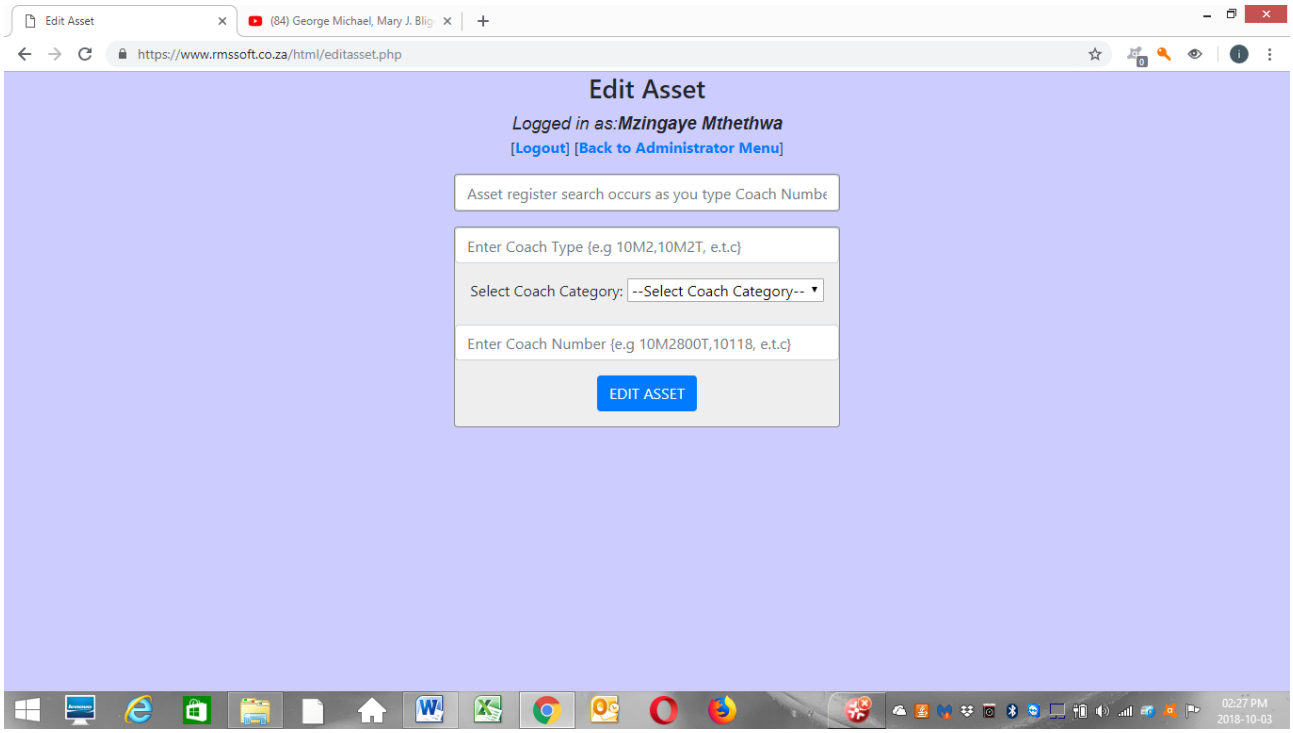


Figure 10, “Edit Asset Screen”

c. Import Asset Register

When the user wants to import an asset register in the system, they access the “Import Asset Register” page by clicking the links “*Manage System Settings>>Asset Register Management>>Import Asset Register*”. Figure 11 shows the page that appears.

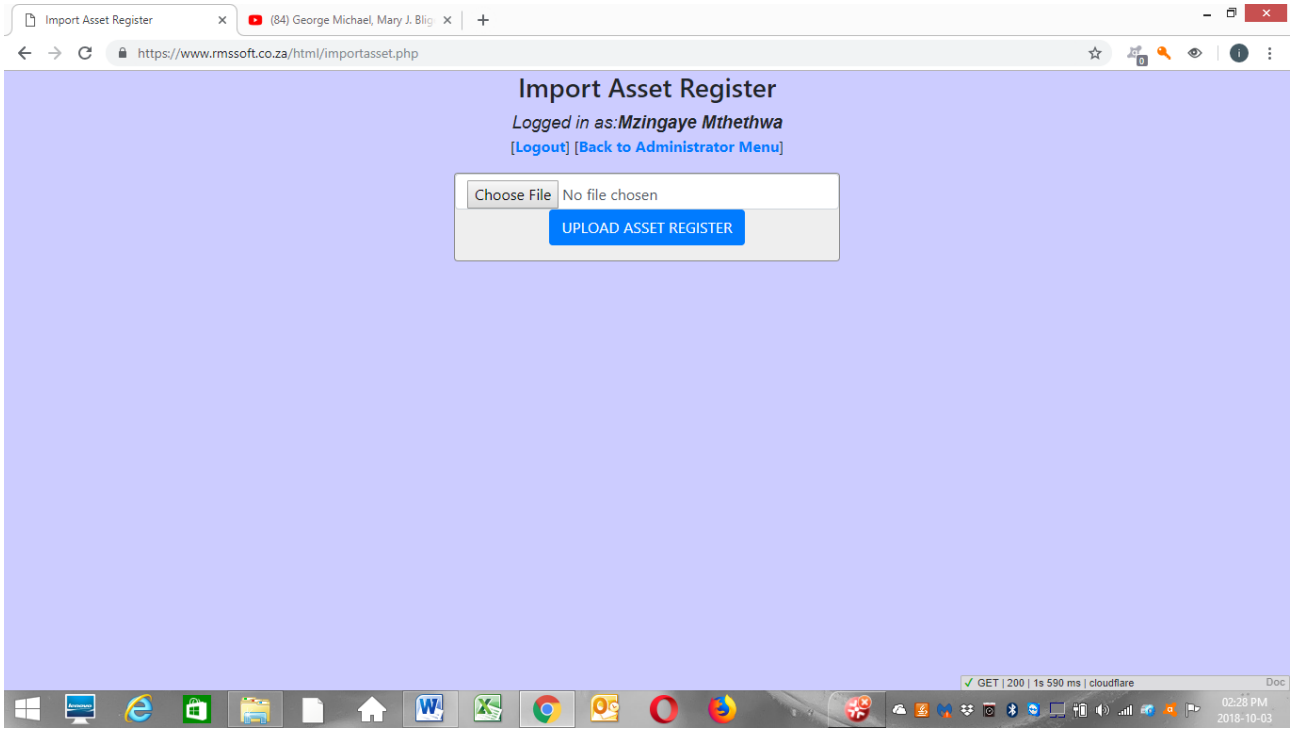


Figure 11, “Import Asset Register Screen”

This page gives the user the ability to add multiple assets simultaneously which is much faster if you have a lot of assets to add. All the user needs to do is create a Microsoft Excel file with the assets added in the format shown in Figure 12.

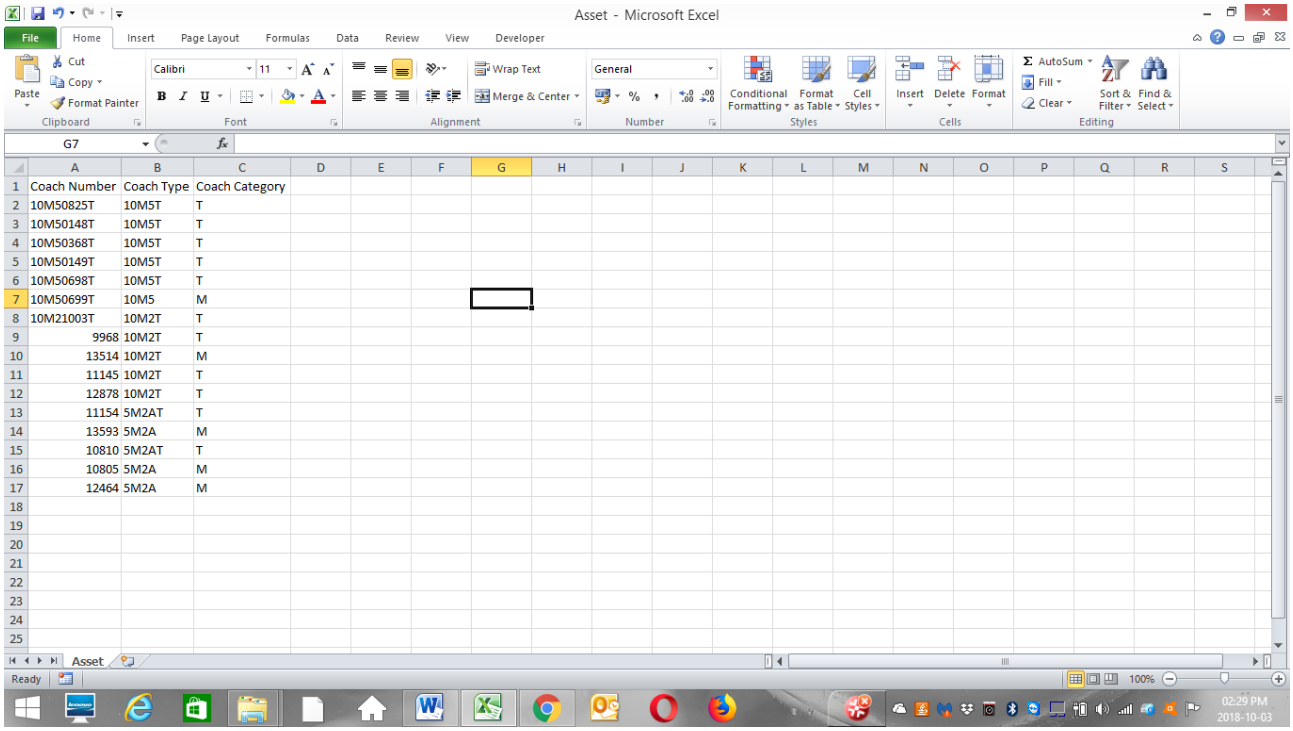


Figure 12, “CSV File with listed Assets”

The column names must match the names shown in Figure 12 including the case as the column names are **case sensitive**. Make sure the order of the column names is as shown in Figure 12 and that no column name is missing in the MS Excel file. Export a comma-separated-values (CSV) file from MS Excel and this exported CSV file is the file format that is supported by the RMSSOFT v1.0 system. Please note that when you are saving as “CSV”, please choose the **(comma delimited) CSV** type and **not** the MAC or MSDOS type**.** Import this CSV file using the form shown in Figure 11. Make sure that the **Coach Category values are in the set {W, L, M, T}.** These values are a representation of the Coach Category mainly, W=”Wagon”, L=”Locomotive”, M=”Motor Coach” and T=”Trailer Coach”. No other values are supported. Please adhere to these requirements and make sure the case is uppercase as shown in Figure 12.

3.3.1.2 Axle Serial Number-Coach Mapping Management Function

a. Add Axle Serial Number-Coach Mapping

When the user wants to add the axle serial number to coach mapping in the system, they access the “Add Axle Serial Number-Coach Mapping” page by clicking the links “*Manage System Settings>>Axle Serial Number-Coach Mapping Management>>Add Axle Serial Number-Coach Mapping*”. Figure 13 shows the page that appears.

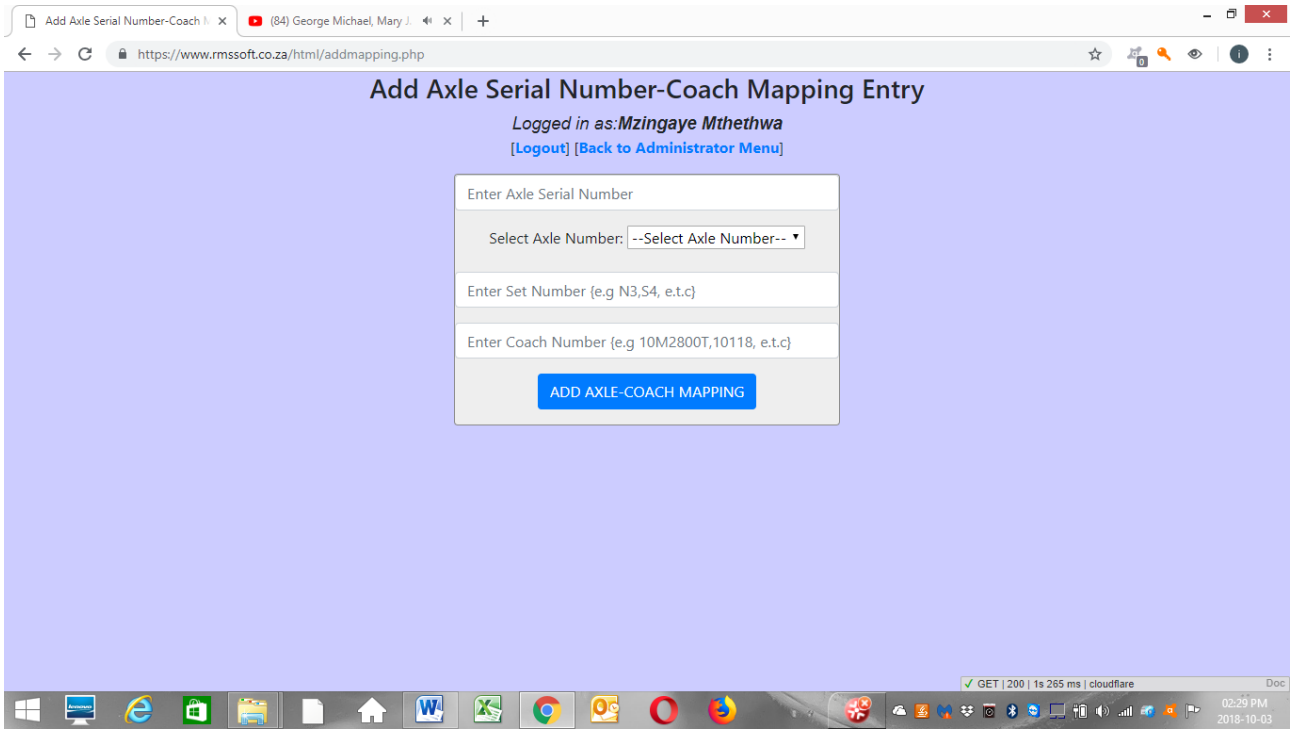


Figure 13, "Add Axle serial Number-Coach Mapping Entry Screen"

The user must complete the following fields

- Axle Serial Number (Two or more characters, i.e Only digits, letters, hyphens and spaces allowed)
- Axle Number (Select between 1, 2 , 3 and 4)
- Set Number (Two or more characters, i.e Only digits, letters, hyphens and spaces allowed)
    - Coach Number (Two or more characters, i.e Only digits, letters, hyphens and spaces allowed)

b. Import Axle Serial Number-Coach Mapping

When the user wants to import an Axle Serial Number-Coach Mapping in the system, they access the "Import Axle Serial Number-Coach Mapping" page by clicking the links "*Manage System Settings>>Axle Serial Number-Coach Mapping Management>>Import Axle Serial Number-Coach Mapping*". Figure 14 shows the page that appears.

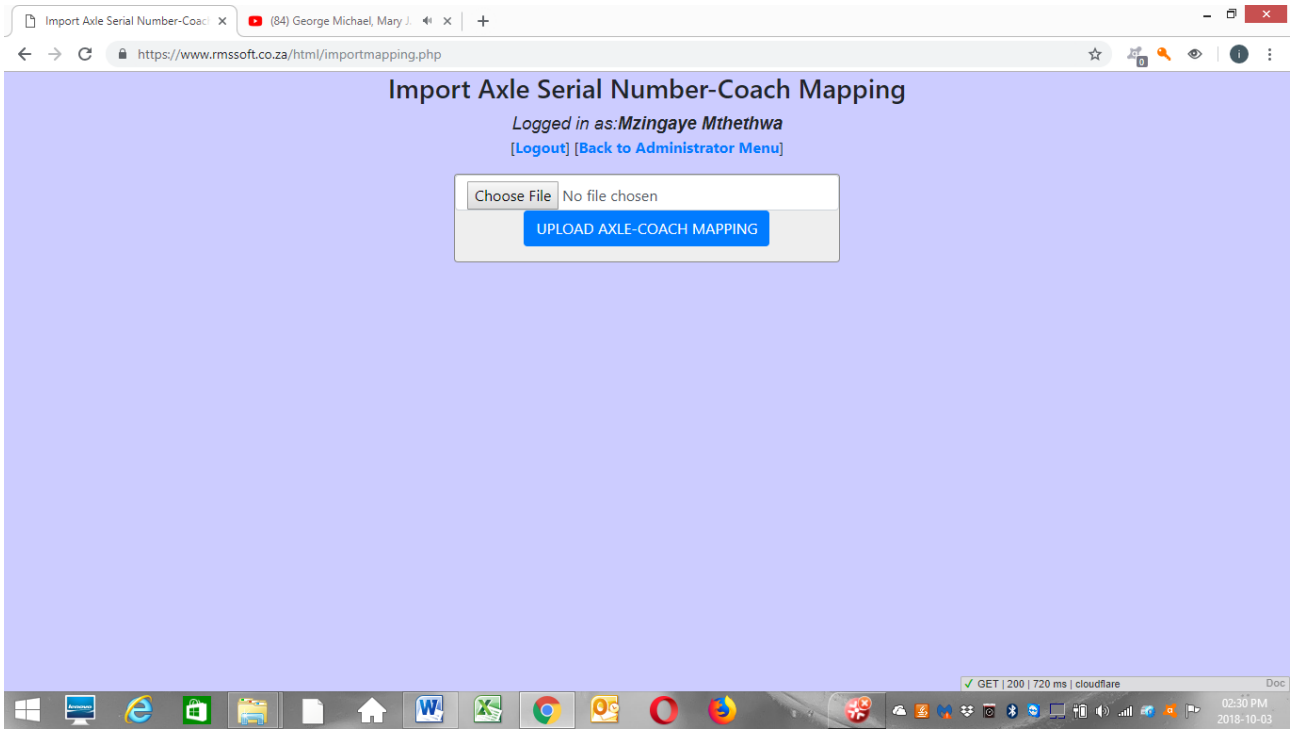


Figure 14, “Import Axle Serial Number-Coach Mapping Screen”

This page gives the user the ability to add multiple axle serial numbers to coach mappings simultaneously which is much faster if you have a lot of mappings to add. All the user needs to do is create a Microsoft Excel file with the mappings added in the format shown in Figure 15.

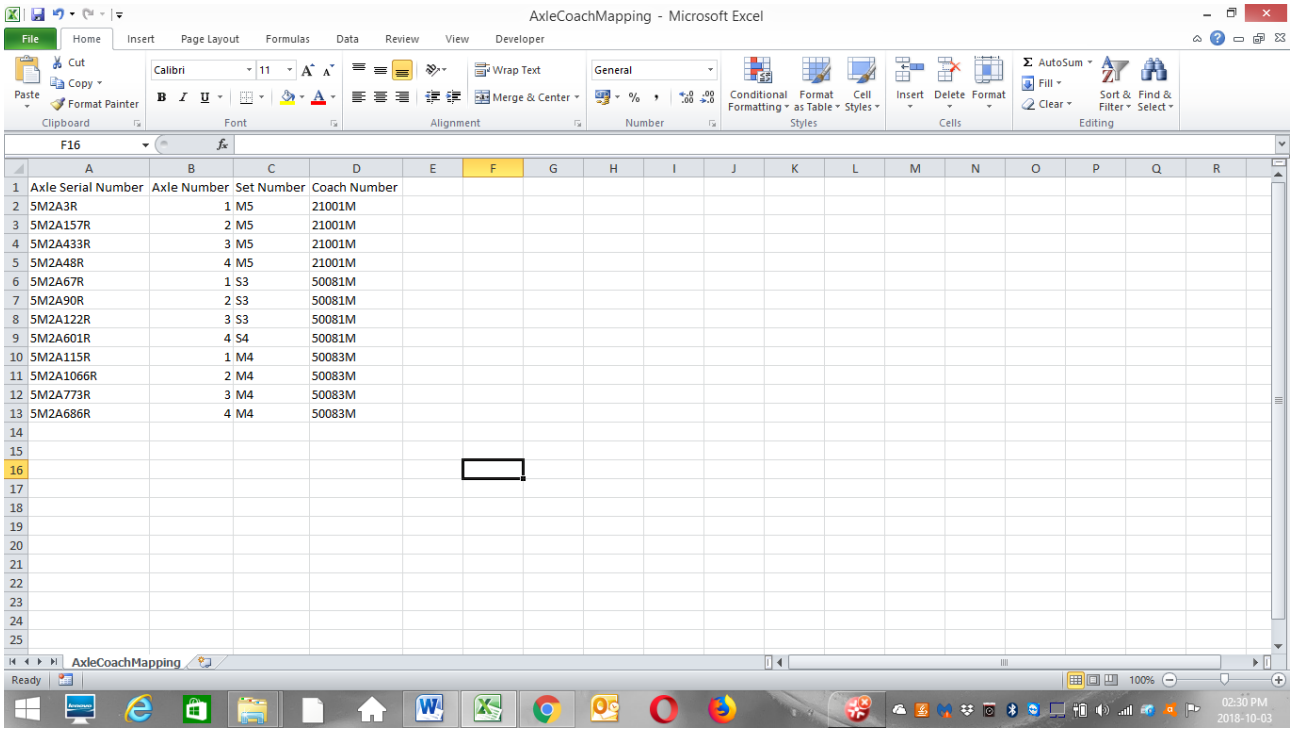


Figure 15, “CSV File with listed Mappings”

The column names must match the names shown in Figure 15 including the case as the column names are **case sensitive**. Make sure the order of the column names is as shown in Figure 15 and that no column name is missing in the MS Excel file. Export a comma-separated-values (CSV) file from MS Excel and this exported CSV file is the file format that is supported by the RMSSOFT v1.0 system. Please note that when

you are saving as “CSV”, please choose the **(comma delimited) CSV** type and **not** the MAC or MSDOS type**.** Import this CSV file using the form shown in Figure 14. Make sure that the Axle Number is between the values of **1 and 4 inclusive.**

c. View Axle Serial Number-Coach Mapping

When the user wants to view the Axle Serial Number-Coach Mapping in the system, they access the “View Axle Serial Number-Coach Mapping” page by clicking the links “*Manage System Settings>>Axle Serial Number-Coach Mapping Management>>View Axle Serial Number-Coach Mapping*”. Figure 16 shows the page that appears.

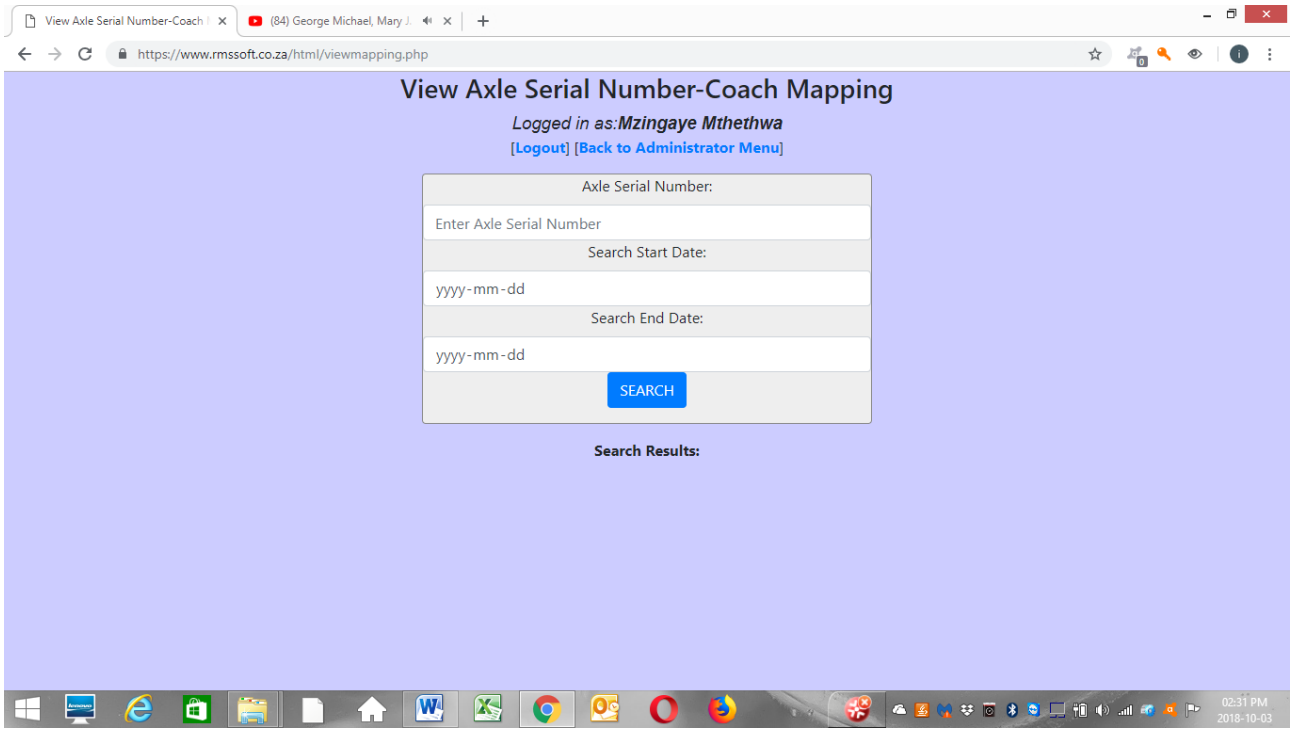


Figure 16, “View Axle Serial Number-Coach Mapping Screen”

The form in Figure 16 requires that the user enters the Axle Serial Number of interest and the Search Start and End Dates for the creation of the Axle Serial Number to Coach Mapping. The system returns the search results just below the above form shown in Figure 16.

3.3.1.3 Daily Distance Travelled Setting Management Function

When the user wants to add/update the average daily distance travelled in the system, they access the “Daily Distance Travelled Setting Management” page by clicking the links *“Manage System Settings>>Daily Distance Travelled Setting Management*”. Figure 17 shows the page that appears.

The user can then enter the average daily distance travelled in kilometres. After successfully setting the distance, the “SET DISTANCE TRAVELLED” button changes to the “EDIT DISTANCE TRAVELLED” button which allows the user to edit the distance setting.

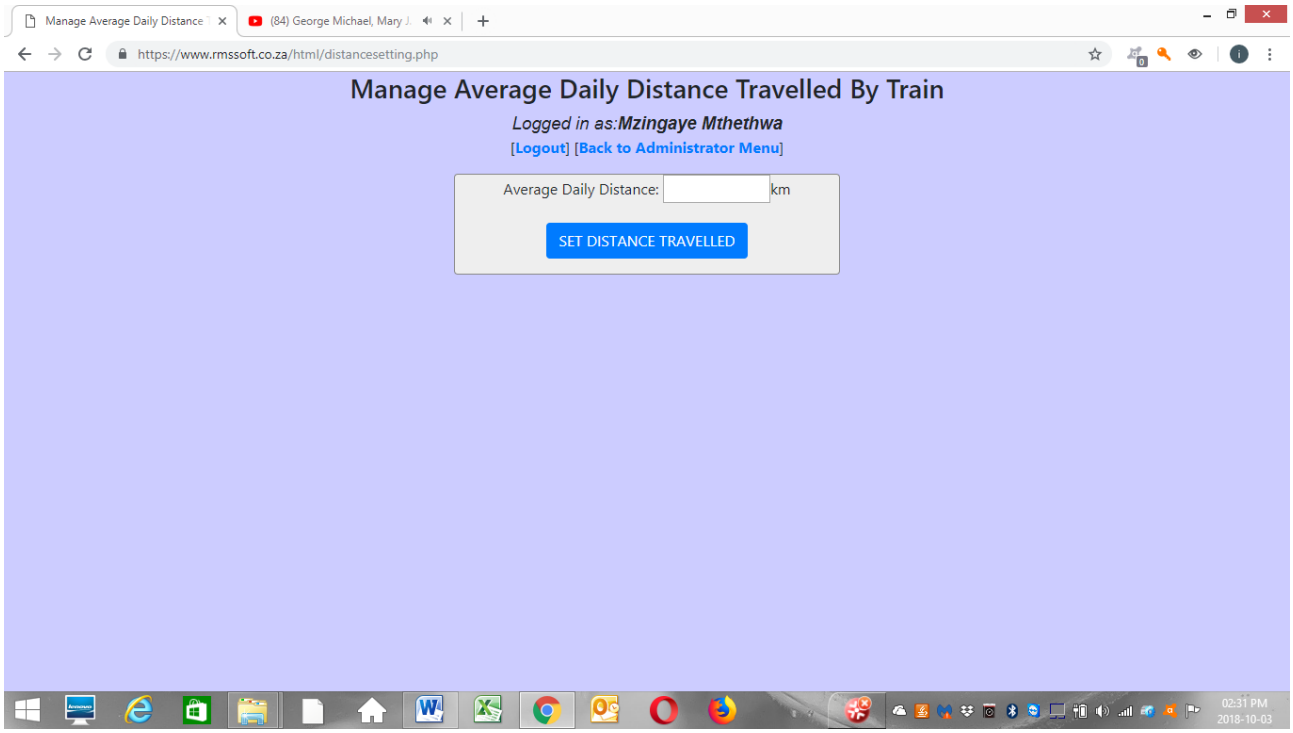


Figure 17, “Manage Average Daily Distance Travelled by Train Screen”

3.3.1.4 Manual Wheel Measurements Alarm Settings Management Function

When the user wants to add/update the manual wheel measurements alarm settings in the system, they access the “Manual Wheel Measurements Alarm Settings Management” page by clicking the links “*Manage System Settings>>Manual Wheel Measurements Alarm Settings Management*”. Figure 18 shows the page that appears.

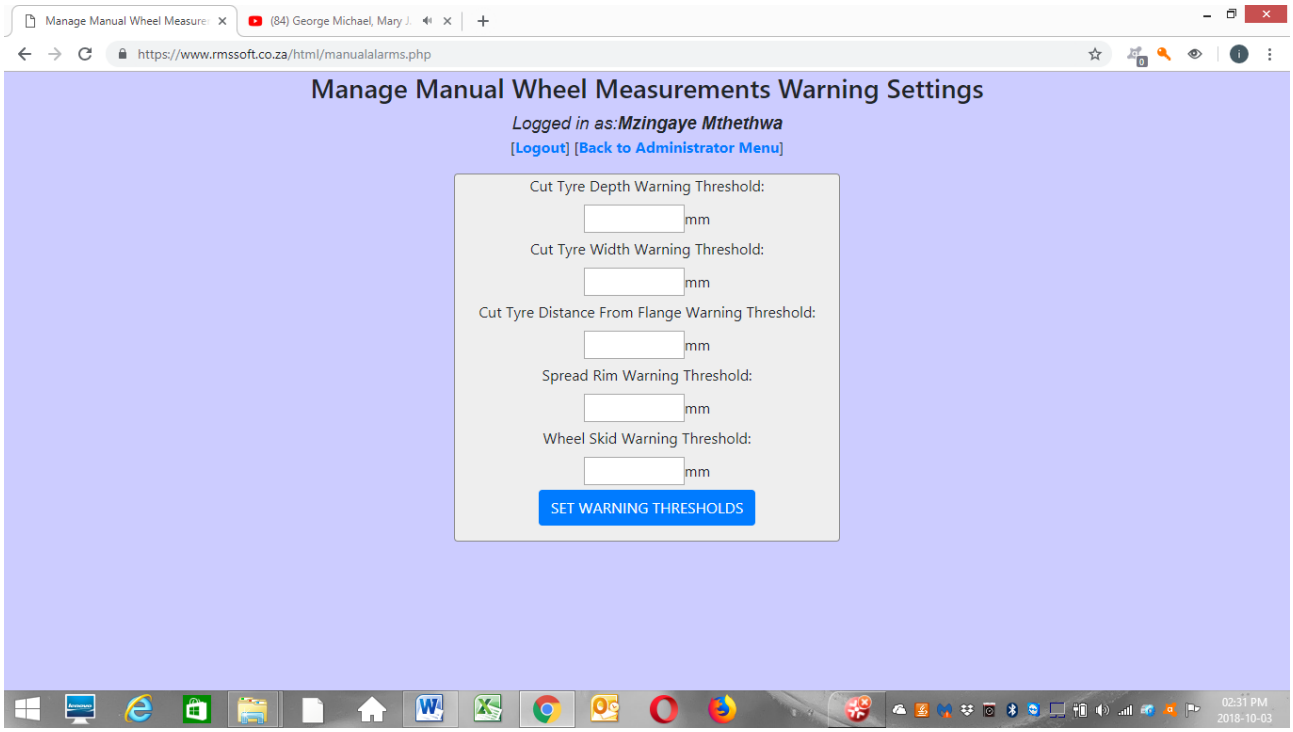


Figure 18, “Manual Wheel Measurements Alarm/Warning Settings Screen”

The user can then enter the warning/alarm thresholds for the manual wheel measurements in millimetres. After successfully setting the warning/alarm thresholds, the “SET WARNING THRESHOLDS” button changes to the “EDIT WARNING THRESHOLDS” button which allows the user to edit the warning/alarm settings for the manual wheel measurements.

3.3.1.5 MiniProf Wheel Measurements Alarm Settings Management Function

When the user wants to add/update the MiniProf wheel measurements alarm settings in the system, they access the “MiniProf Wheel Measurements Alarm Settings Management” page by clicking the links “*Manage System Settings>>MiniProf Wheel Measurements Alarm Settings Management*”. Figure 19 shows the page that appears. Before setting the MiniProf wheel measurements alarm settings, the user needs to first add or import the asset register into the system. This is covered in Sections 3.3.1.1a and 3.3.1.1c, respectively. As mentioned previously, Figure 19 shows the page that appears.

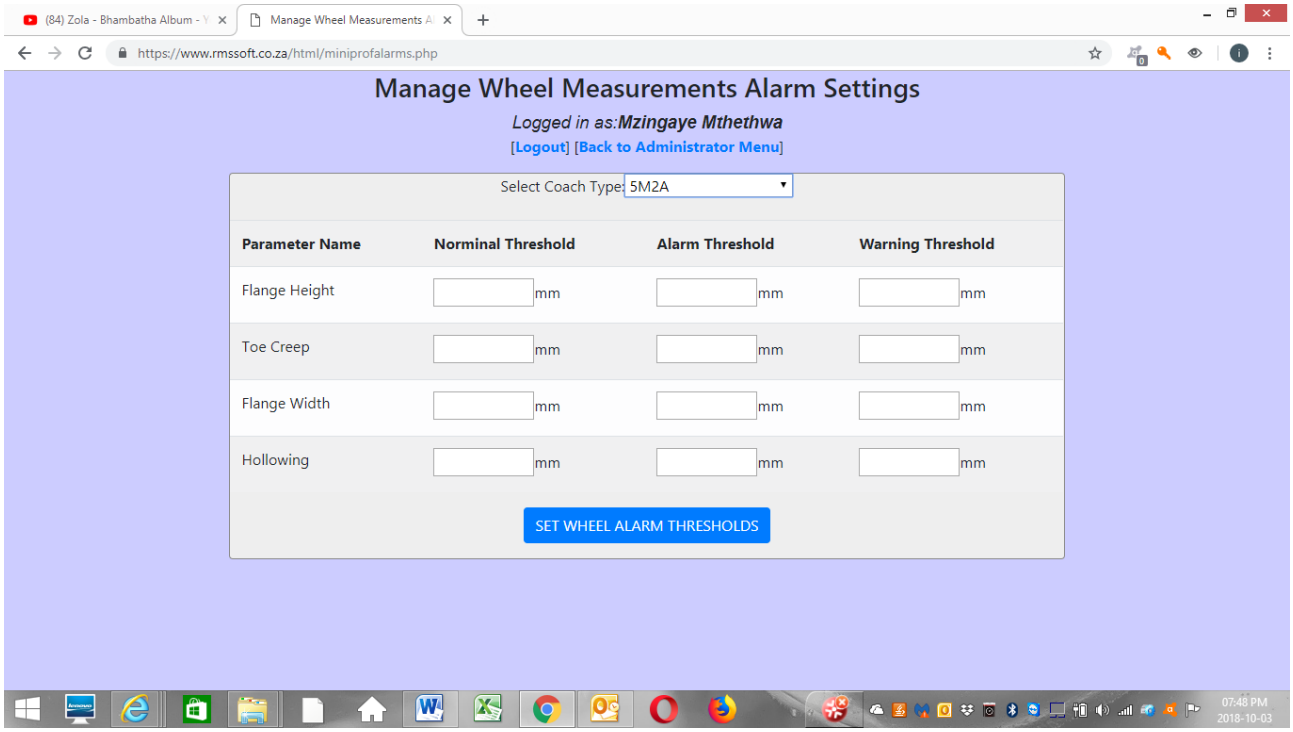


Figure 19, “MiniProf Wheel Measurements Alarm Settings Screen”

The user can select the coach type for which he/she wants to specify wheel alarm settings for as shown in Figure 19. The user can then enter the nominal, alarm and warning thresholds for the different measured wheel parameters for the selected coach type. The user can then enter the nominal, alarm and warning thresholds in millimetres. After successfully setting the thresholds, the “SET WHEEL ALARM THRESHOLDS” button changes to the “EDIT WHEEL ALARM THRESHOLDS” button which allows the user to edit the threshold settings for the selected coach type. To enter the threshold settings for another coach type, the user will have to select another coach type from the dropdown menu and repeat the steps.

3.3.1.6 Wheel Wear Rate Settings Management Function

When the user wants to add/update the wheel wear rate settings in the system, they access the “Wheel Wear Rate Settings Management” page by clicking the links “*Manage System Settings>>Wheel Wear Rate Settings Management*”. Figure 20 shows the page that appears.

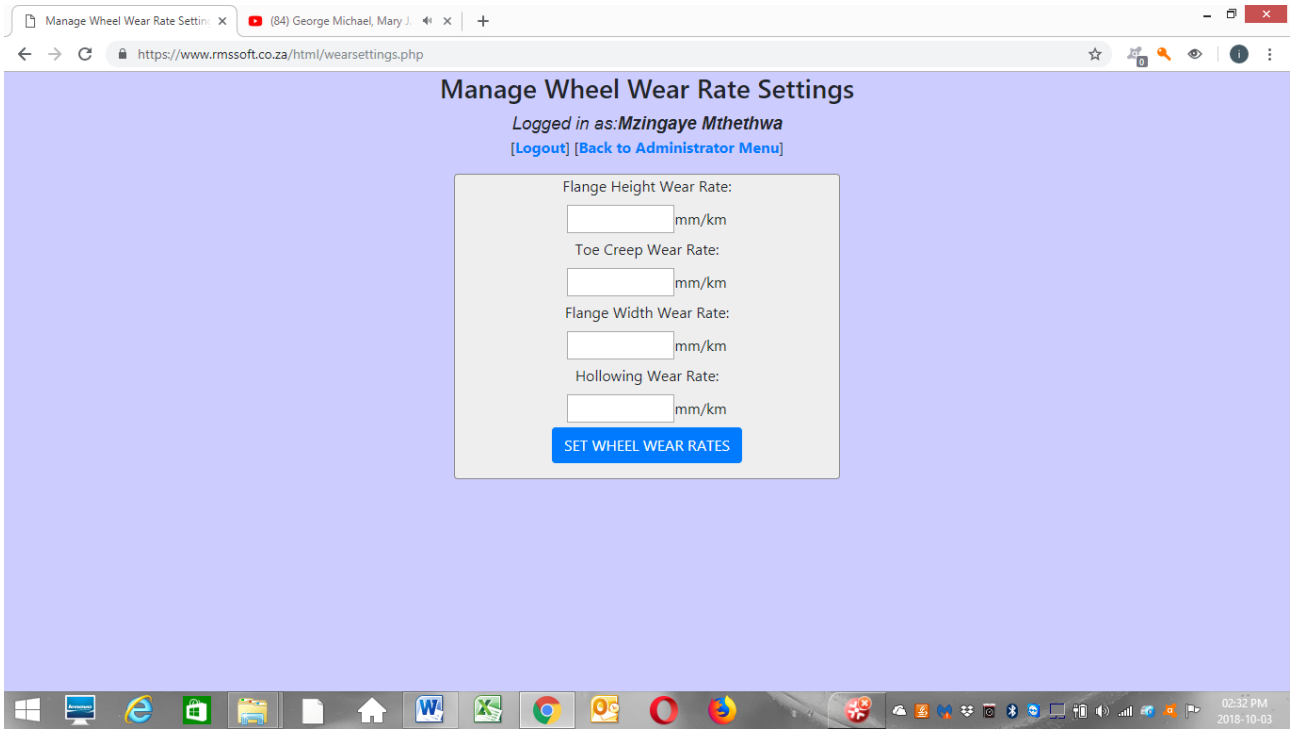


Figure 20, “Wheel Wear Rate Settings Management Screen”

The user can then enter the wheel wear rate settings for the different wheel parameters measured, in millimetres/kilometre. After successfully setting the wear rate settings, the “SET WHEEL WEAR RATES” button changes to the “EDIT WHEEL WEAR RATES” button which allows the user to edit the wear rate settings.

3.3.2 Manage Wheel Measurements Function

This section is responsible for explaining how the Manual and MiniProf wheel measurements will be handled including their associated alarms generated after the Planning Report has been generated.

3.3.2.1 Manual Wheel Measurements Management Function

When the user wants to add/update the manual wheel measurements in the system, they access the “Manual Wheel Measurements Management” page by clicking the links “*Manage Wheel Measurements>>Manual Wheel Measurements Management*”. But before adding the manual wheel measurements, please make sure that the MiniProf wheel measurements have been imported into the system and this is dealt with in Section 3.3.2.2a. Figure 21 shows the page that appears for the Manual Wheel Measurements management.

To add the manual wheel measurements, the user needs to first search for a MiniProf measured wheel entry of interest. For example, in Figure 21, the user searched for a Wheel ID of 8 within Coach 10805 and specified the MiniProf wheel measurement date. The search results appear below the search form as shown in Figure 21. In order to associate manual wheel measurements to that MiniProf wheel measurement entry, the user needs to check the radio button under the “Select Profile To Manage” column. Immediately after selecting the profile to manage, a form appears below requesting the manual wheel measurements to be entered as shown in Figure 22. Soon after adding the manual wheel measurements, you can confirm that they are indeed now associated with that specific MiniProf wheel measurement by searching again for the same MiniProf wheel measurement and selecting the radio button under “Select Profile To Manage”. You will now see the Manual Wheel Measurements form populated with the previously entered data and you can now update the manual wheel measurements.

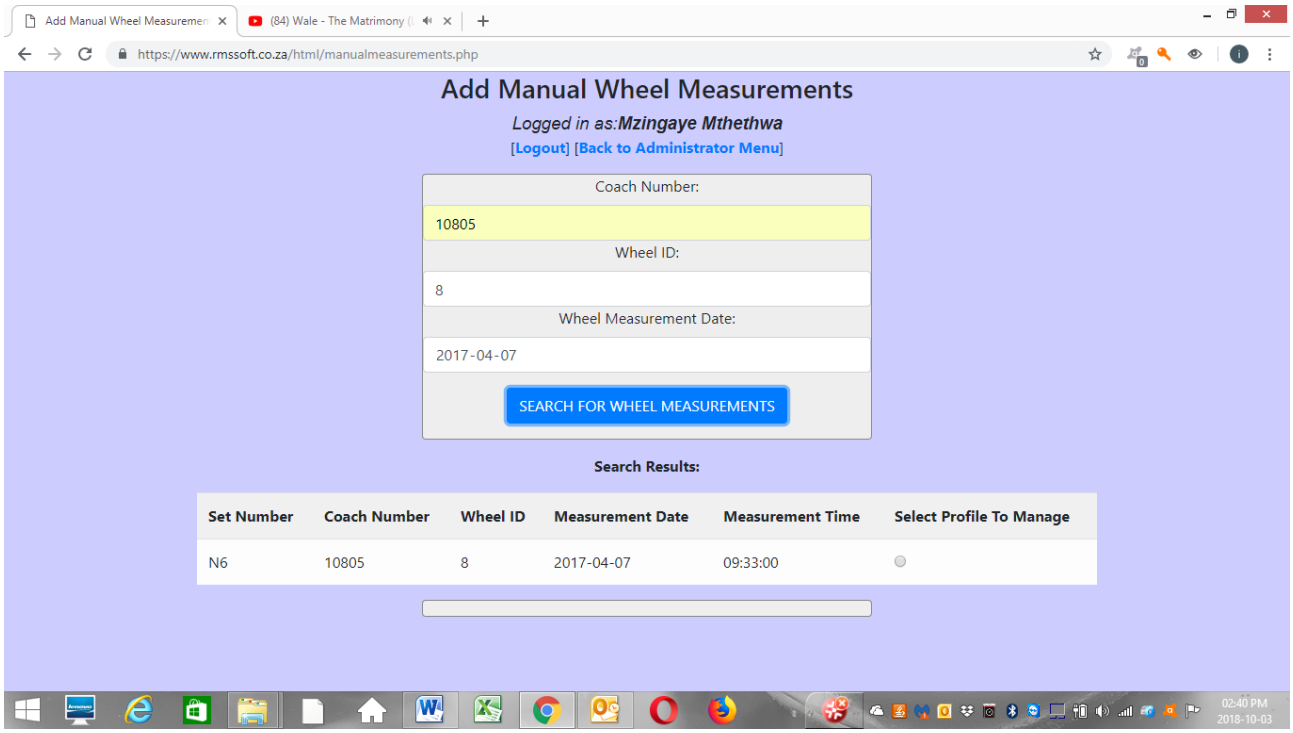


Figure 21, “Manual Wheel Measurements Management Screen”

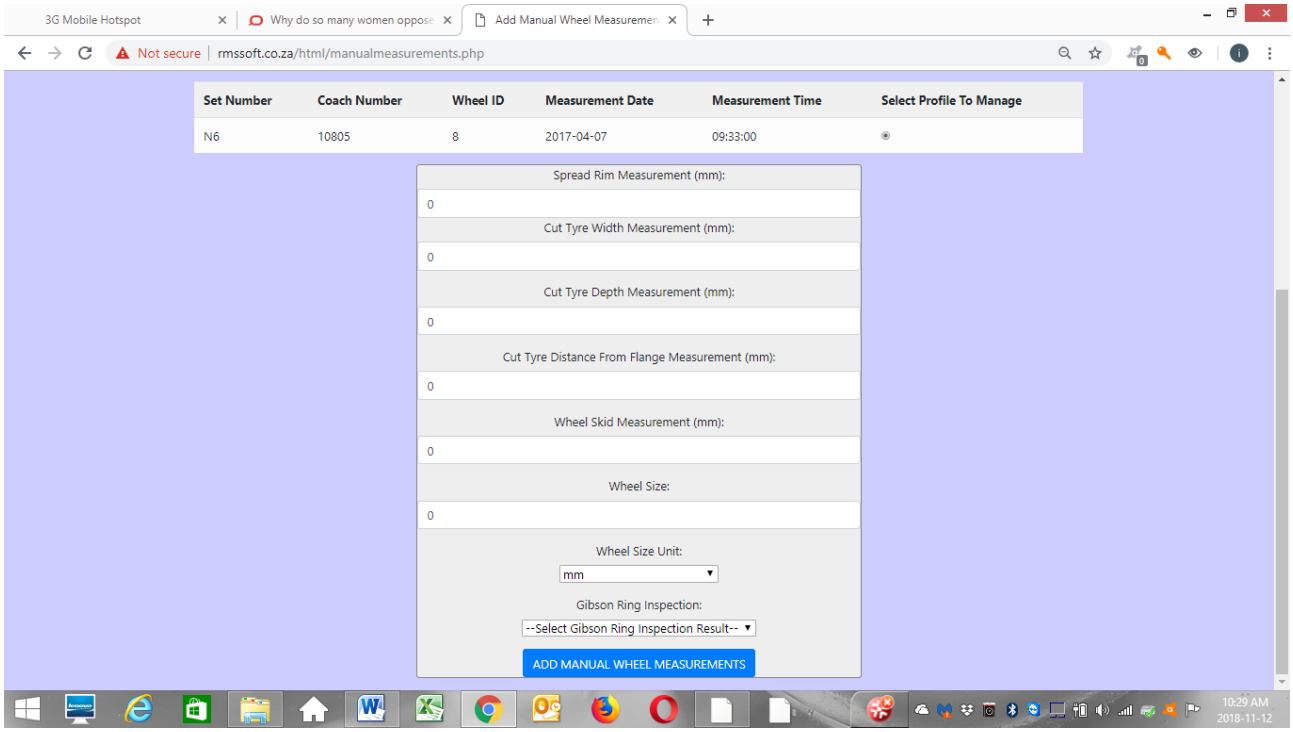


Figure 22, “Form Requesting the Manual Wheel Measurements”

3.3.2.2 MiniProf Wheel Measurements Management Function

a. Import MiniProf Wheel Measurements

When the user wants to import the MiniProf wheel measurements files into the system, they access the “Import MiniProf Wheel Measurements” page by clicking the links *“Manage Wheel Measurements>>MiniProf*

Wheel Measurements Management>>Import MiniProf Wheel Measurements". Figure 23 shows the page that appears for the Importing of the MiniProf Wheel Measurements.

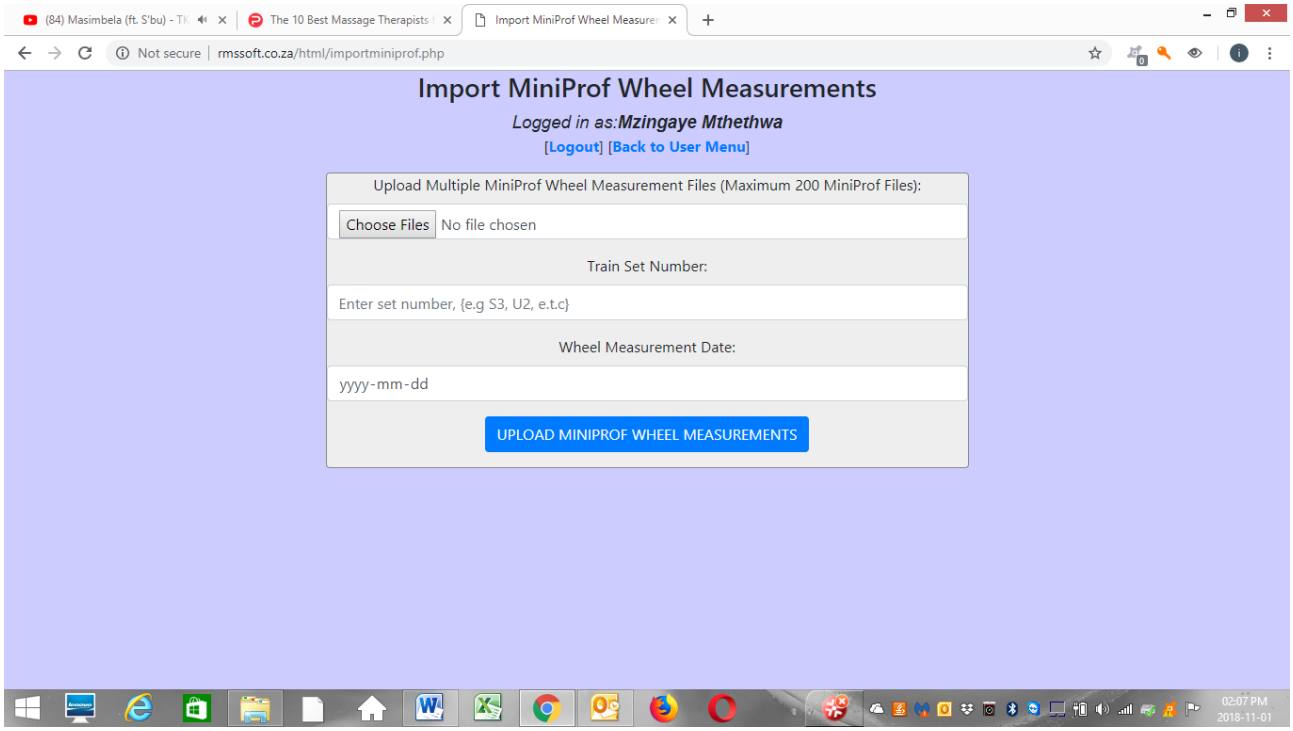


Figure 23, "Import MiniProf Wheel Measurements Screen"

As you can see, the user can select multiple MiniProf measurement files to upload into the system. The maximum number of MiniProf files that can be simultaneously uploaded is 200. It is advised that the files be uploaded per Train Set Number and also depending on the date the wheels were measured. Please note, only MiniProf files are accepted by the system. MiniProf files with missing fields shall not be imported. The system rejects such files and logs the rejection in the error log file on the server. Uploading MiniProf files also saves them on the server for safe keeping in their respective Date of Measurement/Train Set Number folder structure. For example, if you import MiniProf files under the Train Set Number N6 and Wheel Measurement Date 2017-04-07, on the server, the directory structure created will be as follows: "2017-04-07/N6". Under this directory, the uploaded MiniProf files will be saved.

After successfully importing the MiniProf files, a popup dialogue message appears requesting the user to confirm whether all the MiniProf files for that Train Set Number have been imported. Figure 24 shows the dialogue box that appears requesting confirmation. If the user clicks "OK", the system automatically sends an email to the appropriate stakeholders who have access rights to Add Manual Wheel Measurements. The email lets the stakeholders know that they need to enter the manual wheel measurements for a specific train set number. If the user clicks "Cancel", then the system will prompt the user to continue uploading MiniProf files for that specific Train Set Number.

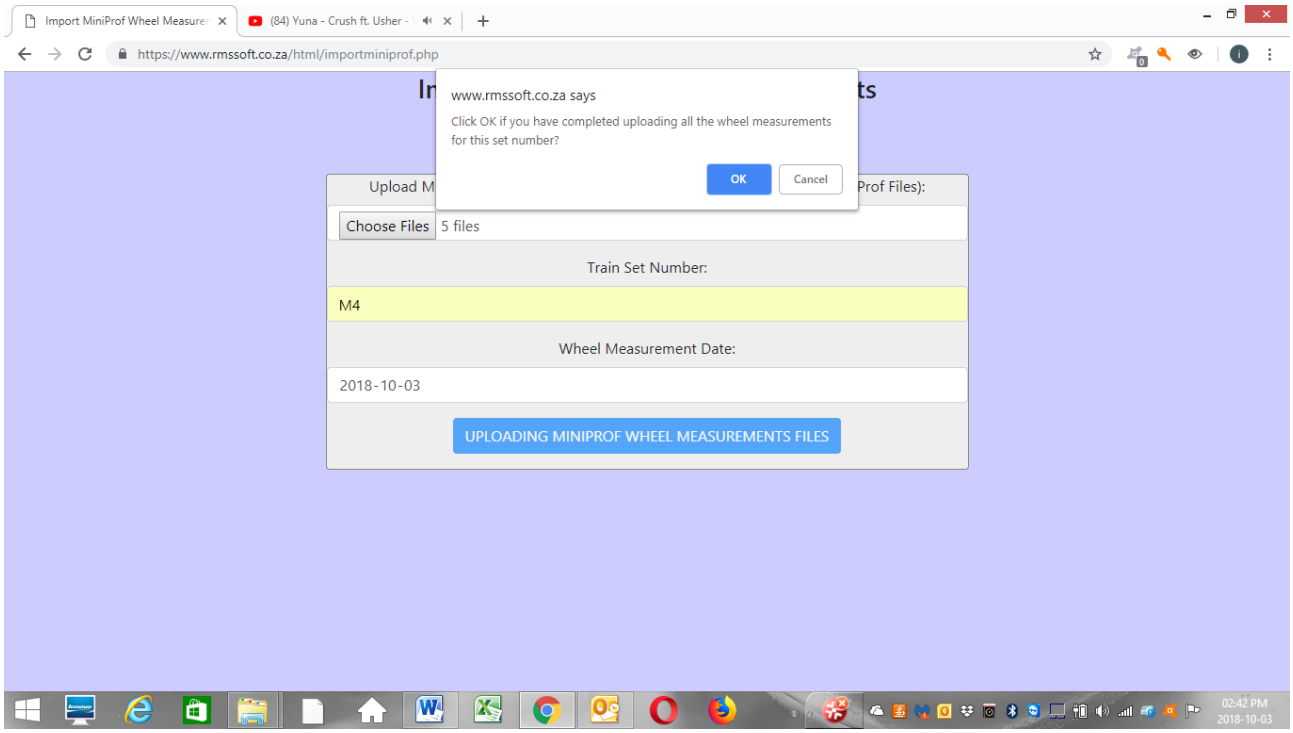
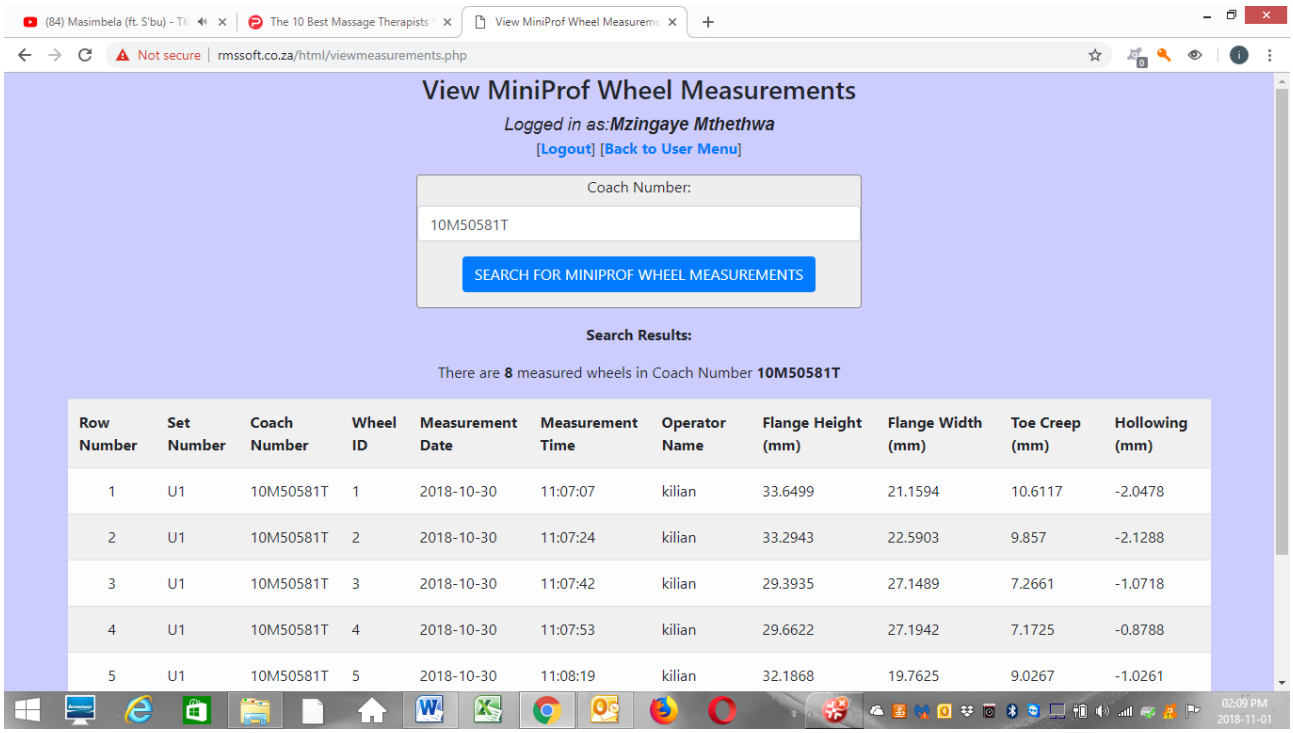


Figure 24, “Confirmation Dialogue Box”

b. View Wheel Measurements

When the user wants to view the MiniProf wheel measurements imported into the system, they access the “View Wheel Measurements” page by clicking the links *“Manage Wheel Measurements>>MiniProf Wheel Measurements Management>>View Wheel Measurements”*. Figure 25 shows the page that appears for the viewing of the MiniProf Wheel Measurements.



Row Number	Set Number	Coach Number	Wheel ID	Measurement Date	Measurement Time	Operator Name	Flange Height (mm)	Flange Width (mm)	Toe Creep (mm)	Hollowing (mm)
1	U1	10M50581T	1	2018-10-30	11:07:07	kilian	33.6499	21.1594	10.6117	-2.0478
2	U1	10M50581T	2	2018-10-30	11:07:24	kilian	33.2943	22.5903	9.857	-2.1288
3	U1	10M50581T	3	2018-10-30	11:07:42	kilian	29.3935	27.1489	7.2661	-1.0718
4	U1	10M50581T	4	2018-10-30	11:07:53	kilian	29.6622	27.1942	7.1725	-0.8788
5	U1	10M50581T	5	2018-10-30	11:08:19	kilian	32.1868	19.7625	9.0267	-1.0261

Figure 25, “View MiniProf Wheel Measurements Screen”

The search form requests that you enter the Coach Number for the measured wheels. The search results are listed below the search form as shown in Figure 25 and the list is a complete list of all wheel measurements for that specific coach number.

3.3.2.3 Wheel Measurements Alarm Event Management Function

Within this section, the user has two options namely

1. Produce the coach stoppage statistical reports for a specific date range
2. View alarm events within a specified date range

The sub-sections (a) and (b) that follow ventilate the functionality for these two options.

a. View Alarm Events

When the user wants to view the wheel measurements alarm events logged in the system, they access the "View Alarm Events" page by clicking the links *"Manage Wheel Measurements>>Wheel Measurements Alarm Event Management>>View Alarm Events"*. Before viewing these alarm events, please ensure that you have generated the planning report **at least once** before. Generating the planning report is dealt with in Section 3.3.4. Figure 26 shows the page that appears for the viewing of the Wheel Measurements Alarm Events.

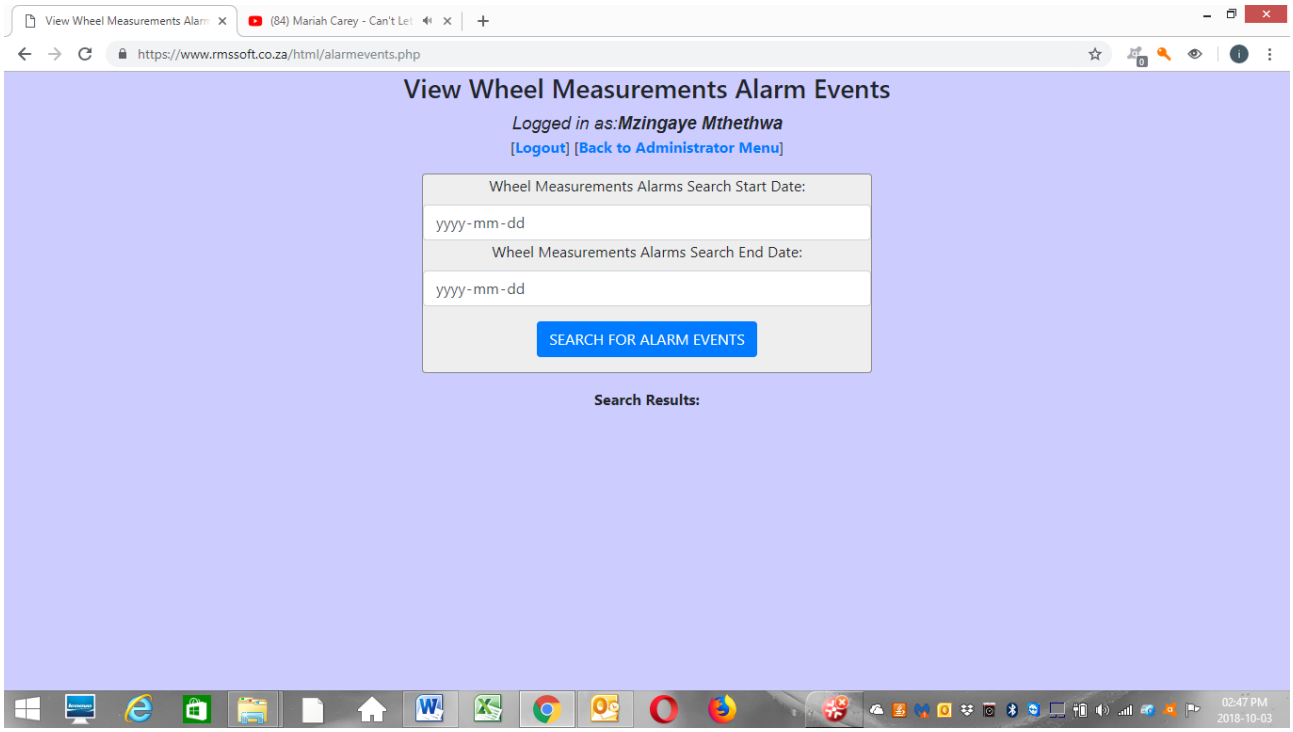


Figure 26, "View Wheel Measurements Alarm Events Screen"

The search form requests the user to select the search start and end date range of when the wheels were measured. The search results will list all the wheels that have violated the alarm/warning settings. The list also details the root cause of the alarm, defect size and predicted date of failure of the wheel.

b. Coach Stoppage Statistical Report

If the user desires to generate a report that shows the statistical distribution of the cause of the coach stoppages within a specified period, then the user has to click on the following links *"Manage Wheel Measurements>>Wheel Measurements Alarm Event Management>>Generate Stoppage Statistical Reports"*.

Before generating this statistical report, please ensure that you have generated the planning report **at least once** before. Generating the planning report is dealt with in Section 3.3.4. Figure 27 shows the page that appears that enables the user to generate the stoppage statistical reports for a specified period. This report is automatically generated in MS-Excel and emailed to the user generating it.

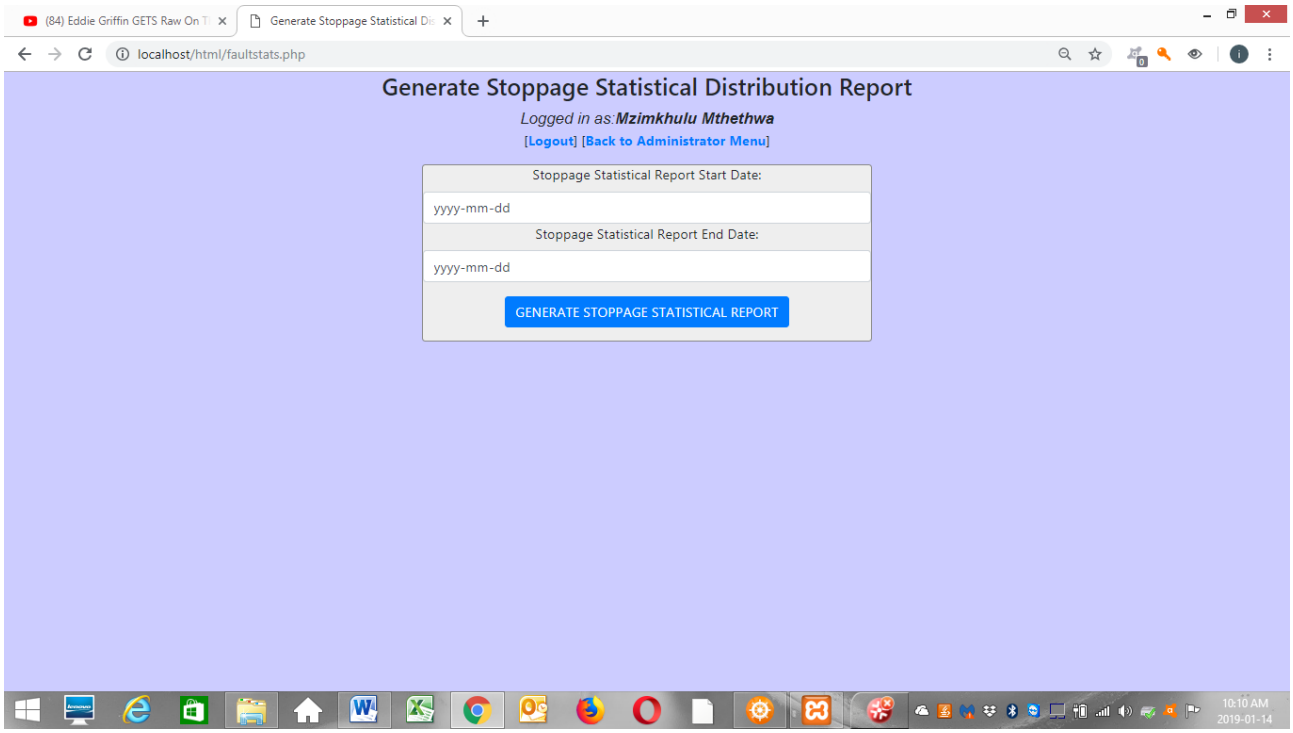


Figure 27, “Generate Stoppage Statistical Report Page”.

3.3.3 System Activity Logs Management Function

When the user wants to generate the activity logs report in the system, they access the “System Activity Logs Management” page by clicking the link *“System Activity Logs Management”*. The activity log logs only events associated with updating or adding of records onto the system. All activities related to updating and adding of records in the system are automatically logged by the system and this is where you can access the logged records. Figure 28 shows the page that appears for the generation of the Activity Log report.

As shown in Figure 28, the user needs to select **1 or more** tasks that they want to view the activity logs for. They should also select the date range of interest of when the update/add transactions took place for the selected tasks. After clicking the “Generate Activity Log Report” button, the system automatically generates a PDF report of these logs and emails the user a copy of this PDF report.

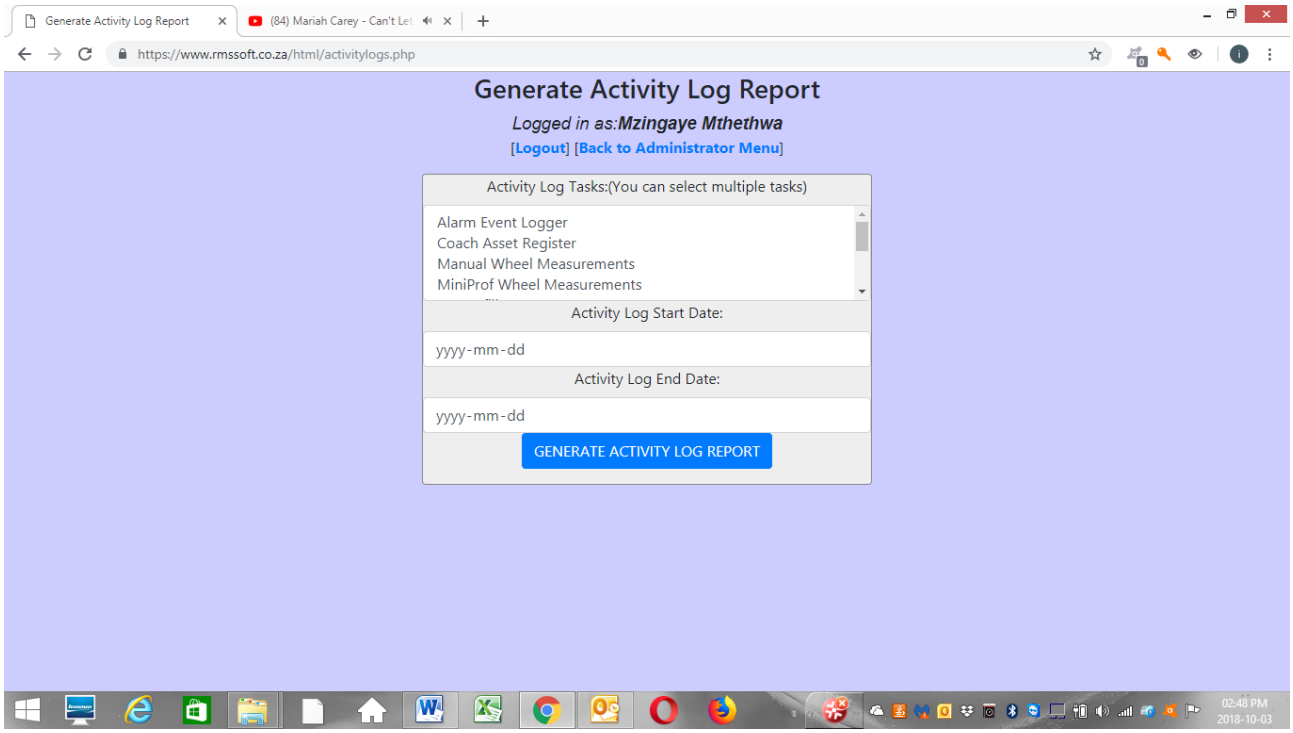


Figure 28, "Generate Activity Log Report Screen"

3.3.4 Wheel Measurements Planning Report Management Function

When the user wants to generate the wheel planning report in the system, they access the "Wheel Measurements Planning Report Management" page by clicking the link *"Wheel Measurements Planning Report Management*". Before generating the wheel planning report, please make sure that the following has been addressed:

- Manual Wheel Measurements Alarm Settings have been set. (Section 3.3.1.4)
- Average Daily Distance Travelled Setting has been set. (Section 3.3.1.3)
- MiniProf Wheel Measurements Alarm Settings have been set. (Section 3.3.1.5)
- Wheel Wear Rates Settings have been set. (Section 3.3.1.6)
- Manual Wheel Measurements for the specified period have been set. (Section 3.3.2.1)
- MiniProf Wheel Measurements for the specified period have been imported. (Section 3.3.2.2a)
- Asset Register must have been imported into the system with Asset Coach Numbers matching those of the Coaches with measured wheels. (Section 3.3.1.1c)

Figure 29 shows the page that appears for the generation of the MS EXCEL wheel planning report.

The system requests the date of when the wheel measurements were performed which basically searches and generates an exception report of all wheels that violated the respective wheel alarm settings. The system then generates an MS EXCEL based planning report and emails it to all relevant stakeholders whilst applying the column visibility access rights rules seen in Sections 3.2.1.3a and 3.2.1.3b. Different stakeholders may receive a different planning report depending on the column visibility access rights given to the different stakeholders/user roles.

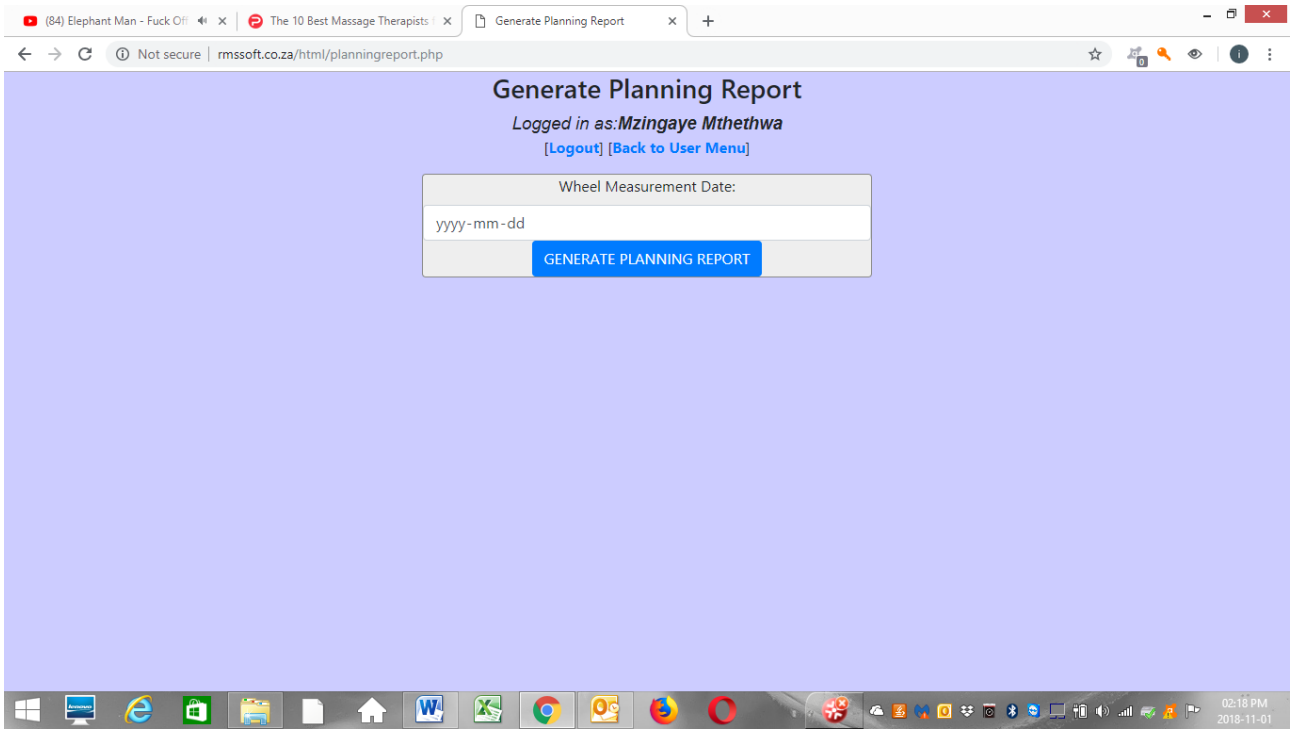


Figure 29, “Generate Wheel Planning Report Screen”

3.3.5 Wheel Re-profiling Data Management Function

This section deals with managing the wheel re-profiling data.

3.3.5.1 Add Wheel Re-profiling Data Function

When the user wants to add the wheel re-profiling data into the system, they access the “Add Wheel Re-profiling Data” page by clicking the link *“Wheel Re-profiling Data Management>>Add Wheel Re-profiling Data*”. Figure 30 shows the page that is used to add the wheel re-profiling data.

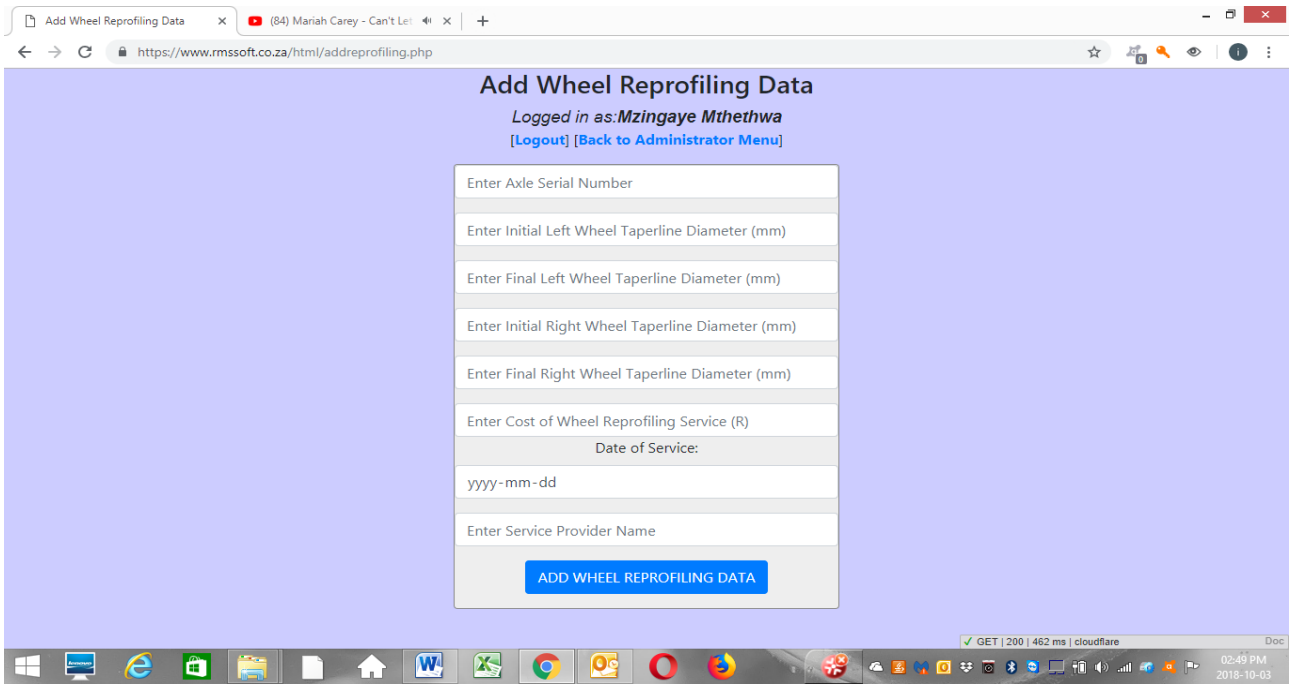


Figure 30, “Add Wheel Re-profiling Data Screen”

Please note that the Axle Serial Number must be at least **two or more** characters long with only, digits, letters, hyphens and spaces allowed as valid characters.

3.3.5.2 Edit Wheel Re-profiling Data Function

When the user wants to update the wheel re-profiling data in the system, they access the "Edit Wheel Re-profiling Data" page by clicking the link *"Wheel Re-profiling Data Management>>Edit Wheel Re-profiling Data*". Figure 31 shows the page that is used to search for the wheel re-profiling data for a specific axle.

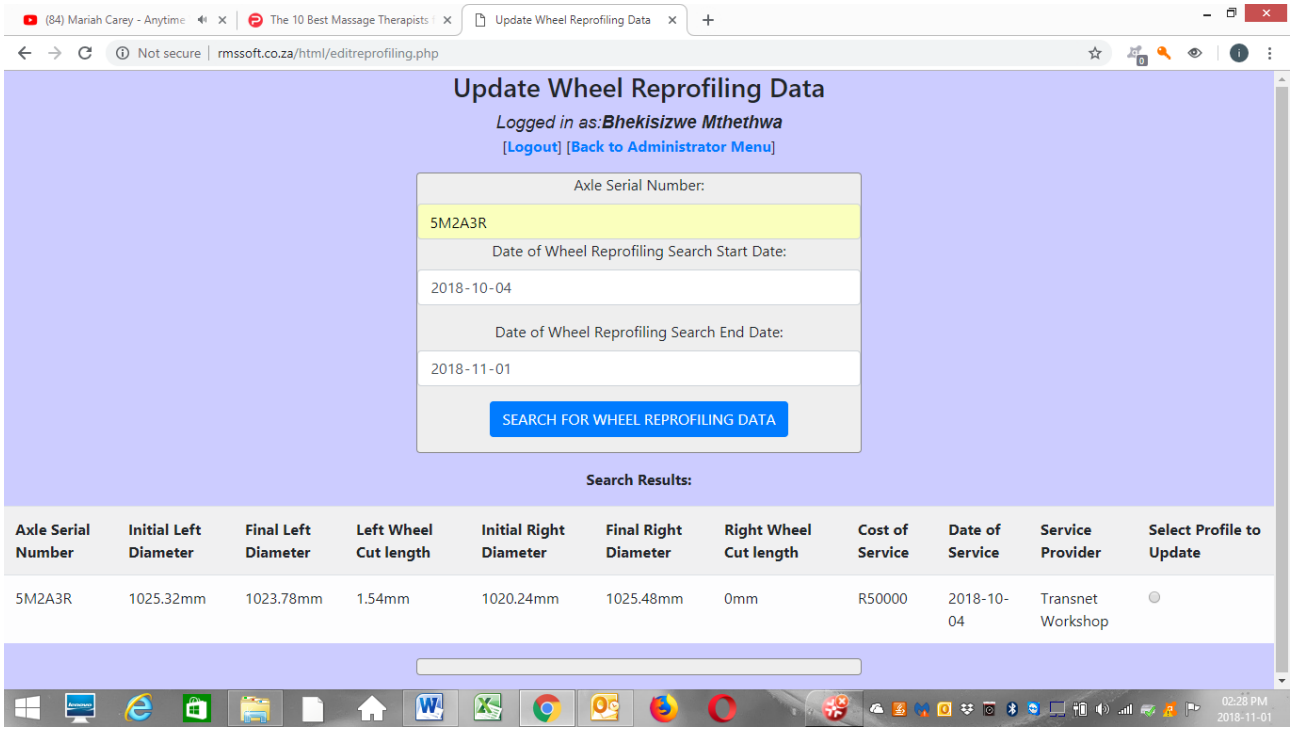


Figure 31, "Wheel Re-profiling Data Search Form Screen"

As you can see, the user is expected to enter the axle serial number of the axle in question and also the search date range. The search date range is looking for wheel re-profiling records based on the date of wheel re-profiling service. As you can see the search results appear below the search form. To update the wheel re-profiling data, the user must select the radio button under the column "Select Profile To Update". This automatically opens up a new form below which shows the wheel re-profiling data for the selected profile and affords the opportunity for the user to edit this information. Figure 32 and 33 shows this form.

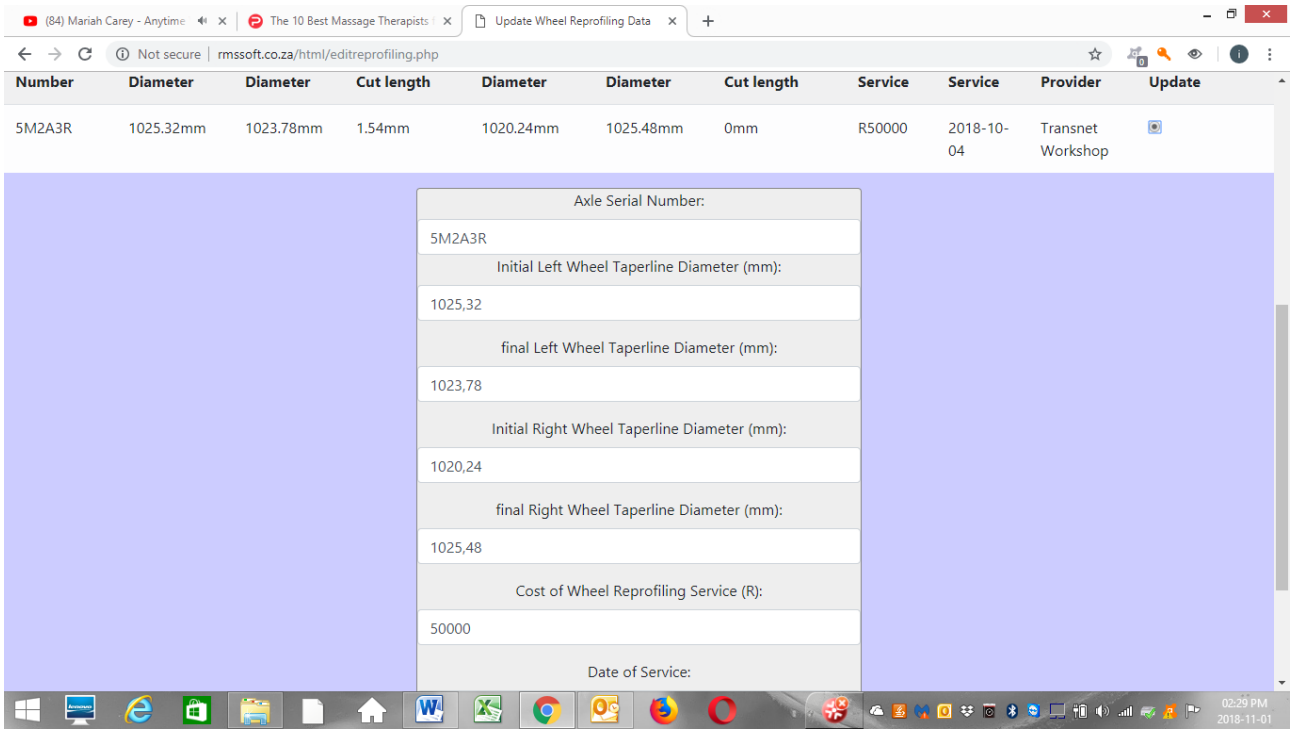


Figure 32, “Wheel Re-profiling Data Update Form Screen”

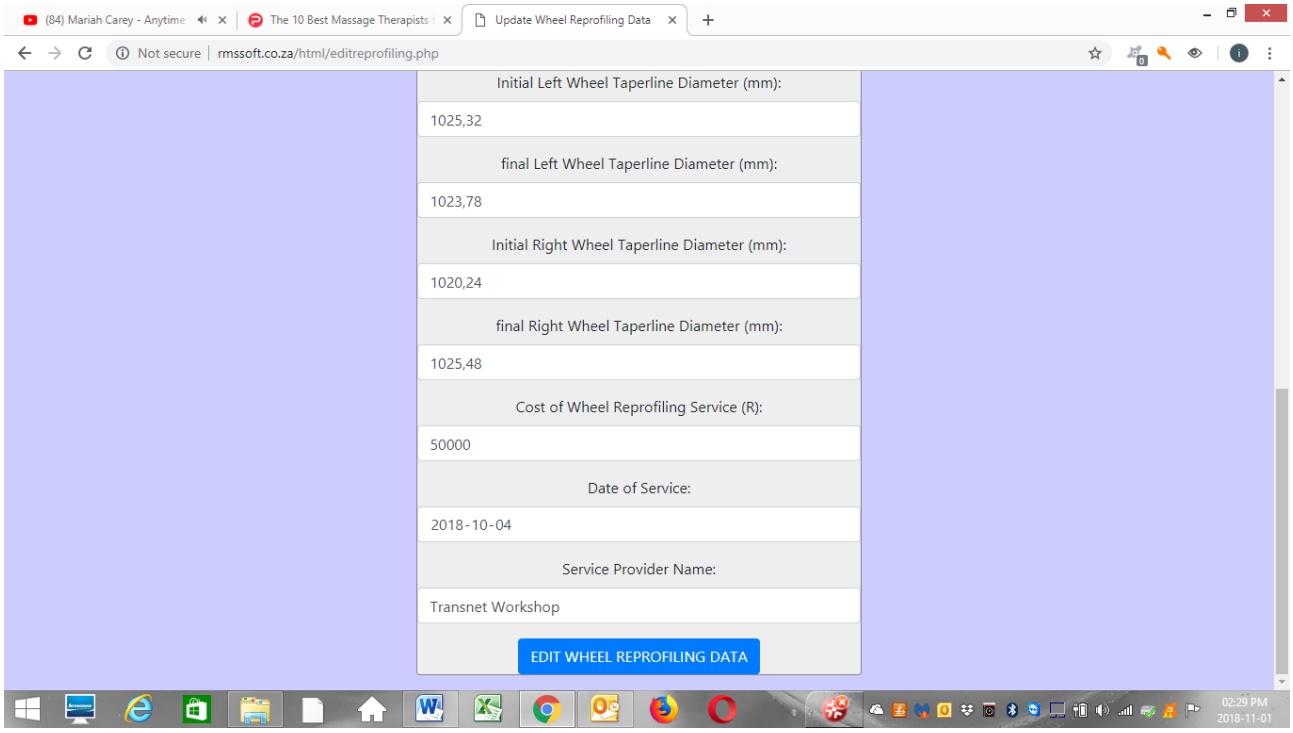


Figure 33, “Wheel Re-profiling Data Update Form showing EDIT button”