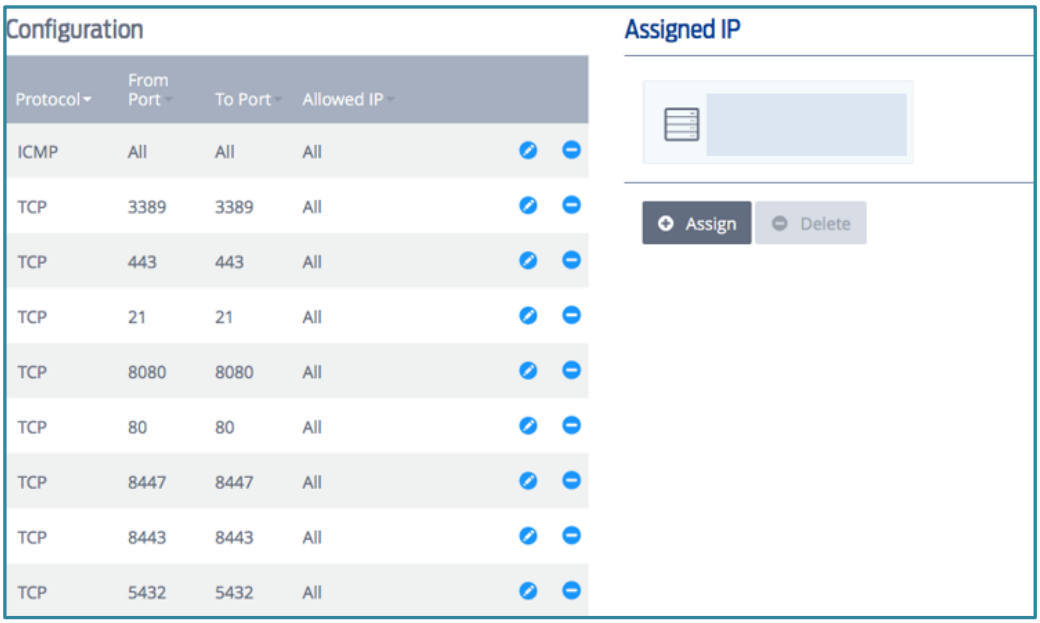
When implementing both GeoServer and PostGIS in a production environment, you will need to allow client access to those instances so that the WMS layers and spatial datasets can be accessed from local machines. Once this is correctly setup, you can then use applications such as QGIS, Map3D and webGIS to access these spatial resources, implementing a single source of truth accessed from a centralised location.

One key requirement is that your chosen Applications Server will allow remote connections through the PORTS that both GeoServer and PostGIS are using. If you have chosen the default settings when installing these applications, then you will need to ensure PORTS 5432 (PostGIS) and PORT 8080 (GeoServer) are opened in the configuration of your Remote Server.



GeoServer:

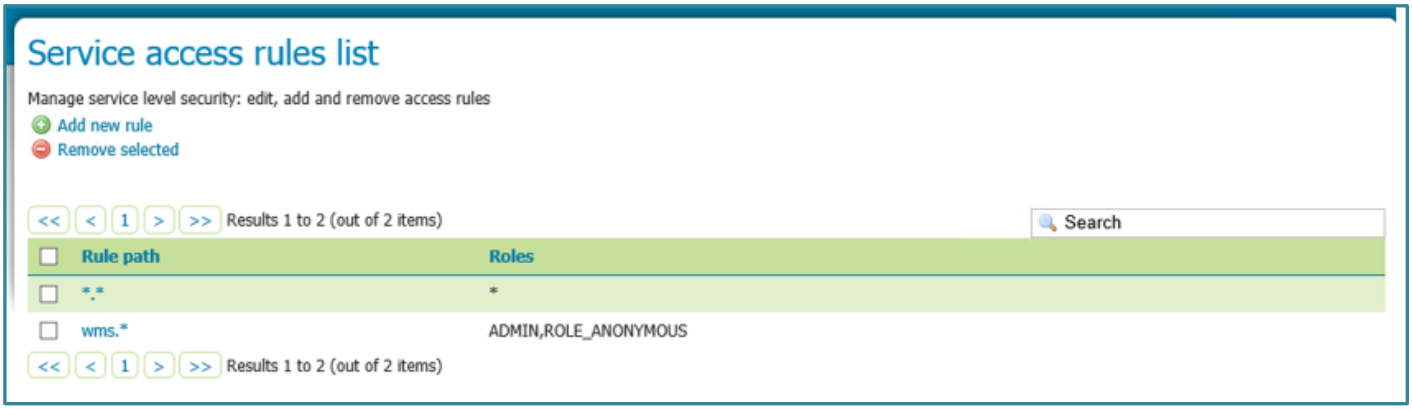
When installing GeoServer ensure that you set the server instance up to run **automatically as a SERVICE**. This will ensure that GeoServer is running continually on the Server machine, and does not need to be manually Started.

To enable users to access your GeoServer instance from a client machine, you simply need to supply the IP address of the Server machine within the GeoServer URL instead of the local host URL.

So, for example instead of using – http://localhost:8080/geoserver/web/

Use - **http://IPADDRESS:8080/geoserver/web/**

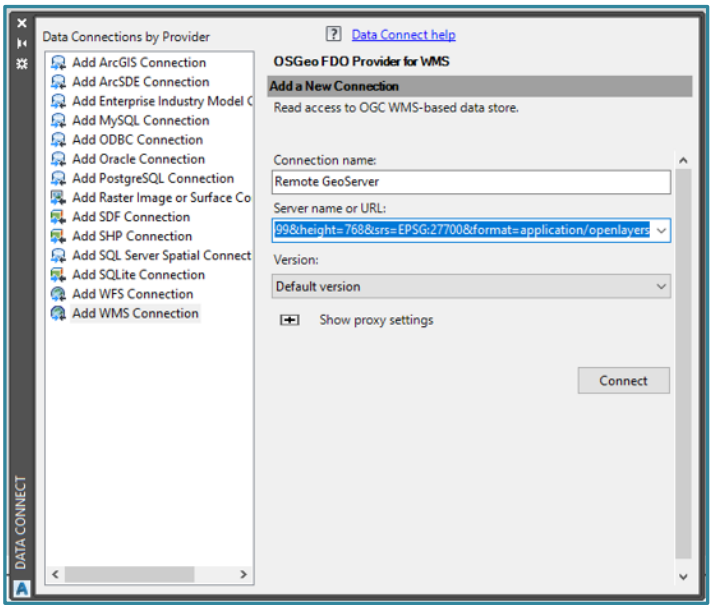
Also, to ensure that users can open your WMS layers you will need to **grant Access Rights.** This is undertaken using the Service Access Rules. For example, if you wish all users to be able to access all your WMS layers, then edit the Security > Services > **Service Access Rule List** to enable users with the **Anonymous ROLE** to access the WMS feeds.



Remember, that you should create other Roles and Rules within your GeoServer instance so that you can control which users can view and edit your WMS and WFS feeds.

Now that GeoServer has been correctly installed you can use a client application, such as QGIS or Map3D to open a GeoServer WMS layer from your remote server machine.

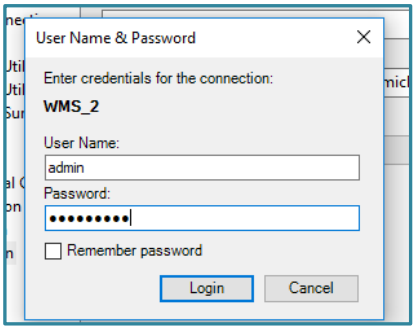
In Map3D use the **Data – Data Connections** option.



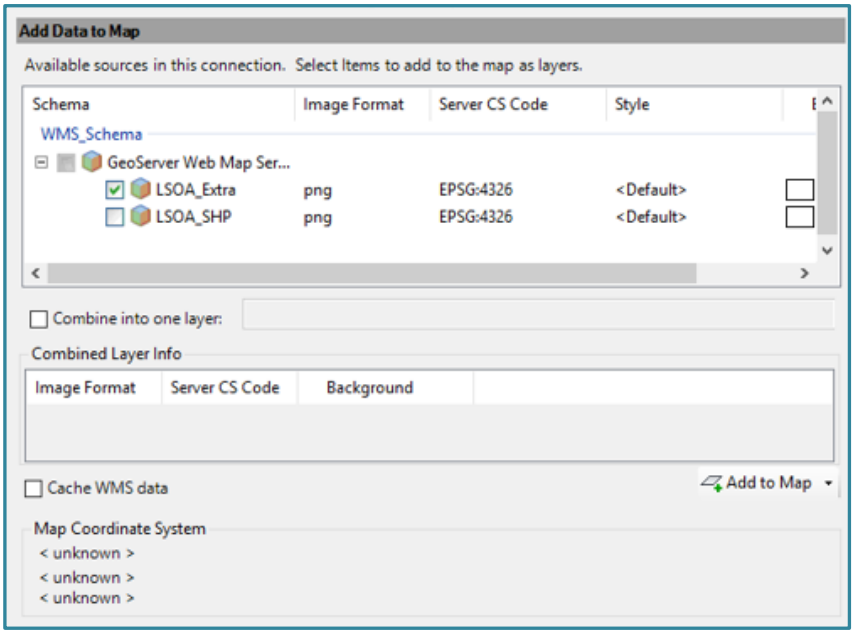
Choose **Add WMS Connections** and then and paste the URL into the Server Name or URL window e.g.

http://IPADDRESS:8080/geoserver/DynamicMaps/wms?service=WMS&version=1.1.0&request=GetMap&layers=DynamicMaps:LSOA_Extra&styles=&bbox=148458.109375,8201.314453125,657897.125,660760.4375&width=599&height=768&srs=EPSG:27700&format=application/openlayers

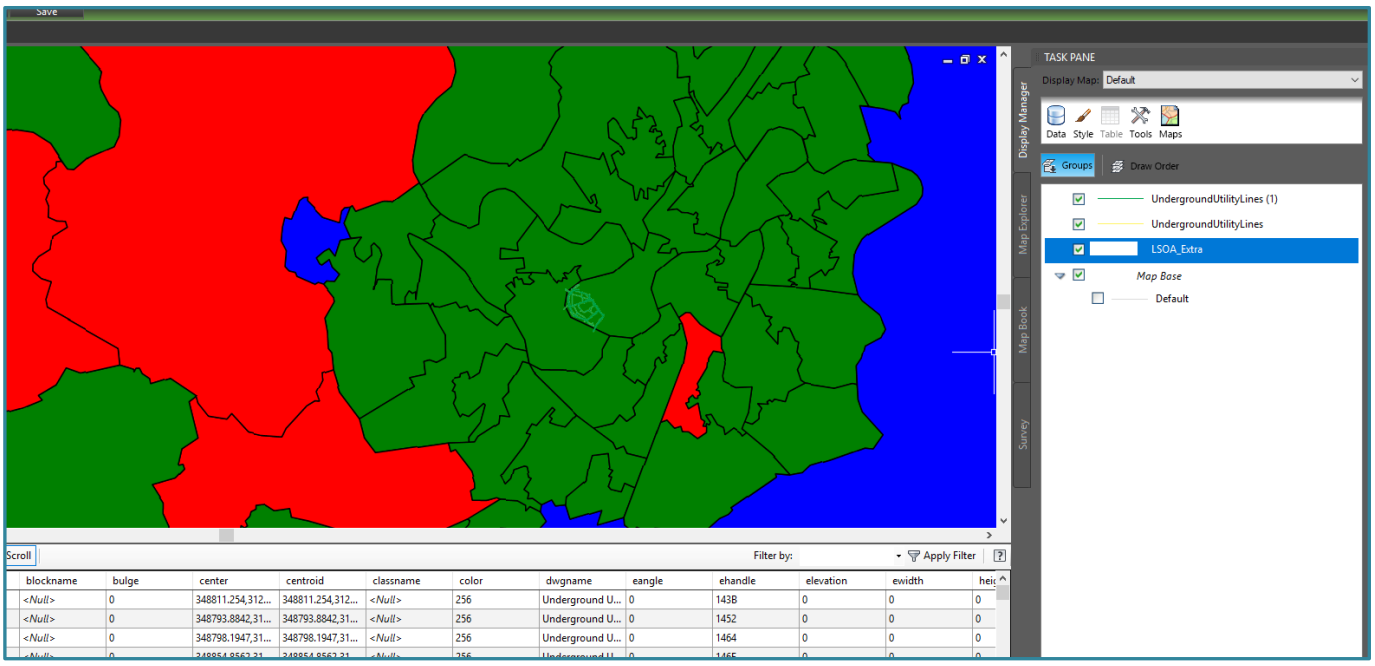
Press **Connect** and enter the username and password that you allocated within GeoServer to your users.



This will connect to the GeoServer instance on the remote server and list the WMS layers that you can access.



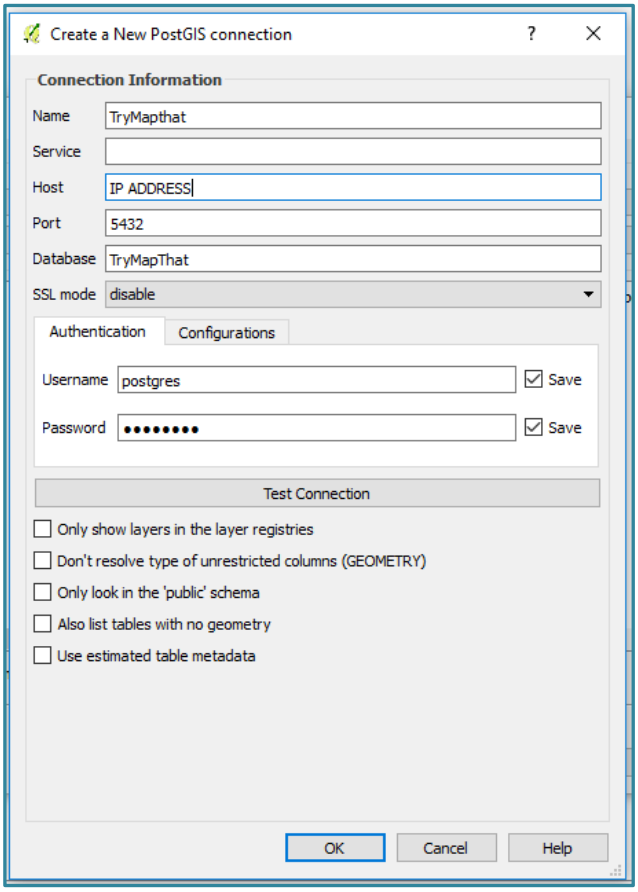
Choose any WMS layer by ticking it and press **Add to Map**, and the WMS is then added to your Map3D map.



PostGIS:

To connect your Remote PostGIS Server, using QGIS, you will need to configure the PostGIS connection using the following parameters:

- **Name –** Any name for the Connection (this is not the PostGIS DB Name)
- **Host –** The IP Address of the Remote Server
- **PORT –** The PORT on that Remote Server that PostGIS is using
- **Database –** The exact name of the PostGIS Database



Remember that for your Remote server to accept connections, the PORT that PostGIS is using should be setup to allow connections. If not when you try to connect using a client application (e.g. QGIS) on a local machine, you will likely receive the following connection error message.

"Could not connect to server: Connection timed out (0x0000274C/100060) Is the server running on host IPADDRESS and accepting TCP/IP connections on Port 5432?"

Once this is resolved and you try to connect again, you may then encounter another issue when connecting, where PostGIS itself by default does not allow remote connections. You may receive the following error message, where the **pg_hba.config** file for PostGIS does not automatically allow remote connections.

"FATAL: no pg_hba_conf entry for host "your IP Address", user 'username', database "Database Name", SSL off."

The reason for this is that PostGIS uses a config file called **PG_hba.config** to define which remote users can connect to the PostGIS instance. By default, it will likely only allow local connections and not connections from a remote machine.

To remedy this, you simply need to find the PG_hba.config file on the Server machine and edit it within Notepad to add a line allowing remote connections. For example;

Allow remote connections from a client machine with a **fixed IP Address:**

```
# TYPE  DATABASE        USER            ADDRESS                 METHOD

# IPv4 local connections:
host    all             all             127.0.0.1/32            md5
# IPv6 local connections:
host    all             all             ::1/128                 md5
host    DatabaseName    all             IPADDRESS/32            md5
# Allow replication connections from localhost, by a user with the
# replication privilege.
#host    replication     postgres        127.0.0.1/32            md5
#host    replication     postgres        ::1/128                 md5
```

Then to allow connections to PostGIS from **any client machine** use the following line:

```
# TYPE  DATABASE        USER            ADDRESS                 METHOD

# IPv4 local connections:
host    all             all             127.0.0.1/32            md5
# IPv6 local connections:
host    all             all             ::1/128                 md5
host    DatabaseName    all             IPADDRESS/32            md5
host    DatabaseName    all             0.0.0.0/0               md5
# Allow replication connections from localhost, by a user with the
# replication privilege.
#host    replication     postgres        127.0.0.1/32            md5
#host    replication     postgres        ::1/128                 md5
```

NOTE – Autodesk Applications, such as MAP3D and Infraworks, will always try to connect to the default **postgres** database, even if it is not the database name that you wish to connect to. Therefore, ensure that your **PG_hba.config file** has a line item that allows connections to the postgres database.

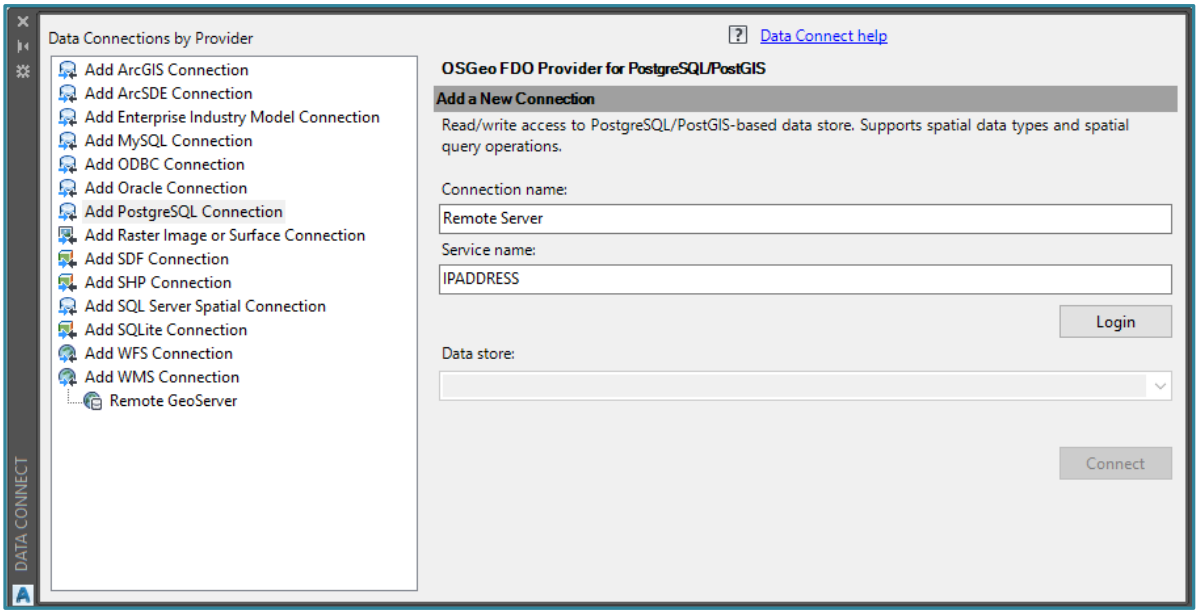
PostGIS will now accept connections from all remote PC's as long as the user enters the username and password. Follow this link for more useful info on configuring the PG_hba.config file:

https://www.postgresql.org/docs/9.5/static/auth-pg-hba-conf.html

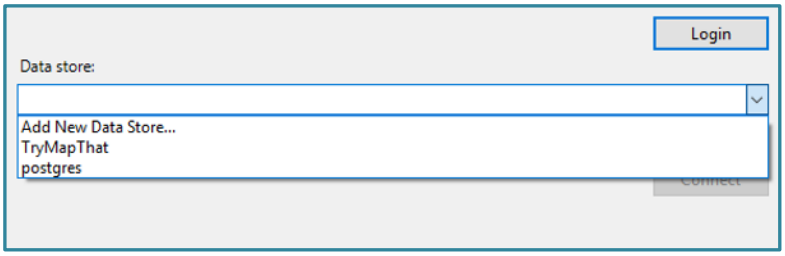
Now that PostGIS has been correctly installed you can use a client application, such as QGIS or Map3D to open spatial layers from your remote server machine.

In Map3D use the **Data – Data Connections** option.

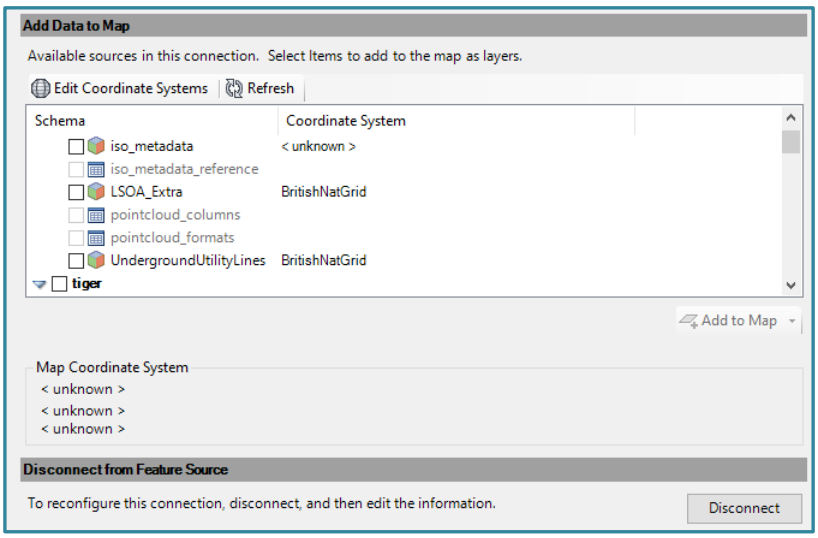
Setup the config as per the below. Where the **Service Name** will be the IP Address of the Server machine with a colon and then the Port Number that PostGIS is running on. E.g. 11.11.11.111:5432



Choose **Login** and once the connection to the Remote Server has been made you can choose from the list of Databases in that PostGIS instance.



Choose the **Database** and press **Connect** and you will be able to open any DB table.



Select the layer e.g. the Utility Lines, and then choose to **Add them to the Map.**