

Adding a new Coordinate Reference System

There is a possibility you may find yourself in a situation where you are required to do planning referencing a CRS which is not available in Well Seeker. In this situation the information relating to the CRS should be requested from the client and can then be used to create a new CRS in Well Seeker.

The below screen shot is an example of the type of information which will be supplied by the client.

```
geodetic.txt - Notepad
File Edit Format View Help
Map System      :      Polska 1992
Ellipsoid       :      WGS 1984 (WGS 1984)
Zone Name       :      GK Zone 3

Local Origin    :      site 'Grotów 12k'

Latitude        :      52°45'53.433N
Longitude       :      015°55'33.656E

Grid East       :      292673,50
Grid North      :      548787,00
Local East      :      0,00
Local North     :      0,00
Convergence     :      -2,448299° from True to Grid North
ScaleFactor     :      1,00000000

Ellipsoid Name  :      WGS 1984
  Equatorial Radius :      6378137,000 m
  Inverse Flattening:      298,25722

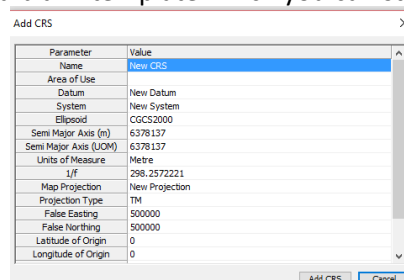
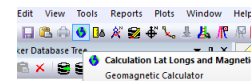
Geo Datum Name:      WGS 1984
  Datum Type       :      Molodensky
  X Shift to WGS84 :      0,000 m
  Y Shift to WGS84 :      0,000 m
  Z Shift to WGS84 :      0,000 m

System Name     :      Polska 1992
  System Measure  :      m, s.i. metres

Zone Name       :      GK Zone 3
  Projection Type :      Transverse Mercator (Gauss-Kruger)
  Latitude of natural origin :      0,0000 deg      00°00'00.000S
  Longitude of natural origin :      19,0000 deg      019°00'00.000E
  Scale Factor at natural origin:      0,99930 deg
  False Easting   :      500000,00 m
  False Northing  :      -5300000,00 m
```

The following instructions detail how to use this information to create a new CRS.

- Open the **Geomagnetic Calculator**
- Click on the "**Mapping Grid**" button at the top left of the box
- Select **Add CRS** at the bottom left of the Mapping Grid
- You will now have a blank template which you can start adding information to.



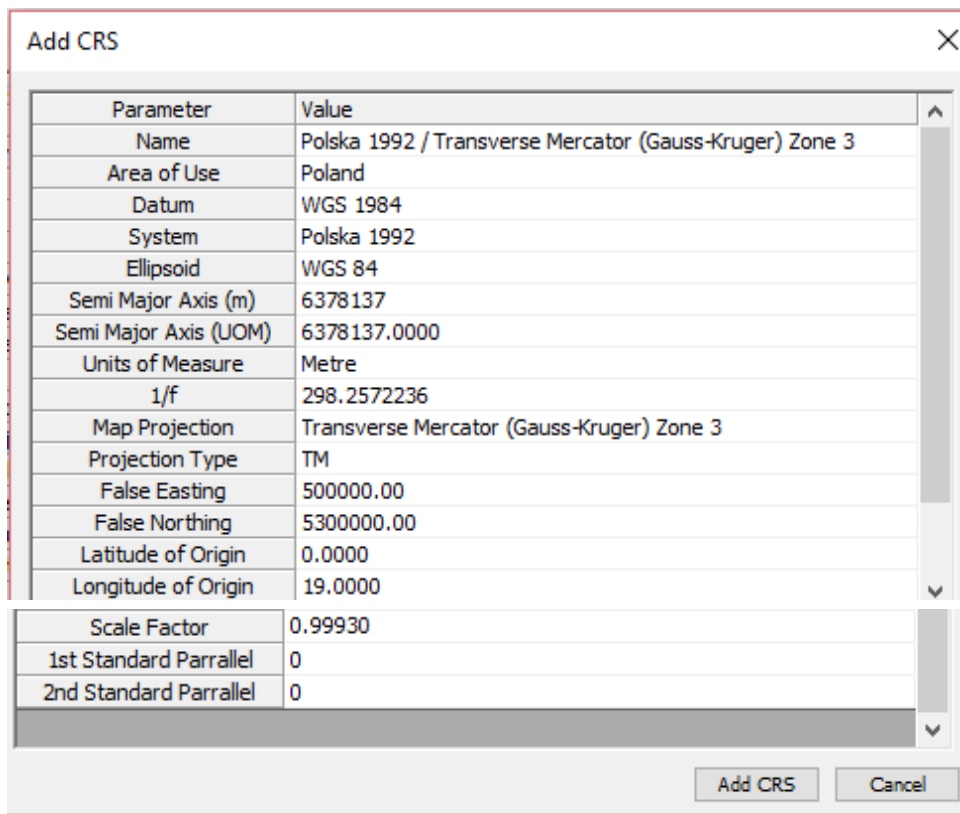
Parameter	Value
Name	New CRS
Area of Use	
Datum	New Datum
System	New System
Ellipsoid	CGCS2000
Semi Major Axis (m)	6378137
Semi Major Axis (UOM)	6378137
Units of Measure	Metre
1/f	298.2572221
Map Projection	New Projection
Projection Type	TM
False Easting	500000
False Northing	500000
Latitude of Origin	0
Longitude of Origin	0

Parameters in **RED** are important and affect the output - Care should be taken to enter the data correctly

- **Name:** This can be anything you want as it has no impact on any of the calculations. In Well Seeker, the naming convention is the **System** / and then the **Map Projection**, and it is recommended that this convention is followed. For this example, the name would therefore be **Polska 1992 / Transverse Mercator (Gauss-Kruger) Zone 3**
- **Area of use:** Description of which part of the earth this CRS references and has no effect on any of the calculations. For this example all we know is it is in **Poland**.
- **Datum:** This is just text and does not directly affect any calculations. For this example it is **WGS1984**.
- **System:** This is just text and does not directly affect any calculations. **Polska 1992**
- **Ellipsoid:** This is an important one and you have to choose from a drop down list of 38 options. In this example you would choose **WGS 1984**
- **Semi Major Axis (m):** This is the Equatorial Radius of the Ellipsoid and is automatically populated based on the ellipsoid selected.
- **Semi Major Axis (UOM):** This is the equatorial radius of the ellipsoid in the units of measure which the CRS is using and is automatically populated based on the ellipsoid selected.
- **Units of Measure:** This is a drop-down menu option and you can choose from 7 options. For this example it would be **metre**
- **1/f:** This is the inverse Flattening of the Ellipsoid and is automatically populated based on the ellipsoid selected.
- **Map Projection:** This is just text and does not directly affect any calculations - **Transverse Mercator (Gauss-Kruger) Zone 3**
- **Projection Type:** This is a drop-down menu and you can choose from 4 options – **TM, 1SP (Standard Parallel), 2SP or STEREO**
- **False Easting:** **500000.00 m**
- **False Northing:** **-5300000.00 m**
- **Latitude of Origin:** This should be input as a decimal - **0.0000 deg (See Point to Note Below)**

- **Longitude of Origin:** This should be input as a decimal - **19.0000 deg (See Point to Note Below)**
- **Scale Factor:** Ratio between measured distance on the map and on the ground - **0.99930 deg**
- **1st Standard Parallel:** This information will be required if you select 1 SP or 2 SP from the Projection Type Drop down menu - Not applicable here - **(See Point to Note Below)**
- **2nd Standard Parallel:** This information will be required if you select 2 SP from the Projection Type Drop down menu - Not applicable here - **(See Point to Note Below)**

The Screen shot below is what your new CRS should look like based on the information detailed above:



Parameter	Value
Name	Polska 1992 / Transverse Mercator (Gauss-Kruger) Zone 3
Area of Use	Poland
Datum	WGS 1984
System	Polska 1992
Ellipsoid	WGS 84
Semi Major Axis (m)	6378137
Semi Major Axis (UOM)	6378137.0000
Units of Measure	Metre
1/f	298.2572236
Map Projection	Transverse Mercator (Gauss-Kruger) Zone 3
Projection Type	TM
False Easting	500000.00
False Northing	5300000.00
Latitude of Origin	0.0000
Longitude of Origin	19.0000
Scale Factor	0.99930
1st Standard Parallel	0
2nd Standard Parallel	0

- Select Add CRS and your new CRS will be available to select from the mapping grid dropdown menu.

Point to Note

When adding **Latitude & Longitude of Origin**, and the **1st and 2nd Standard Parallel** values, these are input as decimals. The below screen shot is from a CRS which requires all of these inputs. You can see that the numbers are provided in both decimal and degrees, minutes and seconds. To accurately input these values into a new CRS, the 4 decimal places displayed is not enough. This means that you will have to convert the degrees, minutes and seconds into decimal (so that you can see the additional decimal places) and input the numbers to **13dp**.

```

Zone Name      : Lambert I Nord
Projection Type : Lambert Conformal Conic (2 parallel)
Latitude of false origin : 49.5000 deg  49° 30' 0.000 N
Longitude of false origin : 2.3372 deg  2° 20' 14.025 E
Latitude of 1st std parallel : 50.3959 deg  50° 23' 45.282 N
Latitude of 2nd std parallel : 48.5985 deg  48° 35' 54.682 N
Easting of false origin : 600000.00 m
Northing of false origin : 200000.00 m
  
```

The screen shot below shows a simple way to do this in excel. The formulae column shows the formulae used in the decimal column. You will note that to 4 decimal places the numbers match those above.

	A	B	C	D	E	F
1						
2						
3		Degrees	Minutes	Seconds	Decimal	Formulae
4	Latitude of False Origin	49	30	0	49.5000000000000	=B4+(C4/60)+(D4/3600)
5	Longitude of False Origin	2	20	14.025	2.3372291666667	=B5+(C5/60)+(D5/3600)
6	Latitude of 1st std Parallel	50	23	45.282	50.3959116666667	=B6+(C6/60)+(D6/3600)
7	Latitude of 2nd std Parallel	48	35	54.682	48.5985227777778	=B7+(C7/60)+(D7/3600)

You can now add these numbers to the relevant CRS input.