

Humanitarian  
OpenStreetMap  
Team

# Tutorial on the use of OpenStreetMap and Humanitarian OSM for online mapping

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## **Introduction**

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### *What is OpenStreetMap?*

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OpenStreetMap is a tool for creating and sharing map information. Anyone can contribute to OSM, and thousands of people add to the project every day. Users draw maps on computers, rather than paper, but the difference is not great. We still draw lines to represent roads, fields, and anything else, and we still represent schools and hospitals with symbols.

The important thing is that OSM maps are saved on the internet, and anyone can access them at any time, totally free.

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### *Purpose of this tutorial*

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The purpose of this training manual is to provide a basic understanding to teachers and students at schools on what is OpenStreetMap and how to use it for remote mapping. The goal here is to equip teachers and students with the basic skills to generate geospatial data such as buildings, roads and points of interest from satellite imagery, add descriptions and information about the generated data and upload it to the OpenStreetMap platform. Moreover, we will discuss the Humanitarian OpenStreetMap platform and the way it can be utilised to control and organise mapping activities in a specific area.

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### *Requirements*

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- ✓ **Skills:** Basic computer skills are necessary, such as using the mouse and signing up for an email account online; however, this should not prevent anyone from participating. People who do not possess these skills will be provided with adequate assistance by more experienced users that will enable them to contribute.
- ✓ **Technical requirements:** one laptop or desktop computer per person; a mouse; stable internet connection with enough bandwidth for displaying imagery.

- ✓ **Time:** About half an hour to forty minutes to complete gain basic understanding of mapping in OSM. Exact time is dependent upon each individual and his/her effort.

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## *Outcomes*

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The key outcomes of this tutorial for the users are:

- To set-up an OpenStreetMap.org account;
- To learn how to use iD Editor (the in-browser editor for [www.OpenStreetMap.org](http://www.OpenStreetMap.org)) to trace/digitise satellite imagery using points, lines and polygons/areas to form buildings or road features;
- To understand the relationship and dependencies of HOT Tasking manager OpenStreetMap platform;
- To map and save your changes in HOT Tasking manager.

# 1 Create an OpenStreetMap Account

The first step to start mapping on OpenStreetMap is to create an OpenStreetMap (OSM) account<sup>1</sup>. In order to do so, go to the following link (or copy paste it into your browser): <https://www.openstreetmap.org/user/new>. On the OpenStreetMap (OSM) website, click “sign up” in the top right corner of the page (Figure 1).

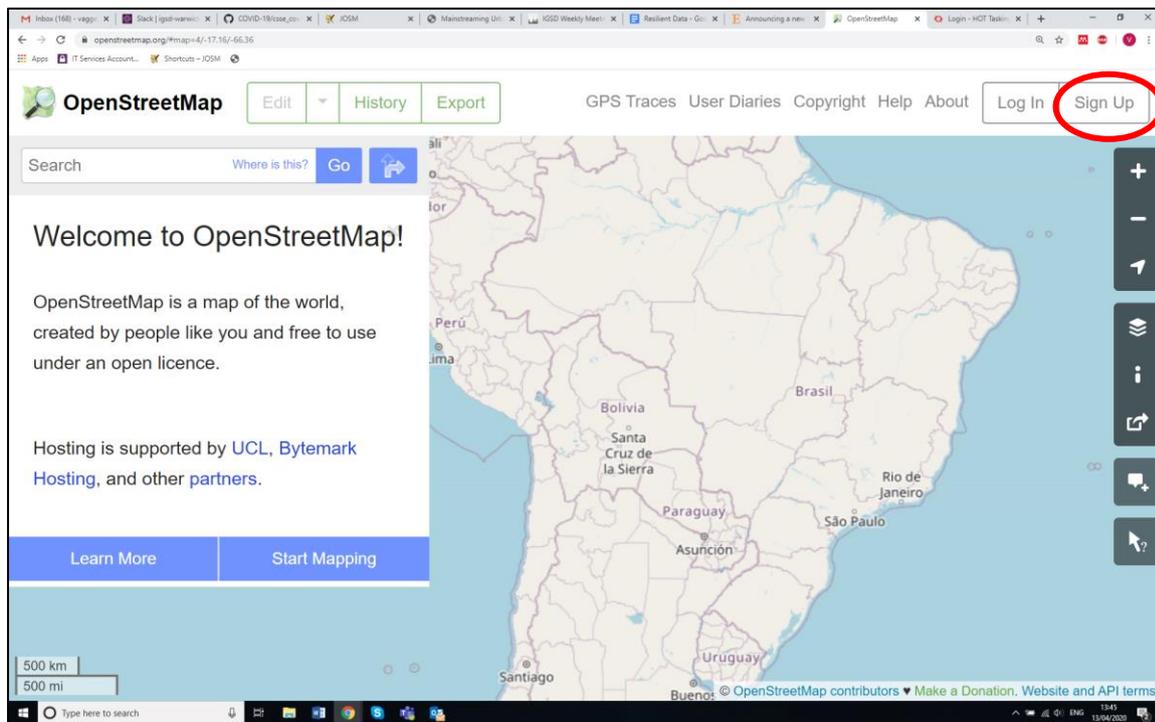


Figure 1: Sign up to OpenStreetMap.

There are five fields on this page that you need to fill in to register an account with OSM as Figure 2 shows. To complete the fields follow the next steps:

- ✓ Enter your email address in the first two fields.
- ✓ In the third field, enter the username that you would like to have. This could be anything distinctive to you but be aware that in some cases the username you choose might be already taken by another user and you would need to choose another one.
- ✓ Enter a new password in the fourth and fifth fields. It does not need to be the same as the password for your email.
- ✓ Make a note of your OSM username and password. You will need it to log in later on.
- ✓ After you have completed all the fields, click “Sign Up” at the bottom of the page.

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<sup>1</sup> If you have already an OpenStreetMap (OSM) account, please skip this section and go to the following section.

The screenshot shows the OpenStreetMap 'Sign Up' page. It features a header with the OpenStreetMap logo and navigation links like 'Edit', 'History', 'Export', 'GPS Traces', 'User Diaries', 'Copyright', 'Help', 'About', 'Log In', and 'Sign Up'. Below the header is a 'Sign Up' section with a globe illustration. The registration form includes the following fields and annotations:

- 1) Email Address:** An arrow points to the input field with the instruction: "Enter your email address here."
- 2) Confirm Email Address:** An arrow points to the input field with the instruction: "Confirm your email address here (this should be the same as 1)".
- 3) Display Name:** An arrow points to the input field with the instruction: "Choose your user name here."
- 4) Password:** An arrow points to the input field with the instruction: "Enter a password of your choice here".
- 5) Confirm Password:** An arrow points to the input field with the instruction: "Confirm your password here (this should be the same as 4)".
- 6) Sign Up:** An arrow points to the blue 'Sign Up' button with the instruction: "Once you fill all the fields click this button".

Figure 2: Insert your details to create an account in OpenStreetMap

After you click the “Sign Up” button, you need to confirm your account. **This is a very important step and should not be skipped.** To do that follow the next steps:

- ✓ Open a separate window or tab in your internet browser, and navigate to your email. If everything was successful with your registration, you should see an email from OSM in your inbox.
- ✓ Open the email. It should look like Figure 3.
- ✓ Click on the link that is identified in Figure 3. A new tab or window will open. If everything went well, you should have an OSM account.



Figure 3: Email from OSM to confirm your new OSM account

- ✓ On the OpenStreetMap home page, click “log in” in the top right corner. Enter your OSM username and password and press ‘Enter’ (Figure 4).

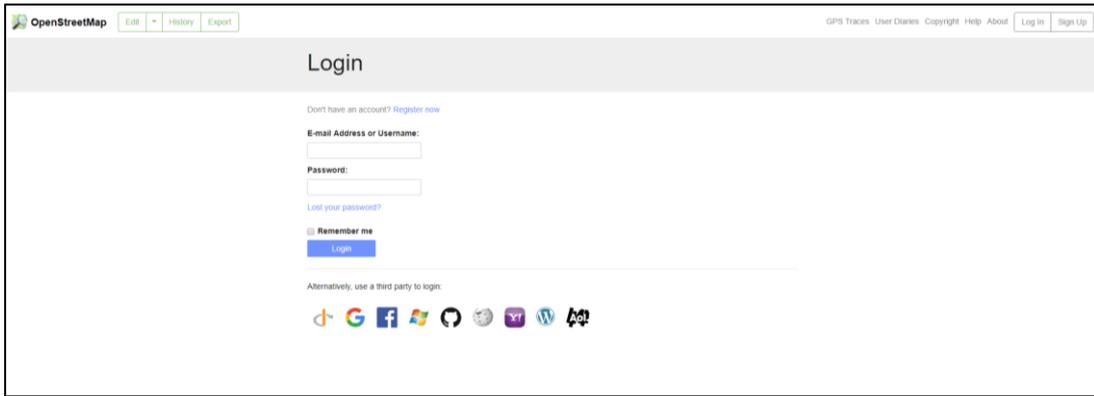


Figure 4: Login to your OSM account

- ✓ You should now be logged in and you should see your username in the upper right corner of the page (Figure 5).

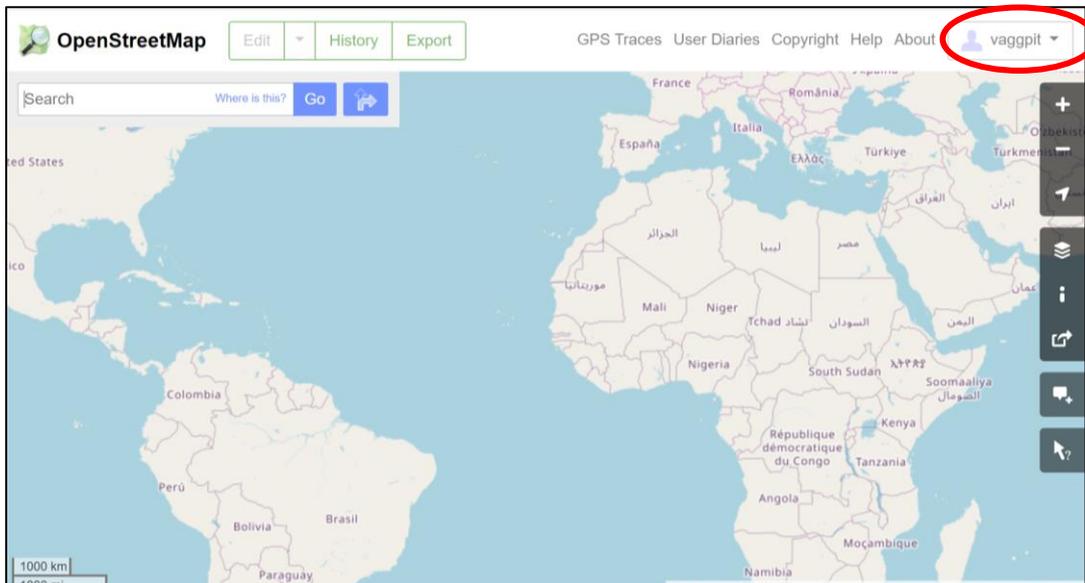


Figure 5: Your displayed username

## 2 The walkthrough

Once logged in, click on “*Edit*”, then on the help icon at the bottom of the menu on the right (see Figure 6). If the “*Edit*” button is not clickable, zoom into the map until it becomes clickable.

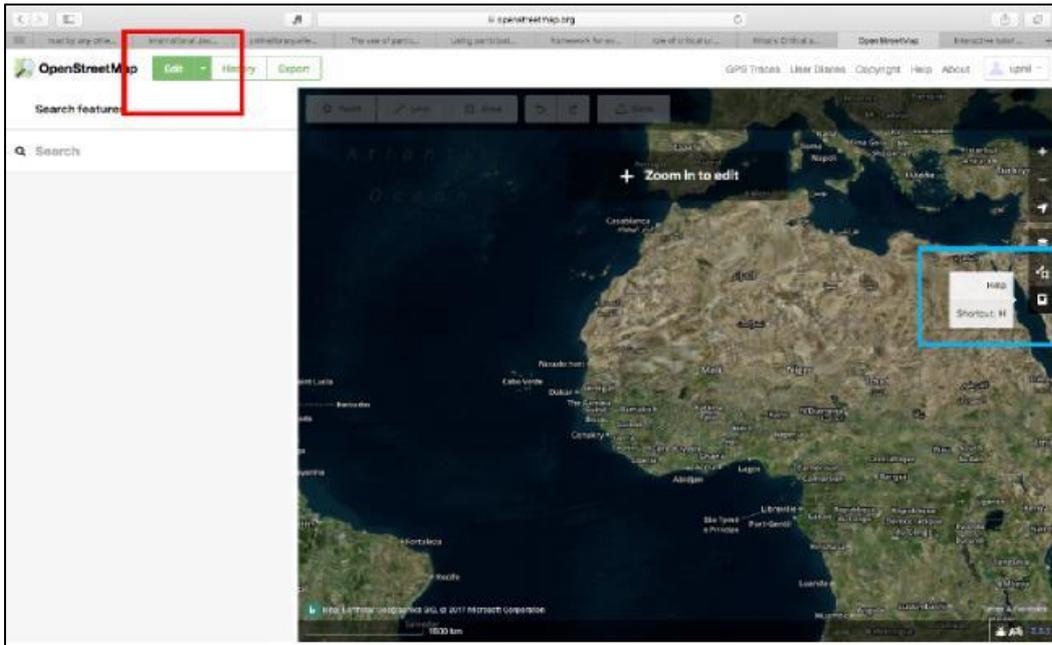


Figure 6: Choose edit to start the mapping

On the expanded help menu select the “*Start the Walkthrough*” button (see Figure 7). This will result in the browser window to switch to the walkthrough training mode with sample imagery (Figure 8).

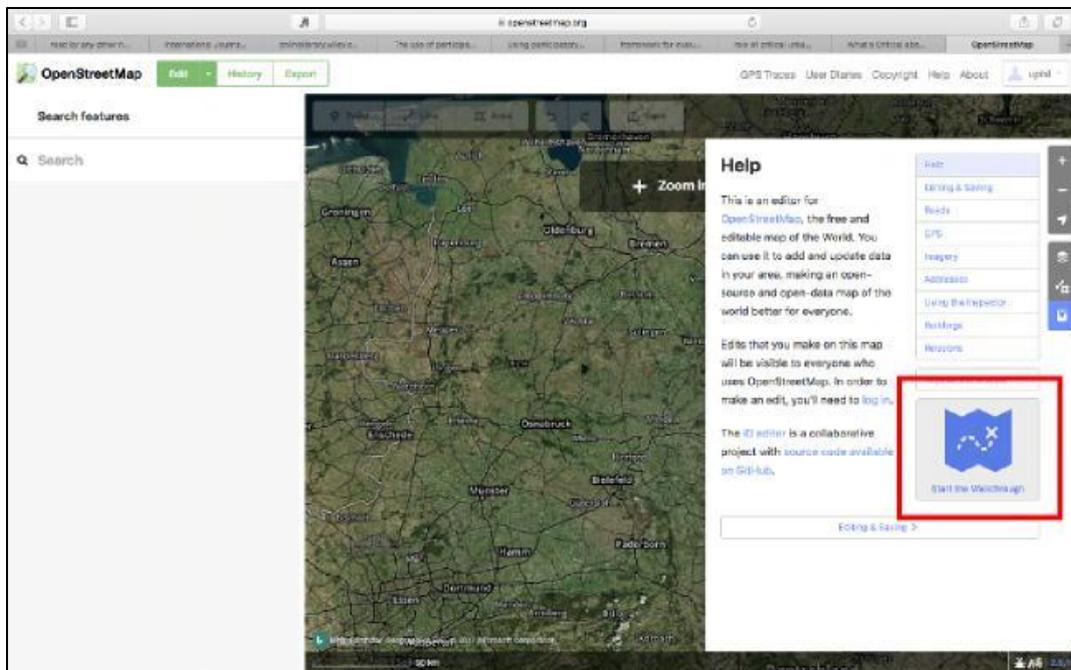


Figure 7: Select the walkthrough

Follow the instructions, by first reading the text and clicking on the OK button in blue colour (see Figure 5.6), to test the mouse is working. The rest of this tutorial follows the interactive walk through that should now be on the screen. It will focus mainly on the sections as described

on the screen: navigation, points, areas, lines, buildings, and start editing. The tutorial menu is highlighted in Figure 8.

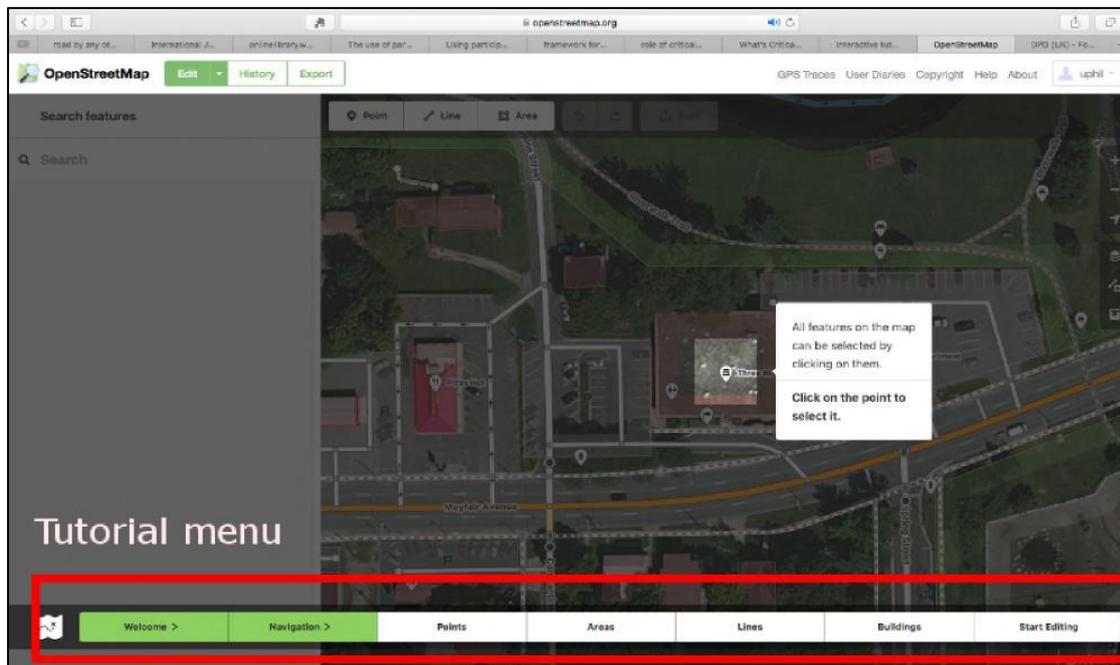


Figure 8: Tutorial menu

## 2.1 Navigation

The first step of the tutorial is the ‘navigation’ part. Click on the “*Navigation*” tab of the tutorial (Figure 8) and follow the next steps:

- **Dragging the map:** drag the map by holding down the left mouse button and moving the mouse the left. You can also use the arrows on the keyboard to move the map; just make sure the “*Num Lock*” button in your computer (if there is one) is off.
- **Zooming:** Zoom in or out by scrolling with the mouse wheel or pressing +/- keys in your keyboard.
- **Inspecting different features:** read the displayed text and click on the button to go to the next when done. Click on the point as indicated by the tutorial. This opens up the features editor on the left panel of the map. The features editor contains the geographic information about the individual feature that is active. Once finished, you can close the features editor by clicking the “x” on the top right corner (Figure 9).

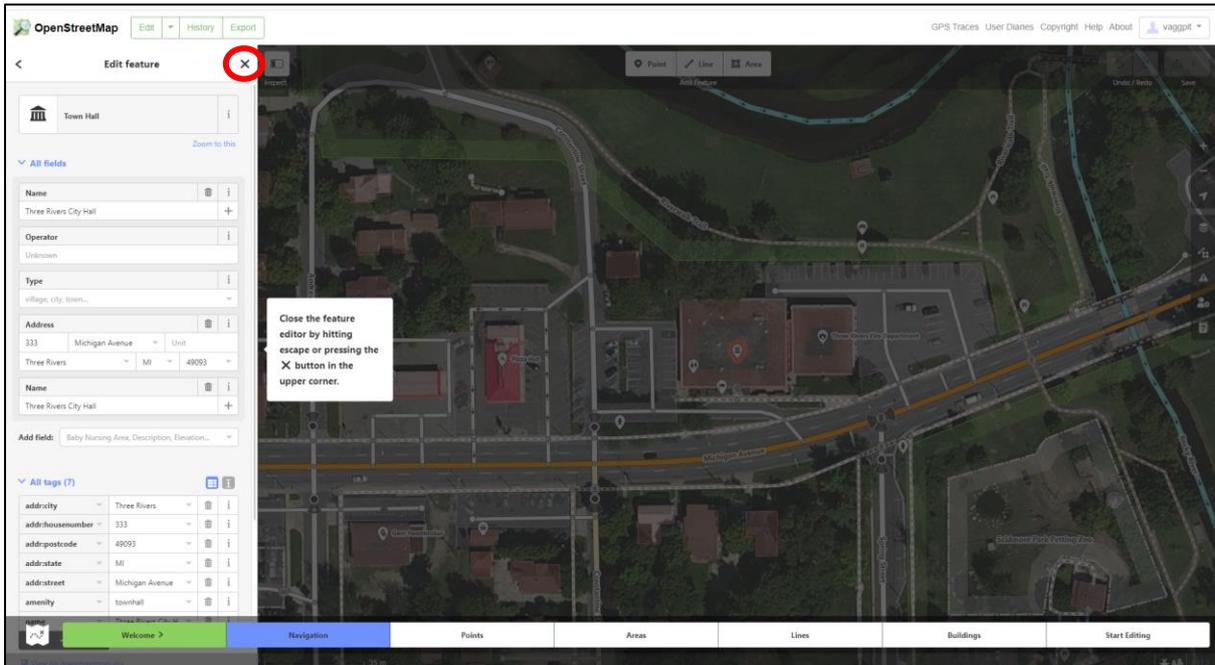


Figure 9: Exit features and select points

## 2.2 Points

Once you finish the navigation section click the “*Points*” tab of the tutorial panel at the bottom and Select the “**Point**” button on the top left corner of the map, as indicated in the tutorial. (Figure 10).

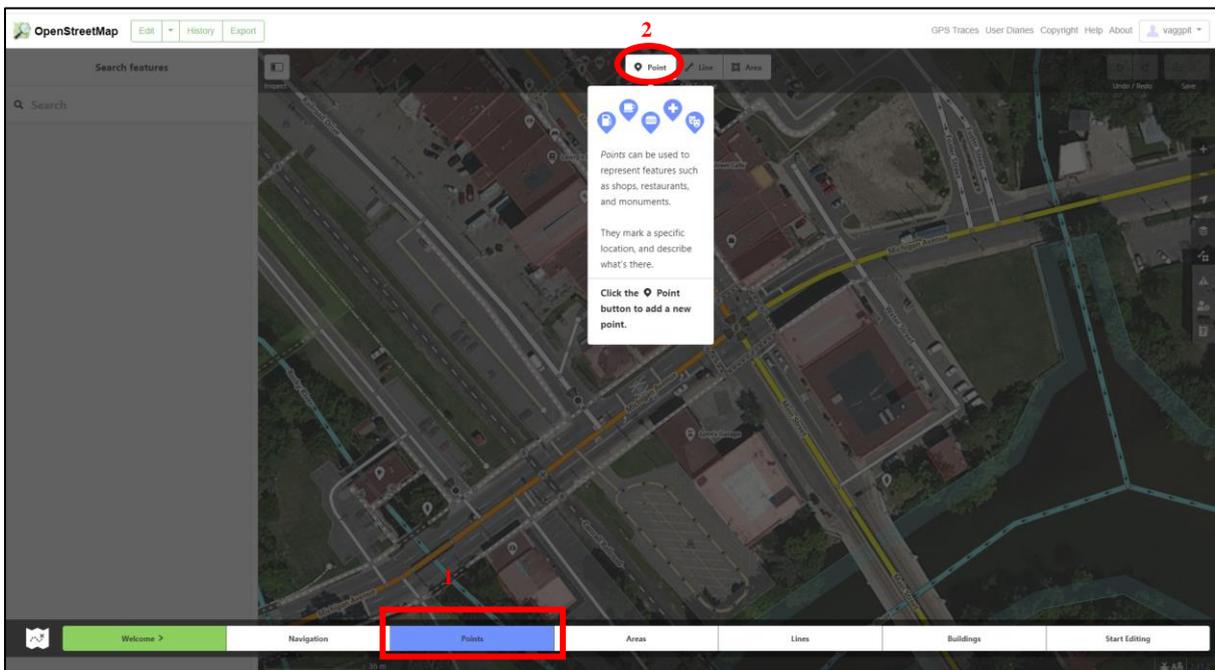


Figure 10: Select point

To complete the exercise follow the next steps:

- ✓ To add a point position the mouse cursor at the feature on the map where the point should go. Left click to drop the point onto the feature (Figure 11).

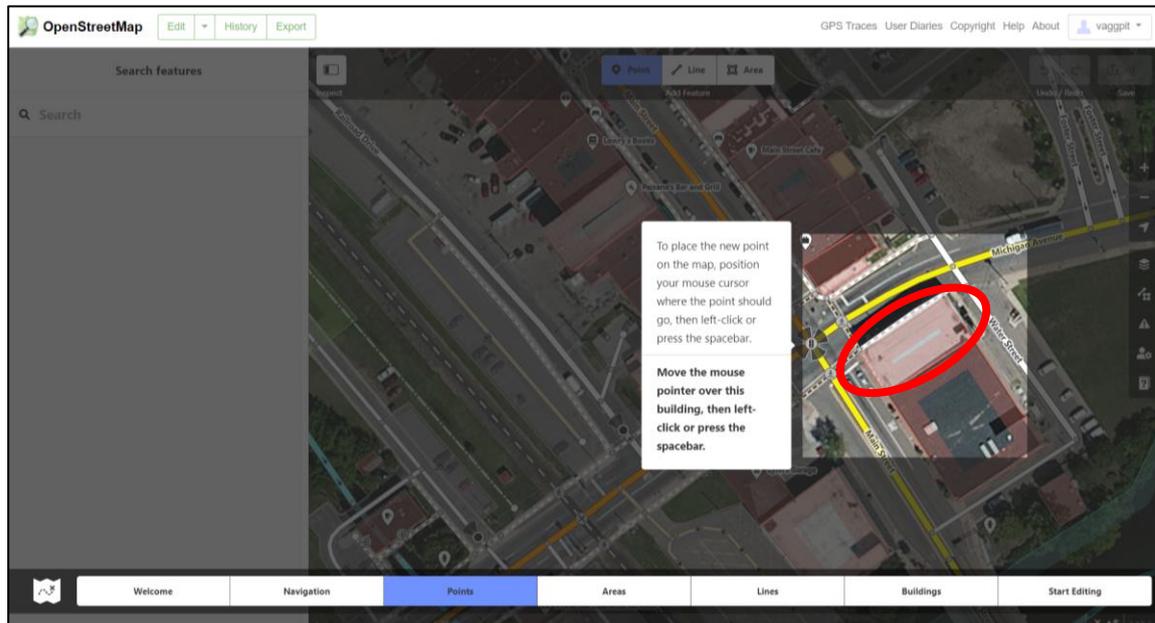


Figure 11: Add a point

- ✓ After dropping the point pin onto the feature, the feature (the rectangular building in this case), needs to be tagged. This is done by typing a keyword into the search field (Figure 12).

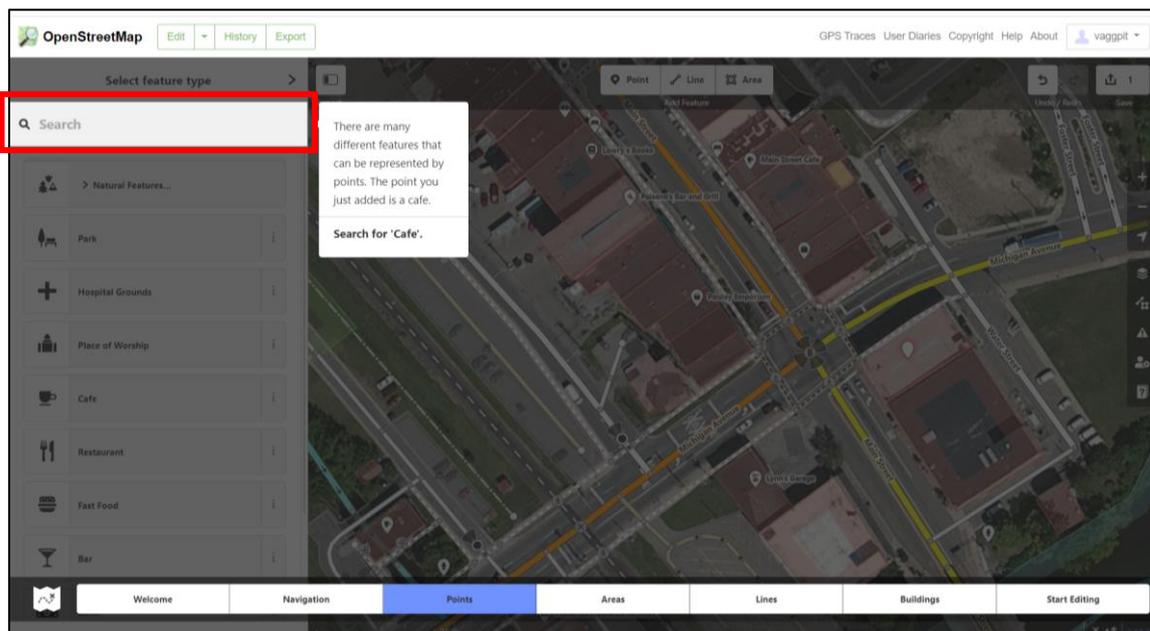


Figure 12: Search for the tag

- ✓ Once you have selected the most suitable tag for the feature (cafe in this case) you can add more details in the fields on the left (if you know them). When you finish click on the ✓ button to finalise the tagging (Figure 13).

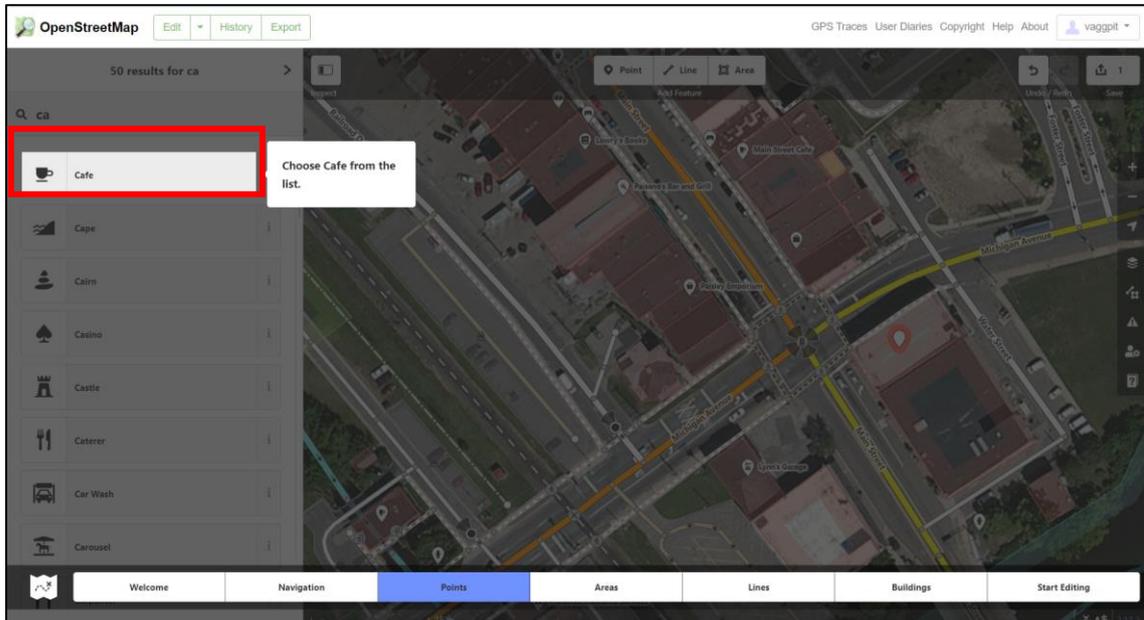


Figure 13: Choose the correct tag

- ✓ If you find a feature on the map of which you are sure that its details need to be changed, click on it. You will then be able to amend the details in the form on the right-hand side. When you finish click on the button to ✓ finalise the tagging (Figure 14).

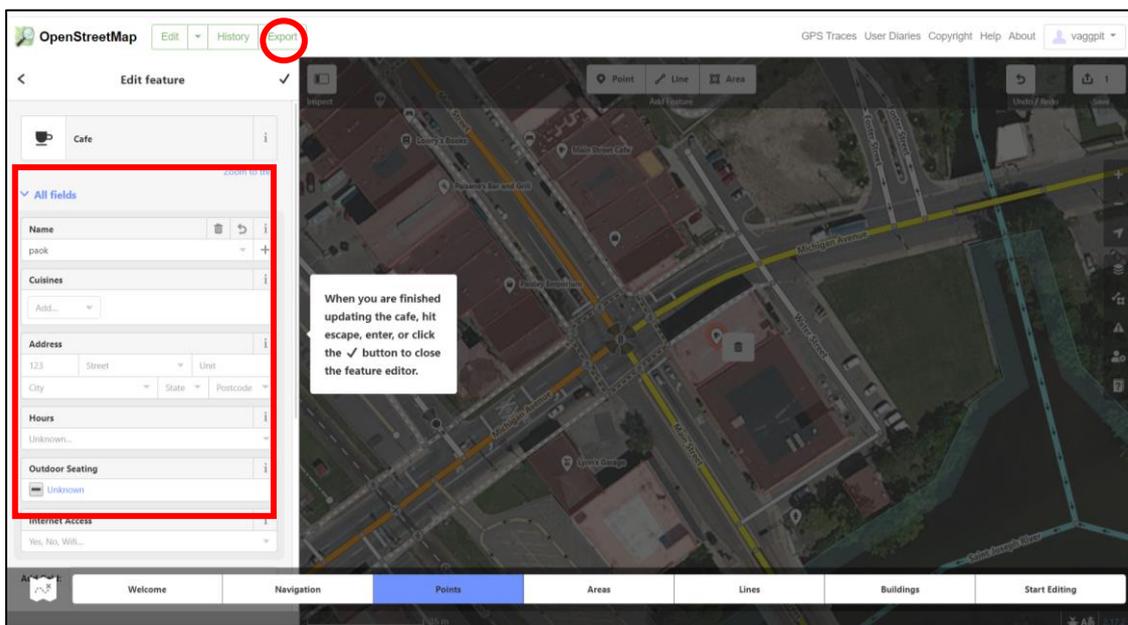


Figure 14: Add/change details in your point

- ✓ To delete a point right click on it, then click the “Delete” button on your keyboard (only if you are absolutely sure) or right click on the point and choose the ‘bin’(Figure 15).

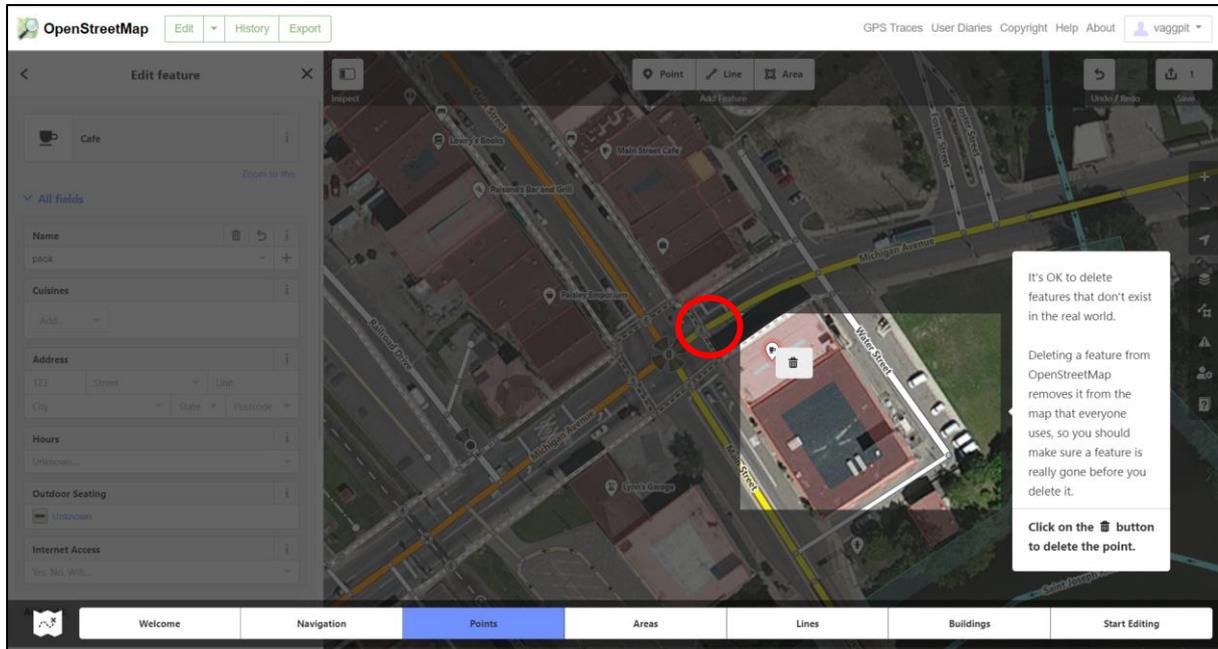


Figure 15: Delete a point

Please note that the “point function” demonstrated in this section should only be used for features that you are mapping and you know their use. In this training exercise, the example is a cafe, but it could also be another point of interest, such as a community centre, a church, a football pitch or a health centre.

### 2.3 Areas

The next part of the walkthrough is focused on mapping ‘areas’ on the map. An area in OpenStreetMap may refer to any type of land-cover shown as a circle, rectangle or any other polygon, including buildings, lakes, sport facilities parks etc. To add an area “Area” button in the tutorial menu (Figure 16).

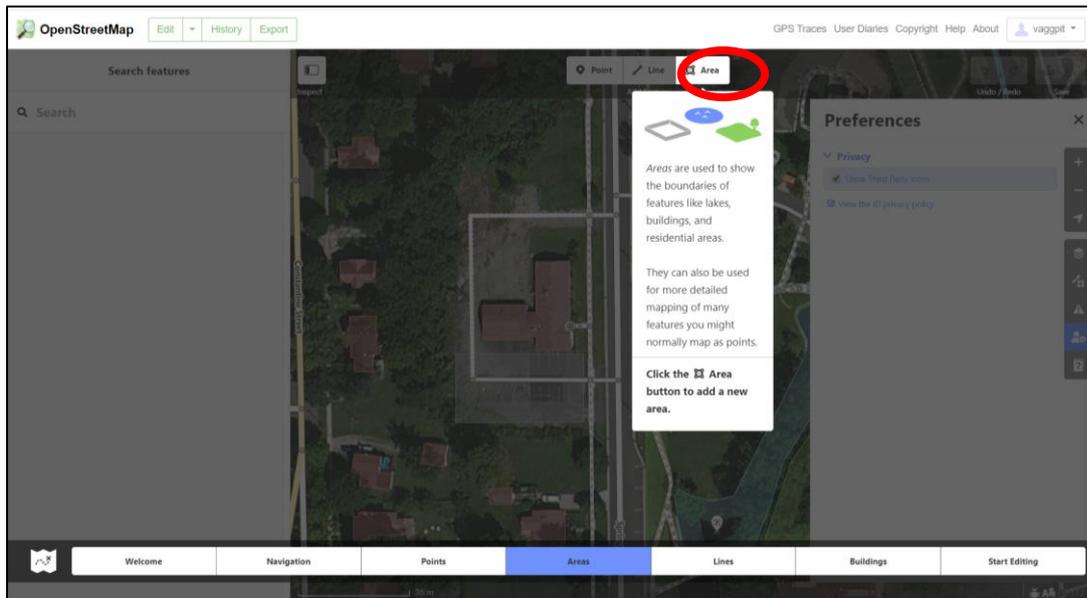


Figure 16: Select the area feature for mapping

Then you will be asked you to add a playground to the map. To draw the polygon click once at the corner where you want to start tracing and continue tracing the outline of the feature by clicking every time you want to mark a corner. Double-click once you arrived at the last corner to stop tracing. Now the feature will need to be tagged with a geographic description. The procedure is similar to the one followed for tagging a point and described above. In short, type in a keyword in the search field on the left and clicking on the tag that best describes the feature as shown in Figure 17(in this case playground).

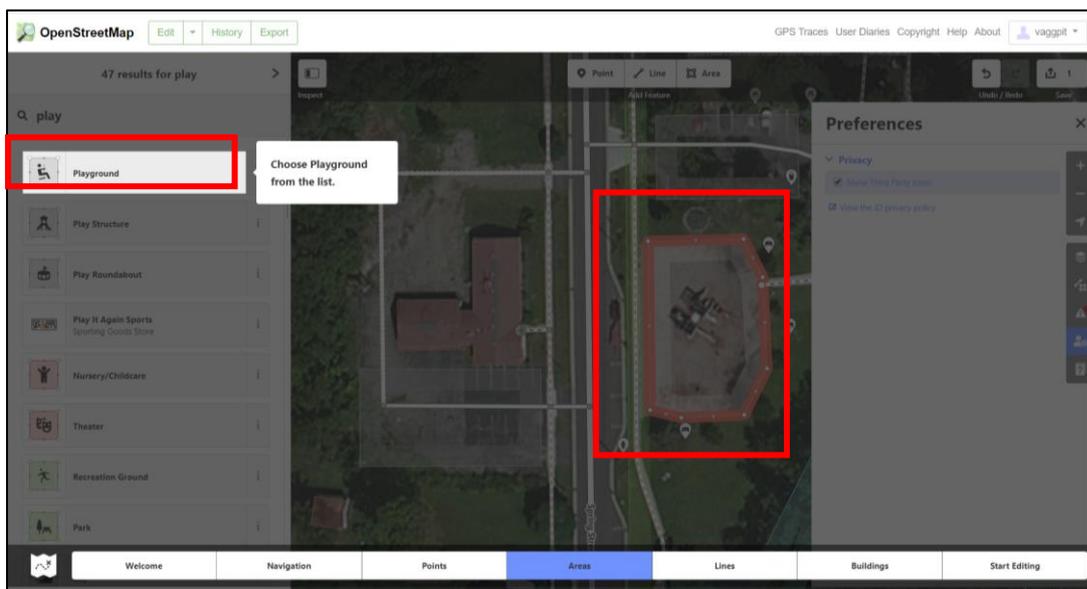


Figure 17: Mapping and tagging an area

## 2.4 Lines

Another feature to map in OpenStreetMap is the 'line'. Lines are mostly used to map roads, rivers, railways or similar linear features. To add a line, click on the “*add line*” button in the tutorial menu (Figure 18).

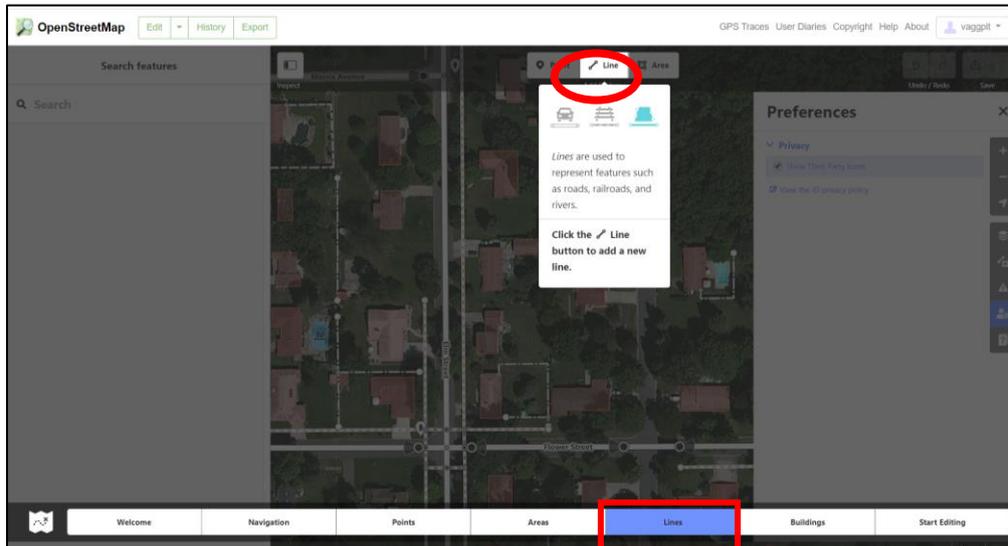


Figure 18: Select the line feature for mapping

The walkthrough tutorial will then ask you to add a road. After clicking the “*add line*” button click at the beginning of the section of the road you want to add. Trace along the middle of the feature (the road in this case) and click at every turn. Please note that is essential to click at every intersection between two or more roads to mark the junction. Double-click once you have reached the end of the road you want to map (Figure 19).

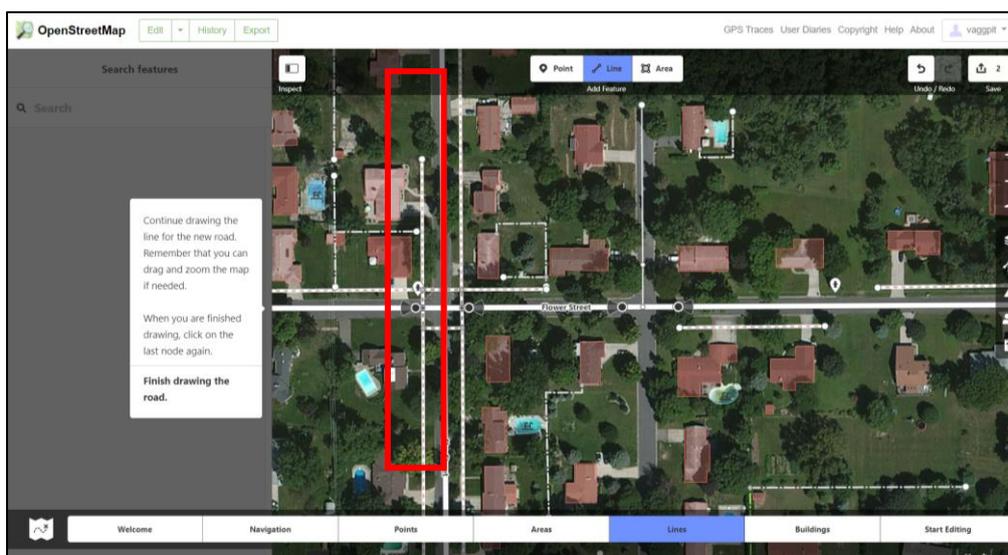


Figure 19: Adding lines/roads in the map

To tag the road, identify the road feature in the tagging field on the left (Figure 20). In this exercise you will be asked to use the tag ‘Minor roads’.

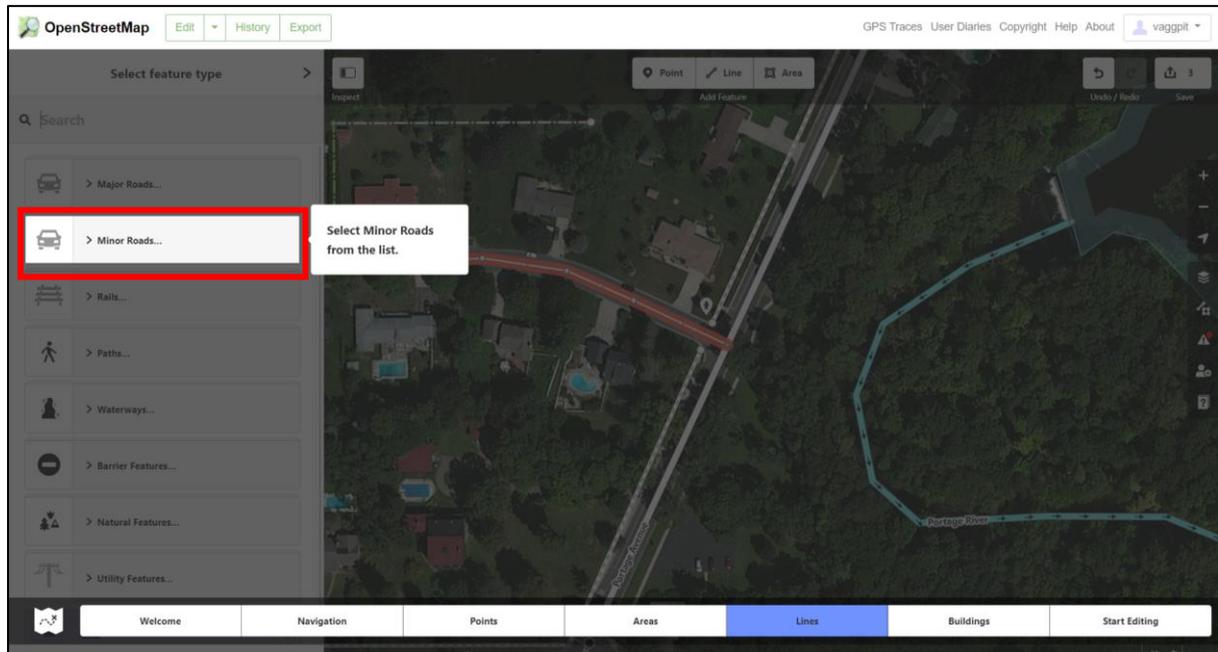


Figure 20: Choose the correct tag for your line/road

If you are unsure what type of road it is, click on the “I” button at the right of each type, which will provide you with more information. If you are still unsure, tag the road as “unclassified”. If you know the name and other details of the road, this can now be filled in the form in the feature editor on the left. The best way to map roads is by starting with the major roads and to work your way down to minor roads. It is important not to have any roads that are unconnected to the rest of the road network, so please sure that the roads you map are placed within the wider network. Starting with the major roads first will help you do so. Figure 21 shows some of the options you have for tagging a road (make sure that you choose ‘Residential road’ for the exercise).

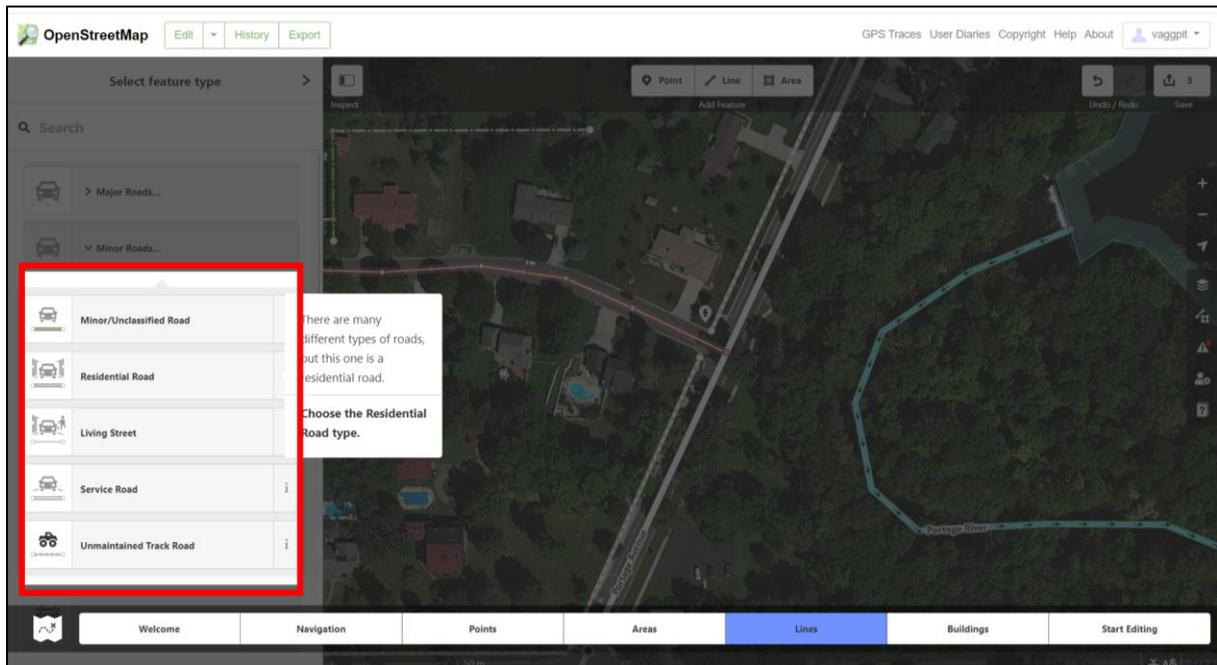


Figure 21: Different types of available tags

## 2.5 Buildings

The final step to complete this walkthrough is mapping buildings. Buildings are a specific type of 'areas' so in order to map one select the "Buildings" tutorial from the menu (see figure 5.7) and then select "Area" as indicated in Figure 22.

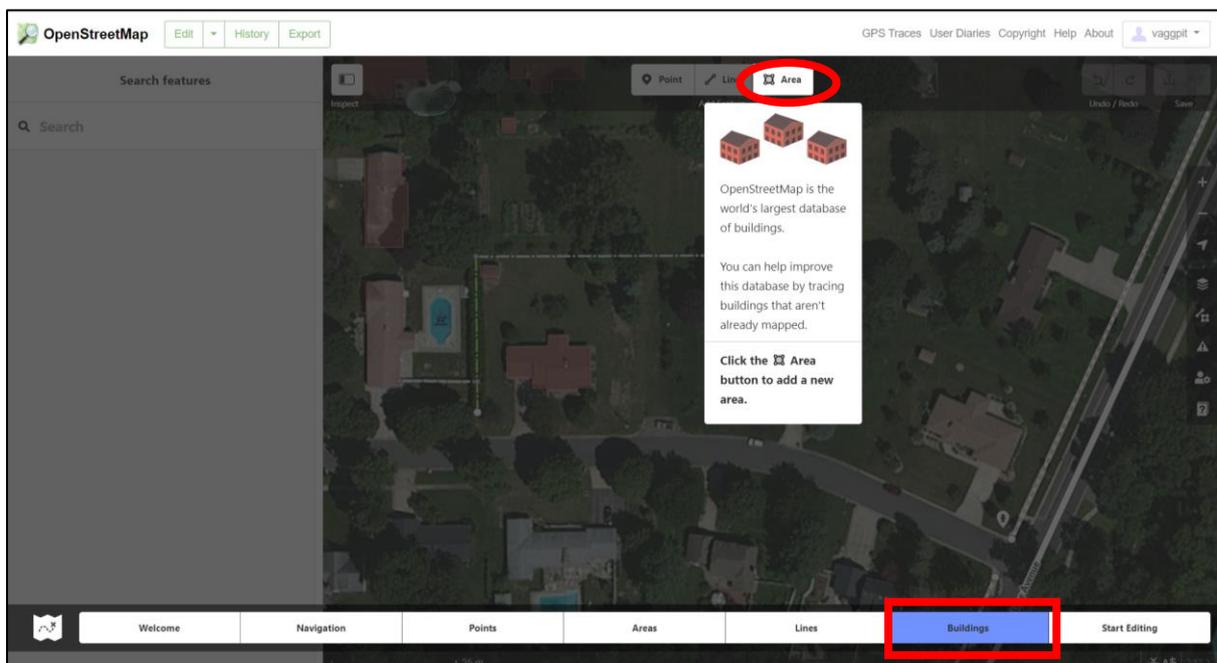


Figure 22: Select 'area' to start mapping your building

Then click once at the corner where you want to start tracing and continue tracing the outline of a building by clicking every time you want to mark a corner. Double-click once you reached

the last corner to stop tracing. To tag the building, choose the “*building features*” option in the feature editor on the left (Figure 23).

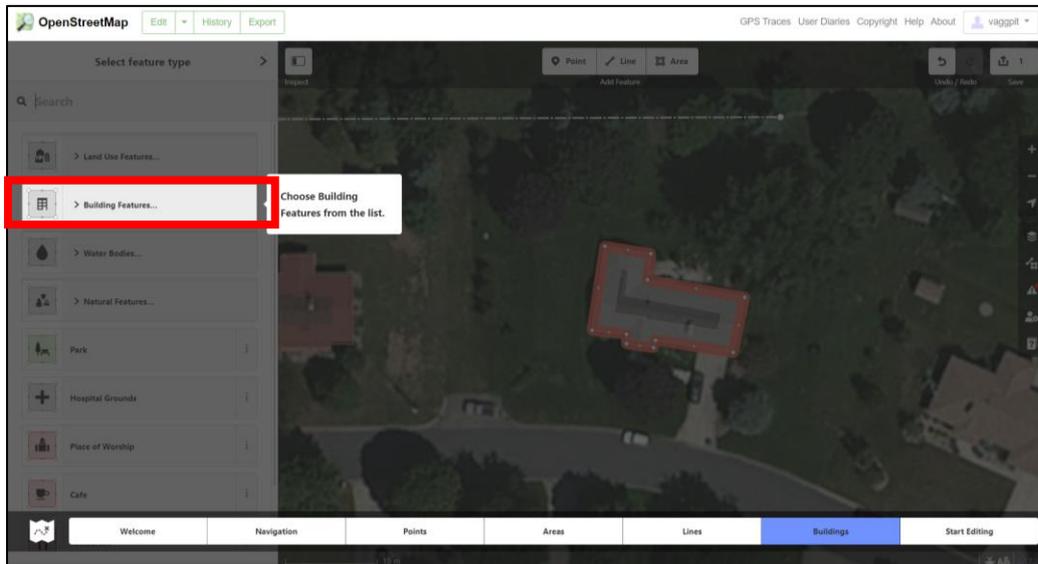


Figure 23: Choose 'building features' to find the correct tag

In general it is best to tag unknown buildings as “*Building*” as it may be difficult to tell from the satellite imagery whether the building is a house or a commercial building. In this example however, it clearly is a house so select “*house*” from the dropdown menu (Figure 24).

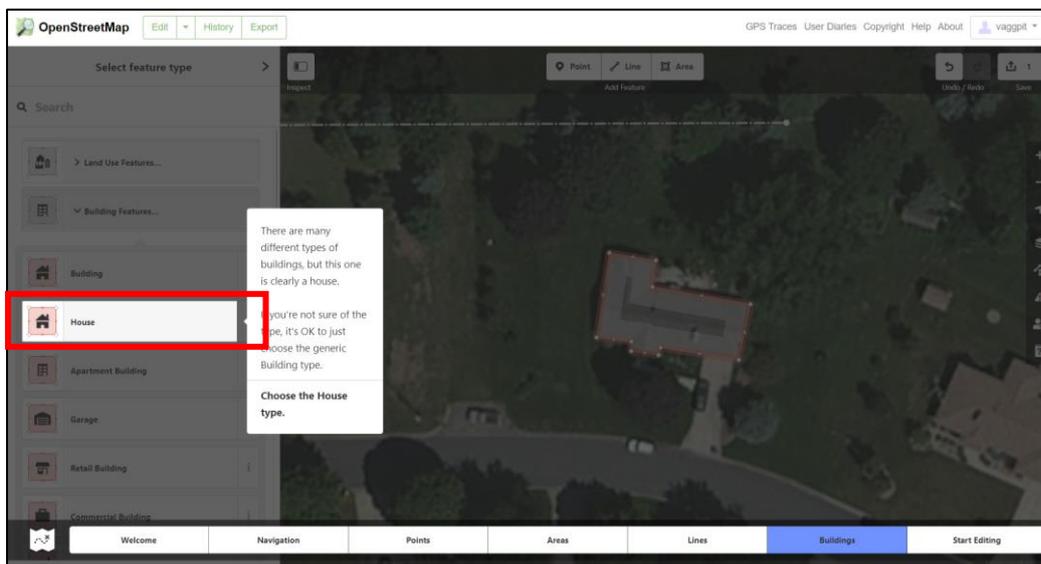


Figure 24: Choose the correct tag for your building

You can then add more details in the feature editor. To square the corners of the building, right click on the building and select the “*square*” symbol or press the ‘Q’ button on your keyboard. This is important, especially if the maps are to be printed out. The same sequence applies for

round buildings. To round your building, right click on the building to select it and then choose 'circularize' or click the 'O' button on your keyboard (Figure 25).

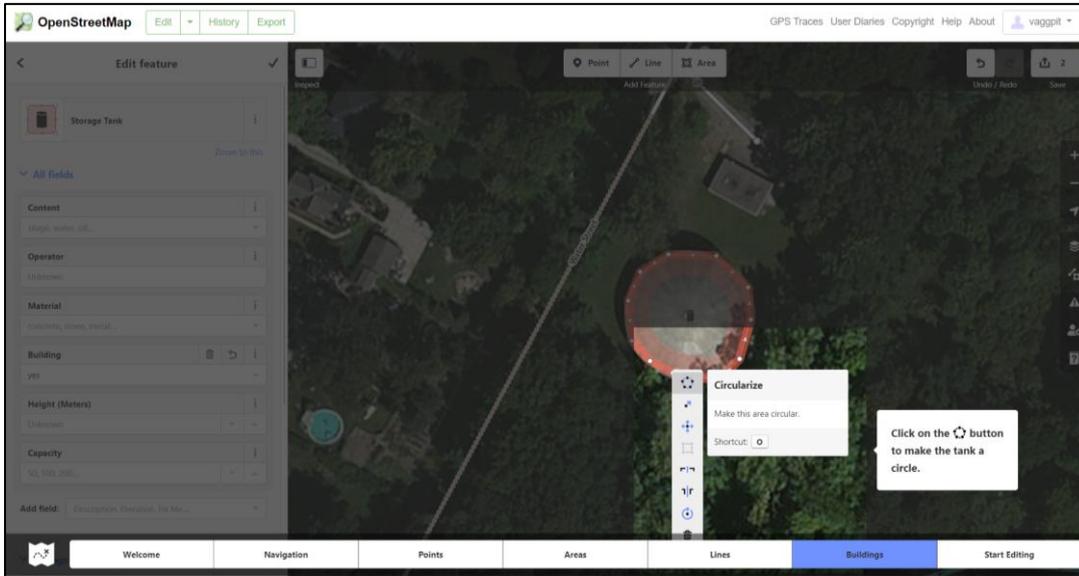


Figure 25: Circularise your building if appropriate

## 2.6 Saving your work to OpenStreetMap.org database

For the walkthrough, it makes sense to disable the save button so that the edits done during the training will not be saved (i.e. uploaded to the online database). When (and if) you want to save your edits, click the "Save" button. The panel on the left will show the upload panel (see figure 26).

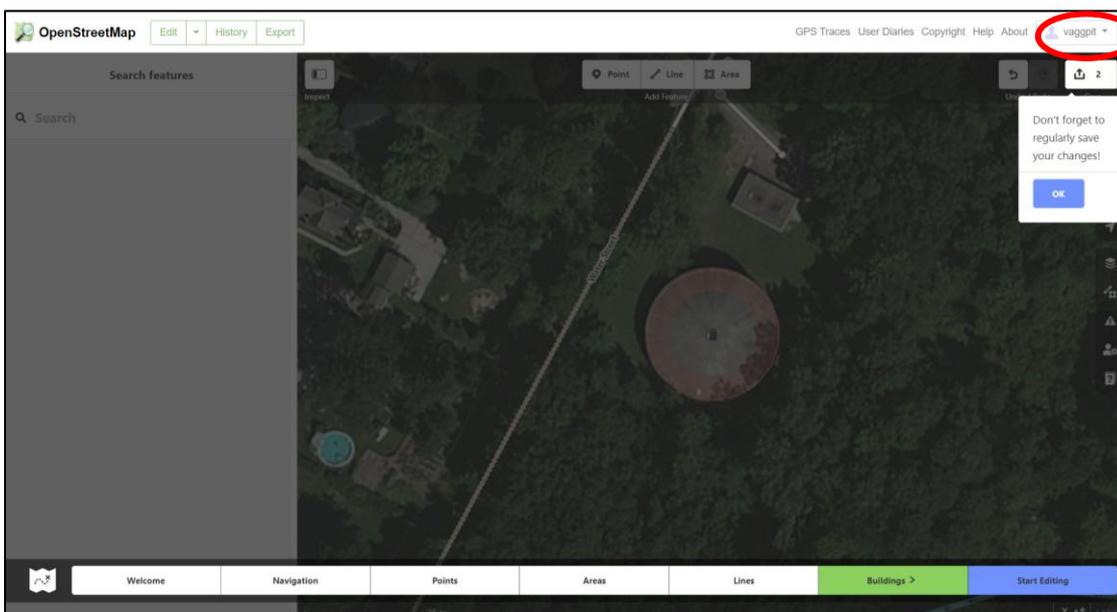


Figure 26: Save and upload your changes

In general, it is advisable to save whenever the box next to the saving button is at nine or higher, in case there are issues with the internet connection. Enter a comment in the “Changeset Comment” box about your edits (for example, with a hashtag referring to your institution/organisation and “added buildings”), tick the box with the text “*I would like someone to review my edits*” and click “*Upload*”.

**Congratulations! You have now acquired the basic mapping skills on OpenStreetMap. If at any point during the walkthrough you make a mistake (we have all made mistakes in the beginning so do not worry) you can restart each mapping session simply by clicking on the desired button.**

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## The Humanitarian OpenStreetMap Tasking Manager

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Now that you have learned the basics of online mapping, it is time to go just a step further. OpenStreetMap, as we have already discussed, is a global collaborative initiative designed to create comprehensive and editable maps from volunteers around the world. After the successful expansion of OpenStreetMap in both academic and practitioner circles, the need for more geospatial data, particularly from organisations working in the humanitarian sector has led to the creation of several initiatives to mobilise more individuals to map more areas and produce more data in the OpenStreetMap platform, particularly in places where humanitarian action was needed. One of the most significant of such initiatives in the Humanitarian OpenStreetMap Team (HOT).

HOT is an international team dedicated to humanitarian action and community development through open mapping. It works with practitioners and volunteers to provide map data which revolutionises disaster management, reduces risks, and contributes to achievement of the Sustainable Development Goals.

In order to organise and manage their work with OpenStreetMaps, HOT has created the Tasking Manager. The Tasking Manager is a mapping tool designed and built for collaborative mapping process in OpenStreetMap. The purpose of the tool is to divide up a mapping project into smaller tasks that can be completed rapidly with many people working on the same overall area. It shows which areas need to be mapped and which areas need the mapping validated.

This approach allows the distribution of tasks to many individual mappers in the context of emergency or other humanitarian mapping scenario. It also allows monitoring of the overall project progress and helps improve the consistency of the mapping.

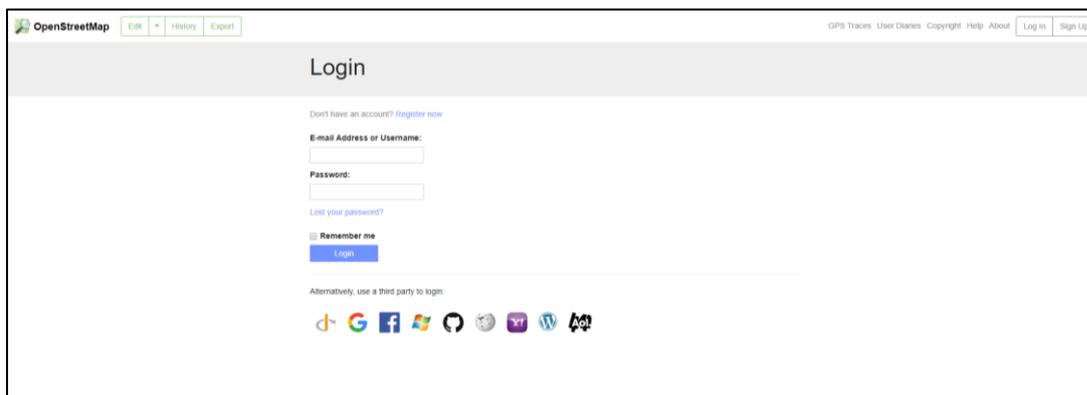
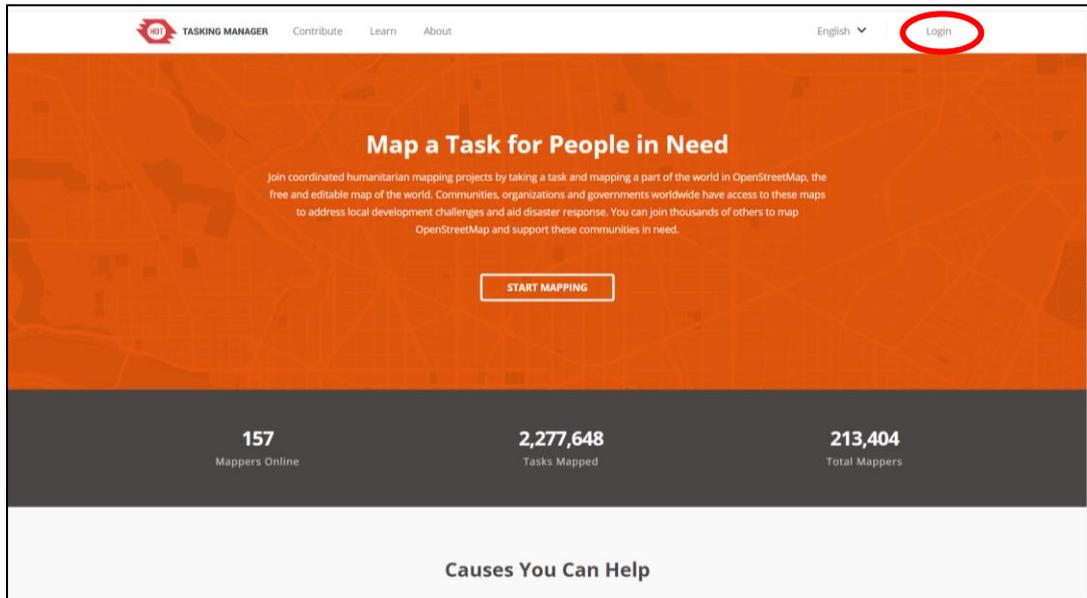
**The whole mapping process is taking place in OpenStreetMap and is based on the process explained above. The Tasking Manager is merely a platform that assist in organising the mapping activity. All changes made through the Tasking Manager are actually done in OpenStreetMap, as the two tools connect to each other.**

**This differentiation is very important to understand!**

### 3 Using the Tasking Manager

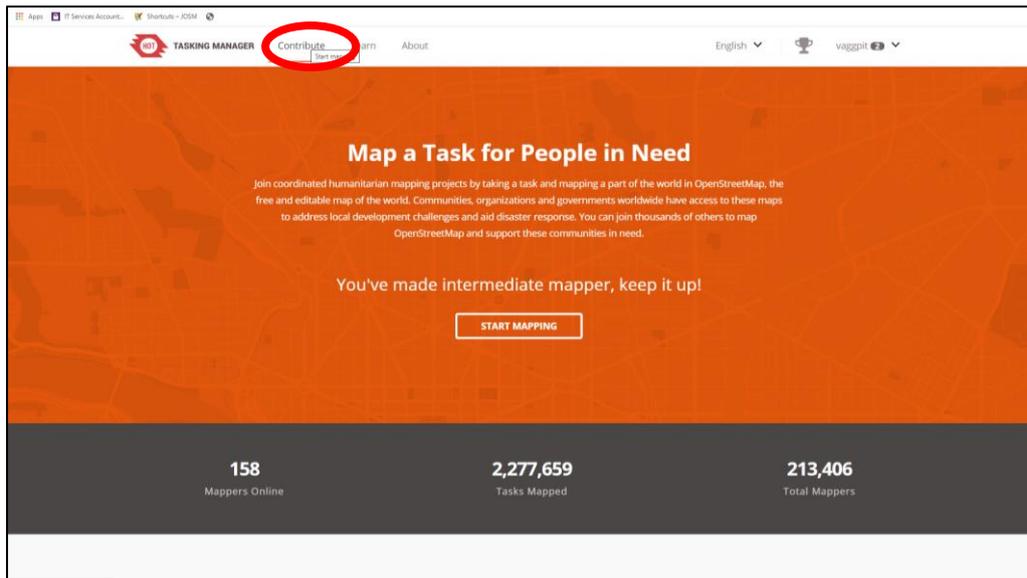
#### 3.1 Log in

Let's move now and see how to use the Tasking Manager. First you need to type the address <https://tasks.hotosm.org/> in your browser. Once you transfer to the Tasking Manager's page, you will need to login in with your OSM account you created before (see Figure 4). The following show the steps you need to follow.

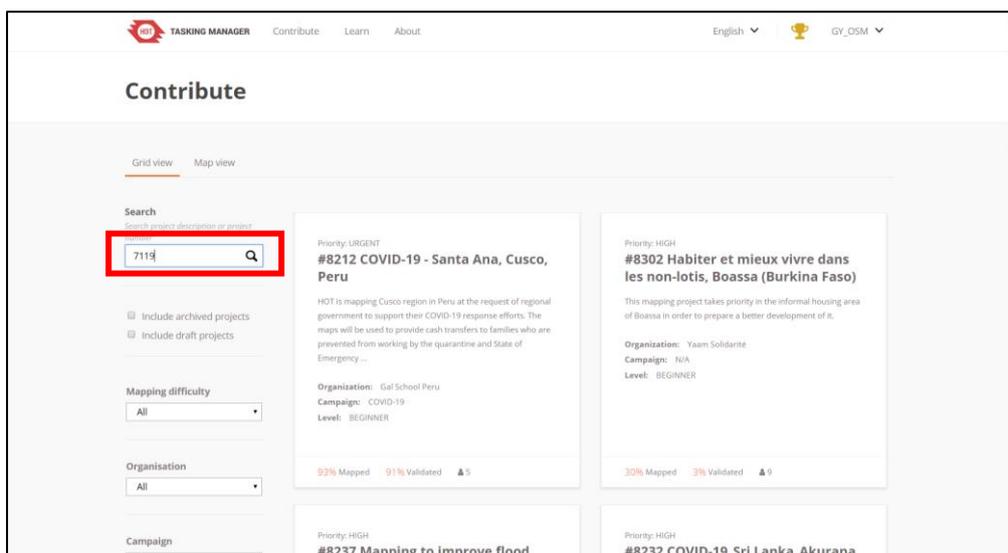


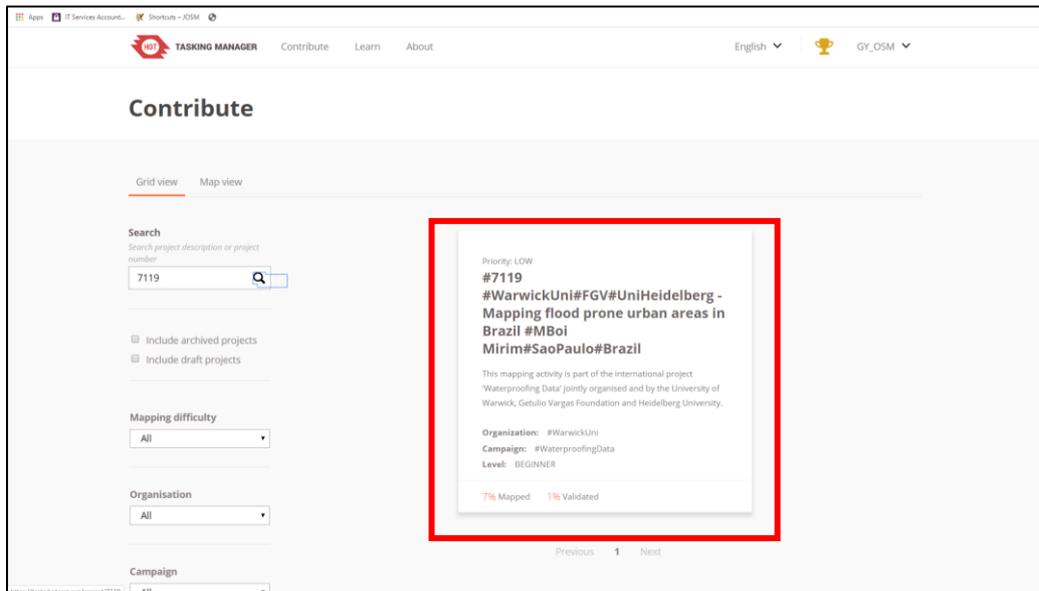
#### 3.2 Choose your project

Once you are logged in you will be able to see your username in the place of the 'Login' button. Now you are ready to start mapping! Click 'Contribute' on the top left side of your screen.



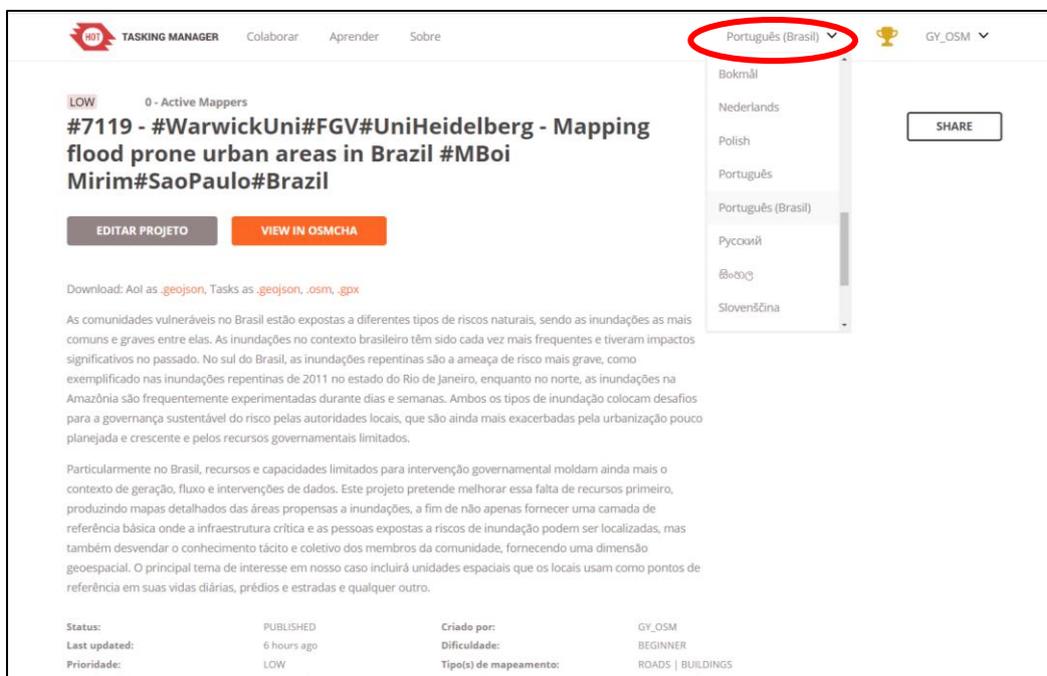
Once you click ‘*Contribute*’ you will be able to see the page in Figure 3.5. In this page you can see all of the current ongoing projects, which you are allowed to map. Each of the project has a different level of difficulty, based on the photographs provided, the density of buildings and other. Now, click on the ‘*Search*’ button and if you are mapping the M’Boi Mirim type ‘7119’, while if you are mapping Rio Branco type ‘6124’. Once you finish do this you will be redirected to your respective project. Click and select your project. In this tutorial we will use the example of M’Boi Mirim in São Paulo. However, exactly the same process and steps should be followed if you are mapping Rio Branco.





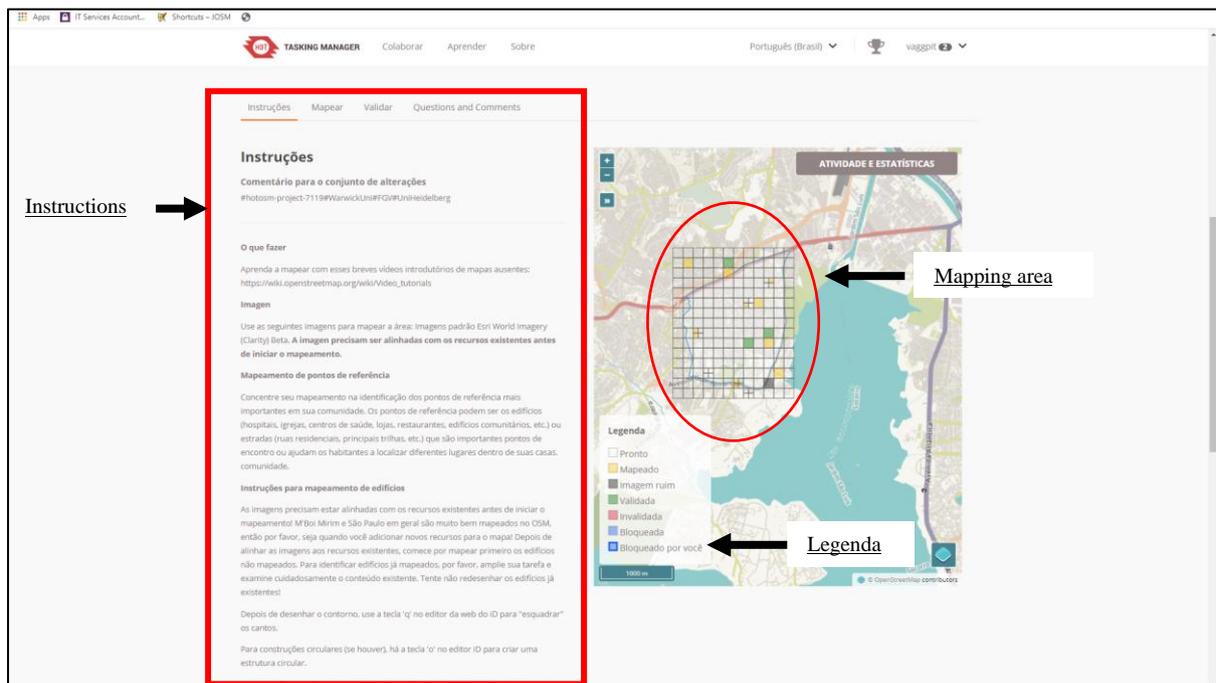
When you select your project you will be presented with the following screen. If your language is different, click on the designated sign and choose *'Portugues (Brasil)'*. In the project page, right below the code number and name of the project, there is a short description of the reason this mapping is taking place, and some basic information regarding the background of the project.

### 3.3 Understanding the project



If you move right below the description, you will see on the left-hand side of your screen instructions (instruções) for mapping in the project. Please spend some time reading the

instructions and pay significant attention to them, as different projects require different things to be mapped. For instance, some projects focus only on the buildings of a designated area, others ask for buildings and roads etc. Moreover, usually in the instructions you will find the imagery you are required to use for the particular task you are mapping<sup>2</sup>. In the case of our projects here, the instructions are clear about what you need to map and what kind of tags you should also use. Therefore, always read the instructions.



On the right-hand side of your screen, you will see the designated area for mapping divided in several different tasks (squares). Each tile (square) represents a different geographical area within the broader study area. The colour of each tile (square) is explained in the provided legend. In short the colours of tile are the following:

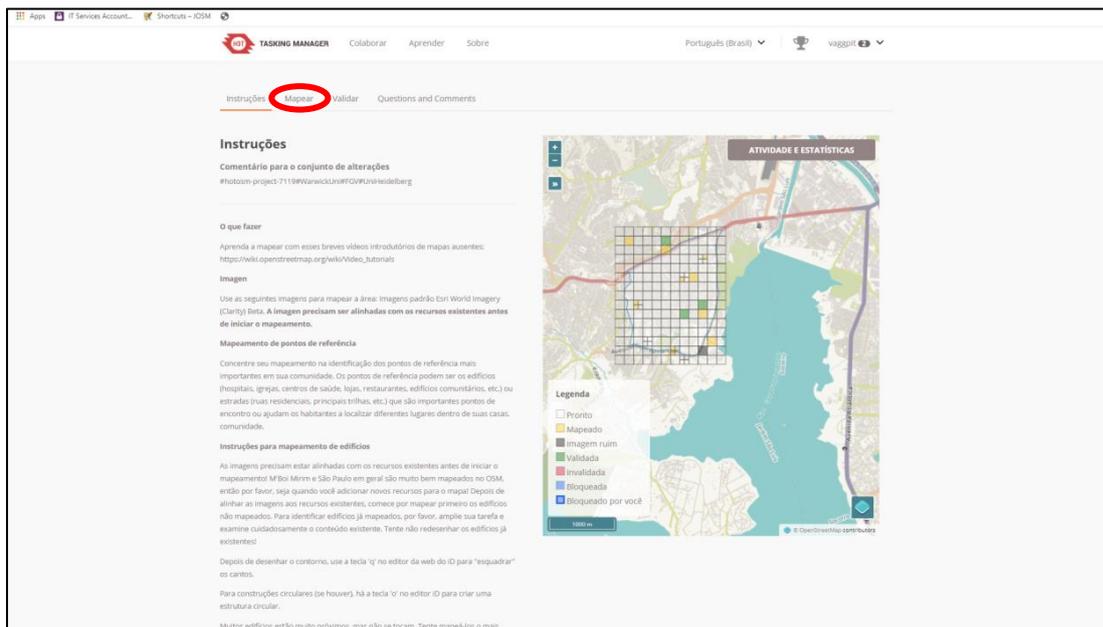
- Tasks (squares) without any colour are ‘Ready (pronto)’ to be mapped;
- Yellow tasks (squares) are already mapped (mapeado) and thus not available to be chosen;
- Black tile are marked as ‘Bad imagery’ (Imagem ruim);
- Green tasks (squares) are mapped and validated by a more experienced mapper (validada);
- Red tasks (squares) are still invalidated (invalidada);

<sup>2</sup> Tip: Always use the imagery asked by the project owner. However, if you struggle to map in some cases, you may switch to other images available to help you with your mapping!

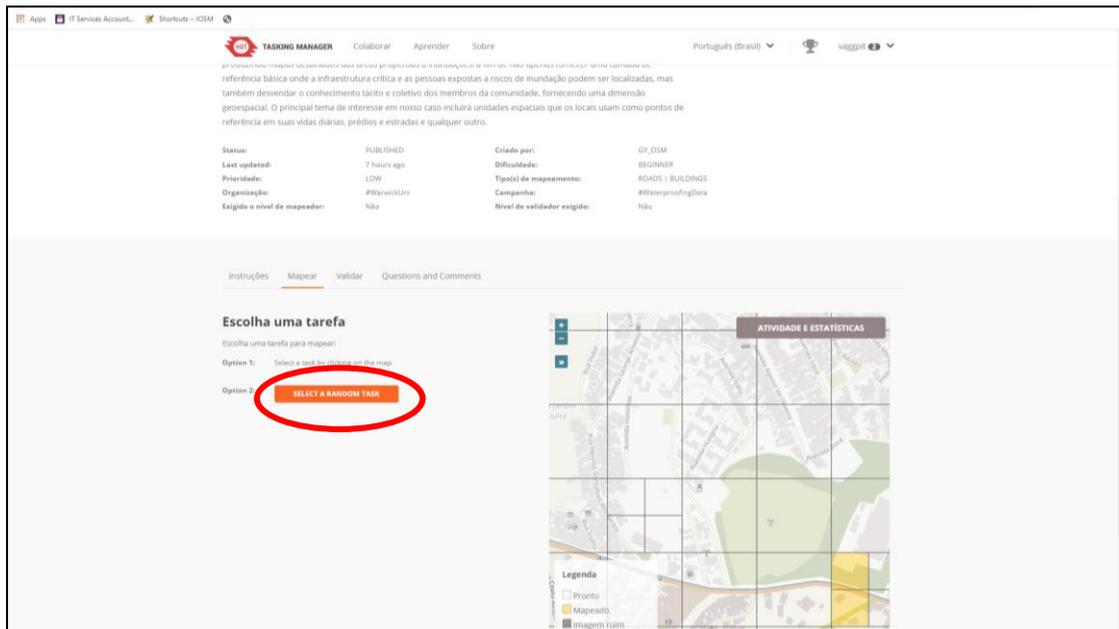
- Blue tasks (squares) are already taken by another mapper (bloqueada) at this time and thus not available to be chosen
- The tile (square) without a colour but with a yellow border, is currently chosen by you (bloqueado por voce)

### 3.4 Choose you task

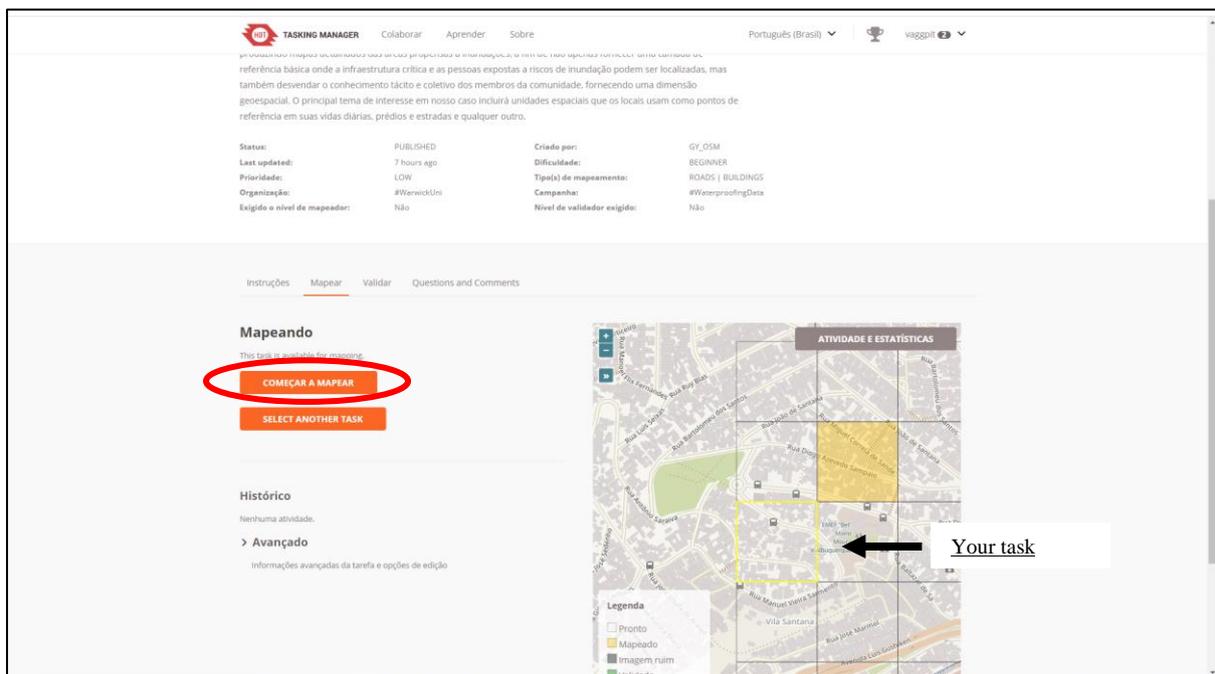
After reading the instructions and familiarising yourselves with the project click on the ‘*Mapear*’ button next to ‘*Instruções*’.



Once you choose ‘*Mapear*’ the following screen will show up. Choose Option 2 ‘*Select a random task*’. You could also select a task by just clicking on it. However, in order to avoid two people choosing the same task, always choose ‘*Select a random task*’.

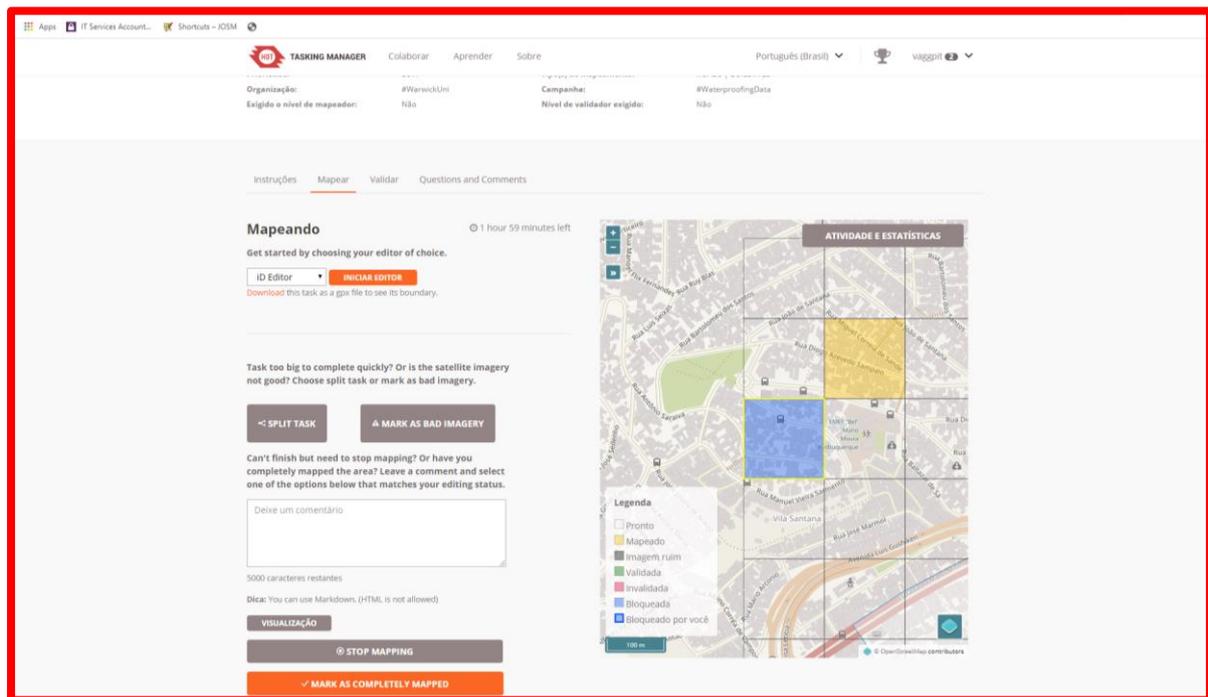


When you choose your task, you will realise that the outline of your tile has turned yellow. As explained above, this means that this task is now blocked for you, and you will be the only one who able to map it. When ready, click *'Começar a mapear'*.

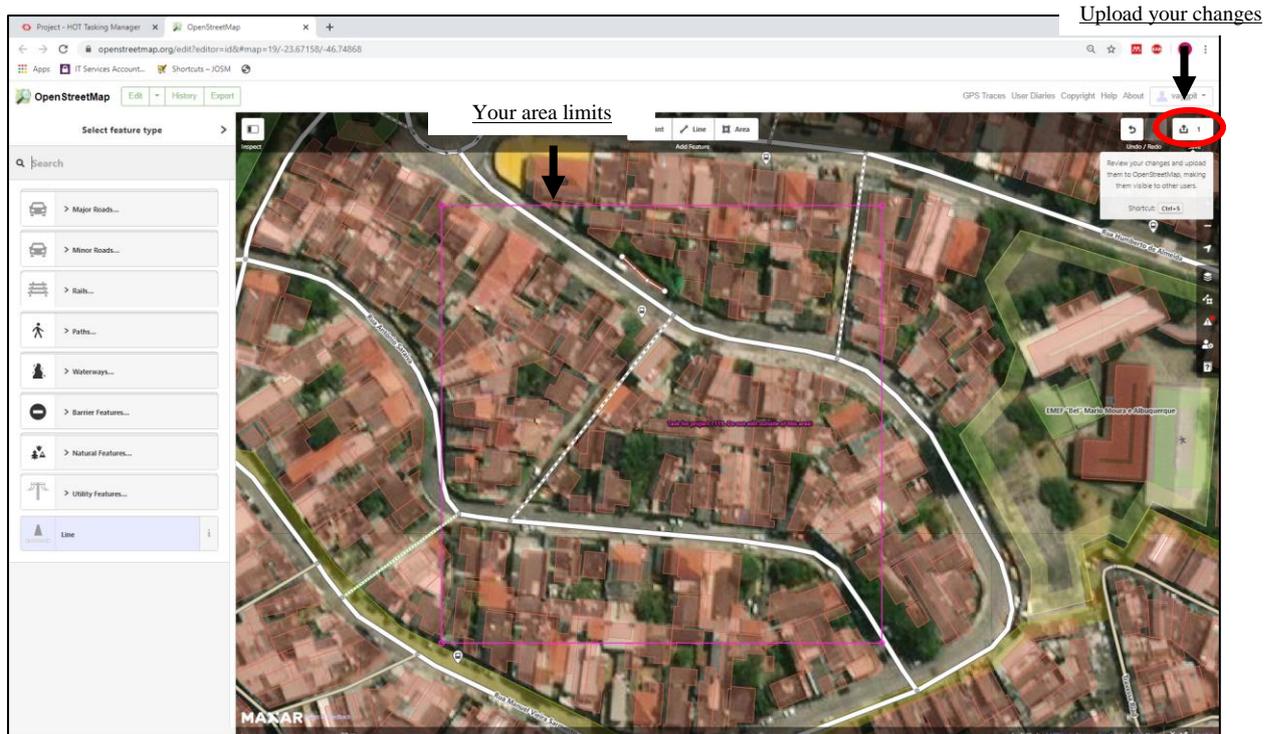


The final step before you actually start mapping is very important! to choose the editor that you will use. This is easy! Just keep the iD Editor chosen and click *'Iniciar Editor'*. **This screen is very important so do not close it!**

### 3.5 Navigating between OpenStreetMap and HOT Tasking Manager



Once you click *'Iniciar Editor'*, a new page is going to open in your browser. In this new screen, you will be redirected to OpenStreetMap and you can now start mapping. The area you have chosen is designated by a purple outline, and you will be able to see all of the features already mapped there. Use the skills you acquired through the walkthrough to map the features you are asked to map in the instructions. If a feature (building or road) is not entirely in your square but stretches outside your limits, map it! Do not forget to tag the buildings you map (choose building, house etc) and also add any other information about them you might know (not personal information about specific people or groups of people though!). Once you finish mapping a building press the 'Q' button in your keyboard to square it or right click on it and choose *'square'*. Also do not forget to upload your changes! Once you map 9-10 features (you will see the number on the top right corner) click *'Upload'* to upload the changes to the OpenStreetMap platform.



**THIS IS THE FINAL BUT VERY IMPORTANT STEP!**

When you think that all the required information has been mapped in your square you need to return to the previous screen in the HOT Tasking Manager. Now you have the following choices:

- If you believe that there is nothing more to be mapped in this area, click the last 'Mark as completely mapped' (bottom in orange). If you do this, your task is going to turn yellow and it will no longer be available for mapping.
- If you did not have time to finish mapping your task, click 'Stop Mapping'. Your task will be free again for another mapper to continue your work. It will be extremely helpful for other mappers if you leave a comment at the comment section regarding the changes you have made or any problems you had with mapping (don't worry about the language here, just try to be polite).
- If the aerial image provided was of low quality, click 'Mark as bad imagery'. Your task will then turn black on the map.

TASKING MANAGER Colaborar Aprender Sobre Português (Brasil) viggitt

Organização: #WaterickUm Exigido o nível de mapeador: Não Campanha: #WaterproofingData Nível de validador exigido: Não

Instruções **Mapear** Validar Questions and Comments

**Mapeando** 1 hour 59 minutes left

Get started by choosing your editor of choice.

ID Editor **INICIAR EDITOR**

Download this task as a gpx file to see its boundary.

Task too big to complete quickly? Or is the satellite imagery not good? Choose split task or mark as bad imagery.

<< SPLIT TASK **MARK AS BAD IMAGERY**

Can't finish but need to stop mapping? Or have you completely mapped the area? Leave a comment and select one of the options below that matches your editing status.

Deixe um comentário

5000 caracteres restantes

Dica: You can use Markdown. (HTML is not allowed)

VISUALIZAÇÃO **STOP MAPPING**

**MARK AS COMPLETELY MAPPED**

ATIVIDADE E ESTATÍSTICAS

Legenda

- Pronto
- Mapeado
- Imagem ruim
- Validada
- Invalidada
- Bloqueada
- Bloqueado por você

Leave a comment for the next mapper

Click if there are more things to be mapped

Click if the image of the task is bad.

Click if you think you have mapped everything

Once you finish with this step you will be able to choose another task and continue mapping!