data processing

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Introduction

This document contains R code that is used to compute and plots.

```
require(tidyverse)
```

```
Loading required package: tidyverse
```

```
-- Attaching packages --------------------------------------- tidyverse 1.3.1 --
```

```
v ggplot2 3.3.5     v purrr   0.3.4
v tibble  3.1.8     v dplyr   1.0.9
v tidyr   1.2.0     v stringr 1.4.0
v readr   2.1.2     v forcats 0.5.1
```

```
-- Conflicts ------------------------------------------ tidyverse_conflicts() --
x dplyr::filter() masks stats::filter()
x dplyr::lag()    masks stats::lag()
```

```
require(sf)
```

```
Loading required package: sf
```

```
Linking to GEOS 3.9.1, GDAL 3.2.1, PROJ 7.2.1; sf_use_s2() is TRUE
```

```
require(terra)
```

```
Loading required package: terra
```

```
terra 1.6.7
```

```

Attaching package: 'terra'
```

```
The following object is masked from 'package:tidyr':

    extract
```

```
require(tidyterra)
```

```
Loading required package: tidyterra
```

```
require(tmap)
```

```
Loading required package: tmap
```

```
require(magrittr)
```

```
Loading required package: magrittr
```

```

Attaching package: 'magrittr'
```

```
The following objects are masked from 'package:terra':

    extract, inset
```

```
The following object is masked from 'package:purrr':

    set_names
```

```
The following object is masked from 'package:tidyr':

    extract
```

```r
require(highcharter)
```

```
Loading required package: highcharter
```

```
Registered S3 method overwritten by 'quantmod':
  method            from
  as.zoo.data.frame zoo
```

```
Highcharts (www.highcharts.com) is a Highsoft software product which is
```

```
not free for commercial and Governmental use
```

```
Attaching package: 'highcharter'
```

```
The following object is masked from 'package:terra':

    colorize
```

```r
require(plotly)
```

```
Loading required package: plotly
```

```
Attaching package: 'plotly'
```

```
The following object is masked from 'package:ggplot2':

    last_plot
```

```
The following object is masked from 'package:stats':

    filter
```

```
The following object is masked from 'package:graphics':

    layout
```

```
options(scipen = 999)

tmap_mode(mode = "view")
```

```
tmap mode set to interactive viewing
```

```
land.use = st_read("proposed_landuses.shp", quiet = TRUE)

land.use = land.use %>%
  st_make_valid() %>%
  # st_is_valid() %>%
  mutate(area_m2 = st_area(geometry) %>% as.numeric(),
         area_ha = area_m2/10000)
```

```
land.use %>%
  tm_shape(name = "Land Use") +
  tm_fill(col = "Name", id = "Name", popup.vars = c("Area (Ha):" = "area_ha"))
```