User Manual for Web Application

This Document is the original user guide of the described web application. The registered softwares and hardware have been used to develop the application.

The details, data and results in this document have been written and verified to the best of the knowledge and responsibility of the authors and editors. Nevertheless, mistakes concerning the content are possible.

The document is available online via HTML in the web portal. Users don't need to install any other software to use the web application. User can find this manual in Help tab of the home page. The Web App has been developed using Leaflet JavaScript library , Mapserver ,HTML and CSS coding.

The data of Eggingen has been secured and comes from a company database . ALKIS data has been provided by the Municipality of Ulm and other data calculation has been done a prerequisite of the web analysis .

Home

Initially the link will open a home page of the web application.

Figure 1 : Home Page

If you click the „ Learn More" Segment the Eggingen city district website will open for a general overview of Eggingen city district.

Analysis

Segment I

In the „Analysis"   segment the analytical approach to find a housing potential demand has been shown.

Figure 2 : First Visualization of the Analysis Page

- ***Baselayers***

Once it is clicked a black and white open street base map layer will appear .

 It can be changed expanding the „OpenStreetMap" in the right panel. There three options can be seen : OSM,B&W (By Default) and Open Topo Map as the following.

Figure 3: Right pane

From here any basemap layer can be selected as per the choice. „Collapse all" minimises the winodw pane whereas „Expand all" expands it.

- ***Zoom and Pan function***

The base map can be zoomed out and zoomed in either by scrolling mouse or with „ +/- symbol in the left. The map has a functionality to pan by clicking the left button of the mouse.
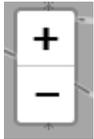

Figure 4: Zoom Button

- ***Scale***

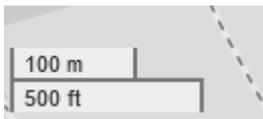In the lower left corner a scale can be seen as following :

Figure 5:Scale

With the zoom function of the map the scale get changed.

Segment II

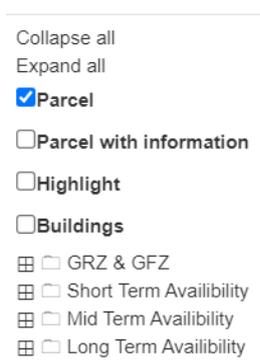In the right pane all the layers can be seen as the following :

Figure 6.Right Pane

For step by step proceeding , click on the "Expand all" where the layers can be seen as following :

Figure 7:Expansion of the layers

Step 1 :

1. **Parcel :** This layer contains the parcel layer which is by default added in the map with a check in check box. It is recommendable to keep it checked for better visualisation and analysis purpose.

2. **Parcel information:** It provides all the current information of the parcel. Check the **Highlight** layer as well. By clicking the layer on the map, the parcel will get highlighted, and the information popup will appear .

3. **Buildings :** By checking the building layer all the buildings in Eggingen district can be visualised.

4. **GRZ&GFZ :** This is a group layer . By clicking on the icon ⊞ following two layers can be open respectively

   o **GRZ →** GRZ refers to „die Grundflächenzahl" or the floor area ratio. This number defines the percentage ratio between the size of the plot of land and the maximum development. For example, GRZ of 0.3 means, that a maximum of 30% of the plot area may be built over. The colour code can be seen in the legend in left pane. It has been calculated by

GRZ = *(Area of the Building / Area of parcel)+ 5% (which includes   garages, footpaths, small house streets etc.)*

By clicking this layer, the potential GRZ of the parcels can be seen

Figure 8 : Choropleth Map of GRZ

- o **GFZ→** GFZ refers to „die Geschossflächenzahl" or Floor space ratio which defines the maximum amount of living space that can be created in a parcel. This number defines the percentage ratio between the size of the plot of land and the maximum square meter area of the full stories. (If a full storey is prescribed in the development plan, the GFZ is identical to the GRZ. The GFZ is only significant if two or more full storeys). With a GRZ of 0.5, the surface area of all floors may not exceed 50 % of the area of the plot. GFZ has been calculated as

GFZ = *GRZ of main buildings * Storey of the main buildings*

By clicking this layer, the potential of GFZ can be seen

Figure 9: Choropleth Map of GFZ

Step 2 :

The analytical layers have been divided in the form their availability of development.

1. **Short Term Availability:** It refers to the parcels which are immediately available for the development by the municipality. It includes **Building Gaps** and **Building Application.**
2. **Mid Term Availability:** It refers to the availability of development of the parcel within three to five years. It includes **Underutilised Parcel, Outer Potential Areas with Planning Right and Built-Up Area.**
3. **Long Term Availability:** It refers to the availability of development of the parcel may be in decades. It includes **Outer Potential Area with Land Use Plan.**

Each layer in the above-mentioned groups is again divided into three states or phases. They are as follows:

> **(a) Actual State:** This state shows the status quo or the current informations of the parcel which include parcel number, it's address and area in square meters by clicking in the significant layers.

Figure 10: Actual State of The Parcel Showing The Status Quo

(b) Development according to planning regulations: This state shows the information of the parcel according to the planning right.

Figure 11: Development According to Planning Regulation

(c) Further Development: This is a state of simulation. It indicates the willingness of the owner of the parcel to develop their respective lands. This state works with the help of a slider in the left pane.

o **Functionality of The Simulation Slider**

Initially the slider has been shown with a visualisation value of 40. It is just for a visualisation purpose. The slider starts from 0 to 100 which refers the 0% willingness of the owner to develop their land to 100% willingness of the owner.
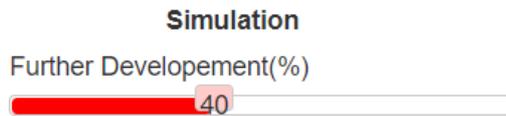
Simulation

Further Developement(%)

`[========40=====================]`

Figure 12 : Slider Feature

Along with the slider , an automatic dialogue box appear as follows having specific information :

Area(sqm)	11140
Floor Space(sqm)	7798.0
Living Space(sqm)	6238.4
No.of Residents	82.6
Chart	

Figure 13 : Dialogue Box having Calculated Information

- Area (sqm) → It indicates the total area of the checked parcel layer . (For example : if the "Building Gaps " layer is checked then it shows the total area of the whole " Building Gaps") in square meters .

- Floor Space (sqm) → This shows the total floor space of the checked layer in square meters which has been calculated as

    Floor Space = Total Area / Average GFZ

- Living Space (sqm) → This depicts the overall living space in square meters of the parcel which is calculated as :

    Living Space = Floor Space – 20%

- No. of Residents → It refers number of potential residents in land which is calculated as:

    No. of Residents = Living Space / 75 m²

- Chart → The chart shows a visual representation of the overall relation with floor space, living space and number of residents in each layer.

As the slider slides from 0% to 100 % each layer gets more darker with the increase in the percentages and that is how it can be analysed how the willingness of the owner to develop their land parcel affects the changes in floor space, living space of the area of the parcel which directly affects the accommodation for the number of populations. The following examples of the layer "Building Gaps" explain the scenario more elaborately :

Figure 14 : Building Gaps with 0% Potentiality of Further Development

Figure 15 : Building Gaps with 50% Potentiality of Further Development

Figure 16: Building Gaps with 100% Potentiality of Further Development

Contact

In the right corner of the home page, **Contact** tab can be seen. It is a medium of the user and the company. User can contact to the company by sending queries through this contact form.

Figure 17:Contact Form

Users need to provide their name, email id, subject of the query or message and the message and submit it. If it is successful a Thank you message can be popped up otherwise error message will pop up.
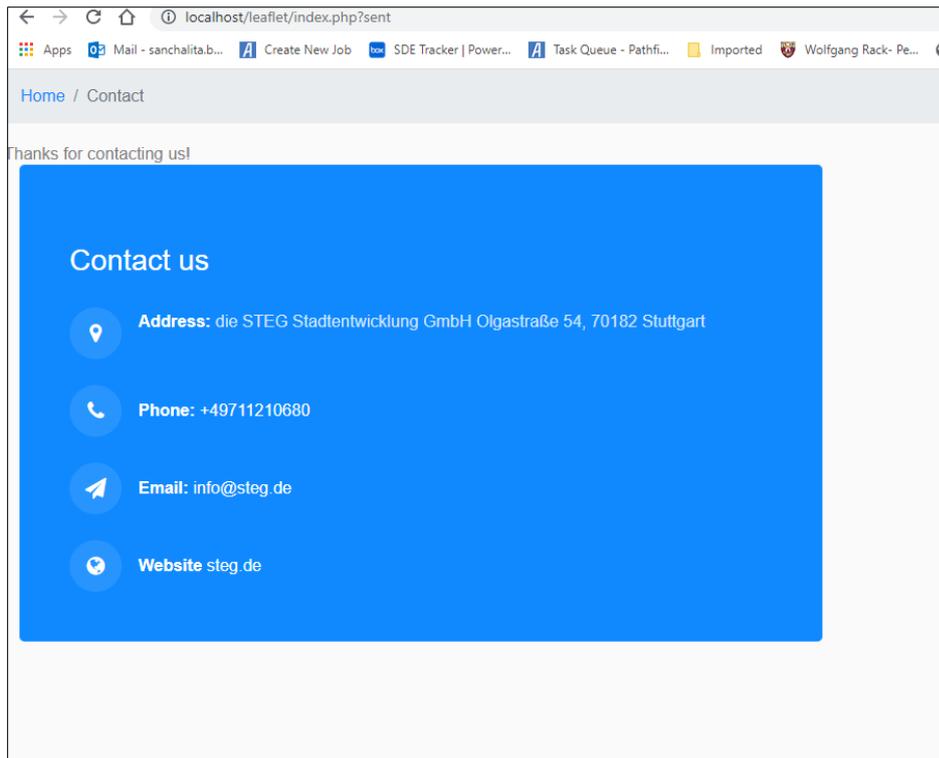
Figure 18: Successful Submission