

## Permissions from authorities

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| Chapter:              | Permissions, tendering, contracts and guarantees                                 |
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### Introduction

When having an idea of where to place the solar collectors in a solar district heating project it is a good idea to visit the municipal authorities to find out what kind of permissions are needed.

This could be e.g. planning permission, environmental permission, permission according to heat planning, energy planning and building permission.

If a long term storage (boreholes, pit heat storage) is needed, special permissions according to drinking water protection will also be needed.

If the solar collectors are roof mounted there might be building restrictions for the roof (especially for old buildings in historical parts of cities) or restrictions about reflections, but normally the only permission needed is a building permission. So the following text is mainly for ground mounted solar collectors.

### Planning permission

The planning authorities take care of use of land in and around the city. Different areas can already be pointed out for recreation, industry, apartments etc. Or there can be restrictions caused by min. distances to churches, archeologically sites, forests, rivers, lakes, sea...

When one or more areas has been found, the land owner(s) has to be contacted and an agreement according to the price for buying or renting the land has to be made.

If there are high trees directly next to the plant, these trees could shadow the collectors significantly. It has to be considered that for cutting down the trees you need in most cases a permission from the local authority.

You should also be aware, that there could be any supply pipes under the ground where you would like to mount the collectors. It is very important to collect information about possible underground pipes from the land owner or the authorities.

Then the planning procedure can start. Try to find one contact person by the authorities. In the planning process the authorities will need a disposition plan (see example in fig.3.1.1) and they might also require visualisations (see example in fig.3.1.2).

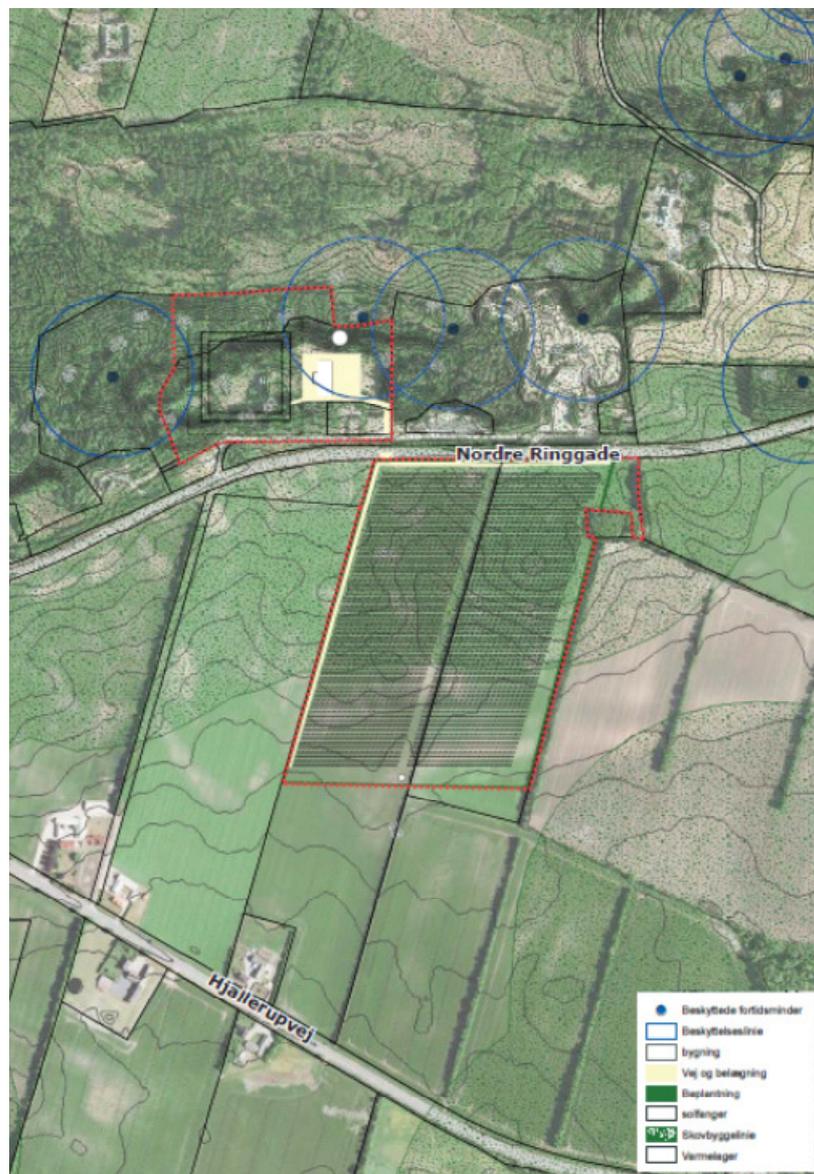


Fig. 3.1.1. Example of disposition plan for 35.000 m<sup>2</sup> solar collectors and 60.000 m<sup>3</sup> pit heat storage, Dronninglund, Denmark. (Red lines mark the area for the plant (storage and collector field). The blue circles indicate a distance of 100 m from relics.) (Source: District plan for SUNSTORE 3 project)



Fig. 3.1.2. Example of visualisations, Dronninglund, Denmark. (Source: District plan for SUNSTORE 3 project)

### Environmental permission

For the environmental permission, emissions to air, ground and water has to be explained.

There are no emissions to the air from the solar collectors, but the solar collectors normally replace other fuels and thus save emissions. Saved emissions can be calculated when fuel is known.

Table 3.1.1. Emissions in kg/MWh fuel [1]

| Fuel        | SO <sub>2</sub> | NO <sub>x</sub> | CO <sub>2</sub> |
|-------------|-----------------|-----------------|-----------------|
| Straw       | 0.47            | 0.32            | 0               |
| Oil boiler  | 0.08            | 0.23            | 266             |
| Gas boiler  | 0               | 0.15            | 204             |
| Gas engine  | 0               | 0.49            | 204             |
| Biogas      | 0.07            | 0.73            | 0               |
| Electricity | 1.18            | 0.45            | 364             |
| Wood        | 0.09            | 0.32            | 0               |
| Waste       | 0.03            | 0.37            | 117             |

\* Average for Danish electricity production 2011.

Emissions to water can be caused by leakages of collector fluid. Therefore the chemical content of collector fluid has to be given to the authorities (normally water + glycol) including measures to prevent leakages.

In case of leakages, most of the time the authorities requires an "Action plan".

These measures can be alerts in the control system (for pressure drop) and blow off systems for too high temperatures and pressure.

### Permission according to heat planning / energy planning

Heat plans or energy plans might put restrictions on the kind of fuel used for heat production. As an example a new biomass boiler cannot be approved together with a natural gas fired CHP-plant in Denmark and solar district heating can only be approved if the socio economy is positive.

### Building permission

A building permission is normally not needed for ground mounted solar collectors unless a building or an accumulation tank is included. At least you have to register the solar plant at the authorities.

For roof mounted collectors a building permission might be needed since it has to be proven that the weight of the solar collectors is not too high for the construction.

A check list of permissions is seen in the next page.

### Check list of permissions

1. Local plan
  - Is it a protected area (landscape, flora, fauna)
  - Is there a required minimum distance to
    - churches
    - archaeological sites
    - forests
    - rivers
    - lakes
    - sea
    - (others?)
  
2. Environmental permission
  - Emissions to air, ground, water
  - Noise
  - Check that reflections will not disturb traffic and neighbours (is not a problem if the glass has undergone an antireflective treatment)
  
3. Check that there is no conflict with heat plan / energy plan
  
4. Building permission (if mounted on roof or a new building are included in the project)

### References

- [1] The Danish Energy Agency, "Forudsætninger for samfundsøkonomiske analyser på energiområdet" (*Assumptions for socioeconomic analysis on the energy field*), table 8 and 9, April 2011, [www.ens.dk/da-DK/Info/TalOgKort/Fremskrivninger/beregningsforudsatninger/Sider/Forside.aspx](http://www.ens.dk/da-DK/Info/TalOgKort/Fremskrivninger/beregningsforudsatninger/Sider/Forside.aspx)

┆ The SDH fact sheets addresses both technical and non-technical issues, and provide state-of-the-art industry guidelines to which utilities can refer when considering/realizing SDH plants. For further information on Solar District Heating and the SDHtake-off project please visit [www.solar-district-heating.eu](http://www.solar-district-heating.eu). ┆