



**Tauw**

## **Scenarioberekeningen Lemselermaten, scenario 6**

**18 september 2018**



## Verantwoording

|                        |                                                                                          |
|------------------------|------------------------------------------------------------------------------------------|
| <b>Titel</b>           | Scenarioberekeningen Lemselermaten, scenario 6                                           |
| <b>Opdrachtgever</b>   | Gemeente Dinkelland                                                                      |
| <b>Projectleider</b>   | Hans Notkamp                                                                             |
| <b>Auteur(s)</b>       | Gerben Willems                                                                           |
| <b>Tweede lezer</b>    | Marc Steenvoorden                                                                        |
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## Colofon

Tauw bv  
Handelskade 37  
Postbus 133  
7400 AC Deventer  
T +31 57 06 99 911  
E [info.deventer@tauw.com](mailto:info.deventer@tauw.com)



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## 1 Inleiding

Voor het N2000-gebied Lemselermaten (zie figuur 1.1) zijn in het kader van het PAS (Programmatische Aanpak Stikstof) hydrologische maatregelen noodzakelijk om de natuur te behouden. De hydrologische effecten hiervan op de Lemselermaten, landbouw en erven worden in deze fase met het verbeterde model inzichtelijk gemaakt.

In deze fase worden in een iteratief proces tussen hydrologen en ecologen verschillende scenario's doorgerekend om uiteindelijk tot een definitief maatregelenpakket te komen.

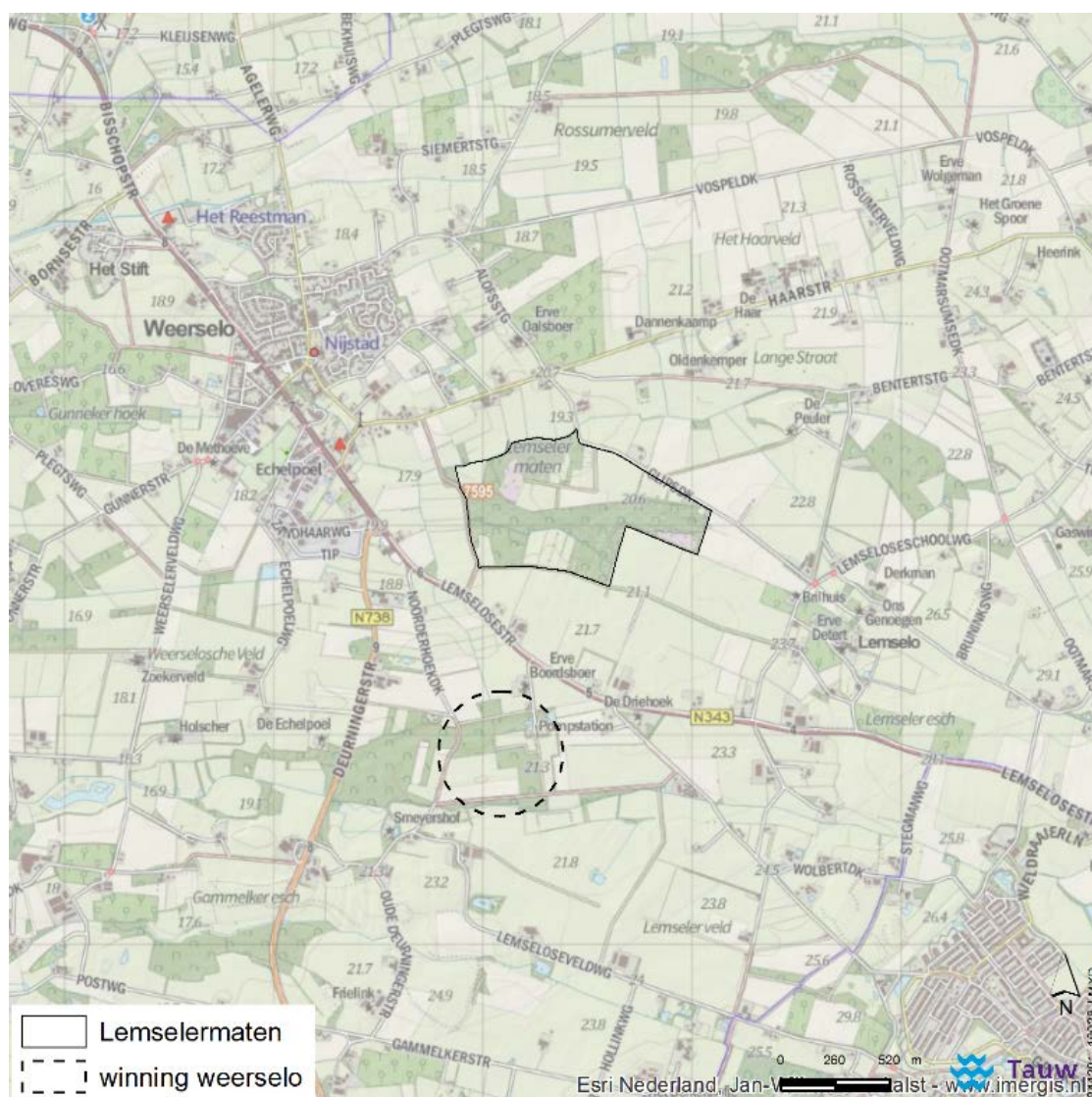


Figuur 1.1 N2000-gebied Lemselermaten

## 2 Scenario 6

### 2.1 Scenario 6

Scenario 6 betreft een scenario waarbij geen maatregelen in het gebied worden getroffen, maar alleen de (drinkwater) winning Weerselo wordt uitgeschakeld. De winning bevindt zich zuidelijk van Lemselermaten waarbij het water via meerder filters op verschillende dieptes wordt onttrokken. Een vergelijking met de huidige situatie maakt het effect van de winning Weerselo inzichtelijk.



Figuur 2.1 Locatie Lemselermaten en Drinkwaterwinning Weerselo.

## 2.2 Implementatie maatregelen in het model

De maatregel is het reduceren van het onttrekkingsdebiet van de winning Weerselo tot een debiet van 0 m<sup>3</sup> per dag. Het debiet van de winning Weerselo is in de huidige situatie variabel. Gemiddeld wordt circa 2600 m<sup>3</sup> per dag minder onttrokken aan het grondwatersysteem (modellagen 4 tot en met 9). Het effect hiervan wordt inzichtelijk gemaakt in hoofdstuk 3.

De winning Weerselo is gelegen ter plaatse van een slenk in de ondergrond. De slenk is opgevuld met voornamelijk zandige afzettingen. TNO<sup>1</sup> heeft een dwarsdoorsnede gemaakt van de ondergrond ter plaatse van de winning Weerselo. Uit deze doorsnede volgt een sterk wisselde bodemopbouw welke zich moeilijk laat vereenvoudigen tot een modelschematisatie. De diepte en het voorkomen van klei wisselt sterk per boring. Verder wisselt ook de korrelgrootte sterk per boring variërend van zeer fijn zand tot uiterst grof zand. In het gekalibreerde eindmodel zijn alle beschikbare gegevens gebruikt om de ondergrond met zoveel mogelijk zekerheid op te nemen in het model. Ondanks deze inspanning blijft de ondergrond in de omgeving van de winning Weerselo onzeker waardoor de berekende effecten kunnen afwijken van de werkelijke effecten.

## 3 Resultaten effectberekeningen

### 3.1 Hydrologische effecten

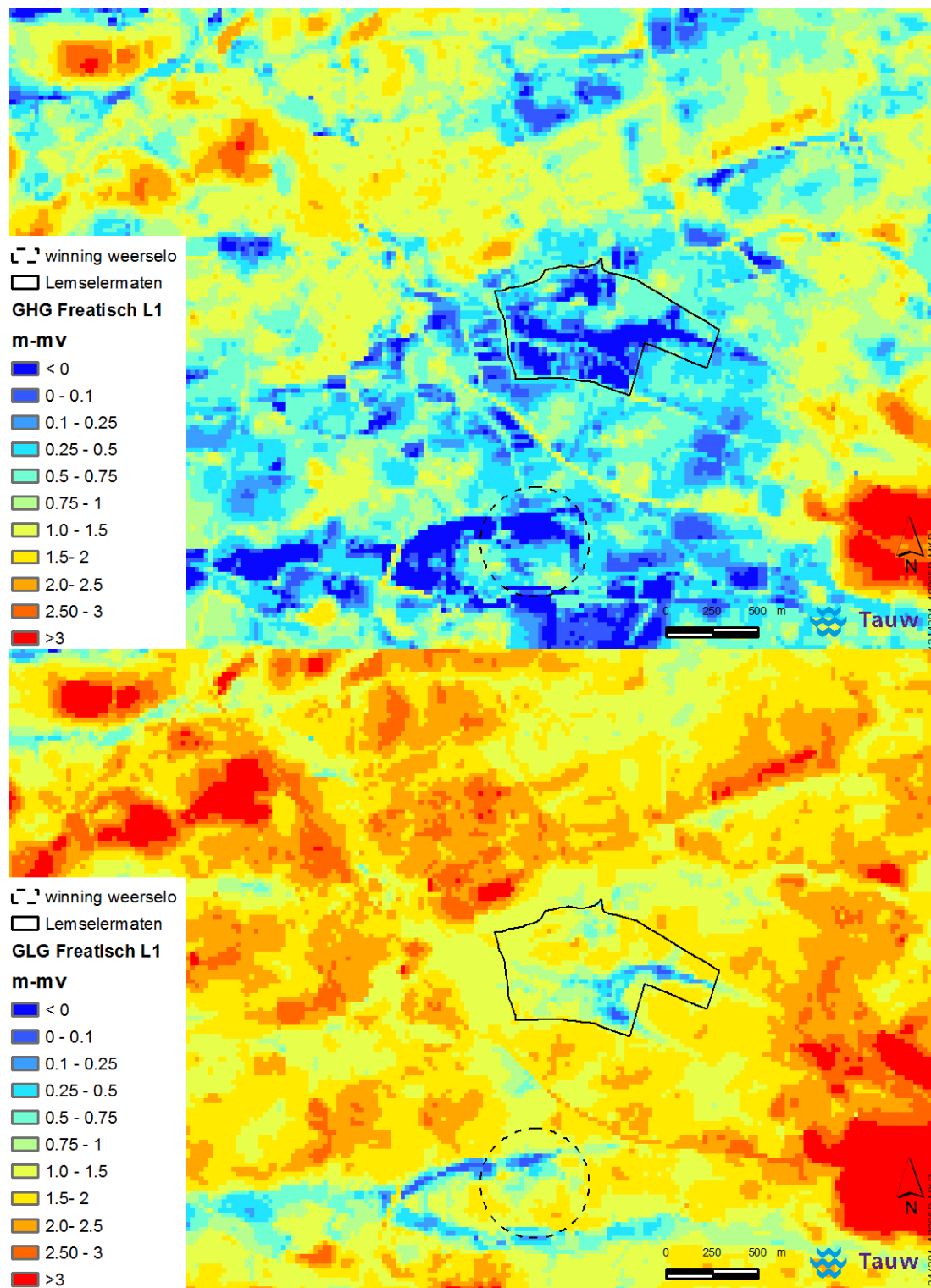
Het stopzetten van de Drinkwaterwinning Weerselo resulteert in een verhoging van de grondwaterstand en veranderingen in de kwel/wegzijging. In onderstaande paragrafen is de berekende grondwaterstand en het effect van de beschreven hydrologische maatregelen gepresenteerd.

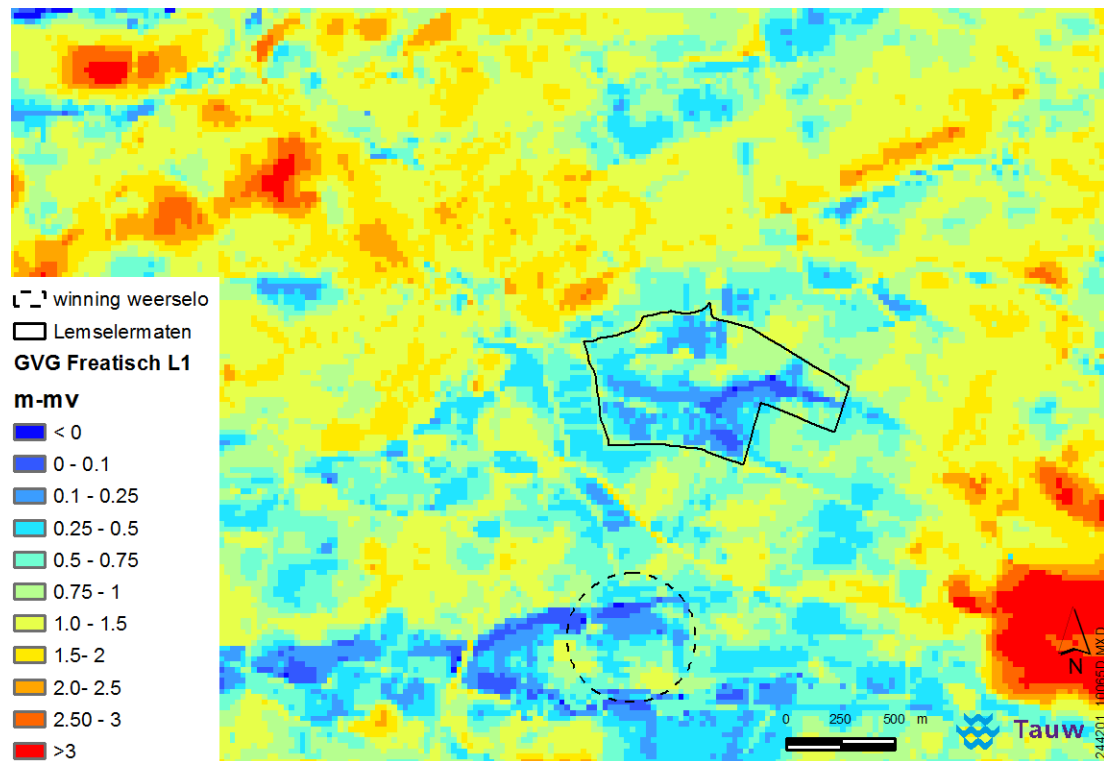
### 3.2 Berekende grondwaterstanden

In figuur 3.1 zijn de berekende grondwaterstanden in m +NAP weergegeven bij het stopzetten van de Drinkwaterwinning Weerselo.

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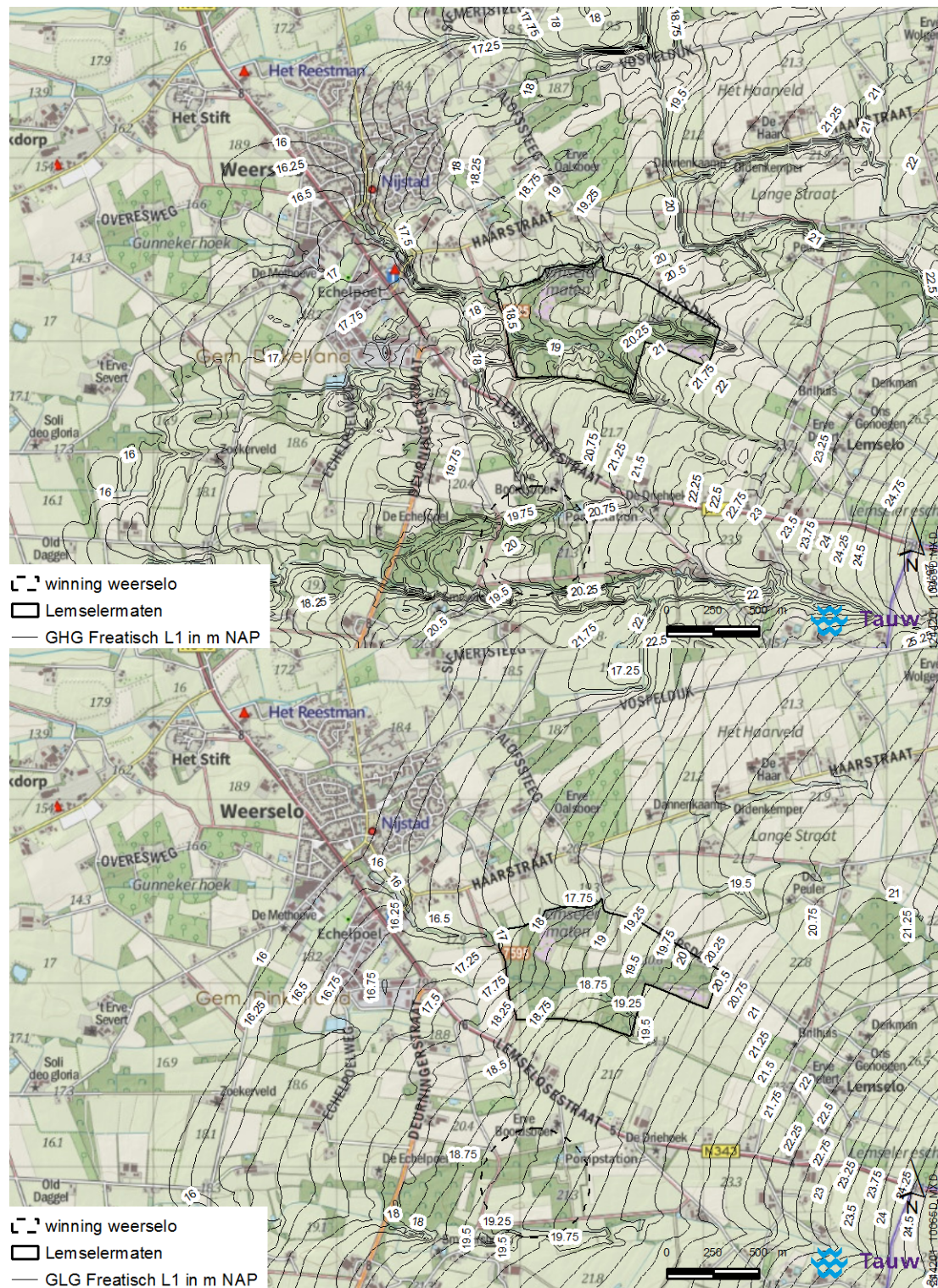
<sup>1</sup> De ondergrond van de Lemselermaten, R. Harting, TNO, 2015

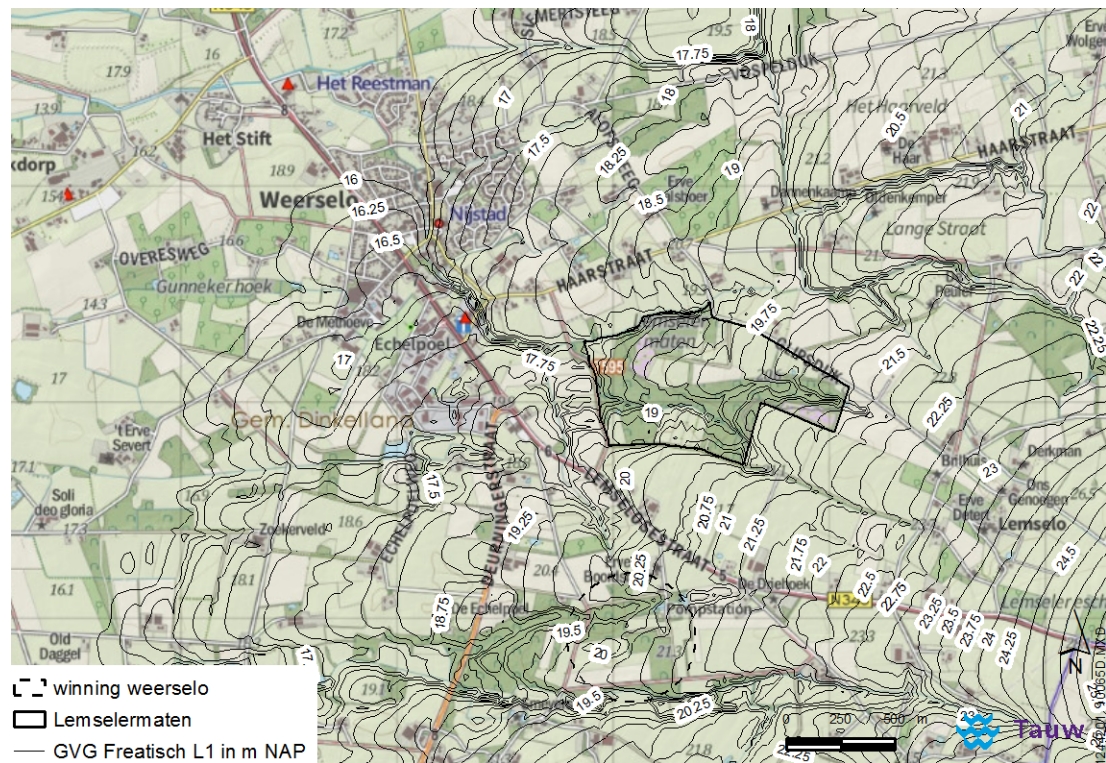




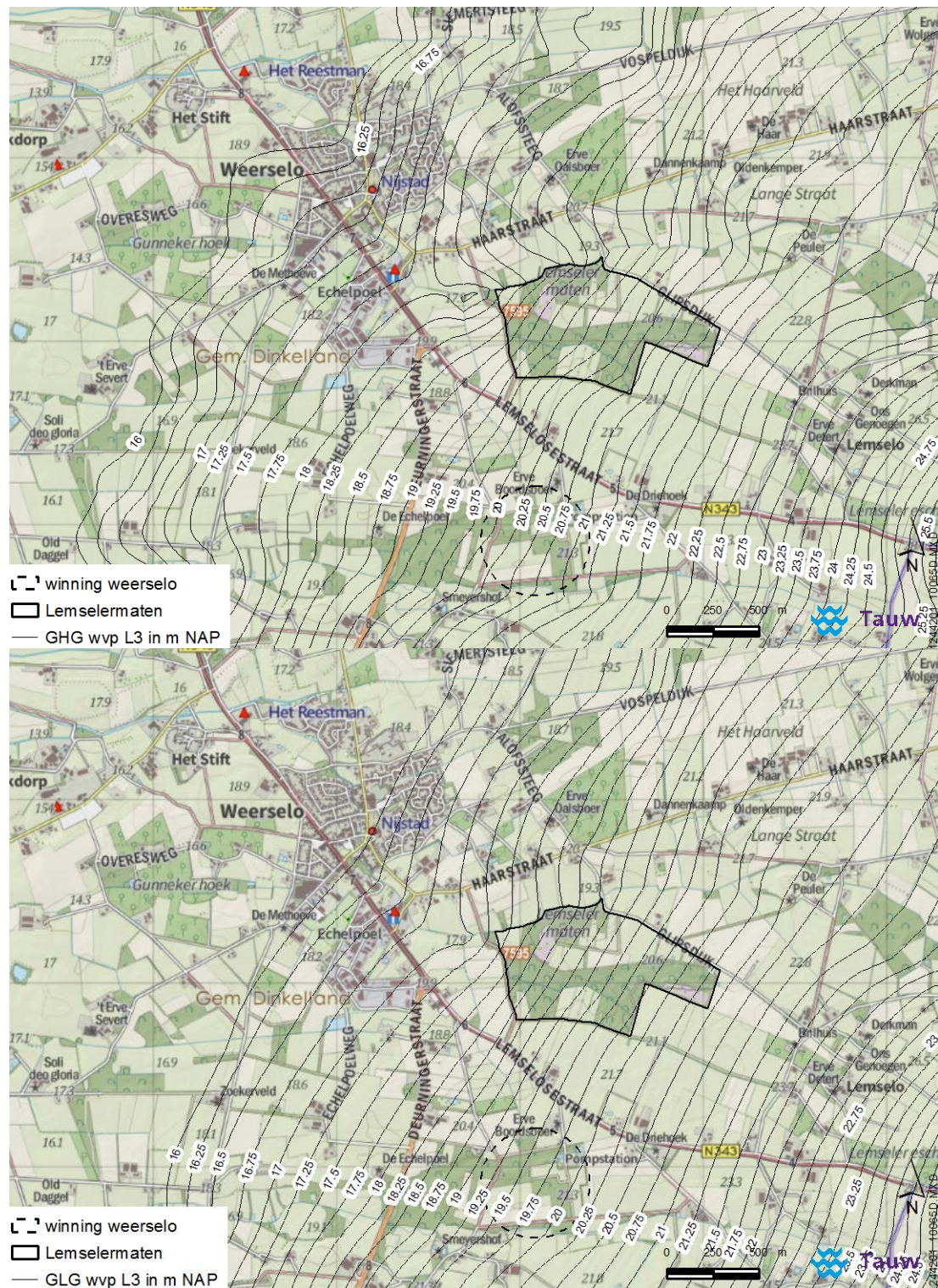
Figuur 3.1 Berekende grondwaterstanden (m) ten opzichte van maaiveld

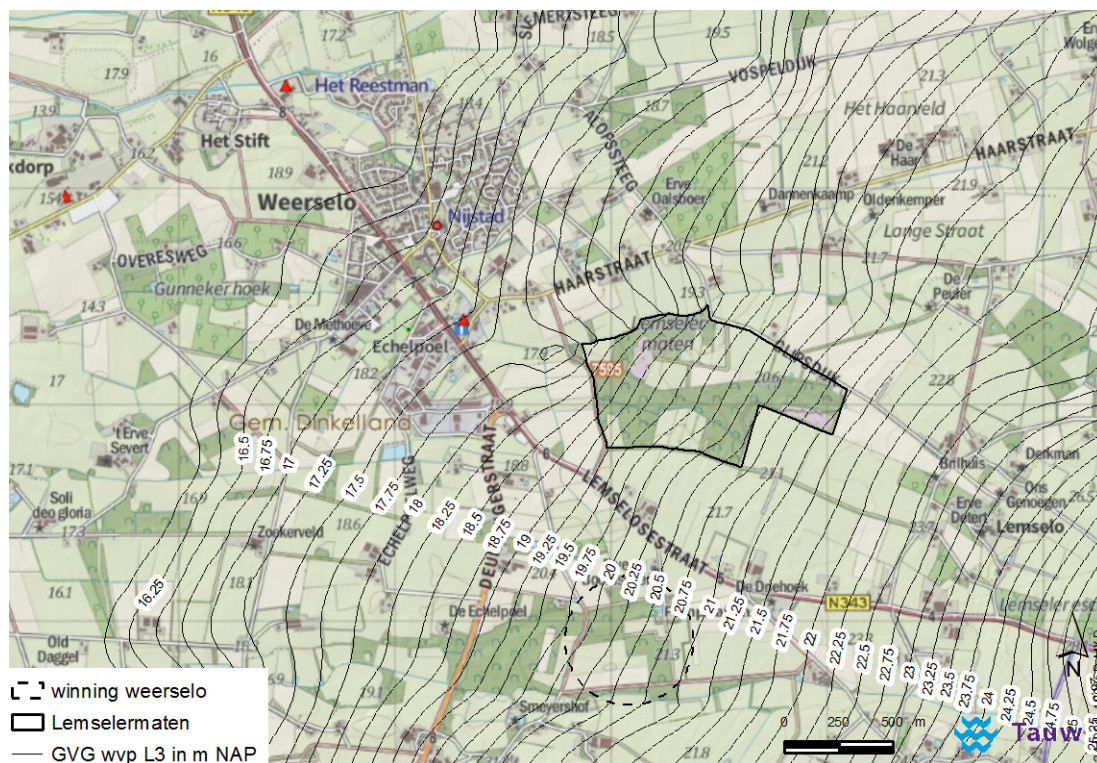
### 3.3 Berekende stijghoogten





Figuur 3.2 Berekende freatische grondwaterstanden (m) ten opzichte van NAP

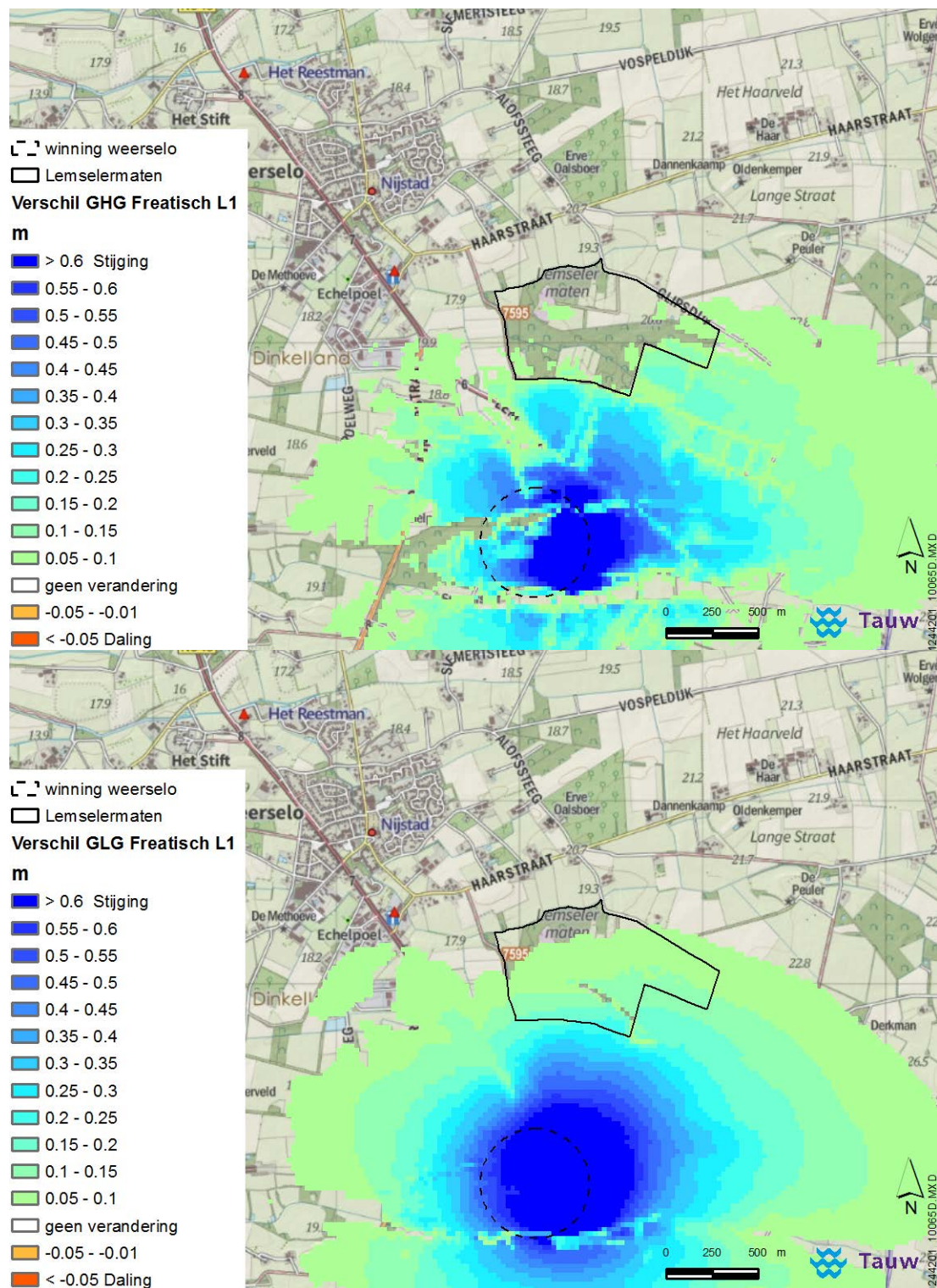


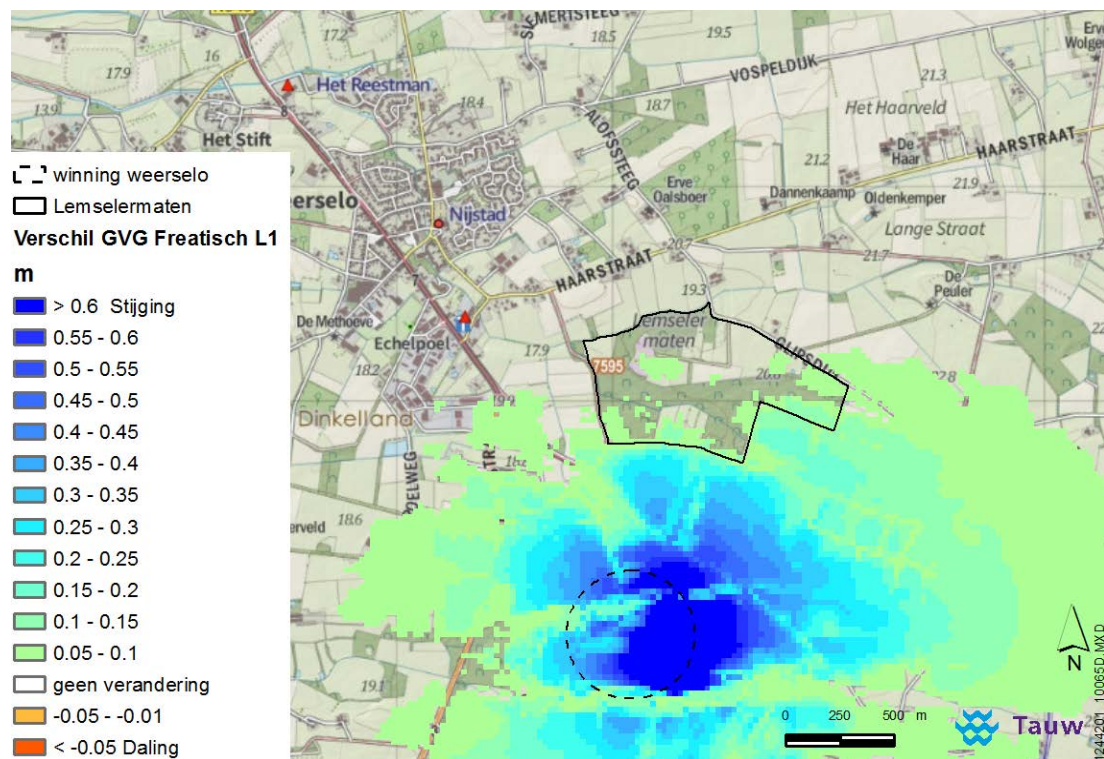


Figuur 3.3 Berekende stijghoogte (m) ten opzichte van NAP voor de Gemiddelde Voorjaars Grondwaterstand (GVG)

### 3.4 Verandering grondwaterstanden

In figuur 3.4 zijn de veranderingen in de grondwaterstanden gepresenteerd. Omdat grondwaterstandsveranderingen vaak seizoensafhankelijk zijn, wordt onderscheid gemaakt tussen effecten bij de gemiddeld hoogste grondwaterstand (GHG), gemiddeld laagste (GLG) en gemiddelde voorjaarsgrondwaterstand (GVG). De veranderingen zijn berekend door de berekende grondwaterstanden voor scenario 6 te vergelijken met de berekende grondwaterstanden in de huidige situatie. Uit de figuren volgt dat de verlaging veroorzaakt door de drinkwaterwinning uitstraalt tot binnen de begrenzing van het Natura 2000 gebied Lemselermaten.

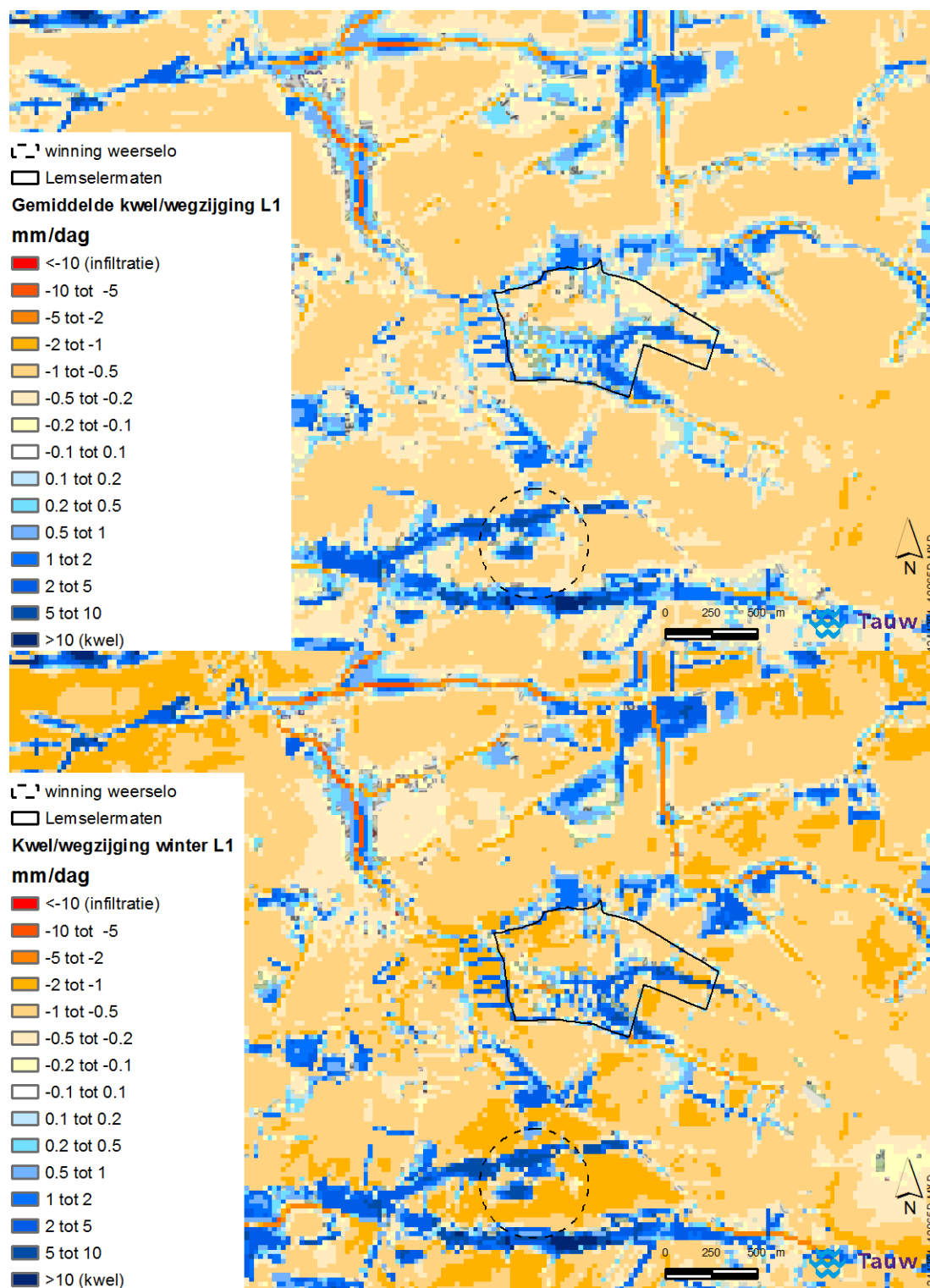


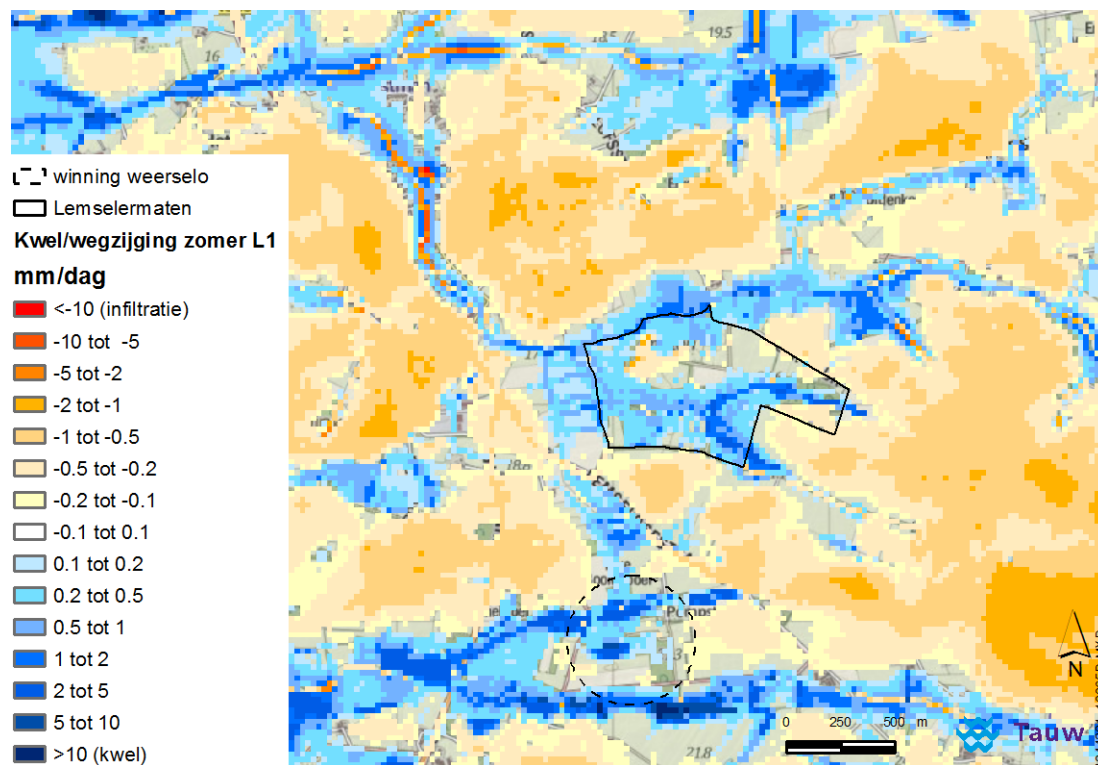


Figuur 3.4 Verandering grondwaterstanden ten opzichte van het uitgangsmodel

### 3.5 kwel en wegzijging

In figuur 3.5 is de hoeveel kwel en wegzijging weergegeven voor de gemiddelde situatie, het zomerseizoen en het winterseizoen na stopzetten van de Drinkwaterwinning Weerselo. Het zomerseizoen betreft de periode van 1 april tot eind september.

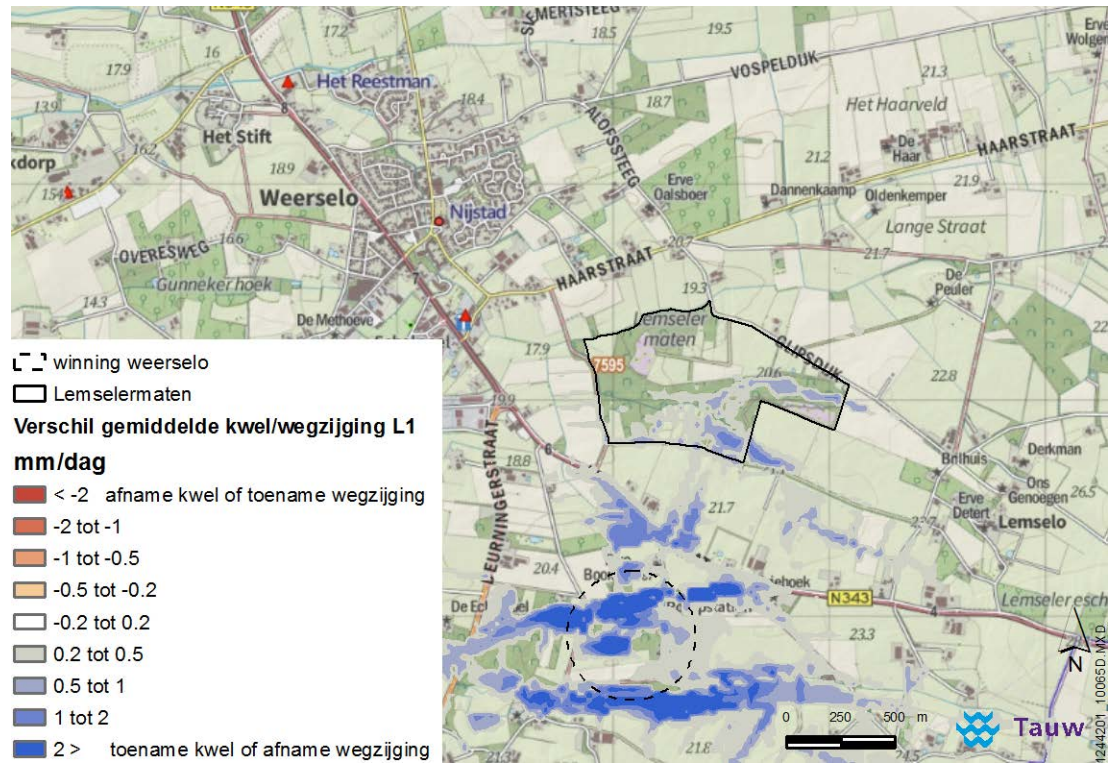


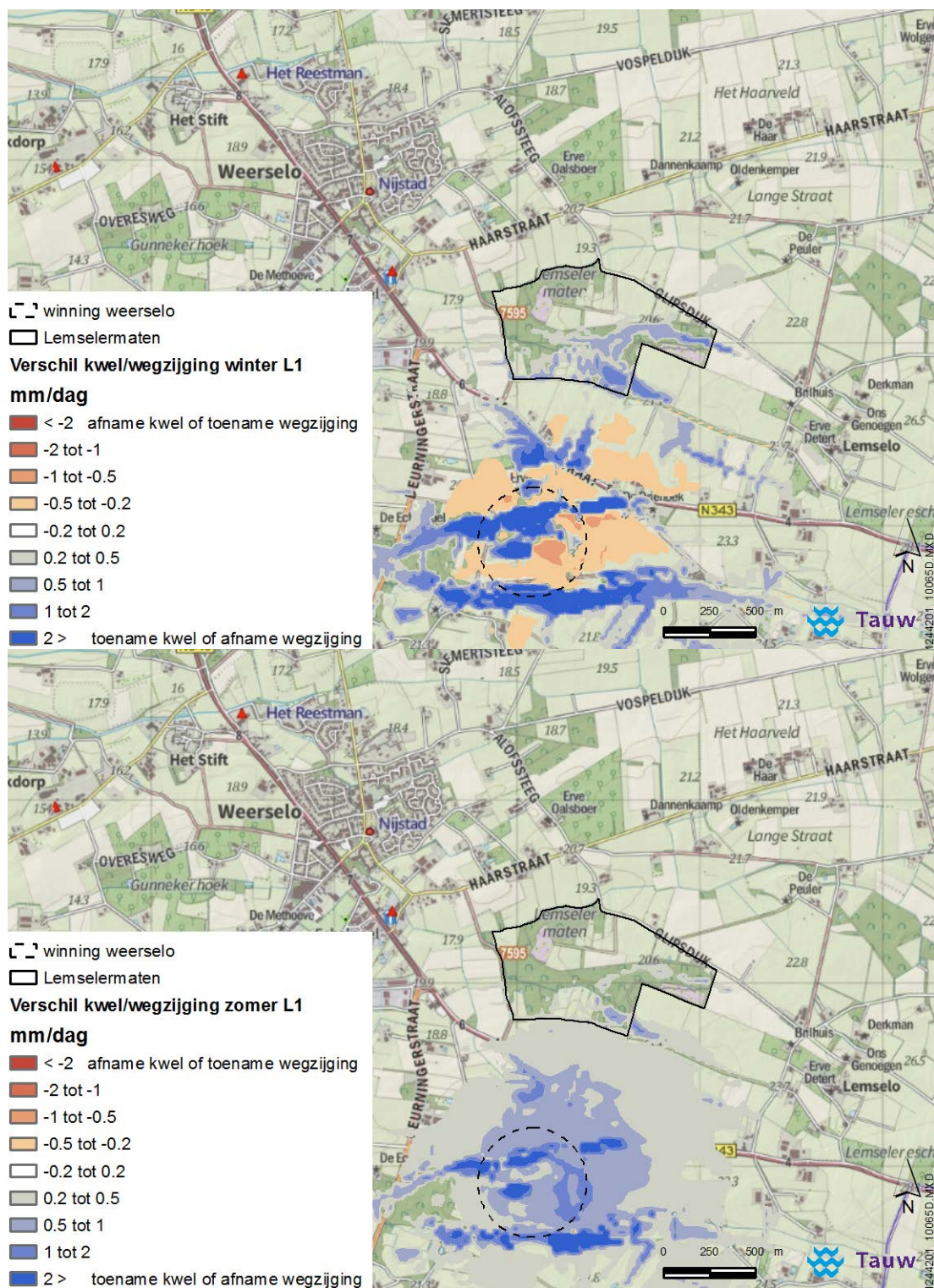


Figuur 3.5 Kwel en wegzijging

### 3.6 Verandering kwel en wegzijging

Veranderingen in de grondwaterstand gaan samen met veranderingen in kwel en wegzijging. In de zone waarin veranderingen van de grondwaterstanden zijn waargenomen treden ook verandering in de kwelflux op.

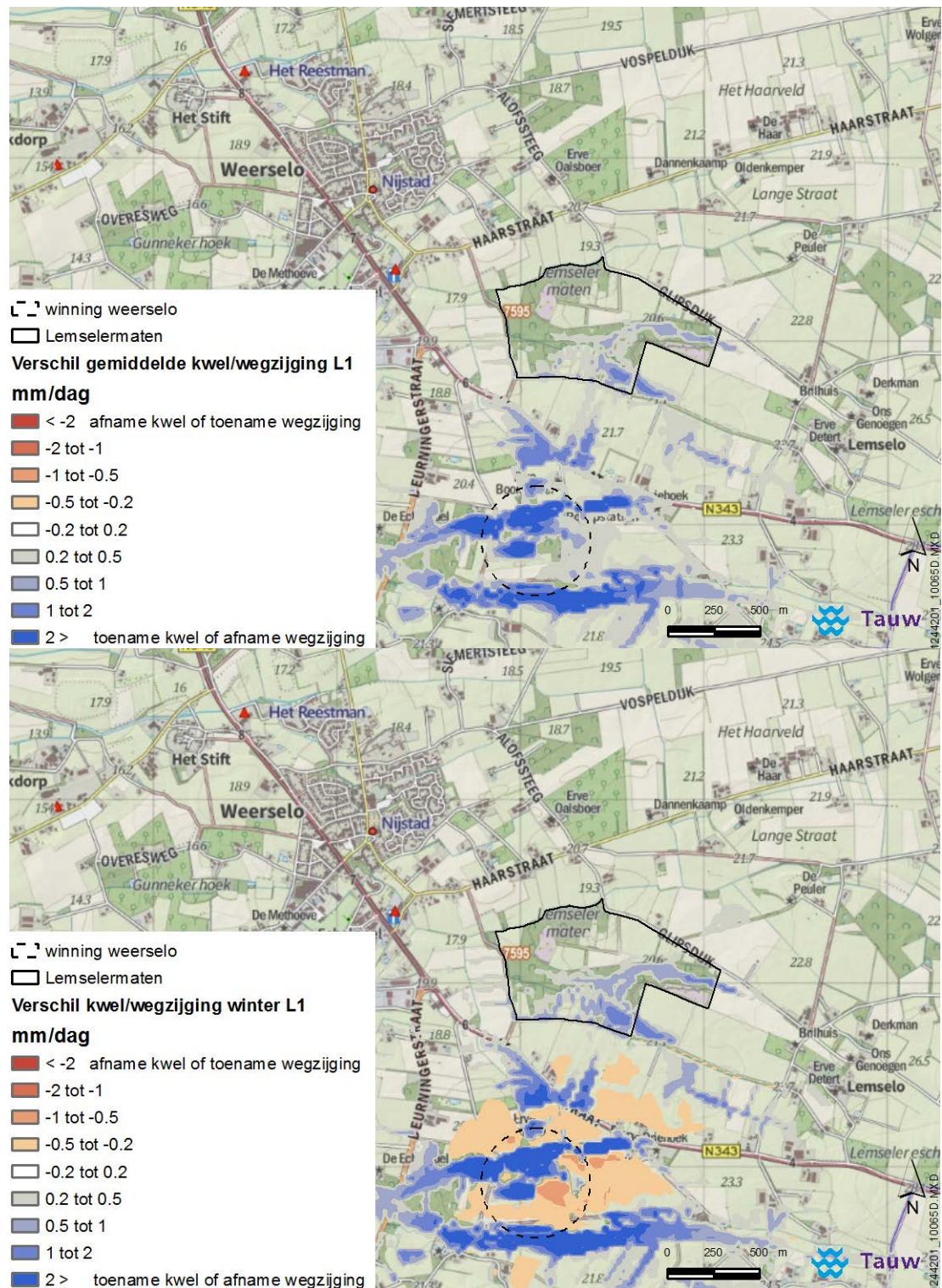


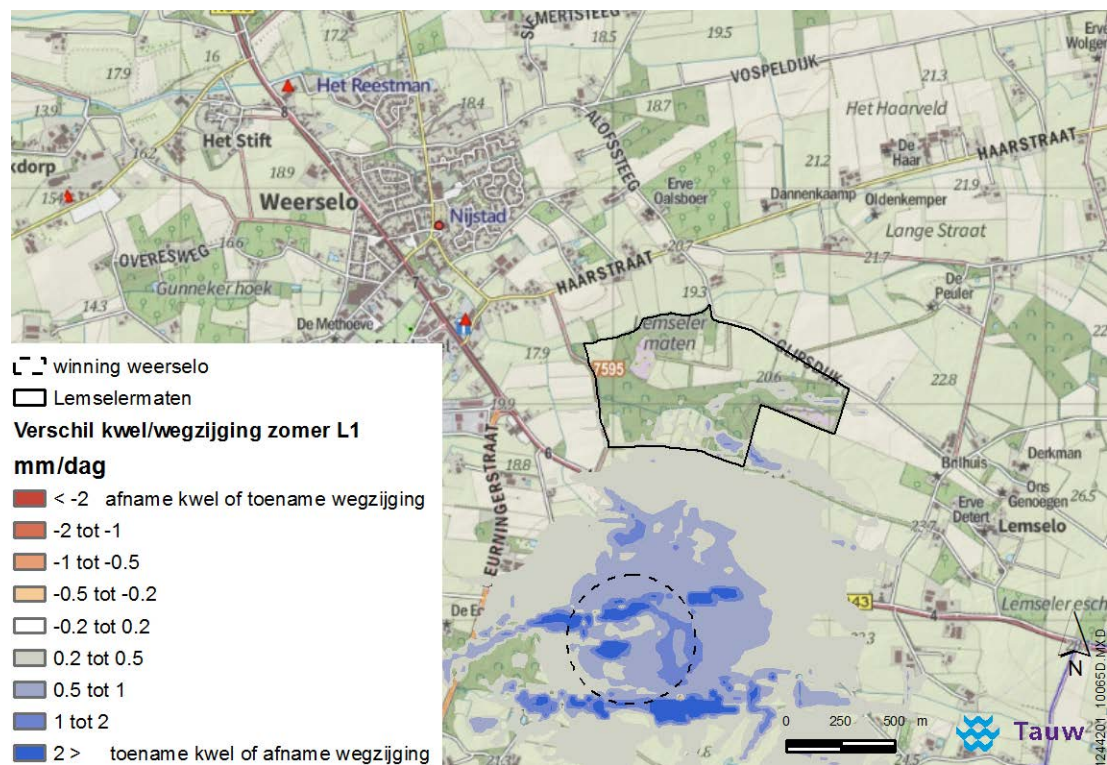


Figuur 3.6 zijn de veranderingen in de kwelflux weergegeven voor de gemiddelde situatie, het zomerseizoen en het winterseizoen. De veranderingen zijn berekend door de kwelflux voor



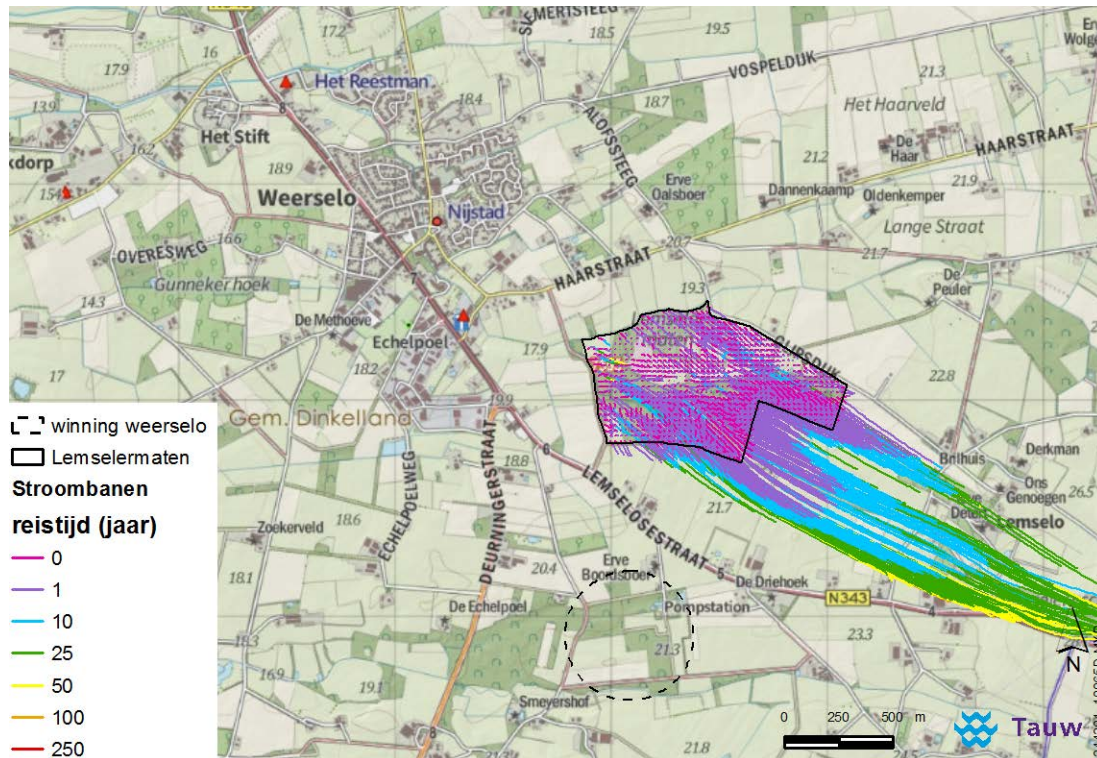
scenario 6 te vergelijken met de berekende kwelflux in de huidige situatie. Het zomerseizoen betreft de periode van 1 april tot eind september.



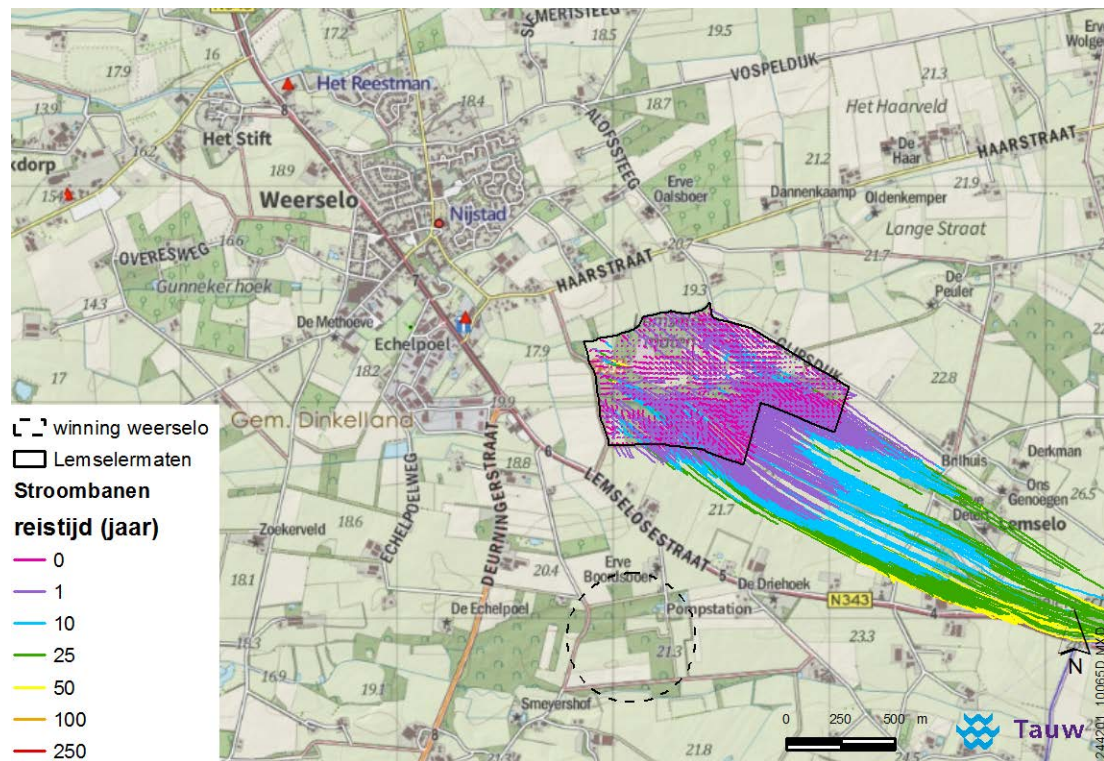


Figuur 3.6 Veranderingen in de kwelflux

### 3.7 Stroombanen



Figuur 3.7 toont de stroombanen naar Lemselermaten voor een gemiddelde situatie. De stroombanen zijn met backward tracé berekend vanuit modellaag 1.



Figuur 3.7 Berekende stroombanen na het uitzetten van de Drinkwaterwinning Weerselo

### 3.8 Tijdstijghoogtelijnen

In bijlage 1 zijn de tijdstijghoogtelijnen weergegeven berekend voor scenario 6. In de tijdstijghoogtelijnen is ook het modelresultaat van het uitgangsmodel gepresenteerd.

### 3.9 Berekend effect per peilbuis

In bijlage 2 zijn berekende effecten berekend voor scenario 6 per peilbuislocatie weergegeven. Onderscheid is gemaakt tussen de effecten bij de gemiddeld hoogste grondwaterstand (GHG), gemiddeld laagste (GLG) en gemiddelde voorjaarsgrondwaterstand (GVG).



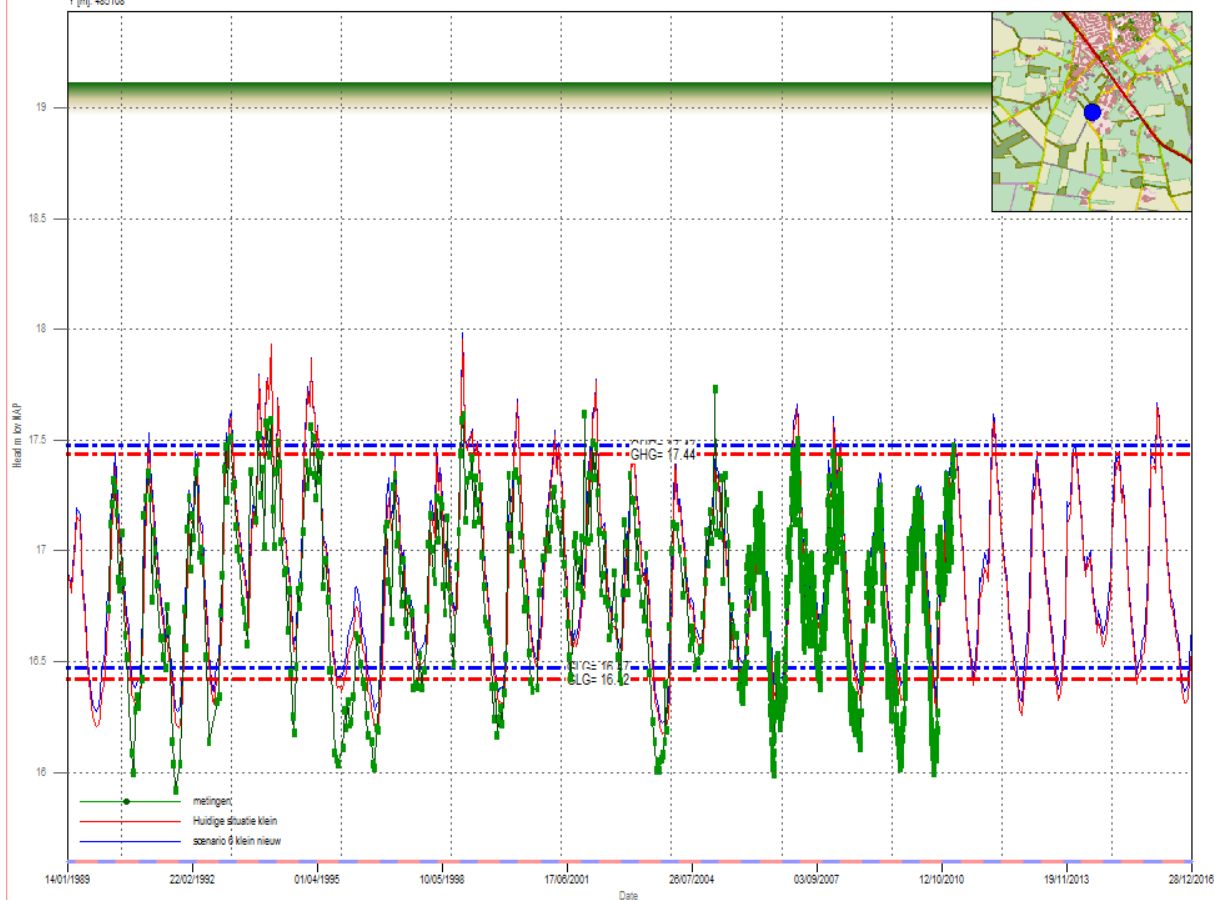
## Bijlage 1

## Tijdstijghoogtelijnen

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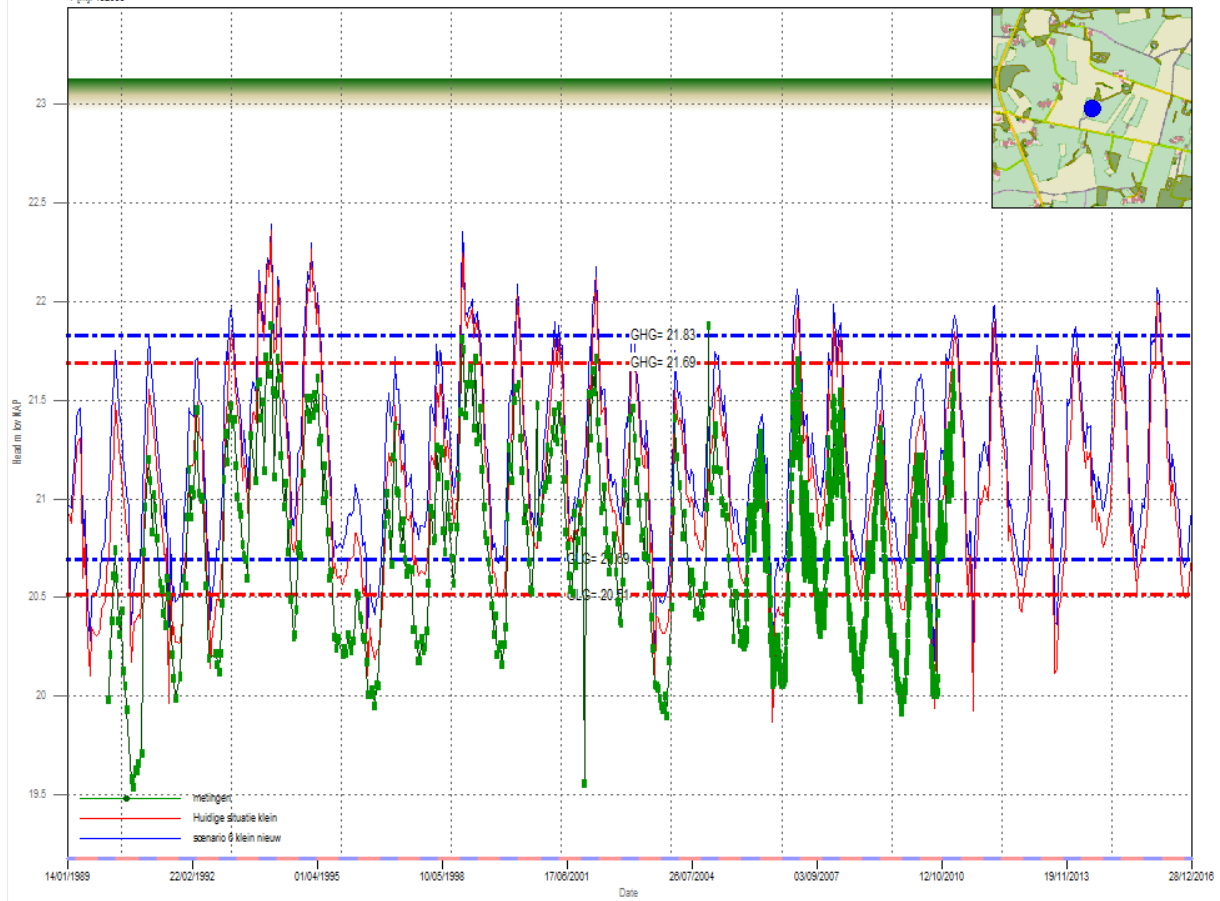
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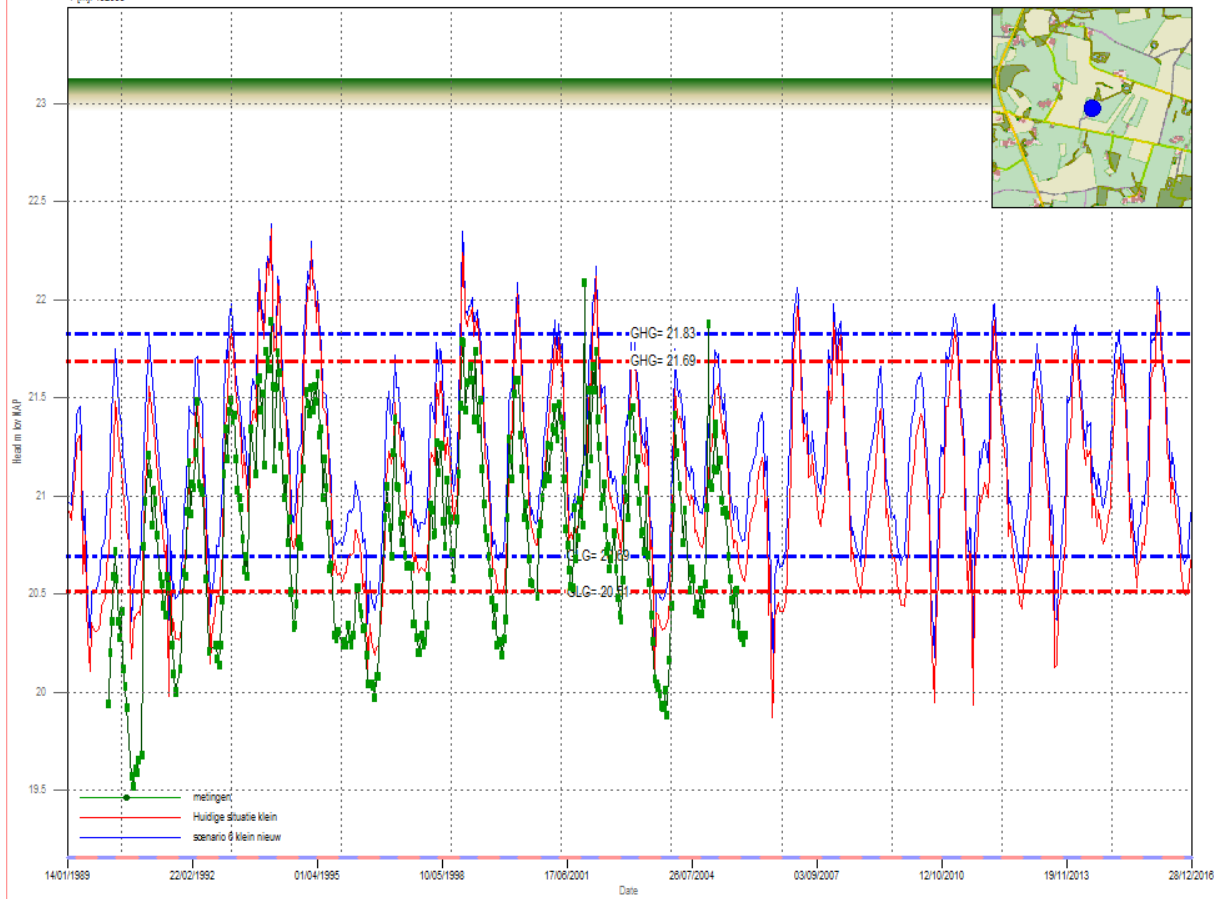
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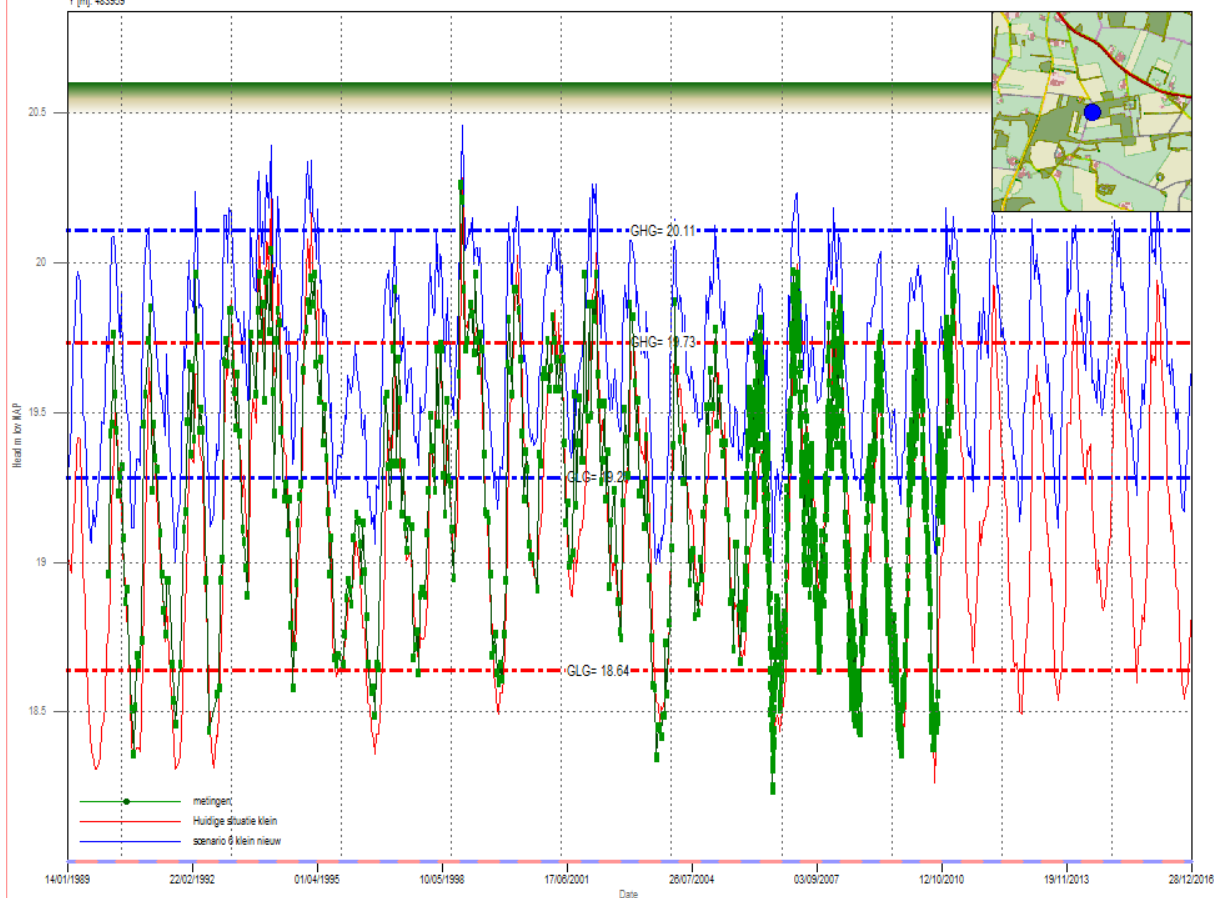
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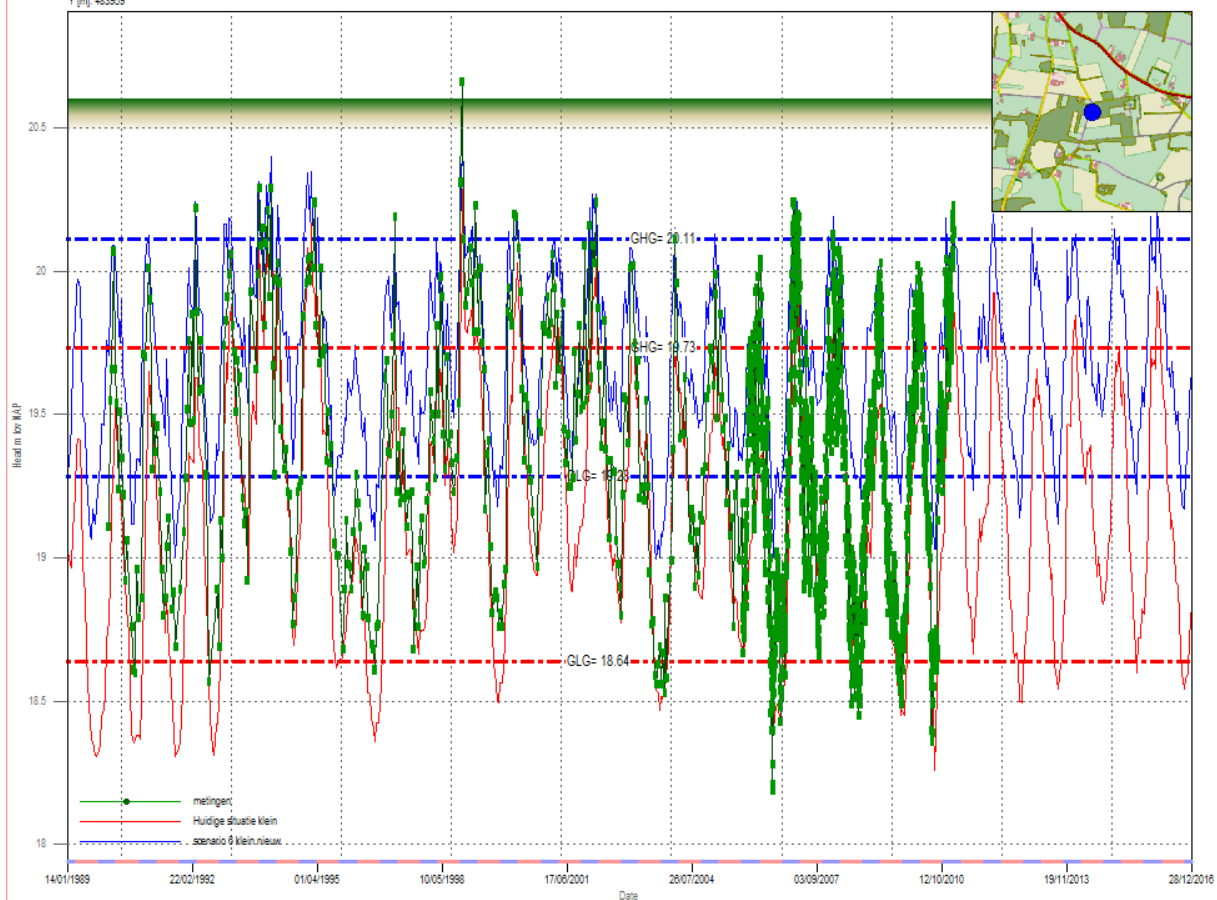
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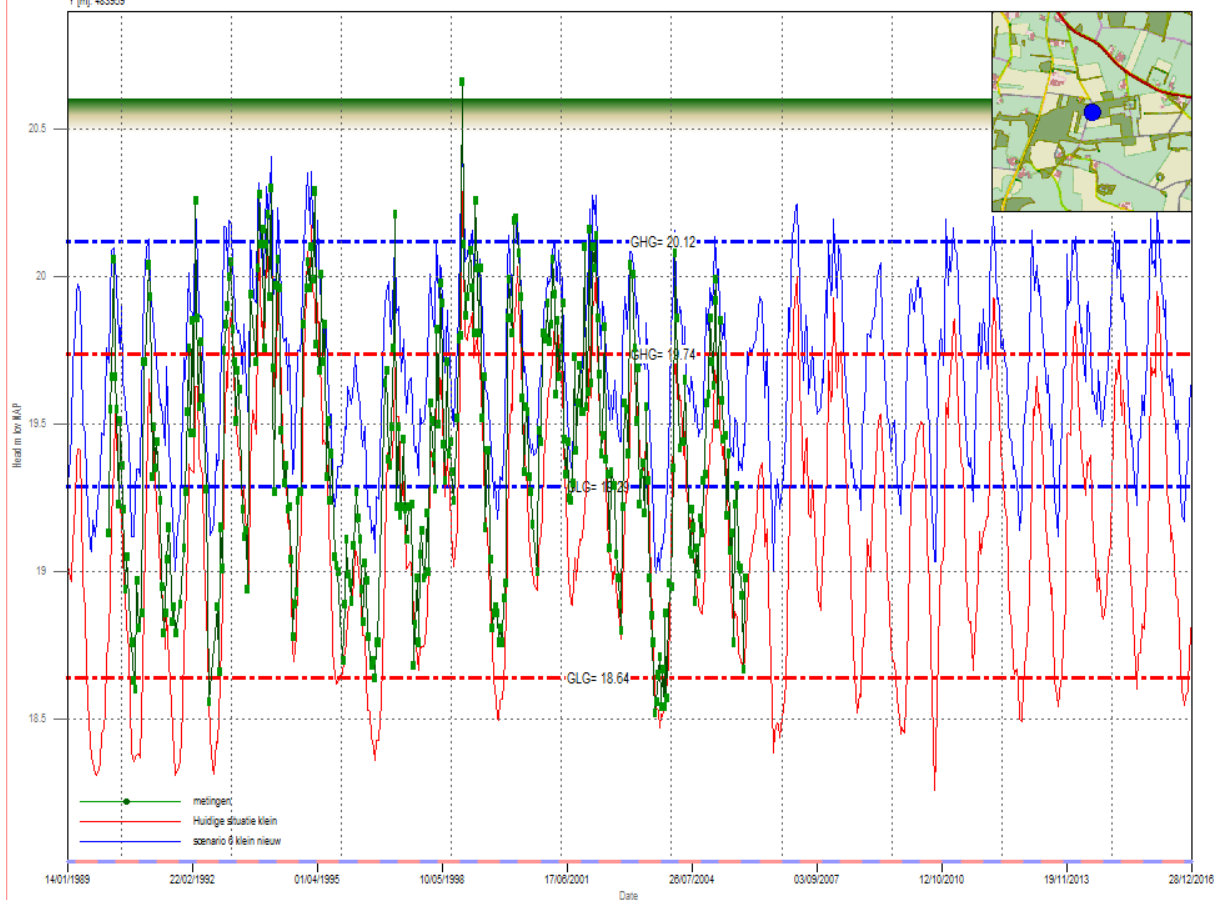
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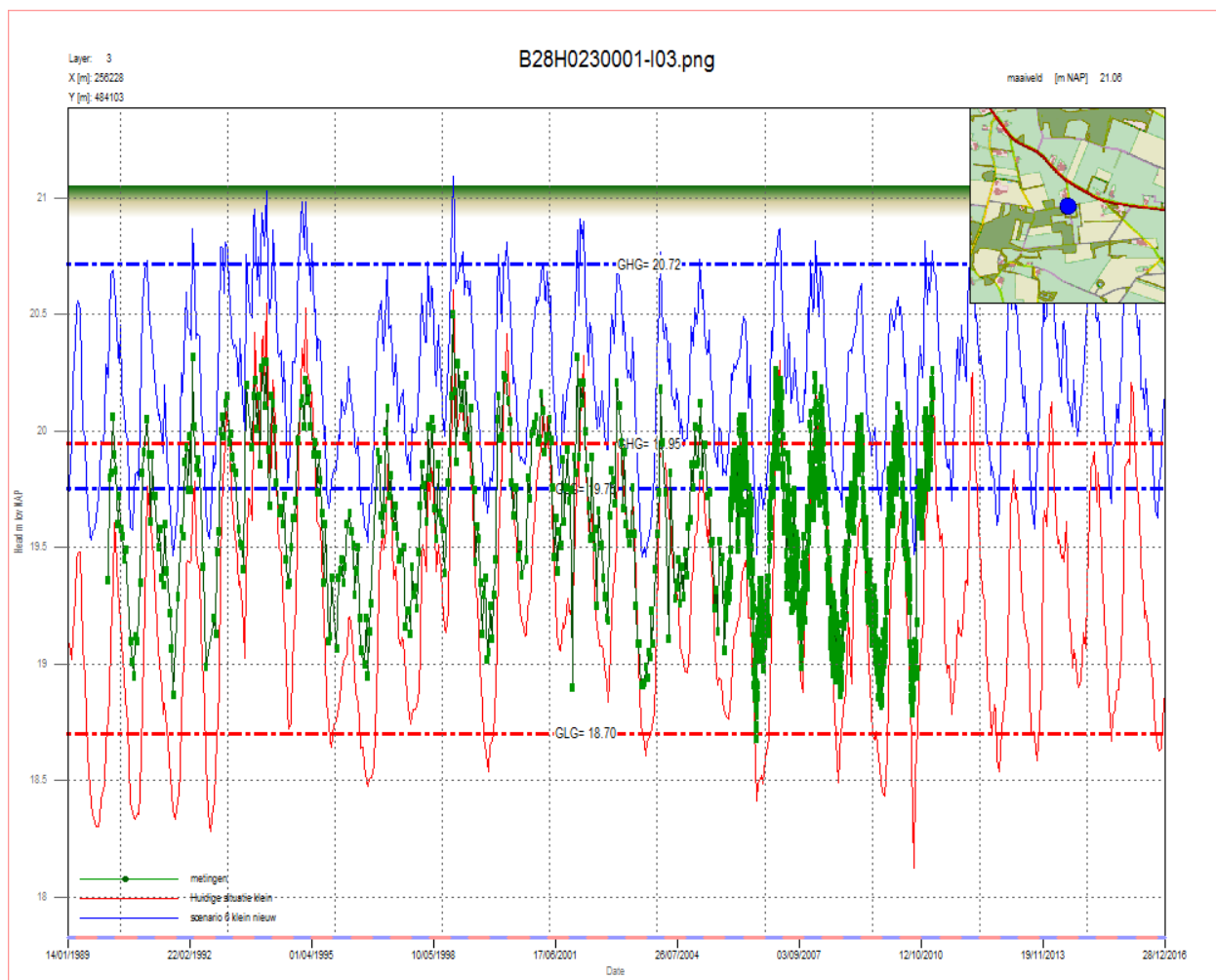


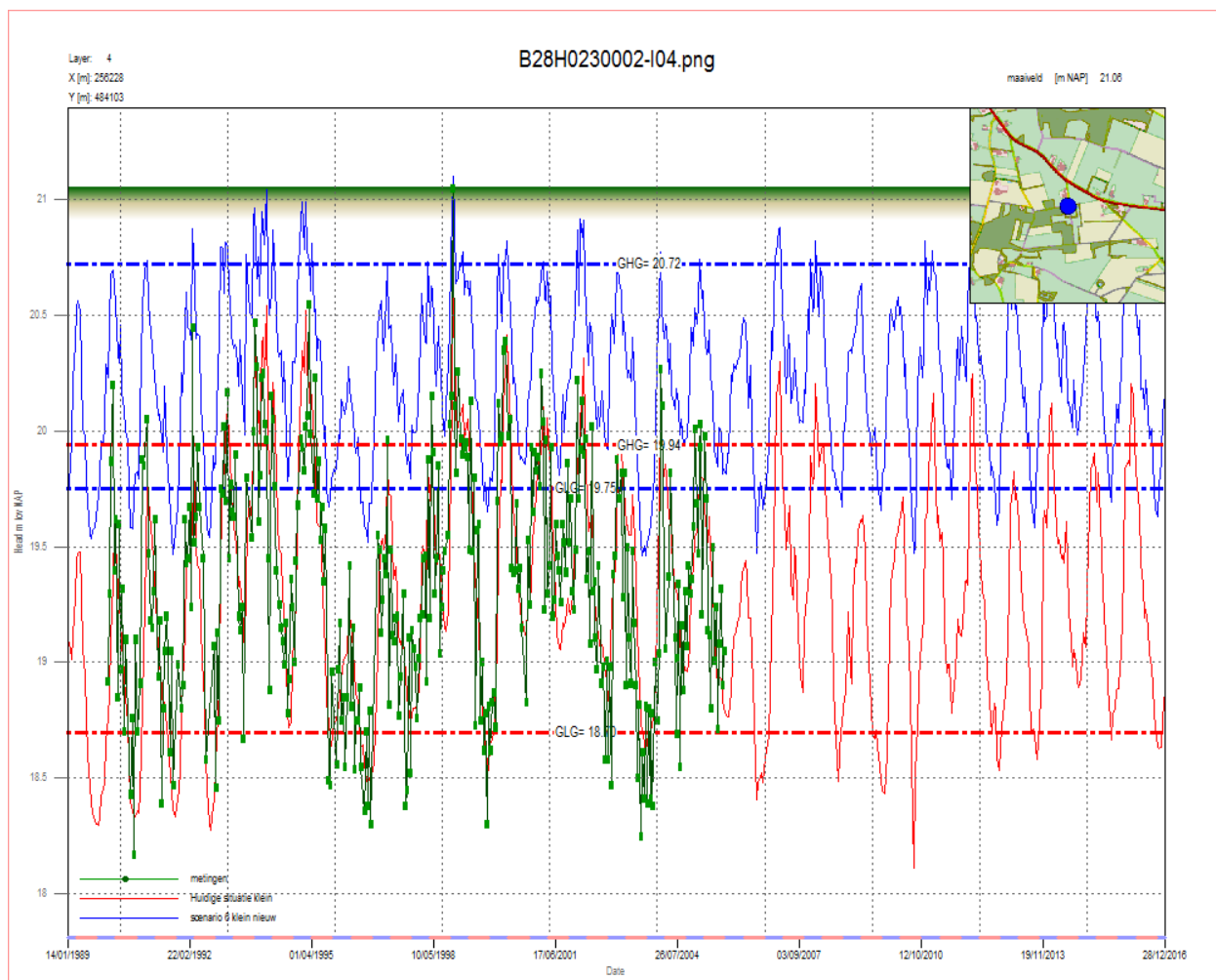
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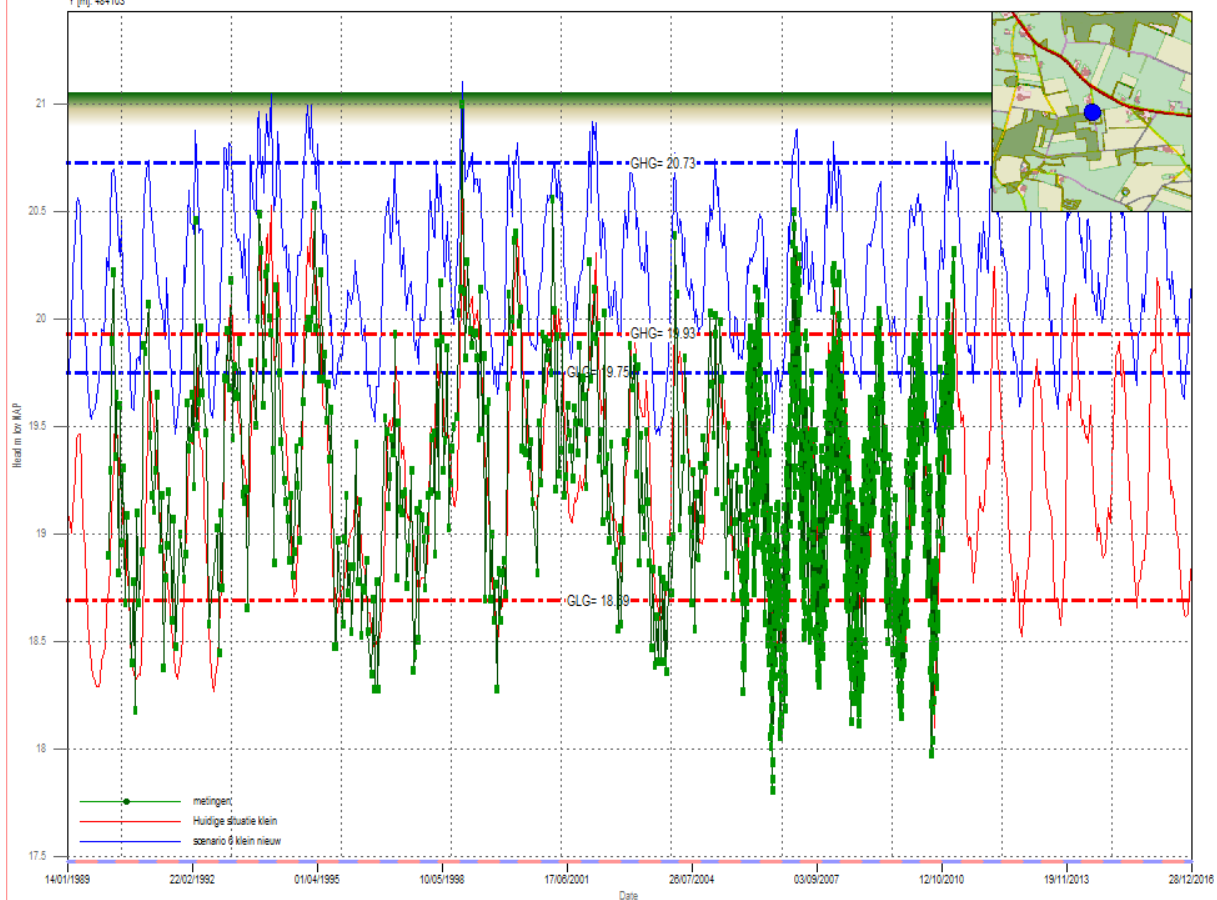


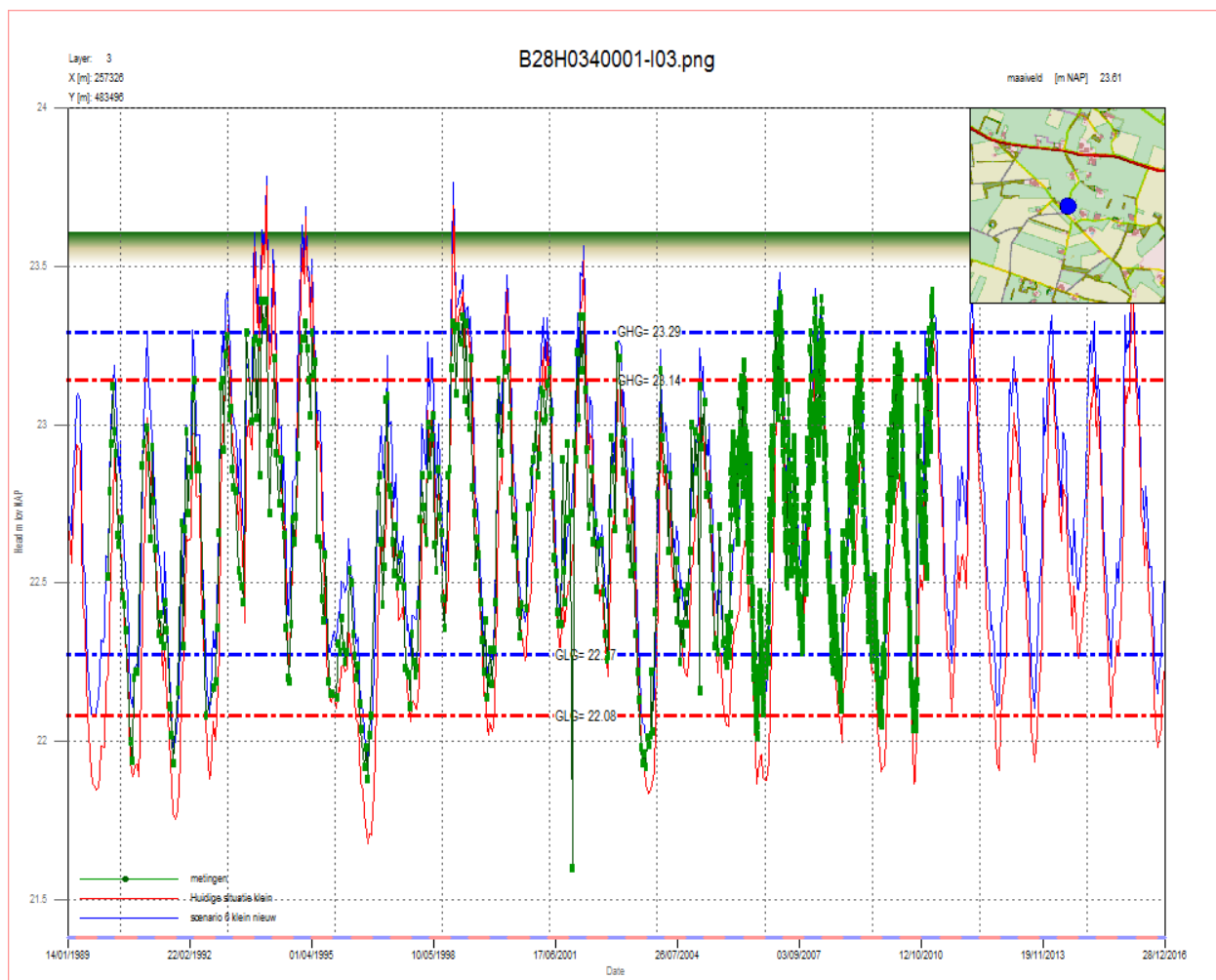


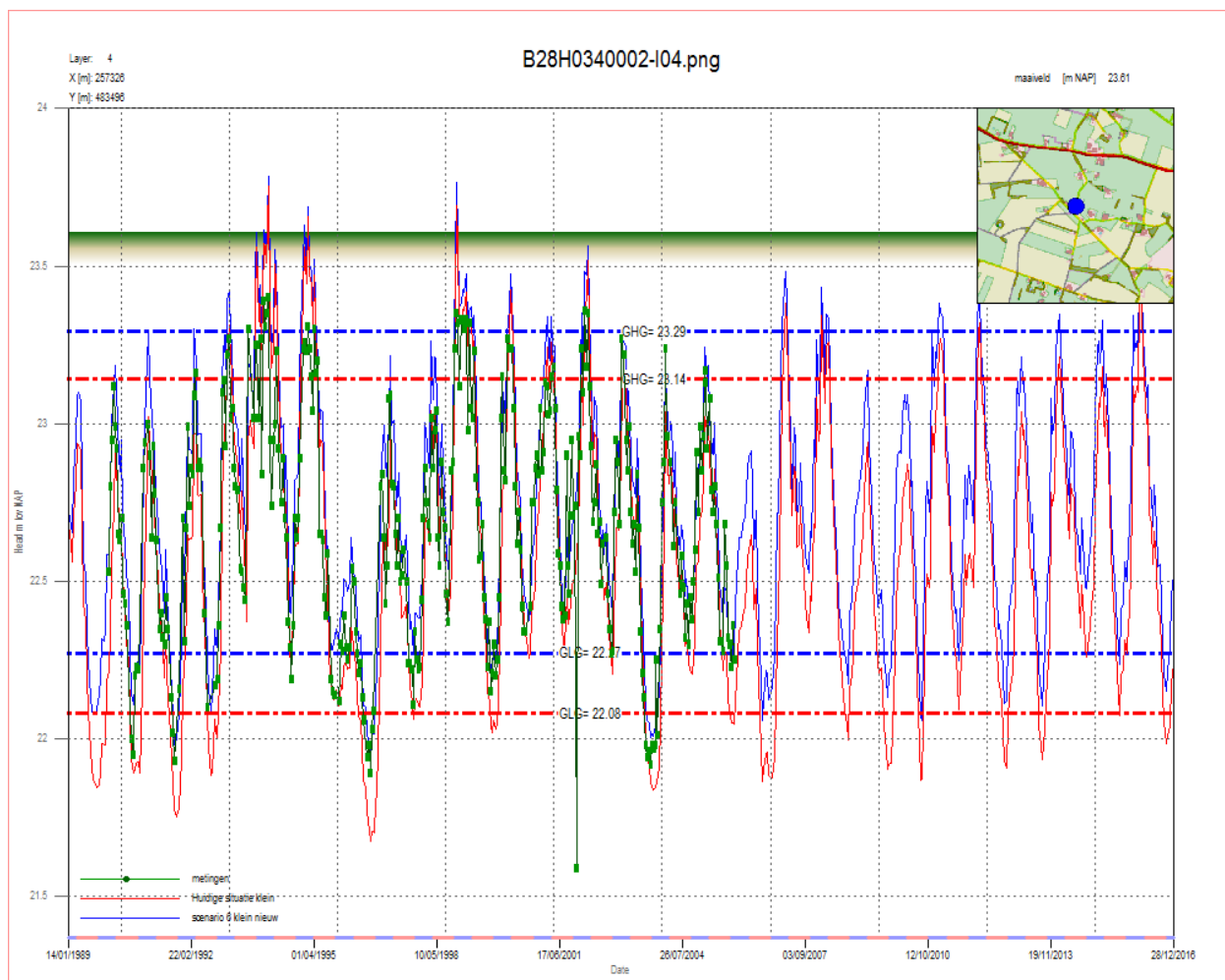
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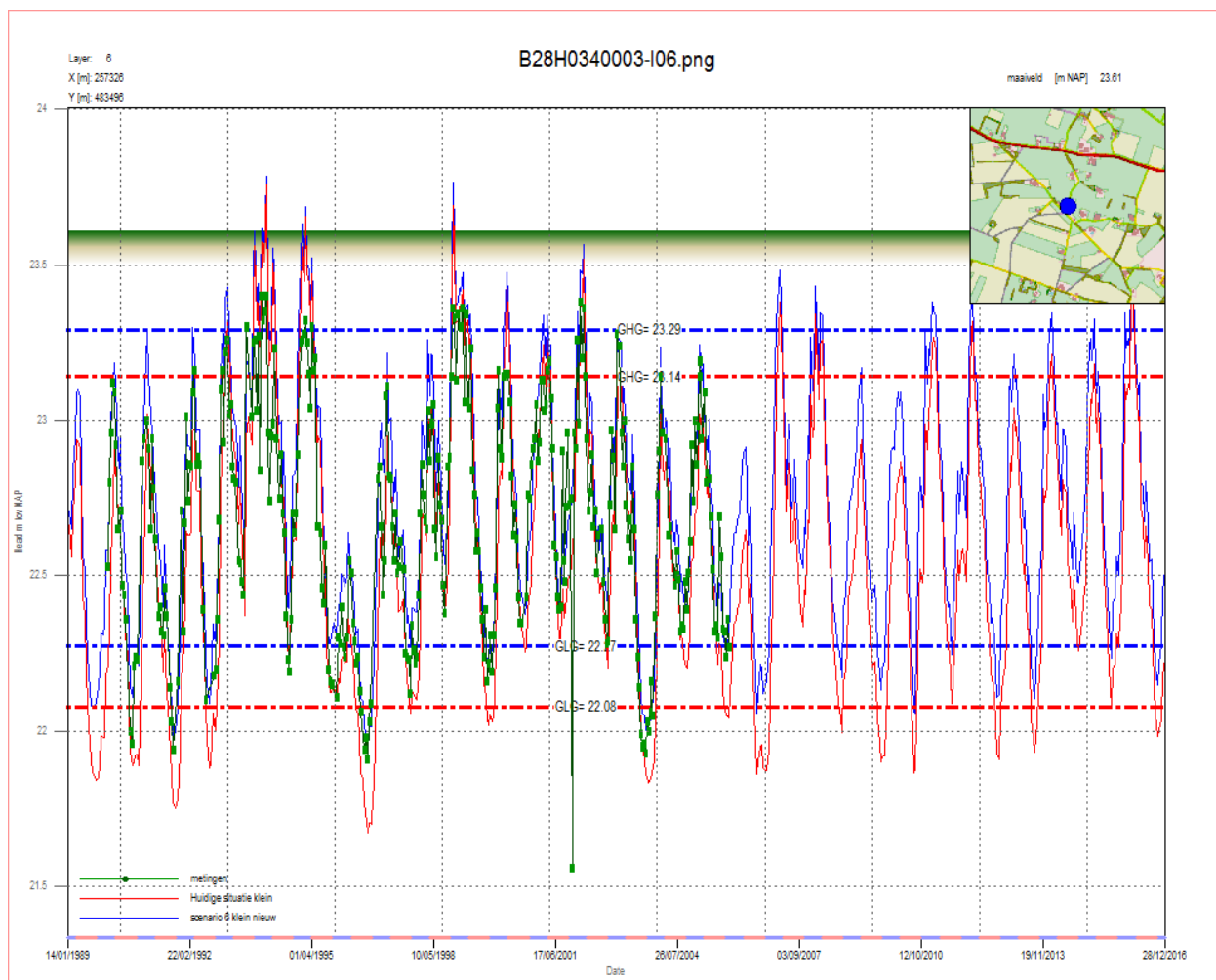
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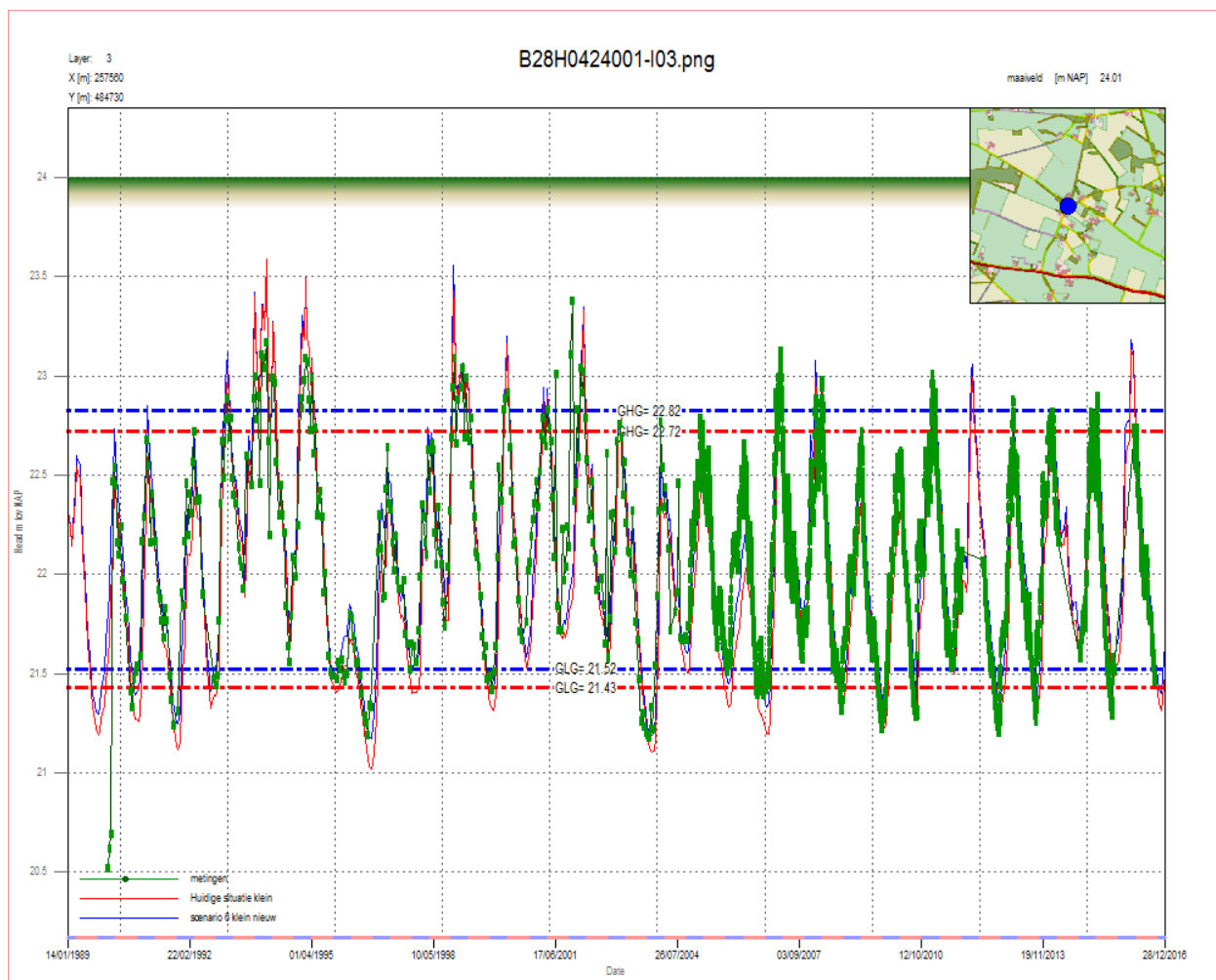
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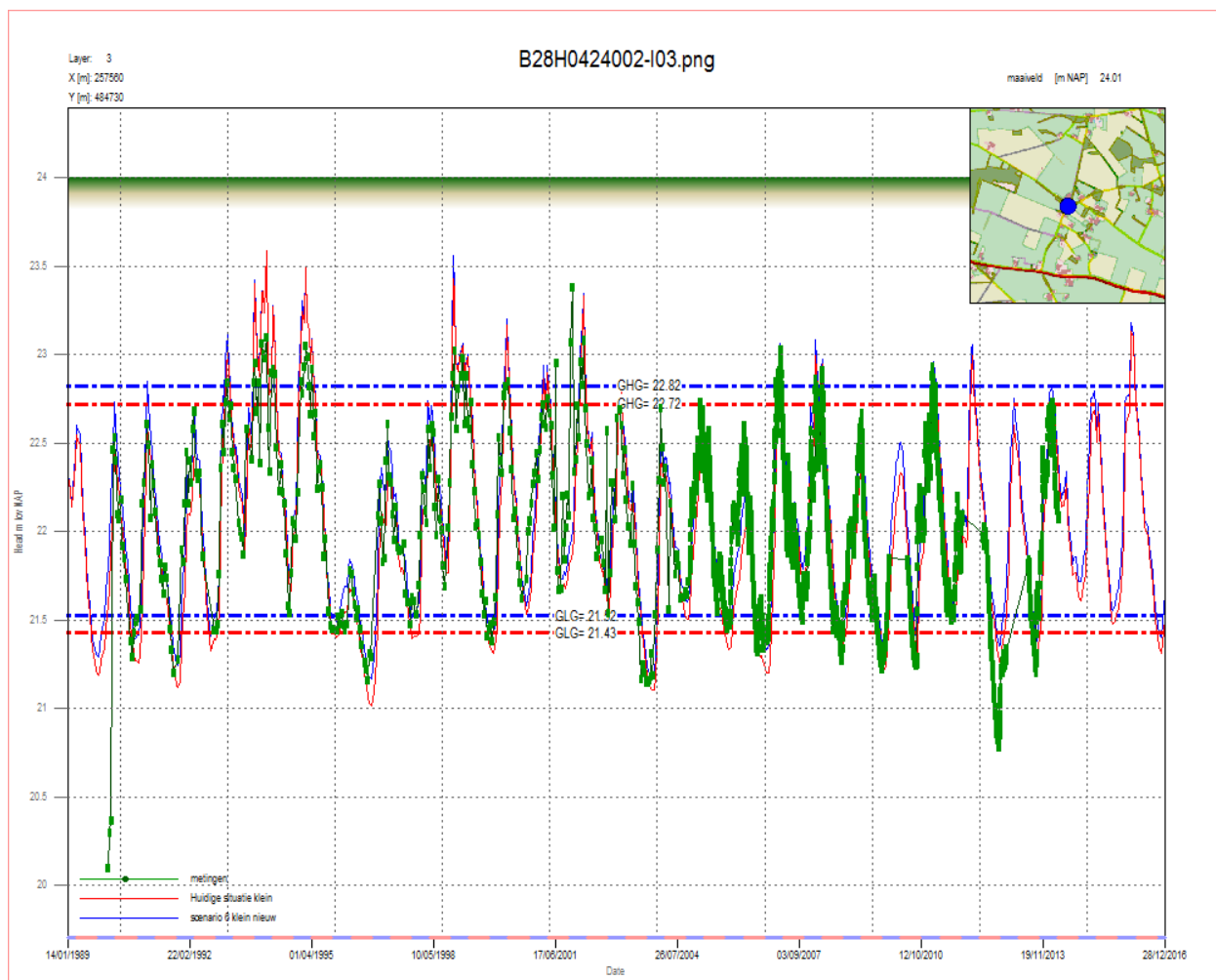


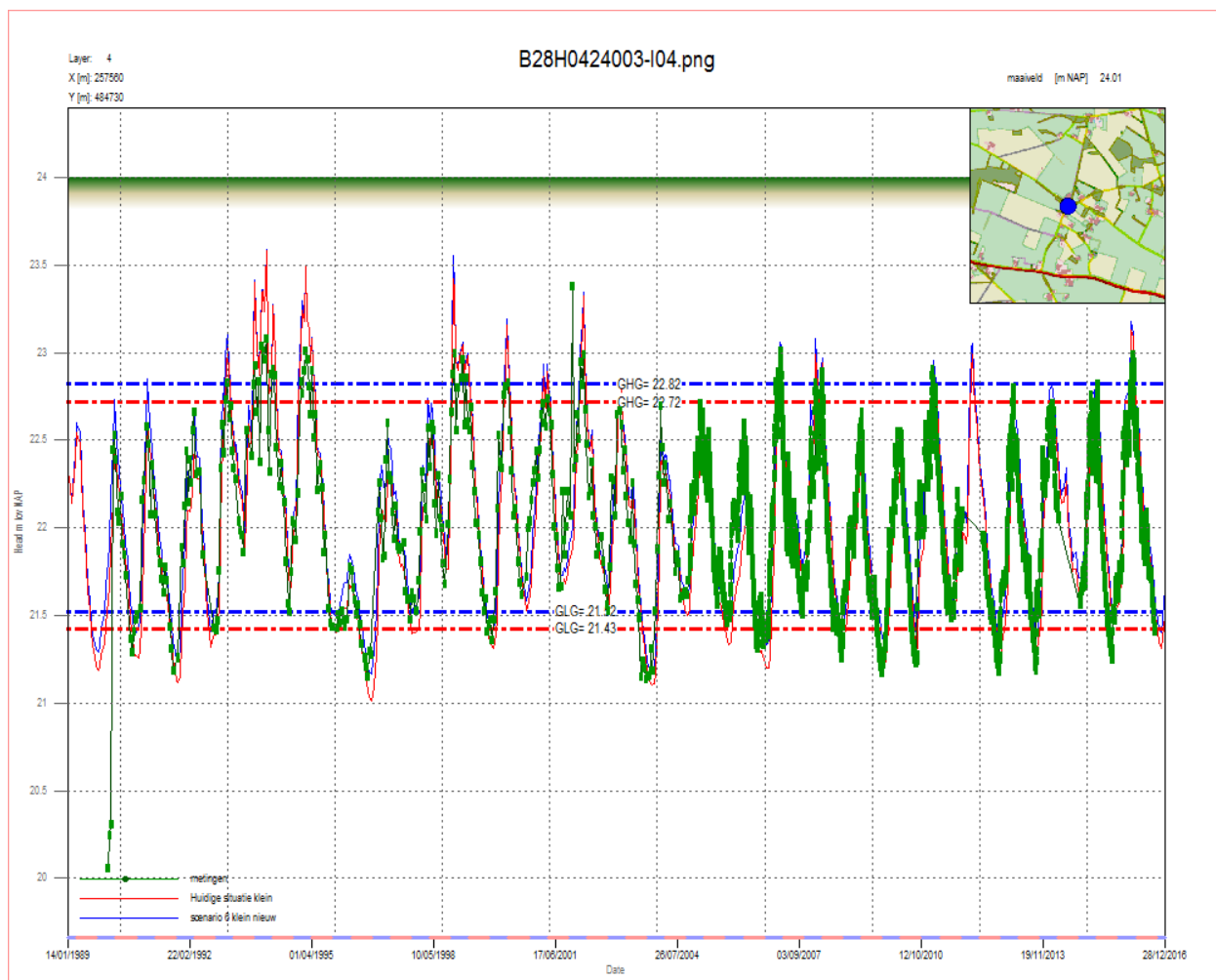








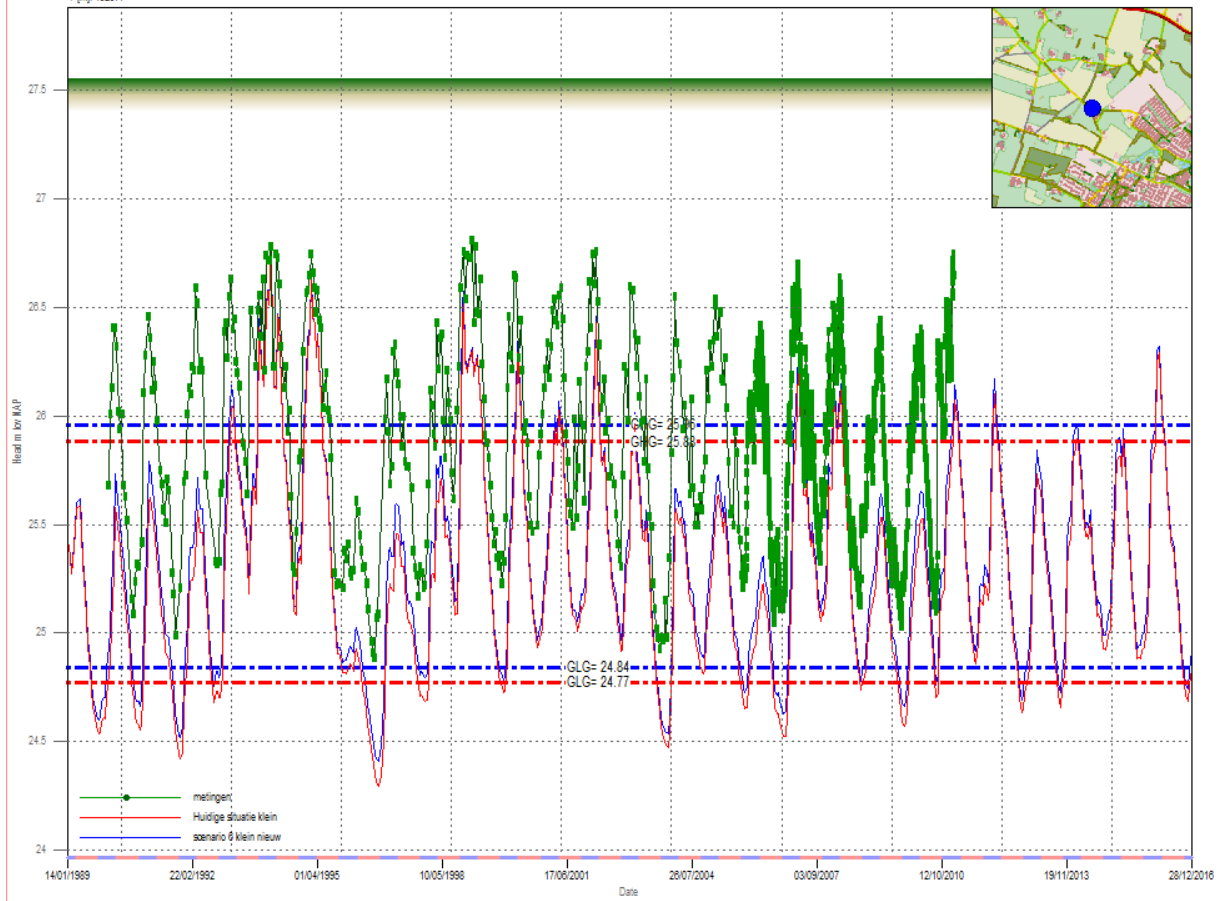




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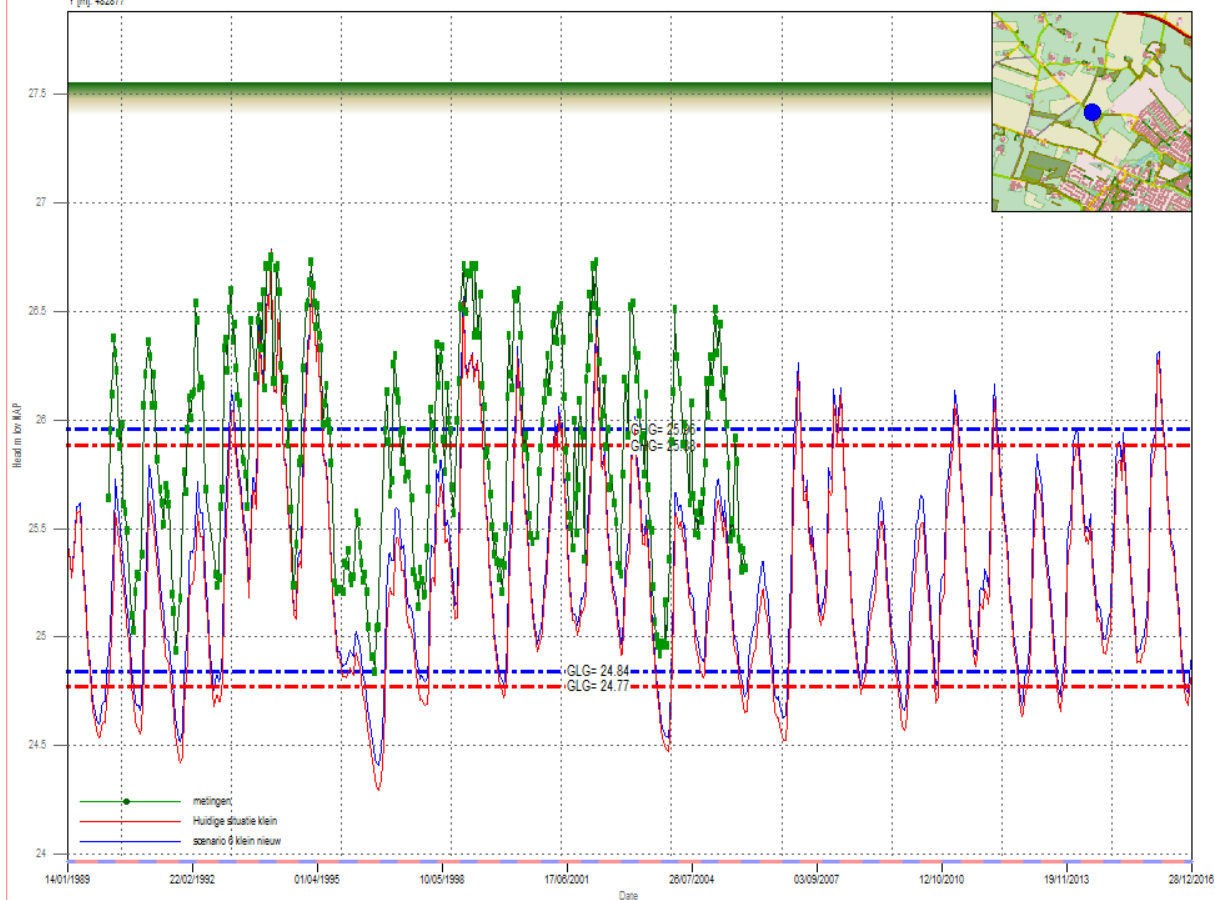
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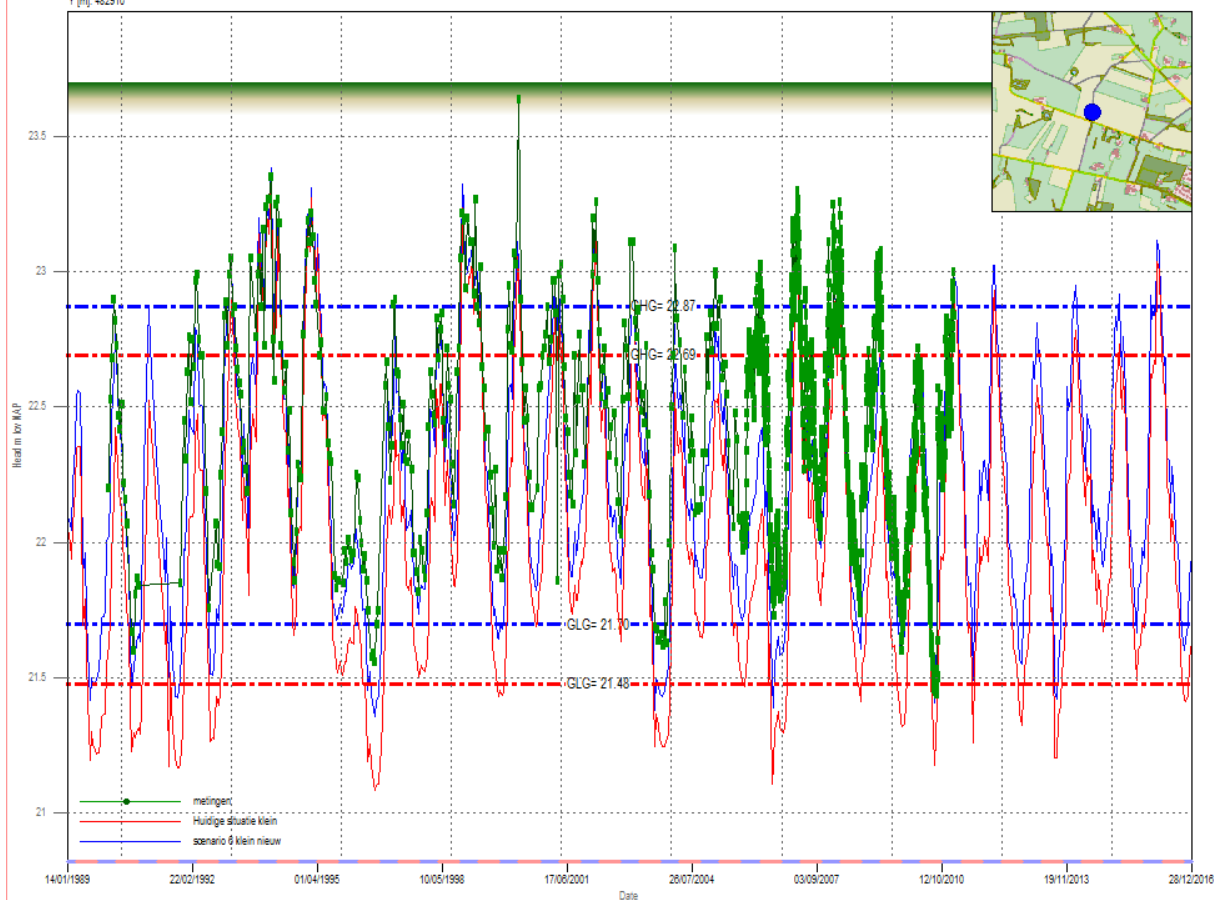
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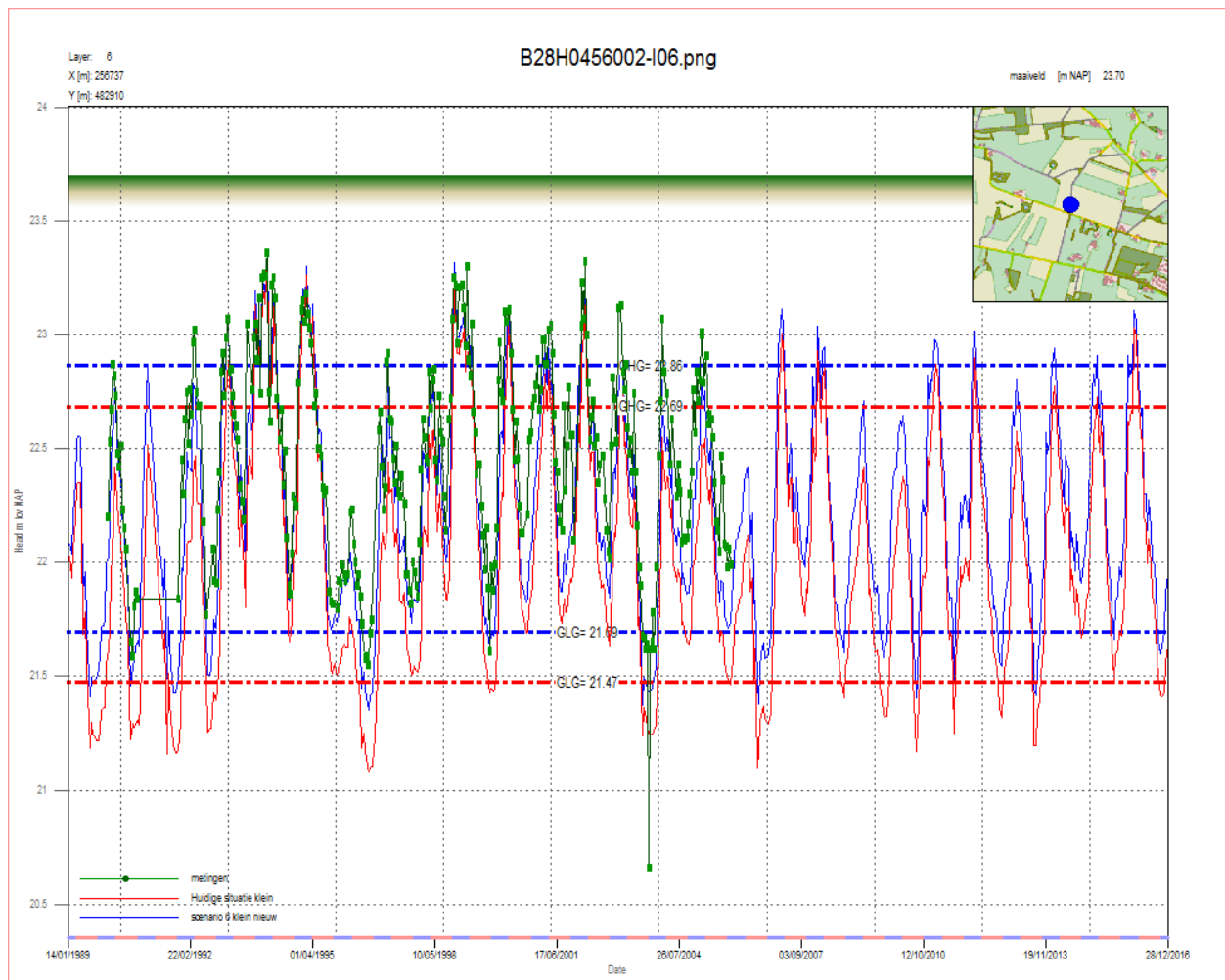


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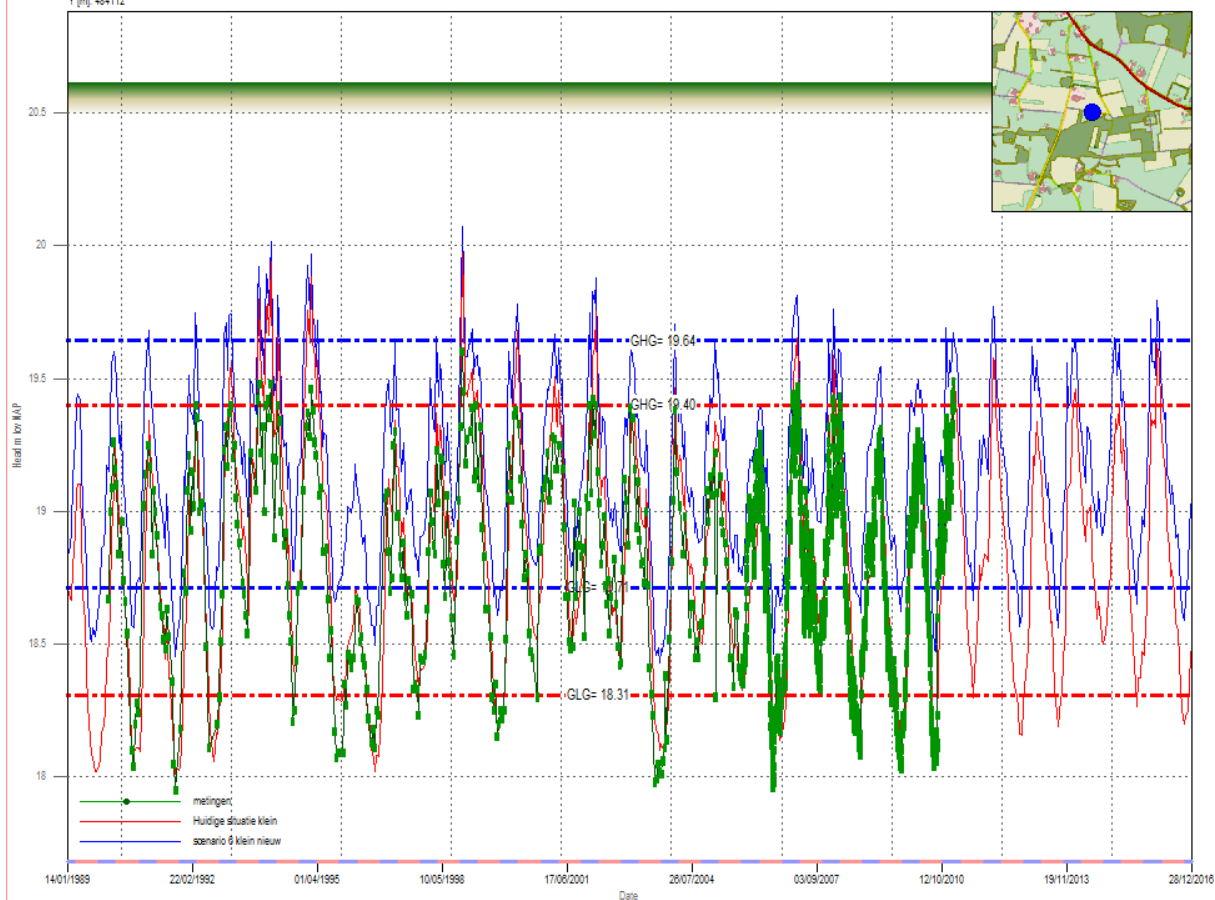




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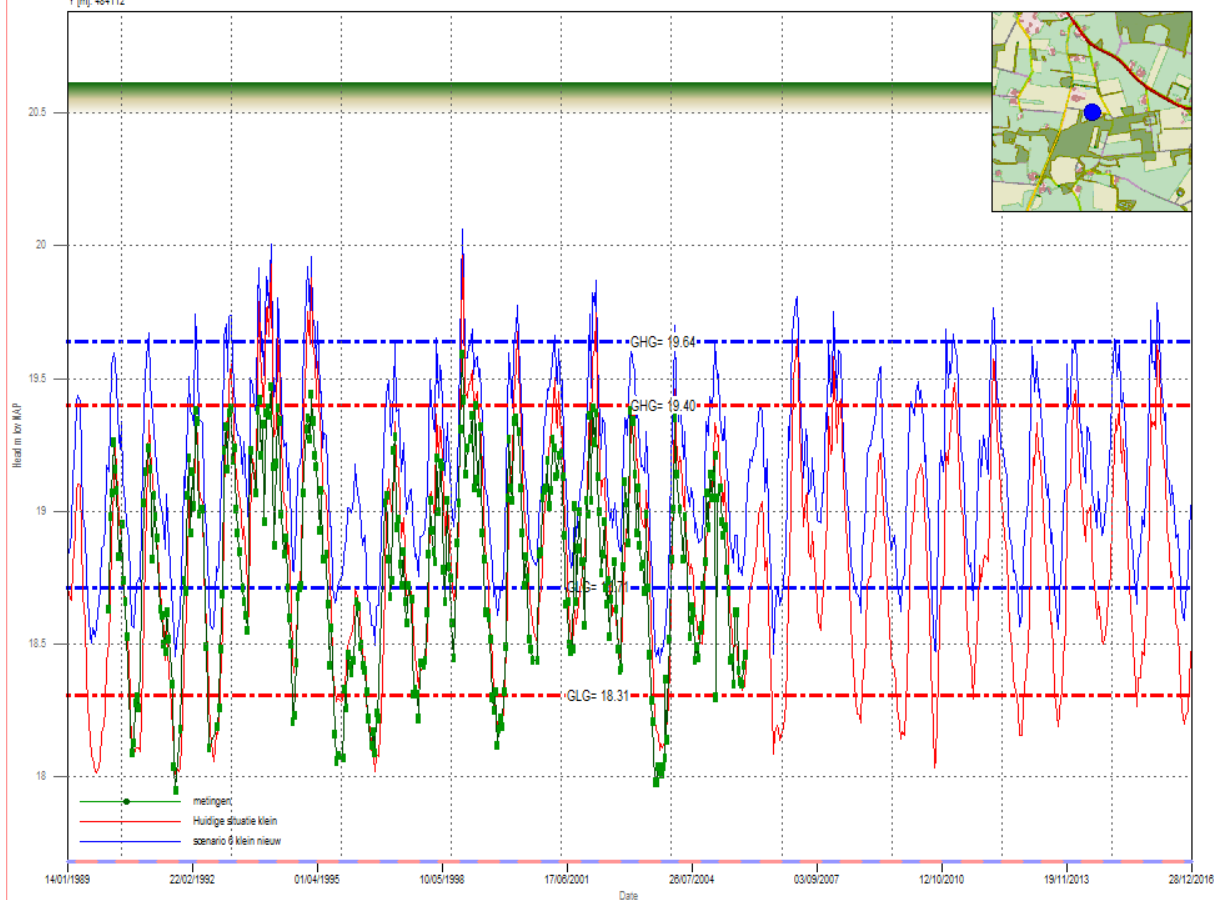
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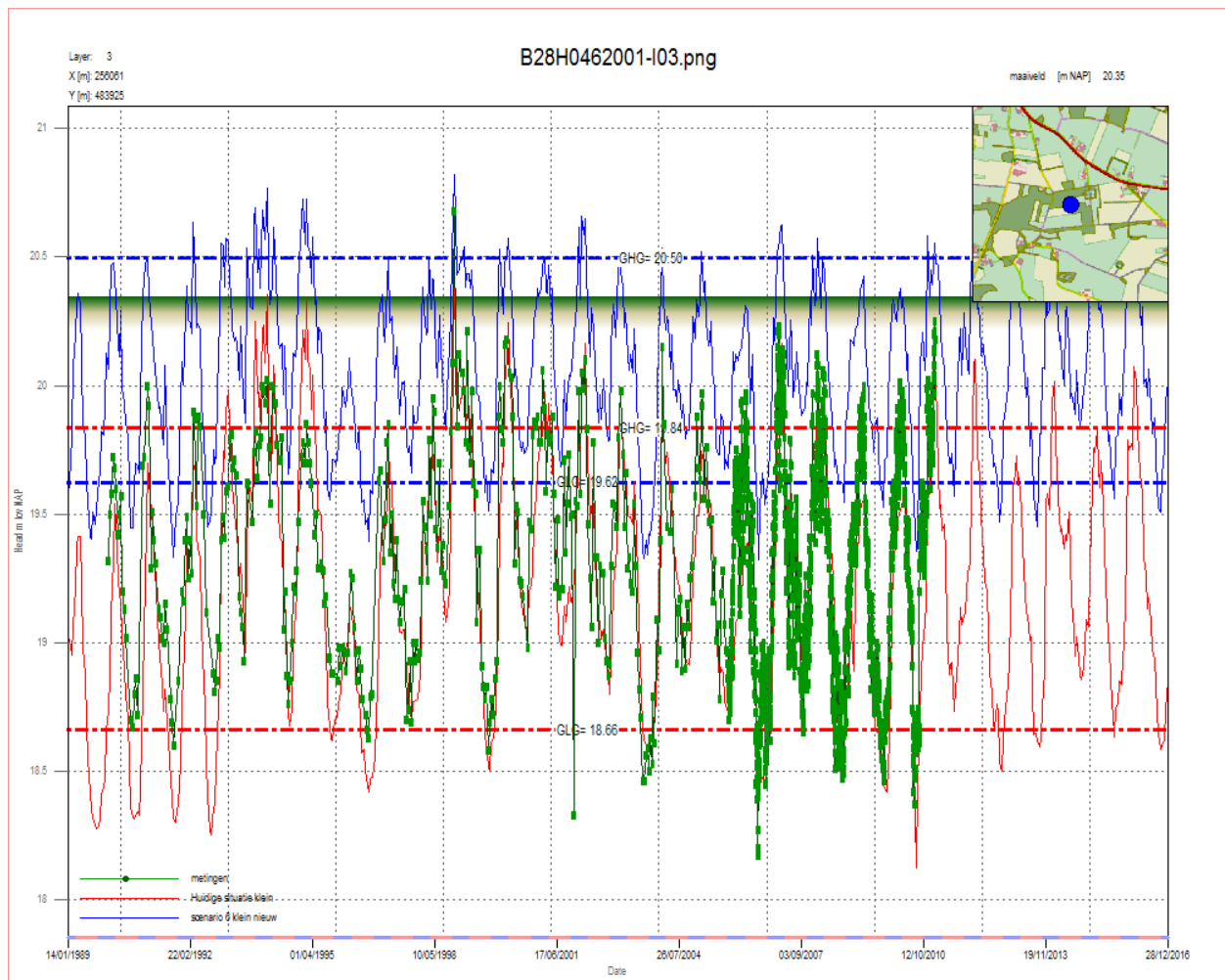


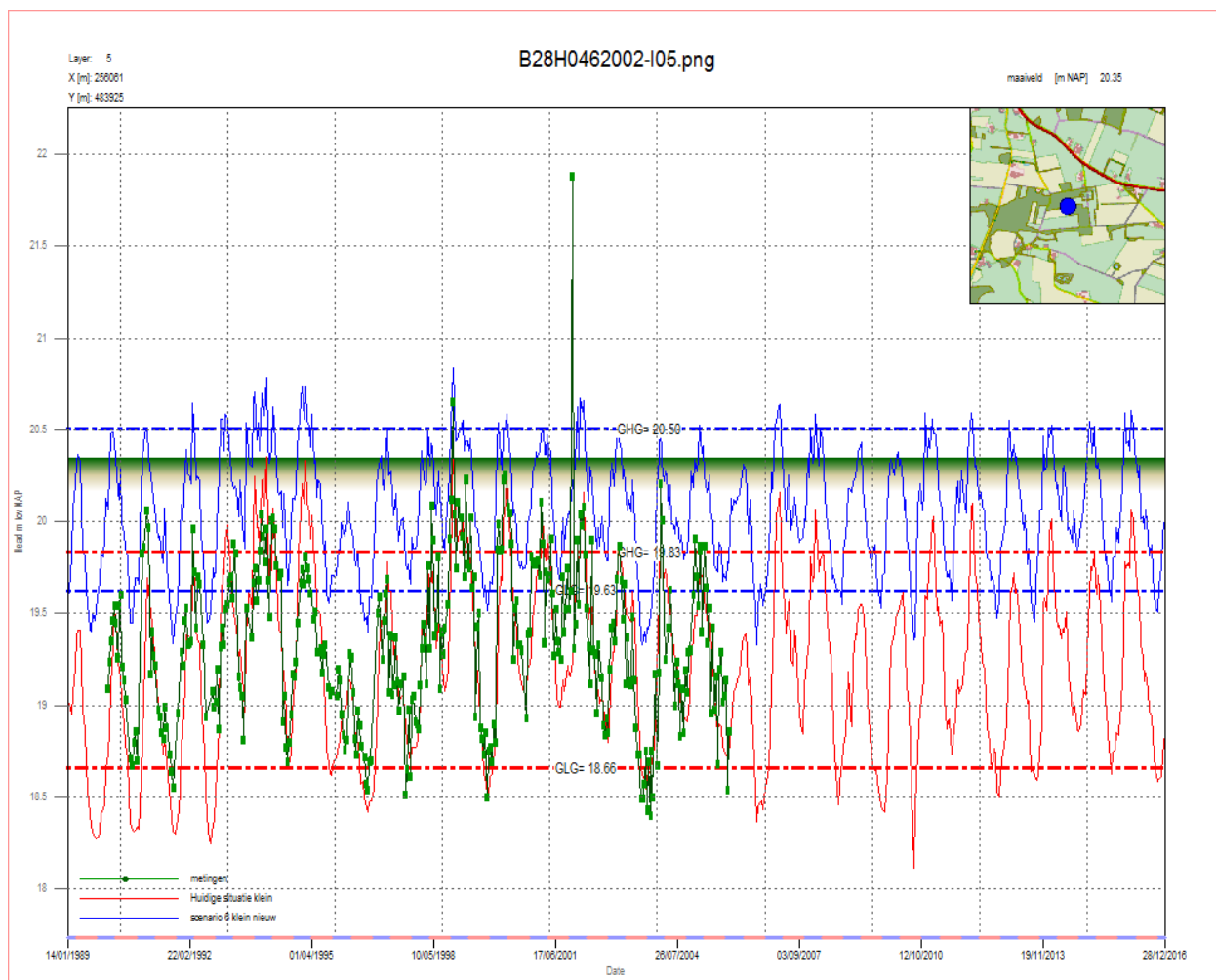
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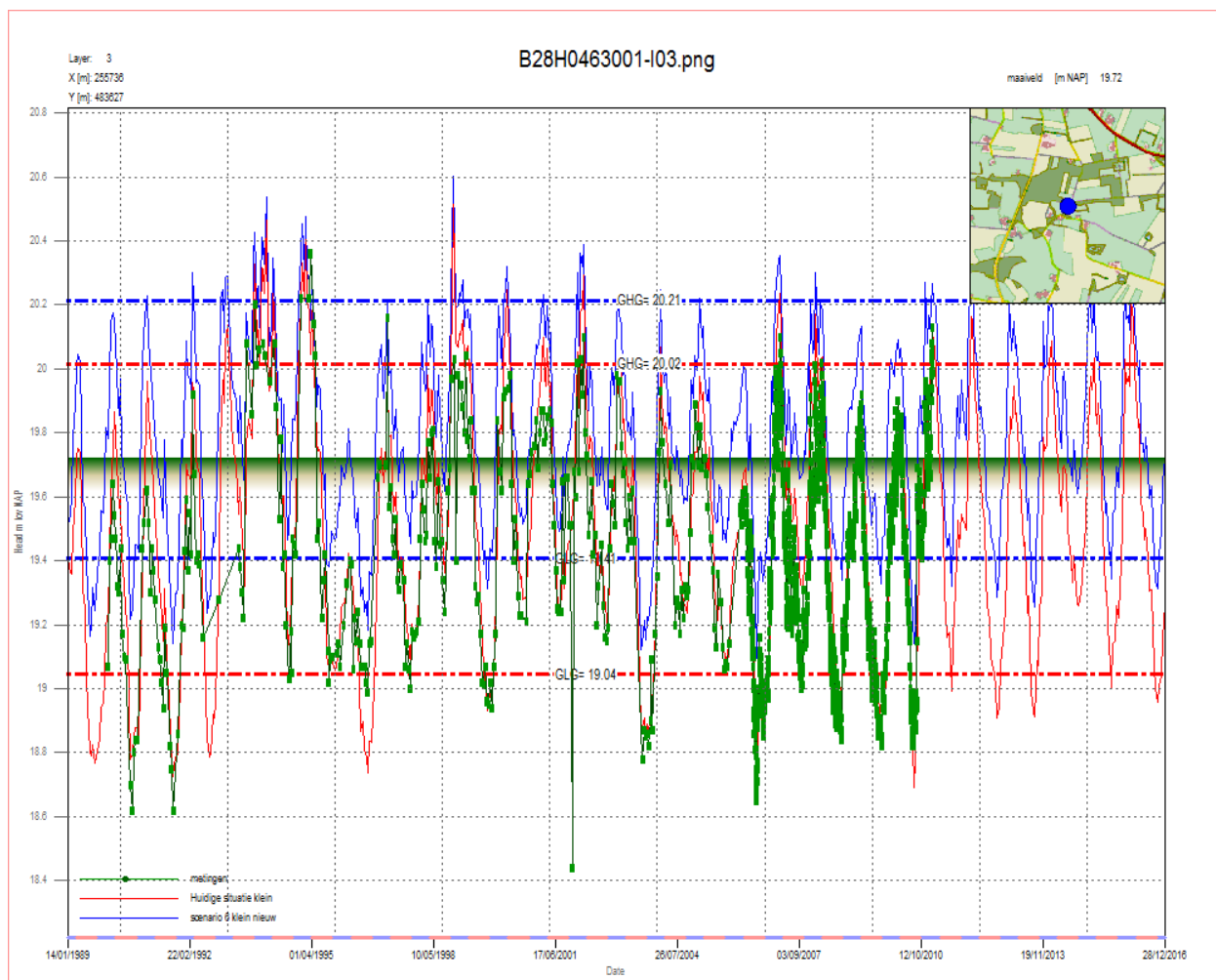
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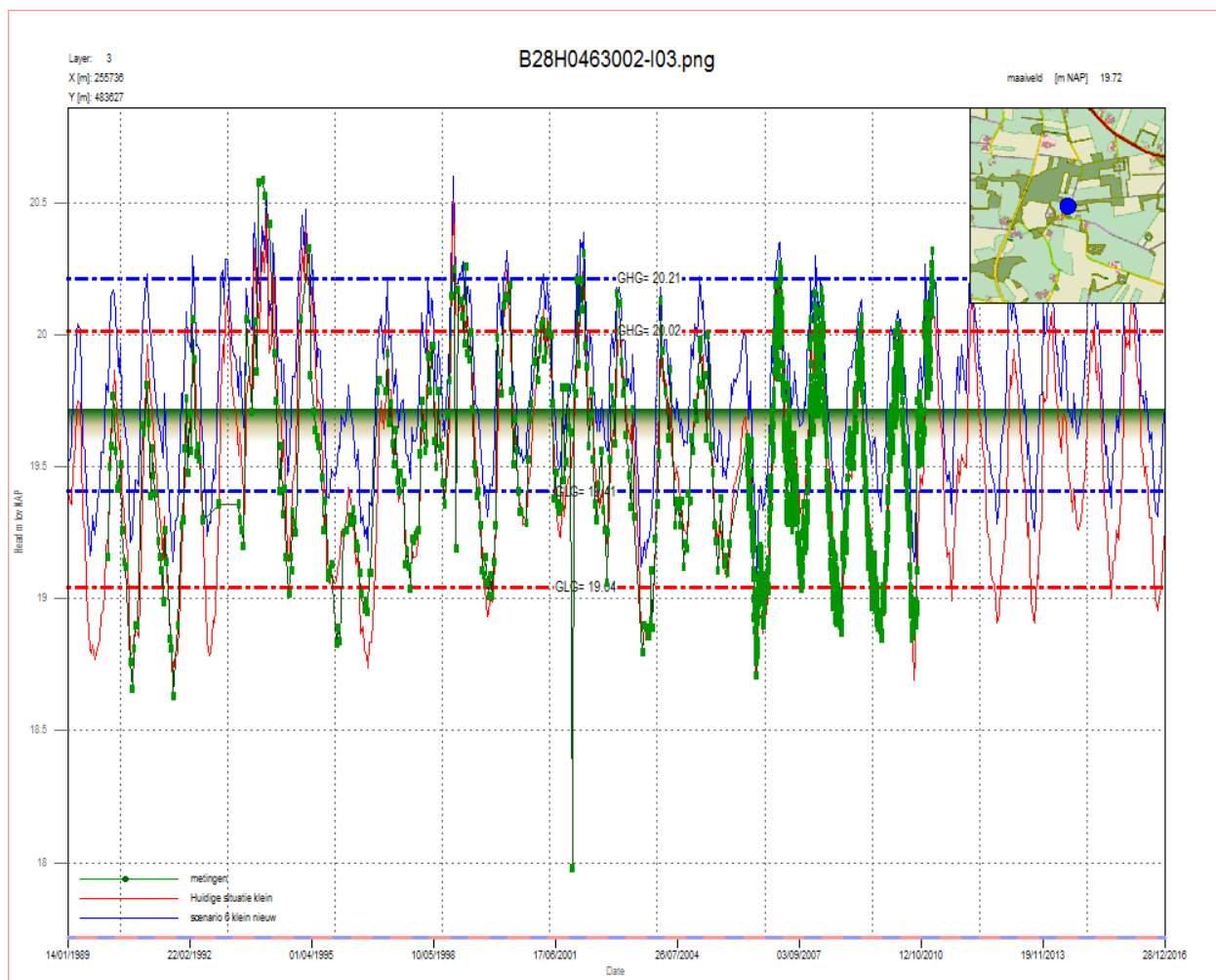
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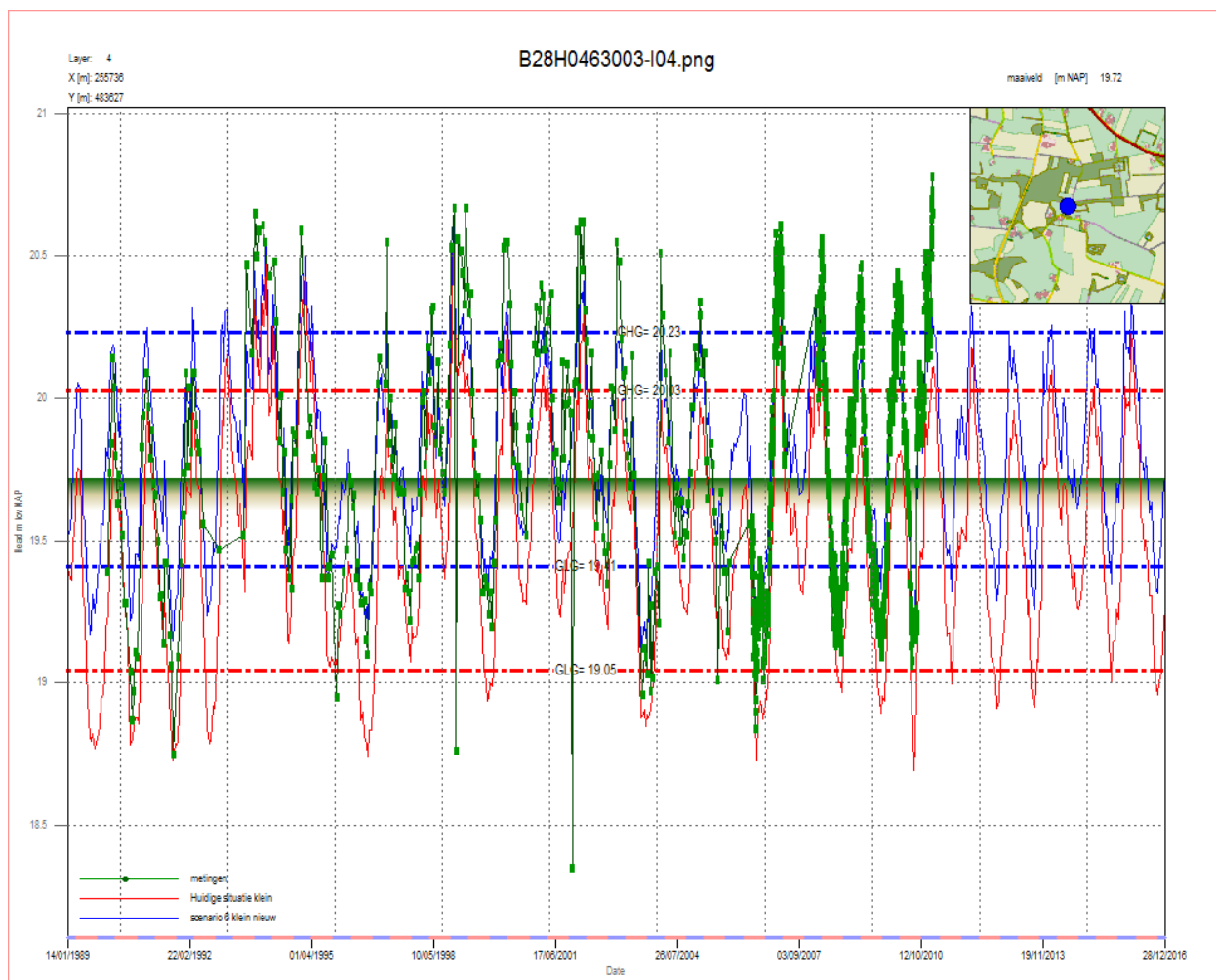


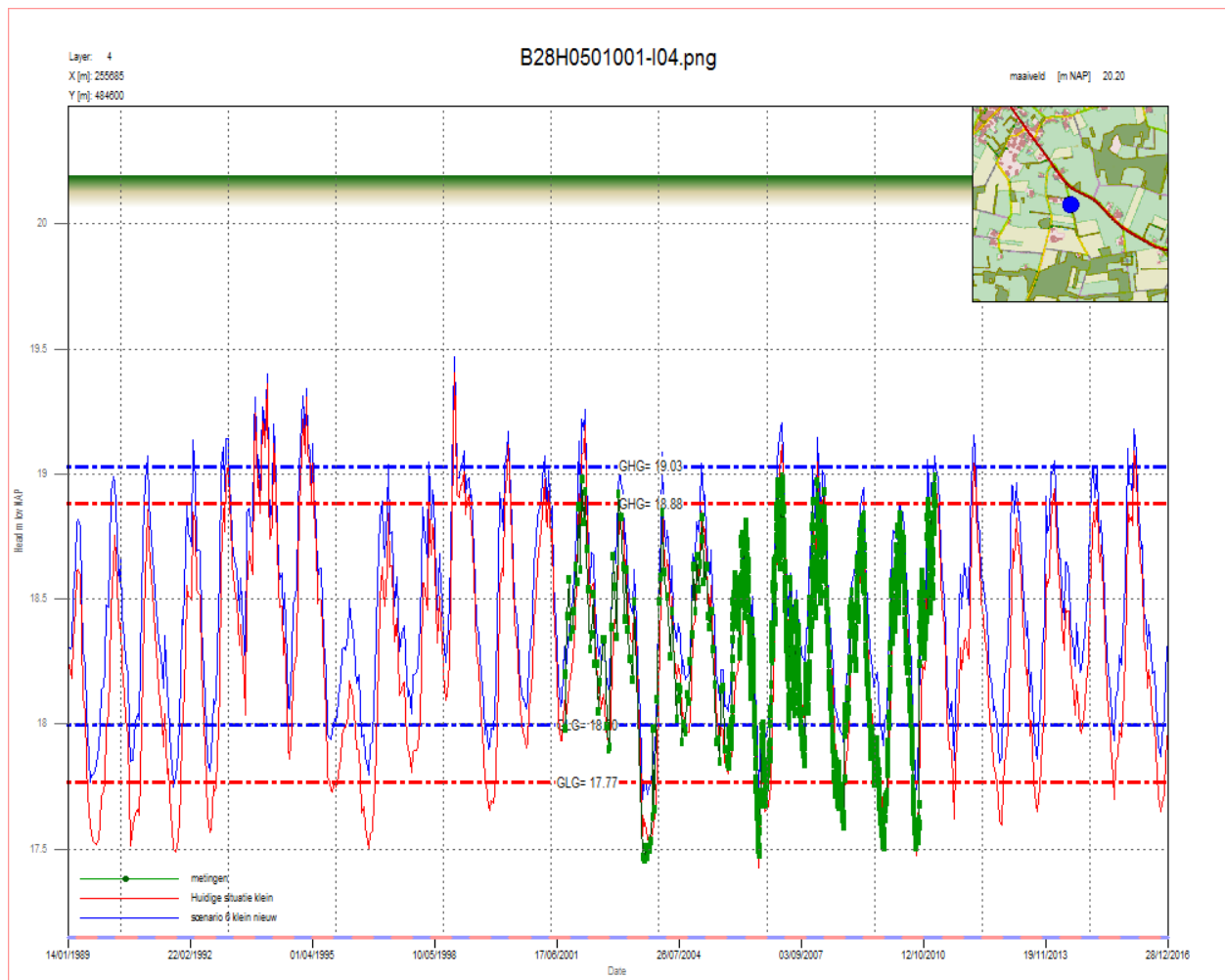


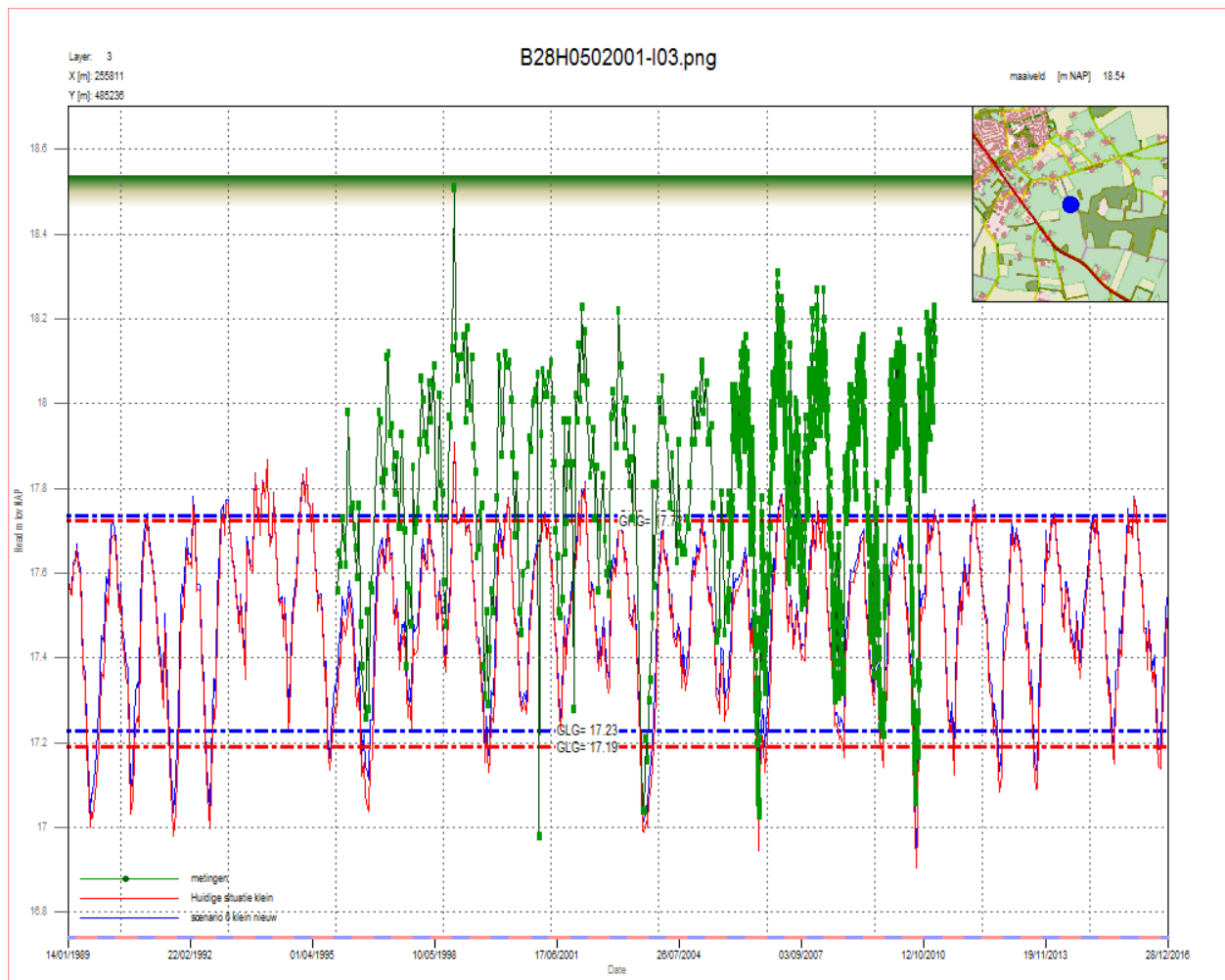


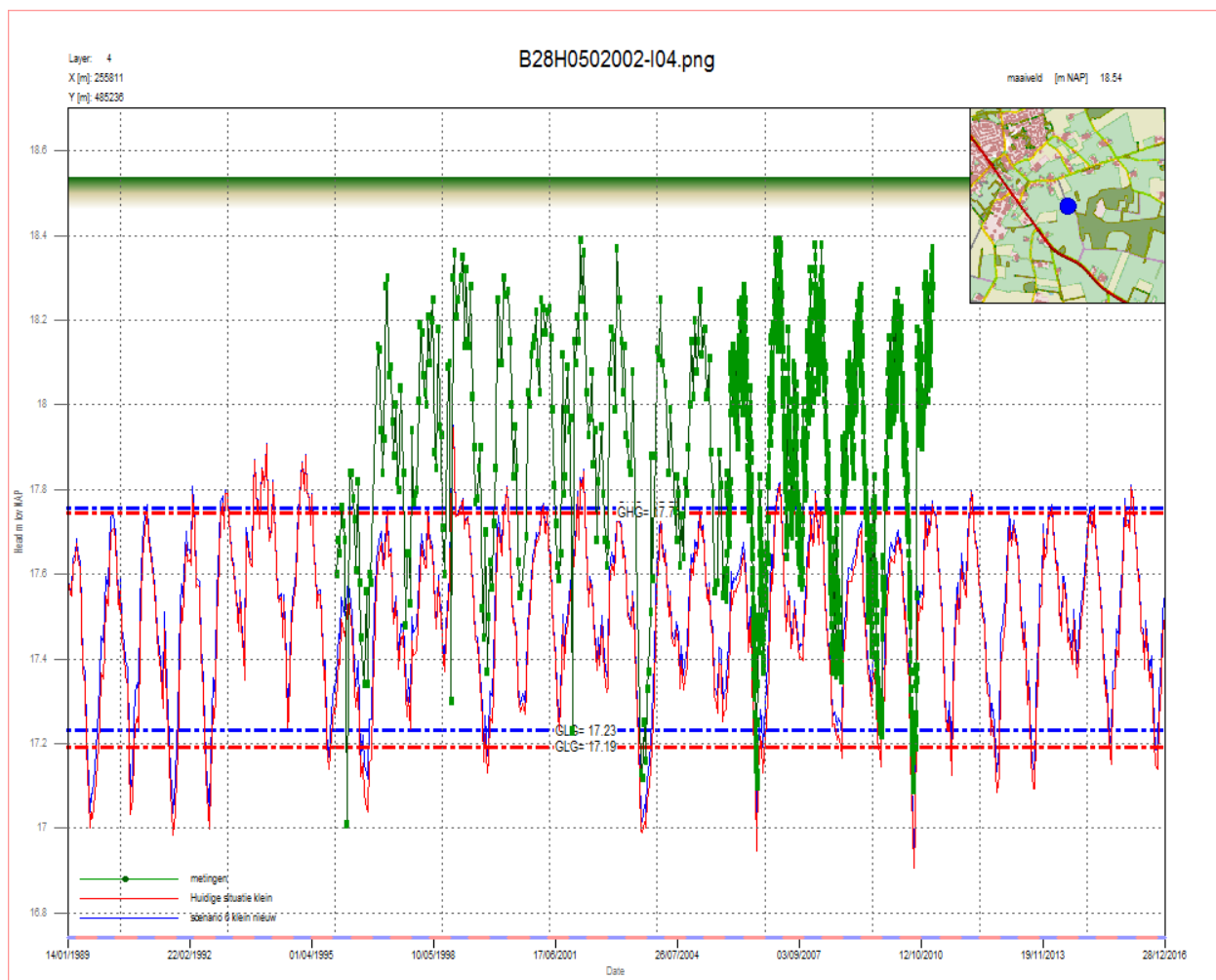


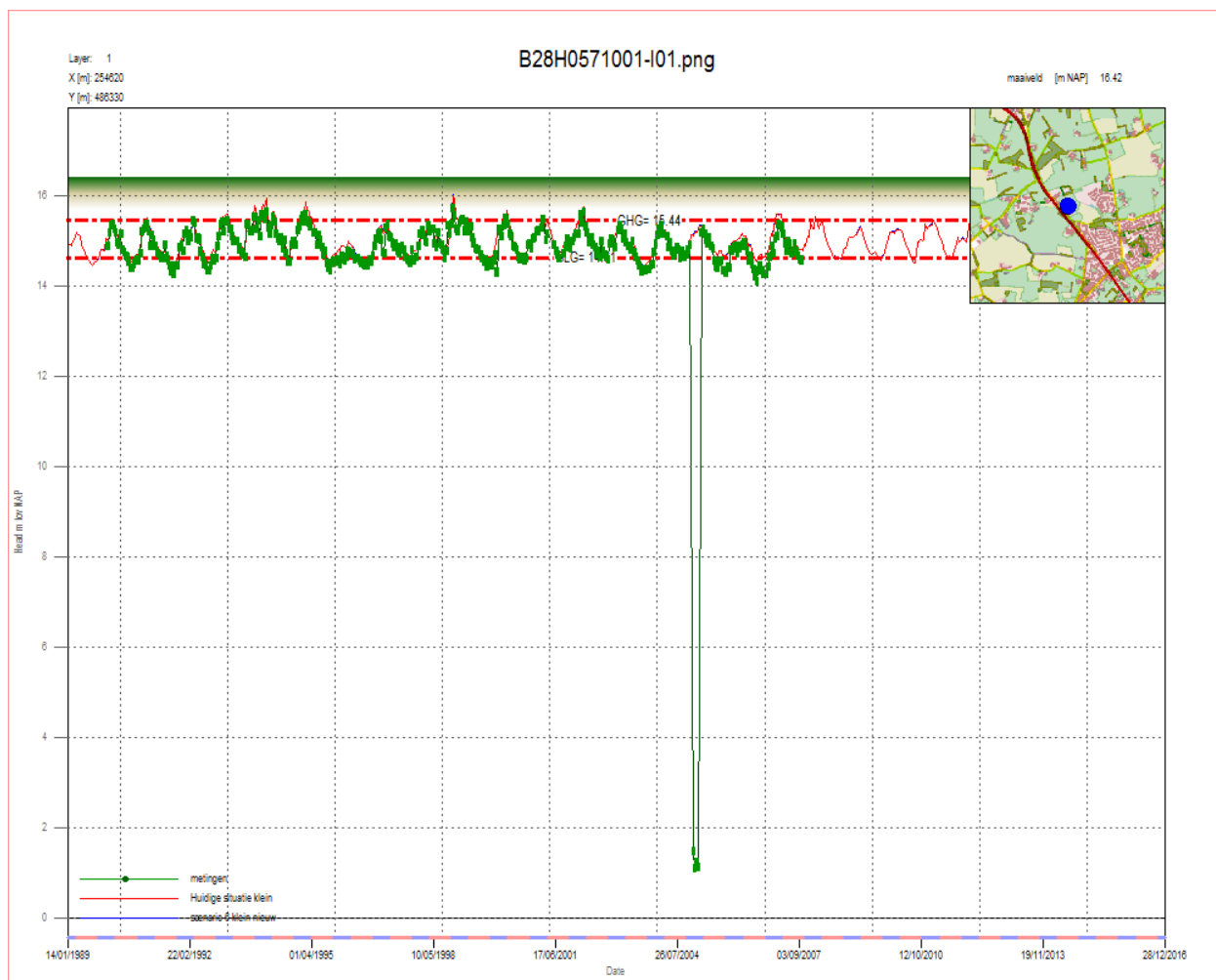


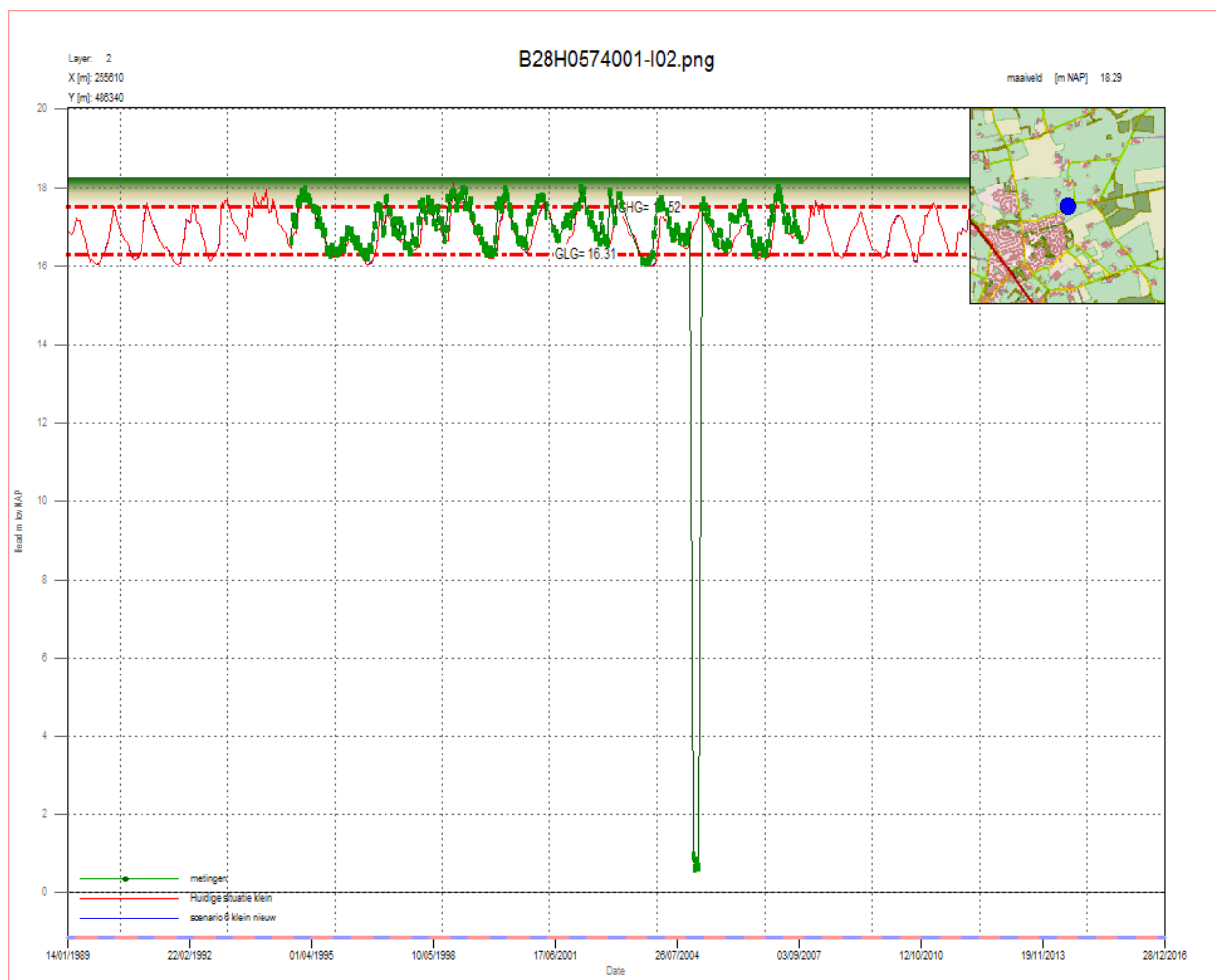


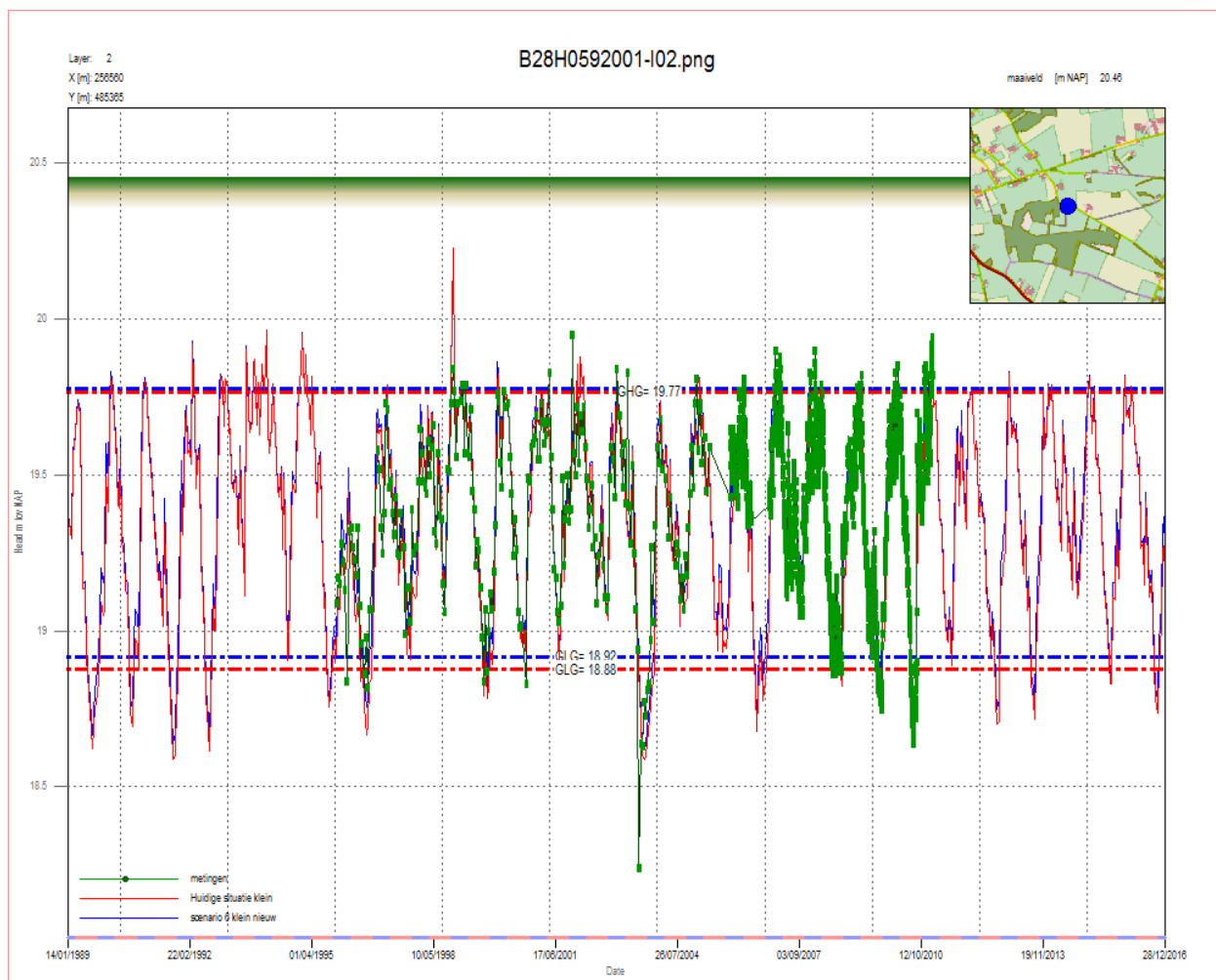


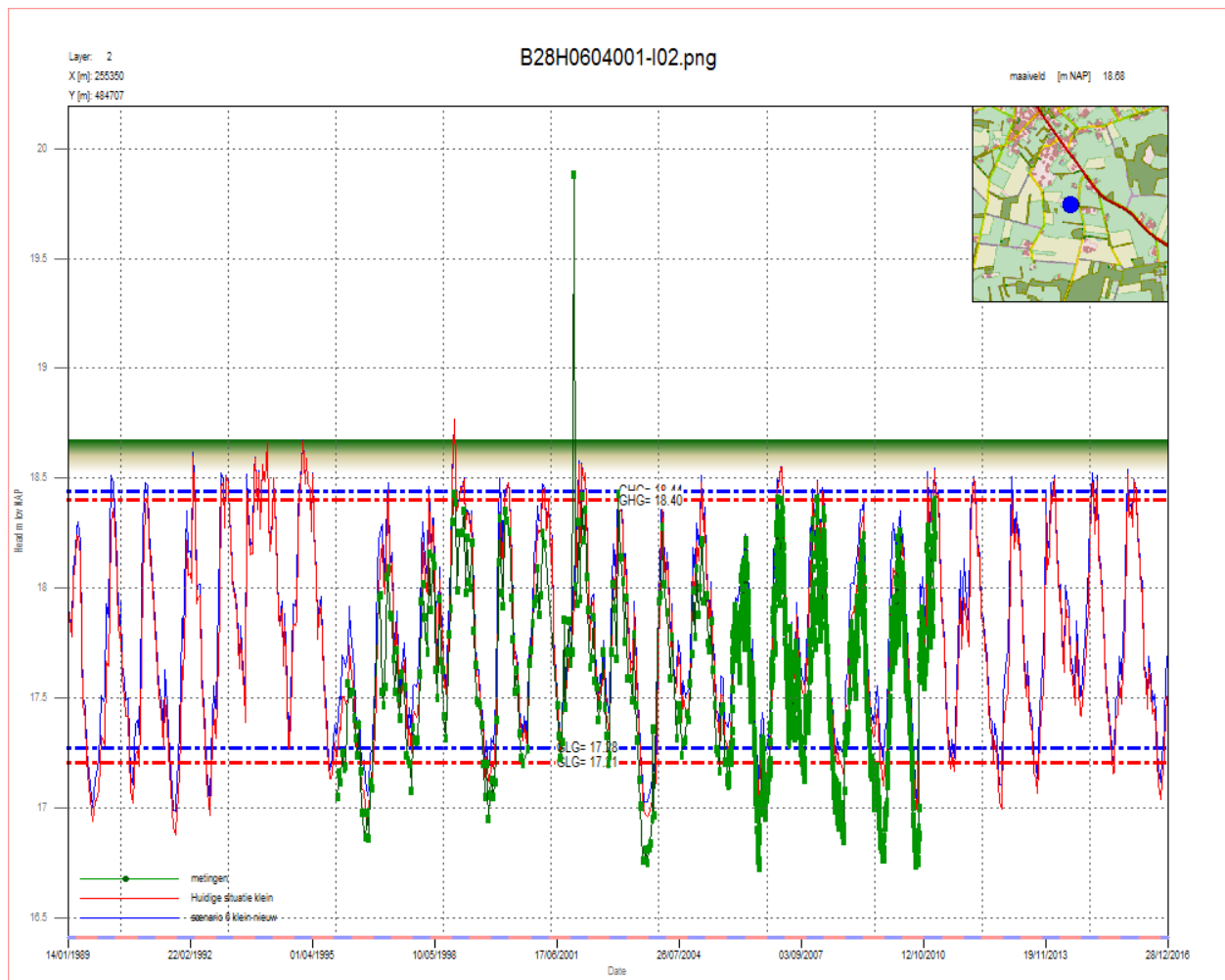


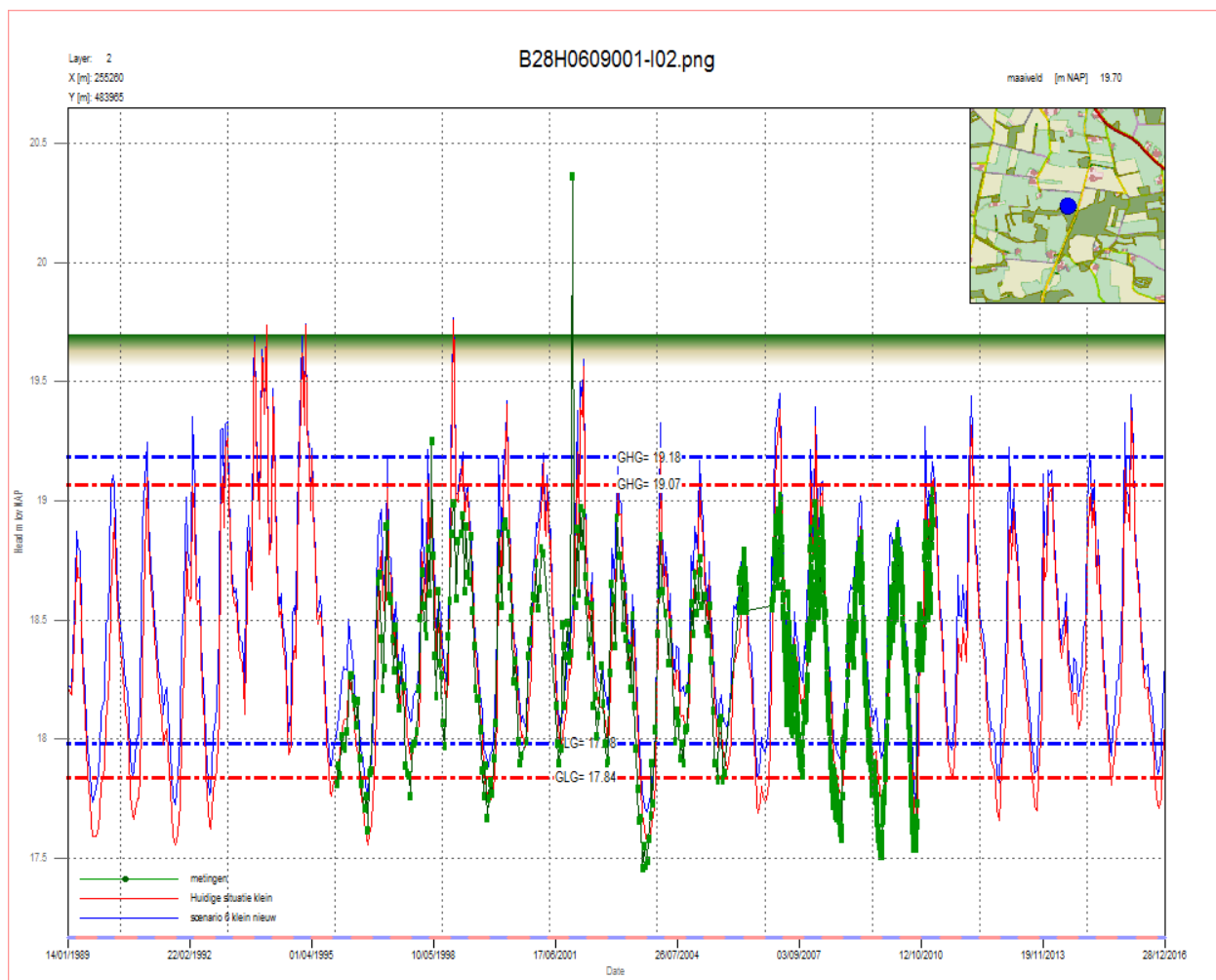


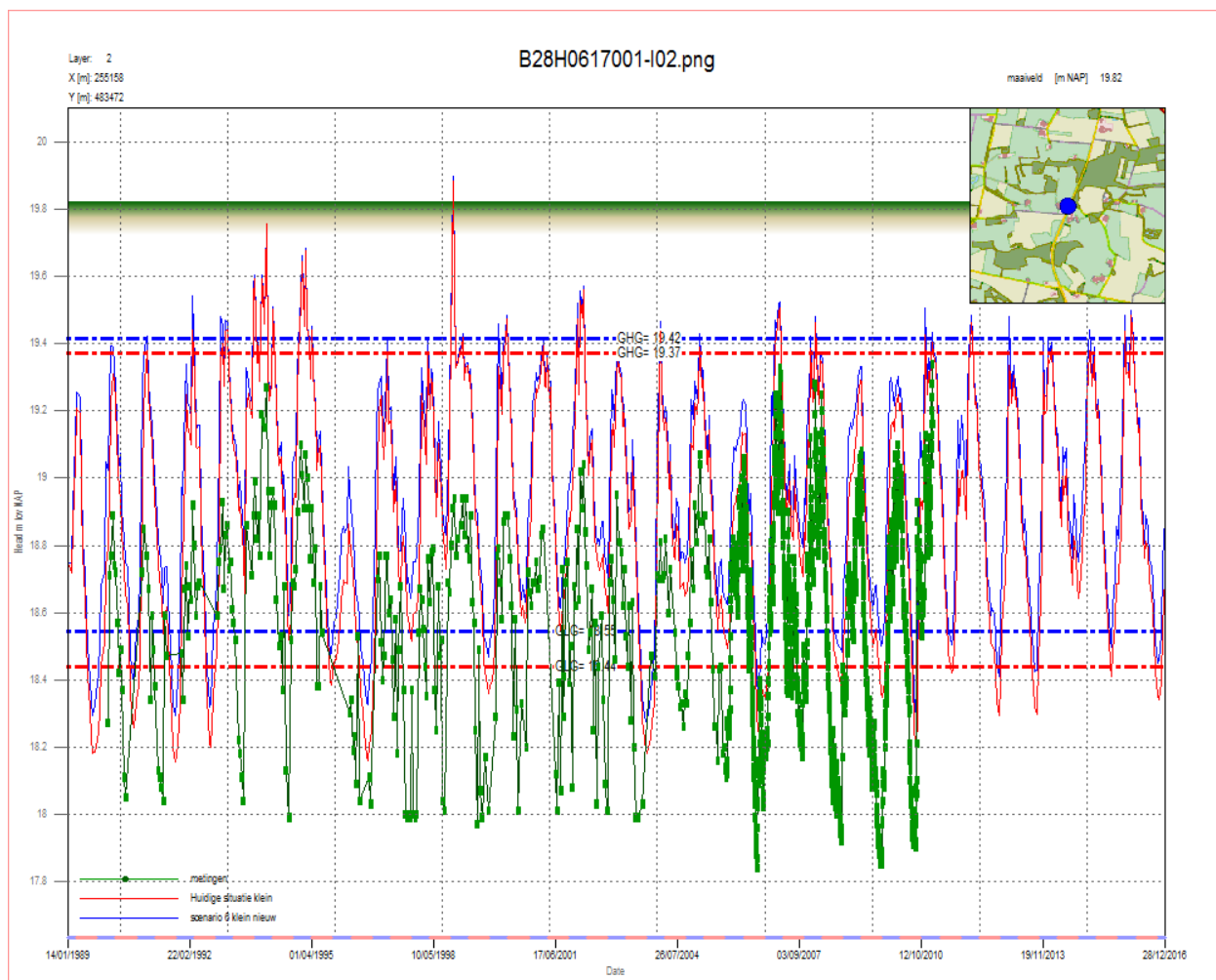


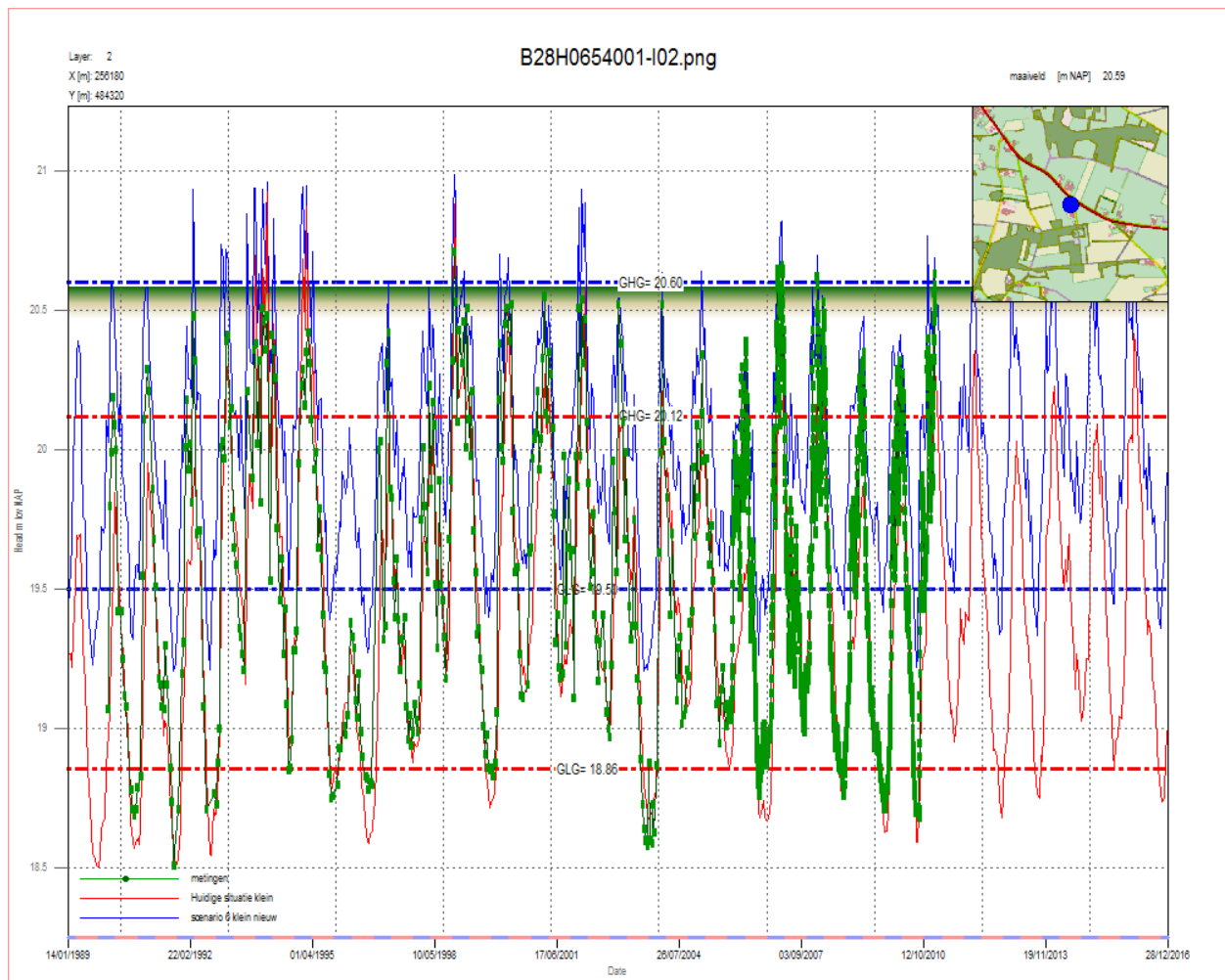


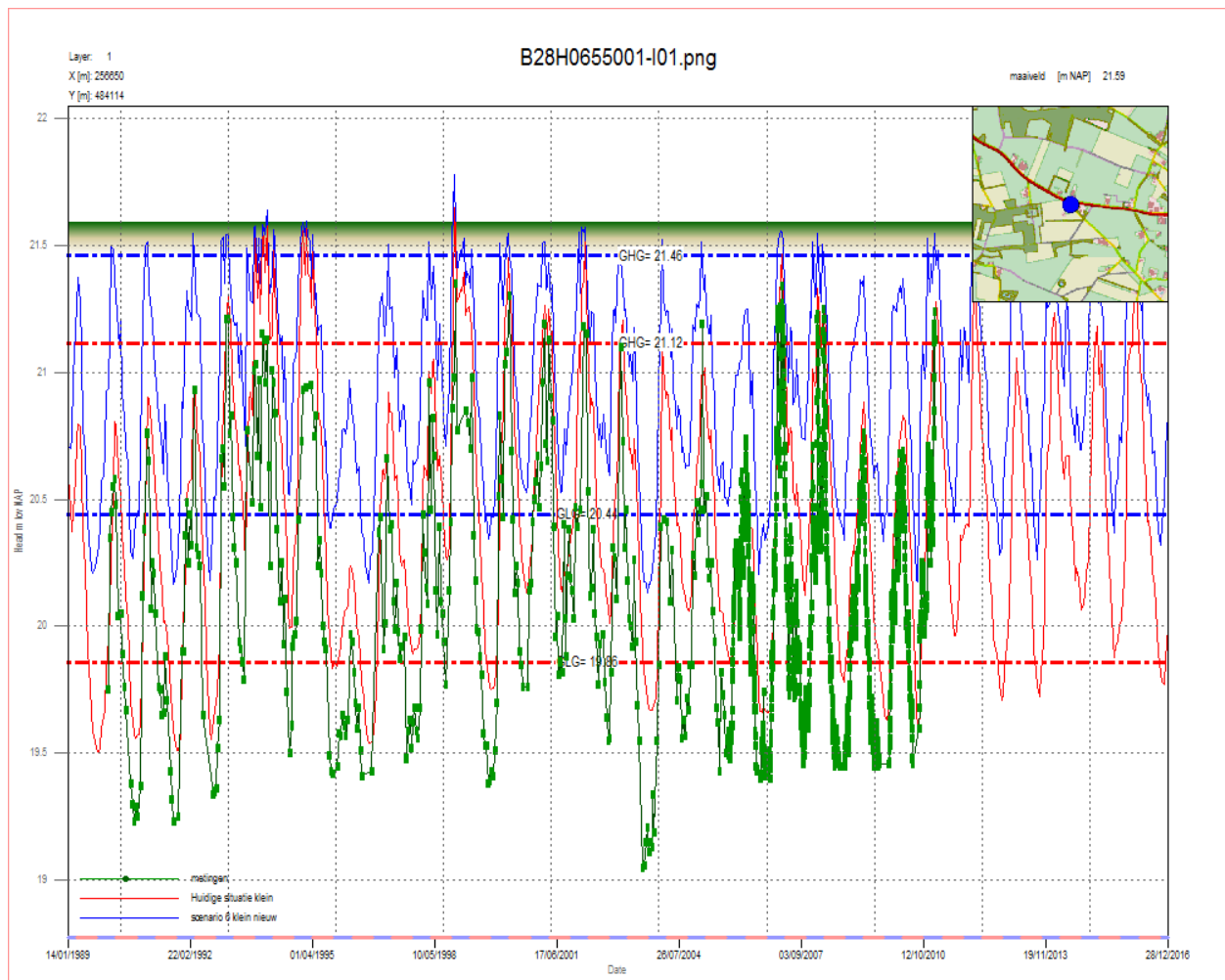


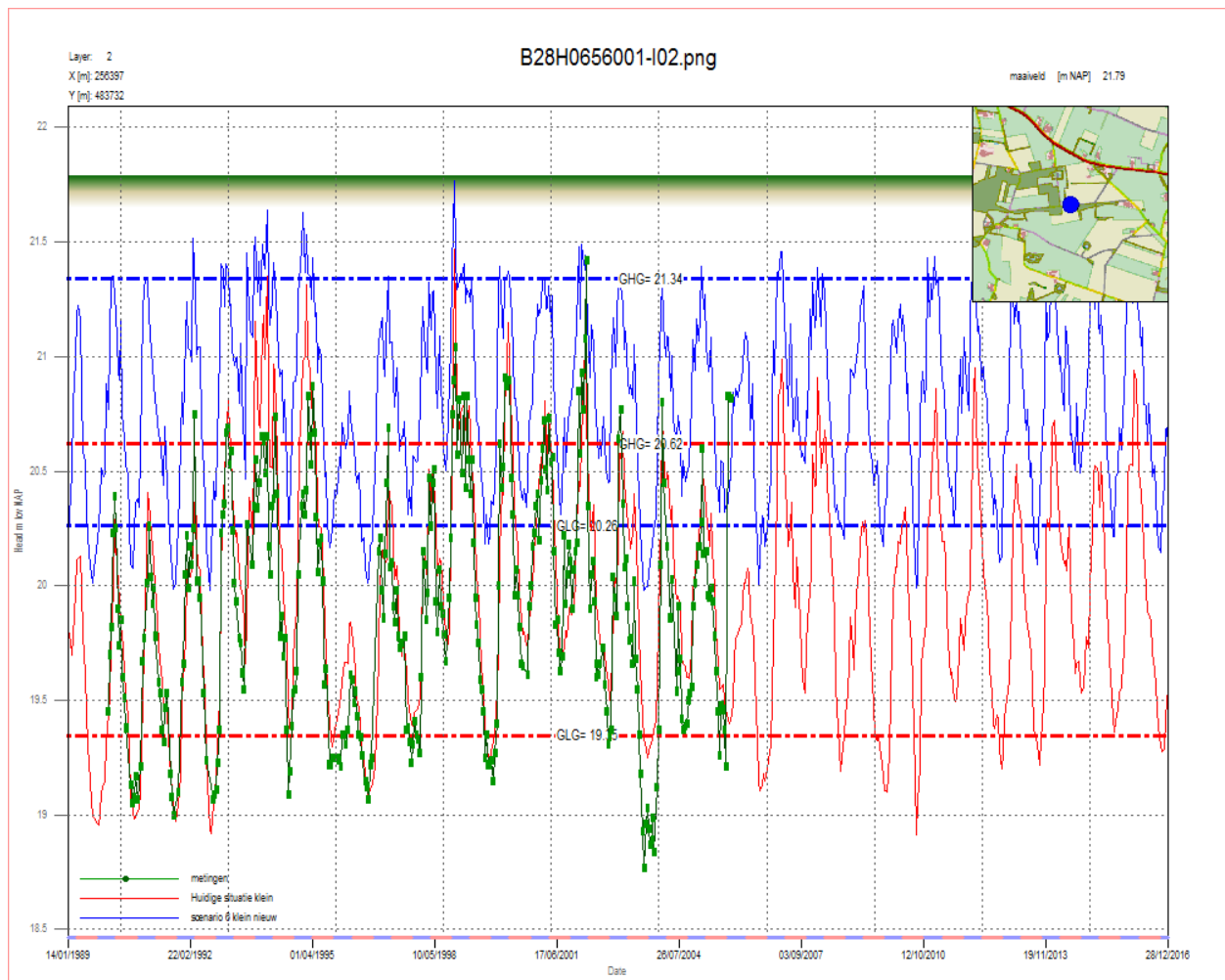


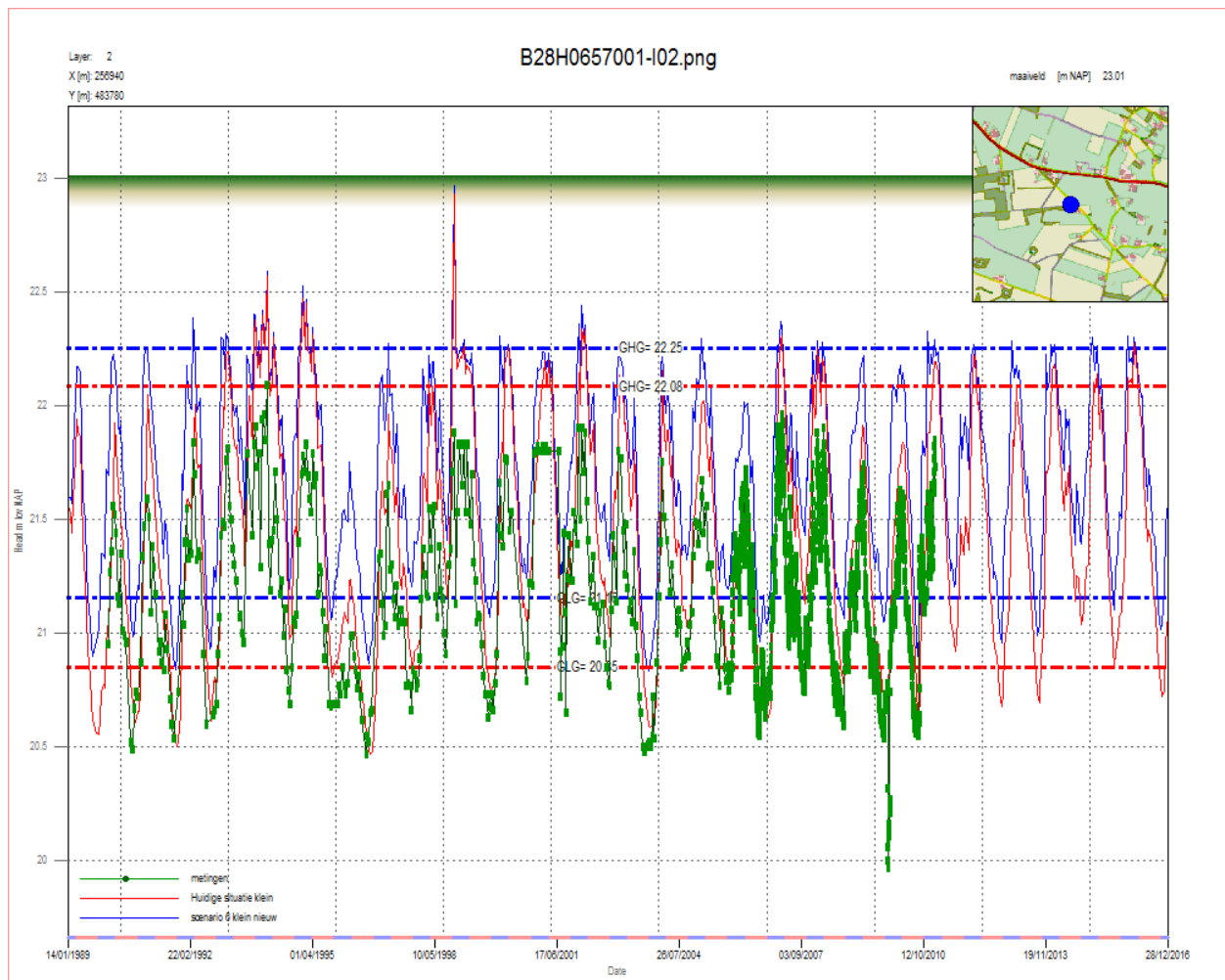








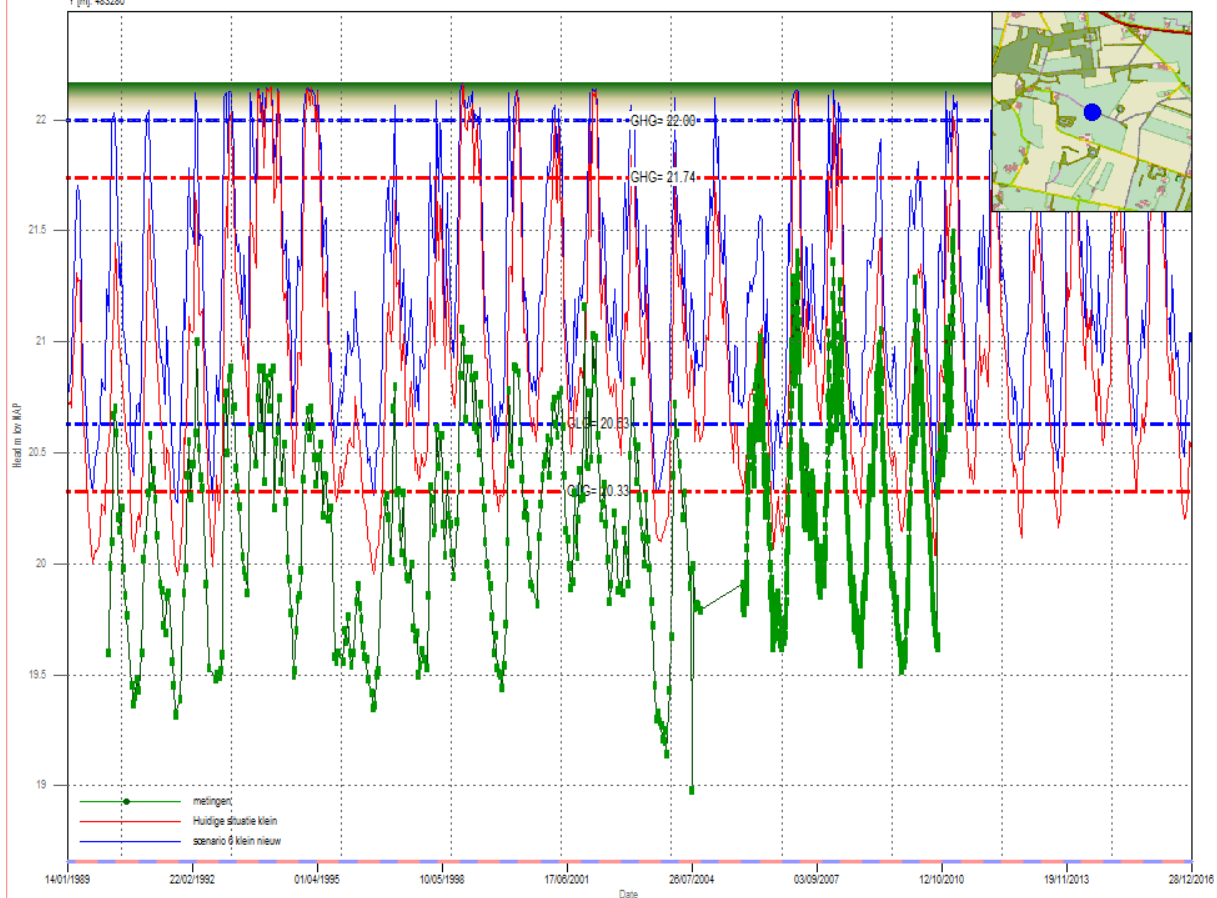


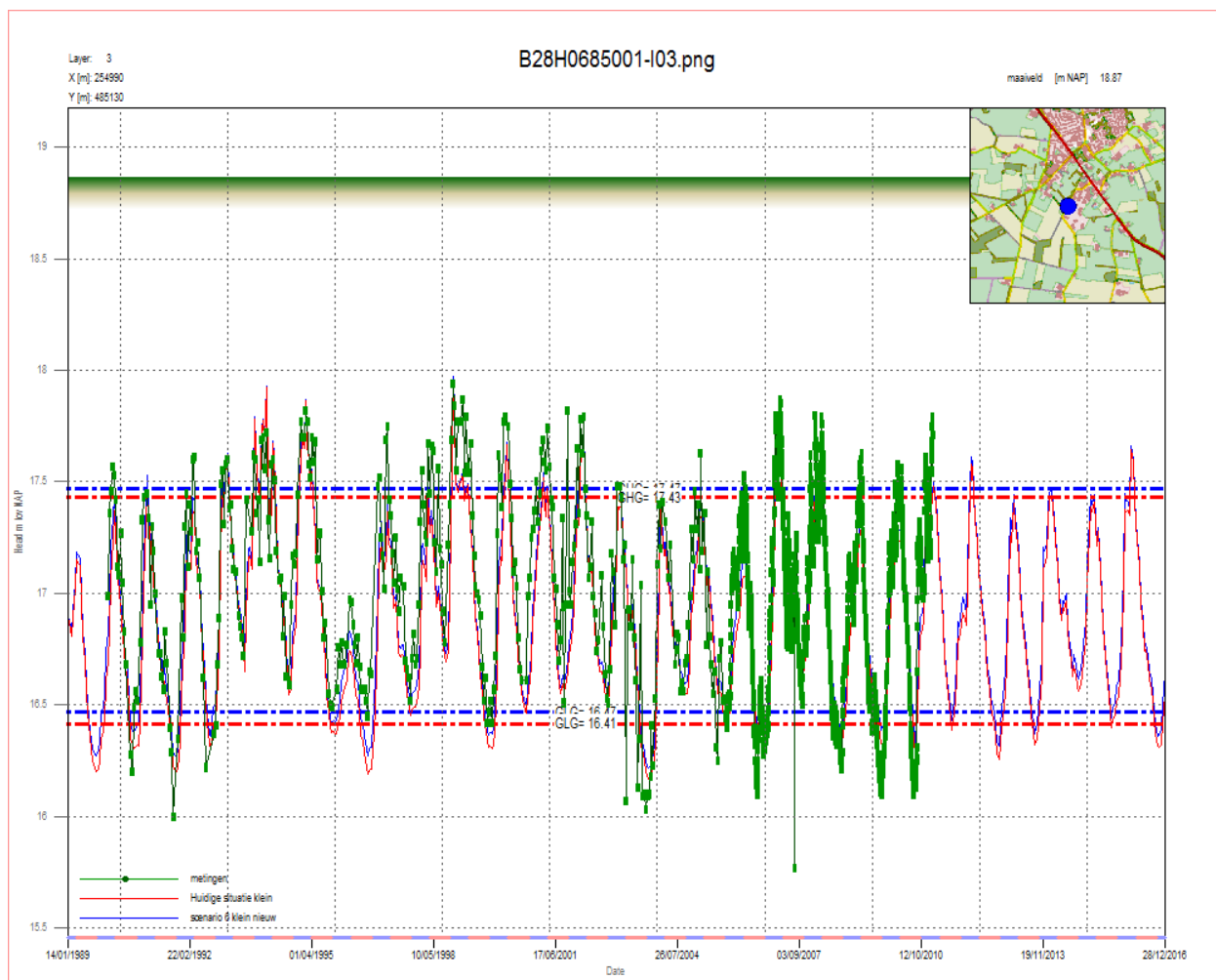


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B28H0658001-I02.png

maasveld [m NAP] 22.17

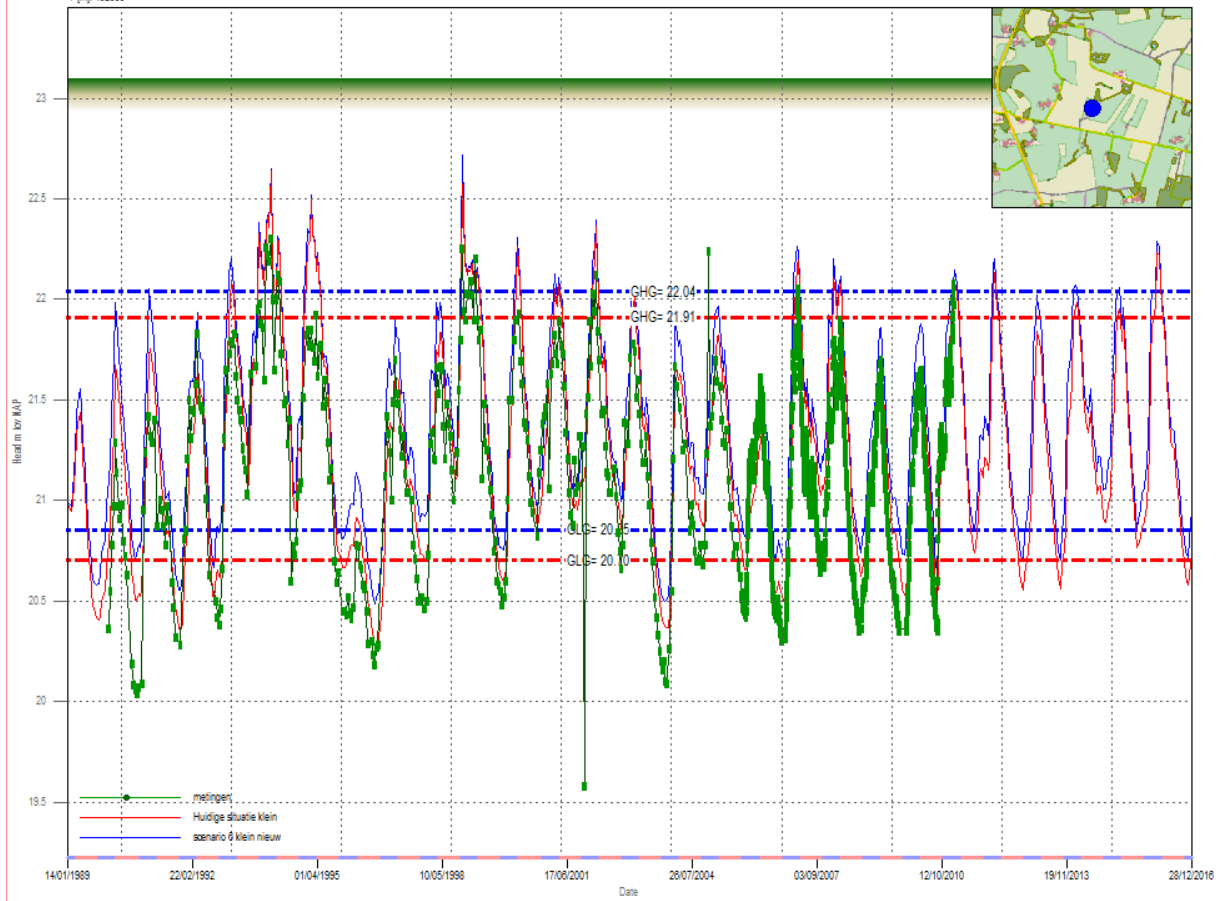


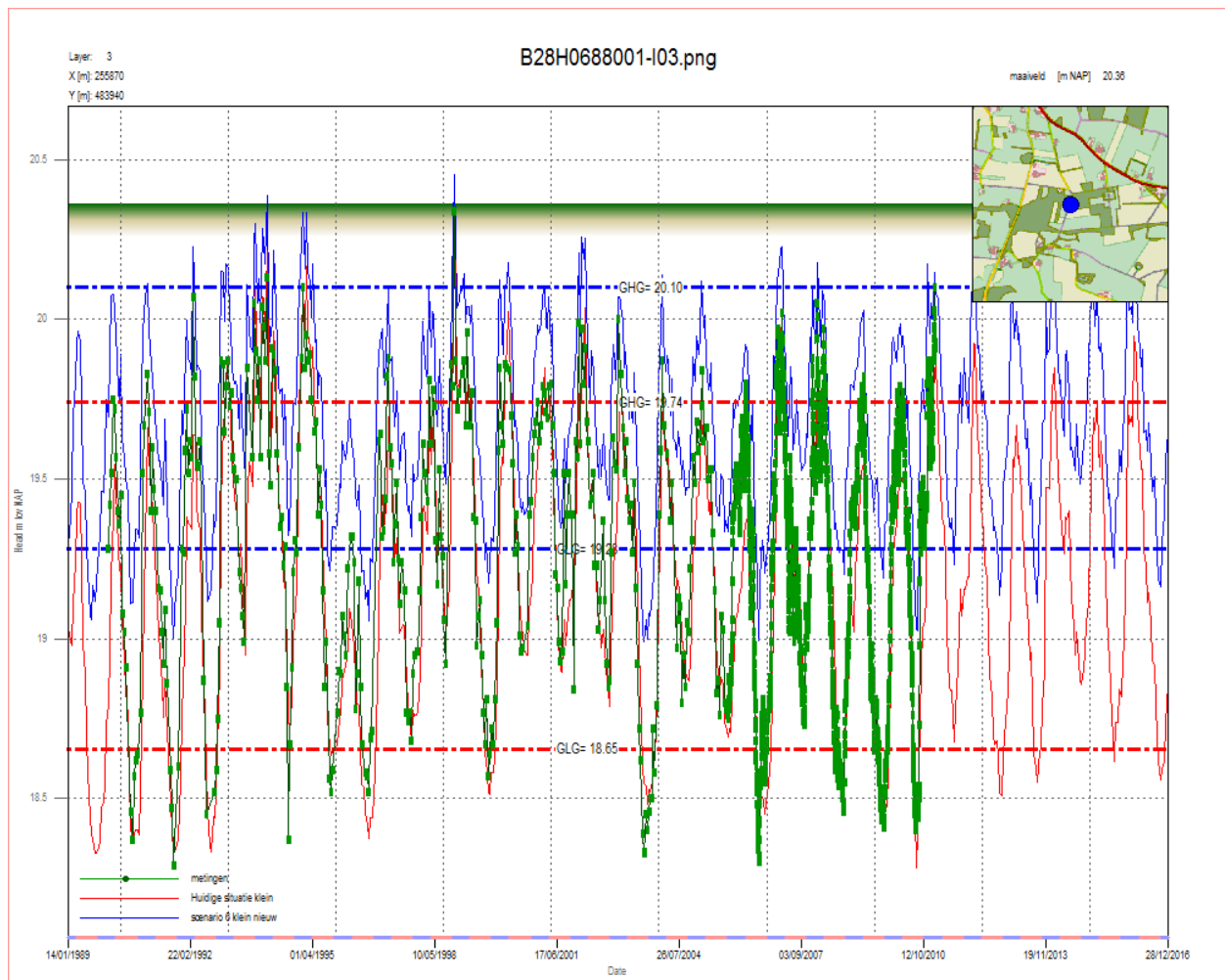


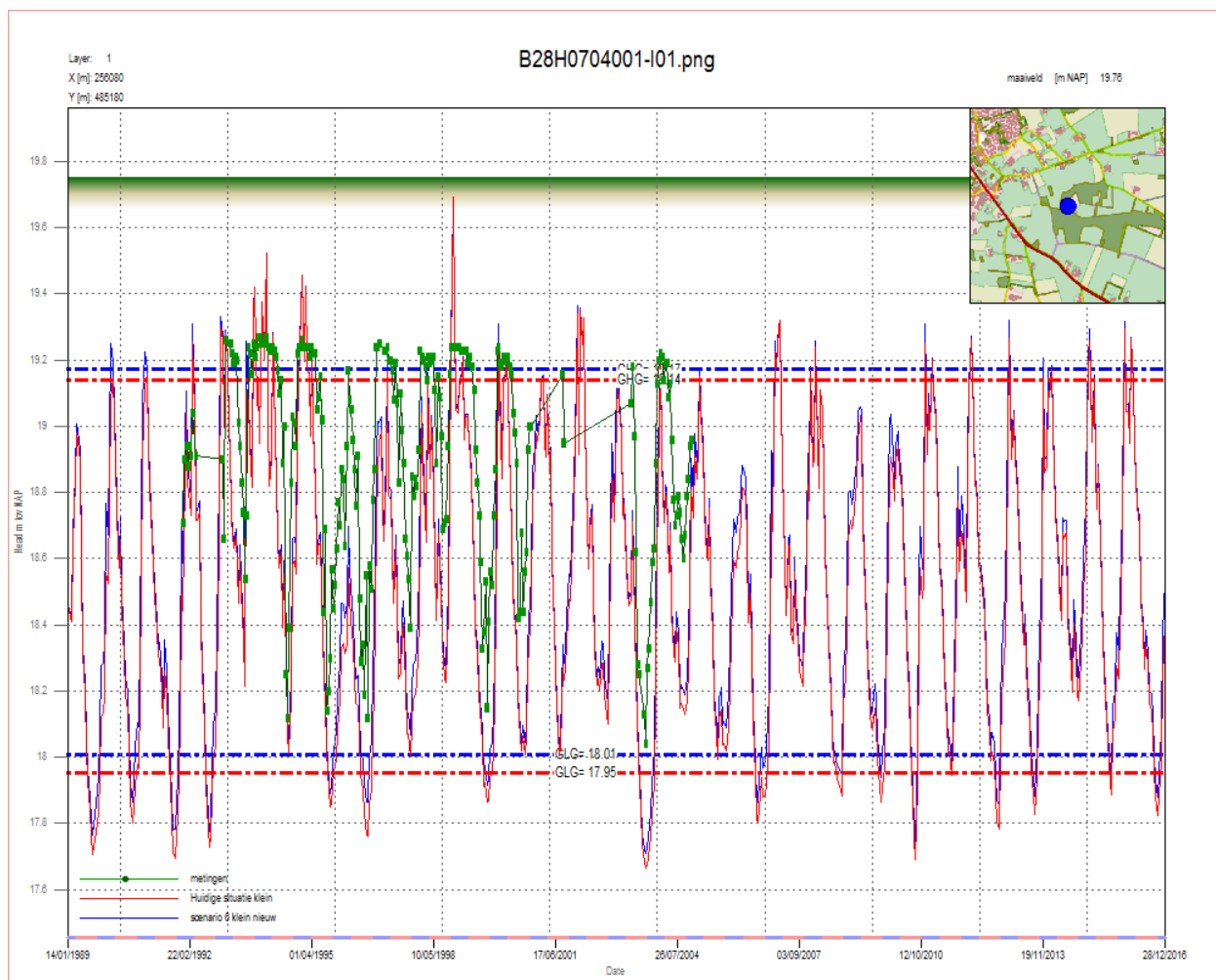
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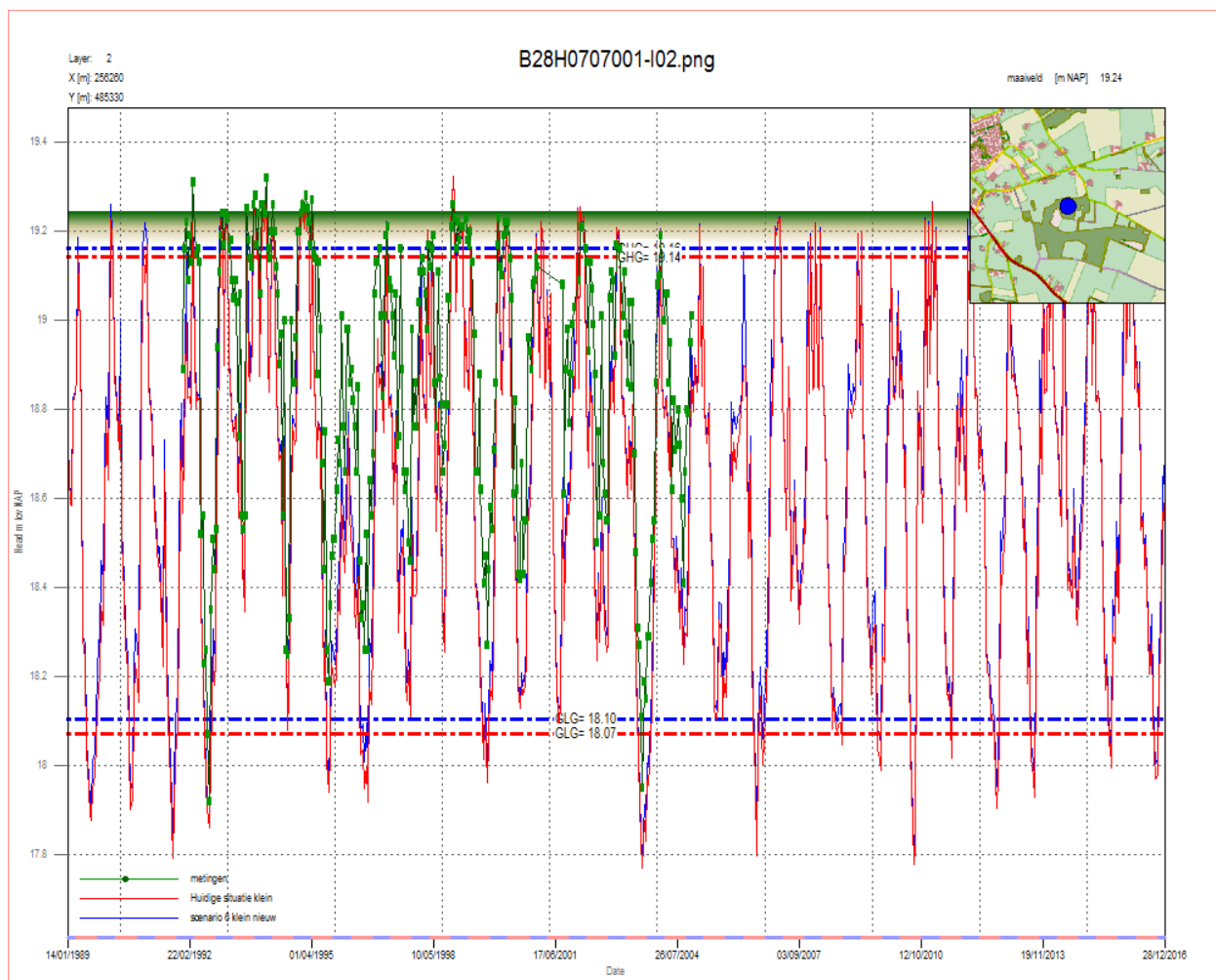
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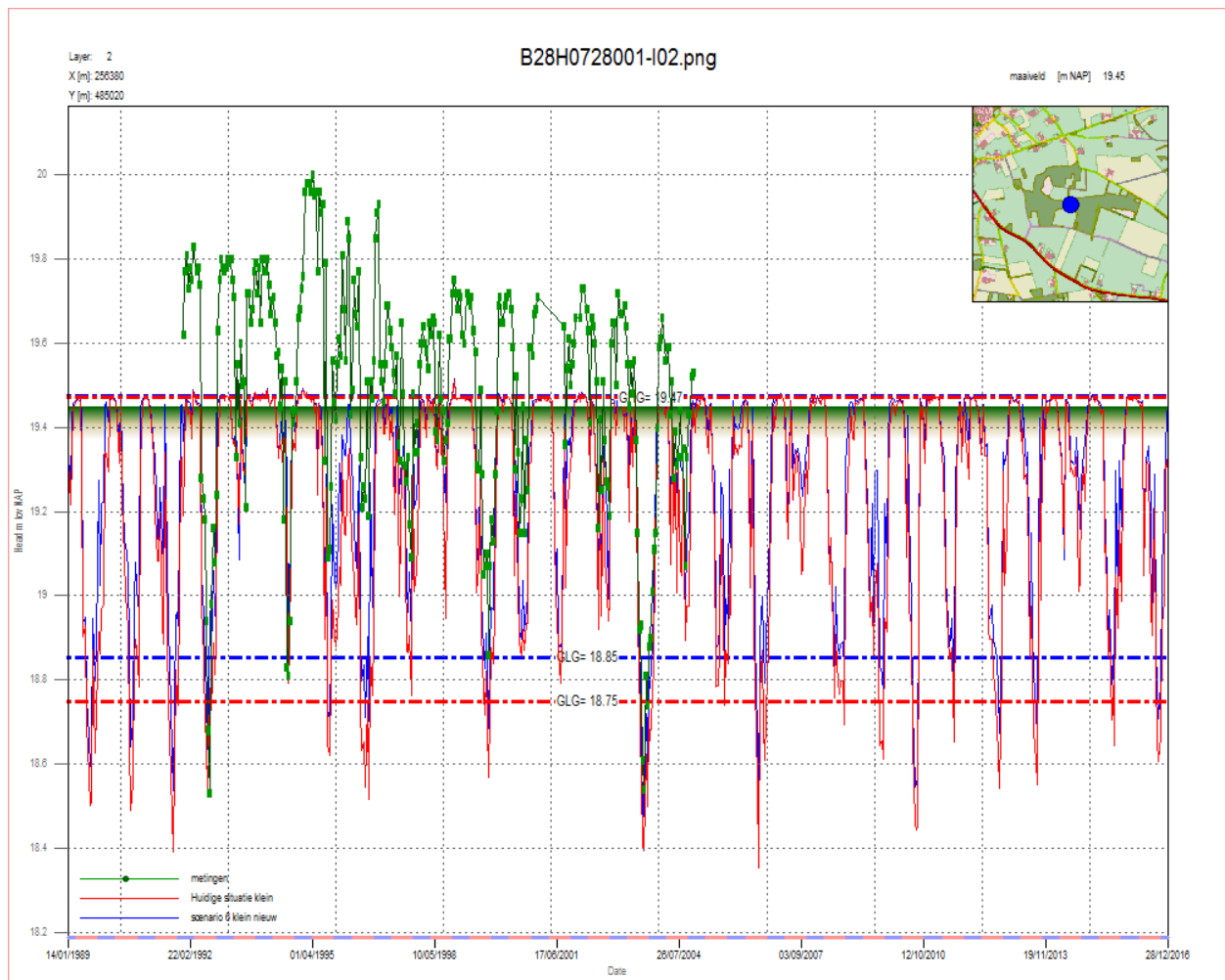
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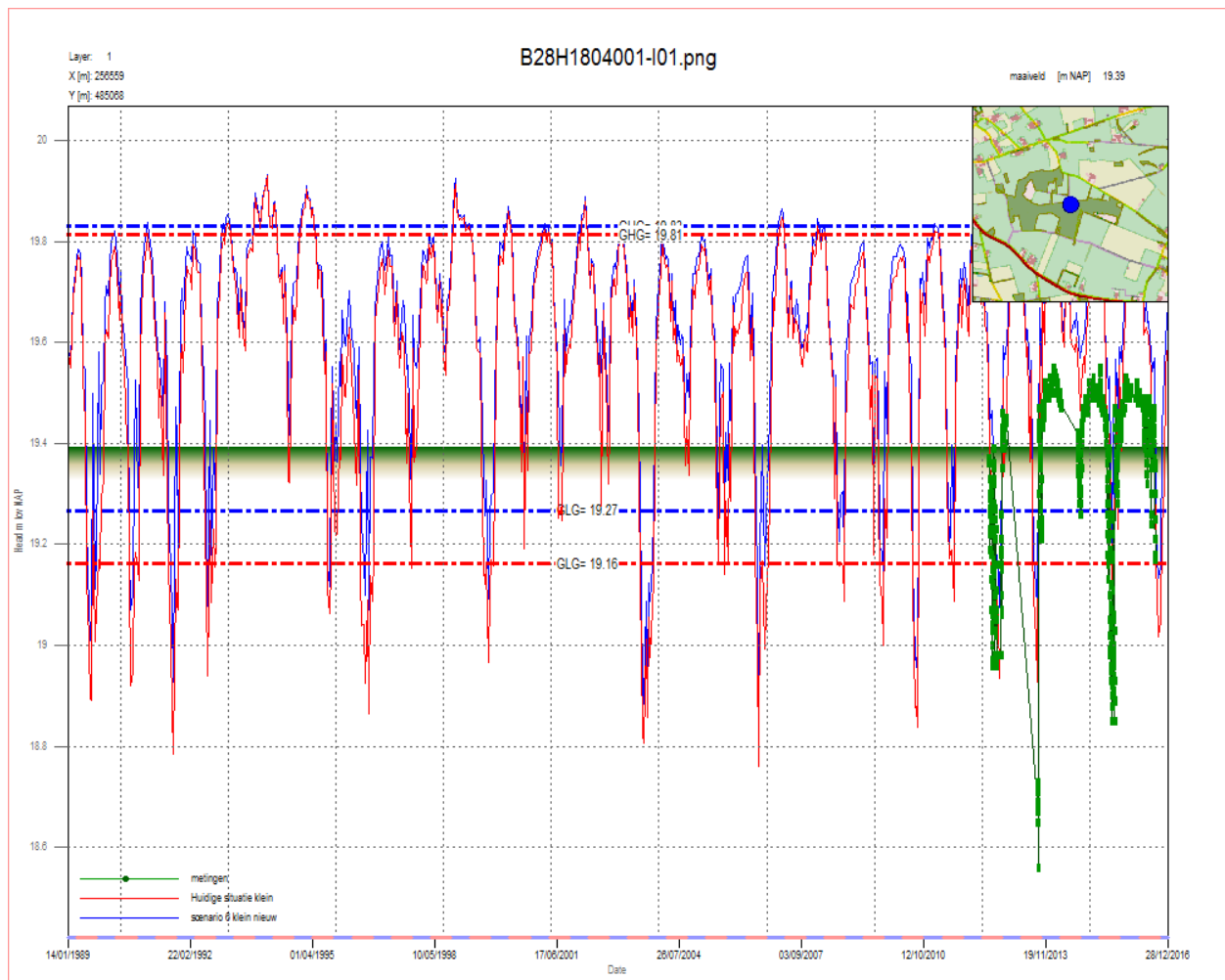


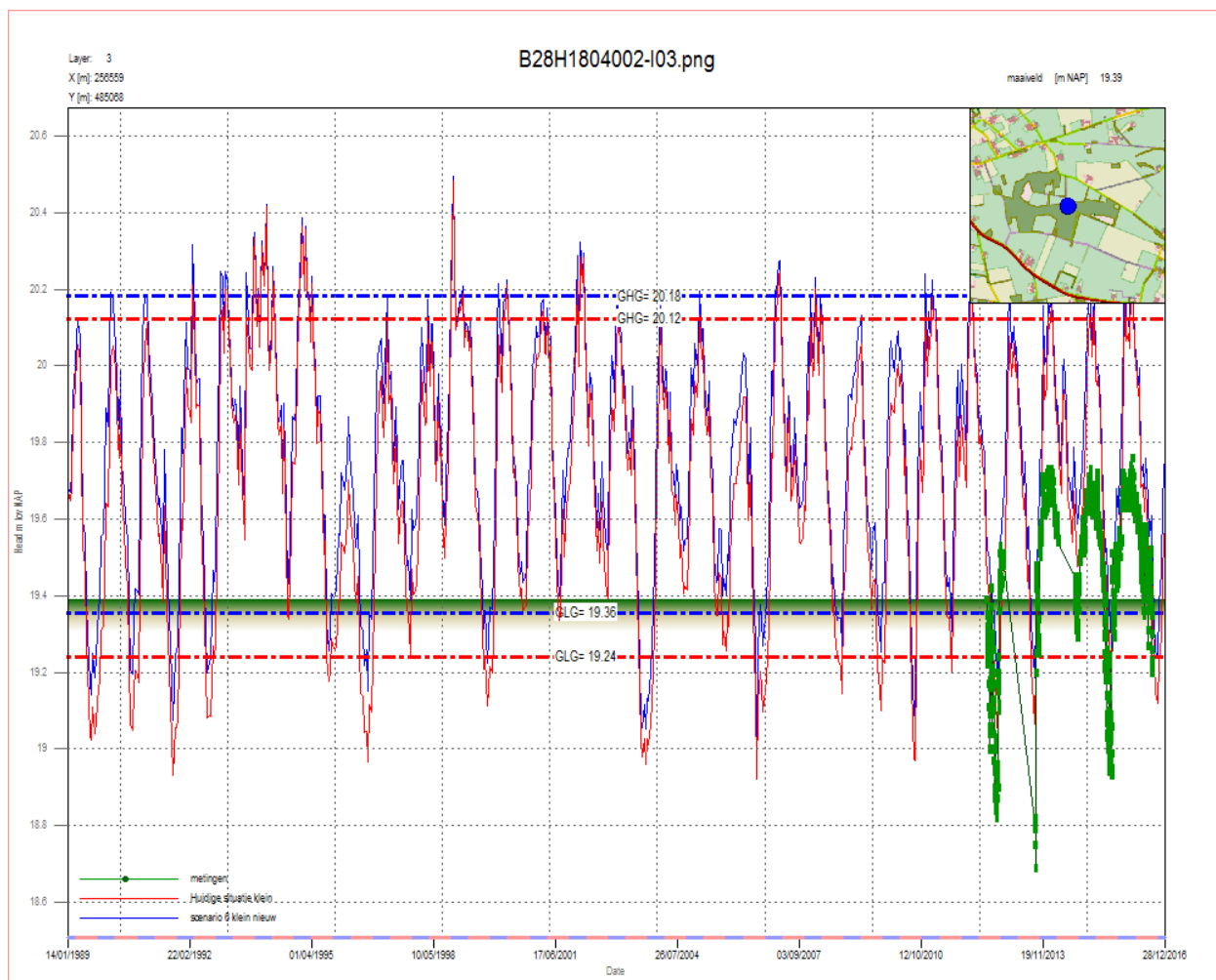


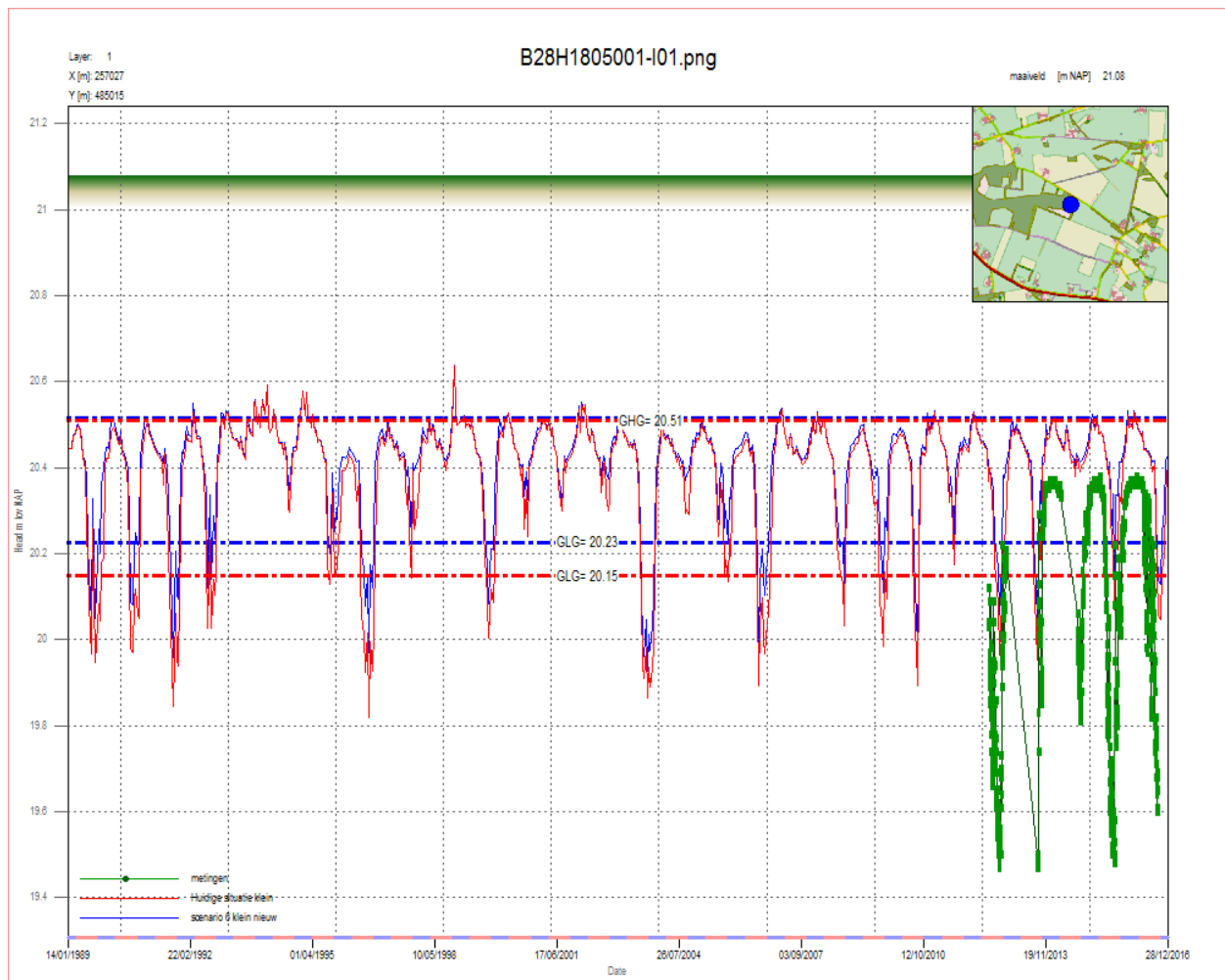


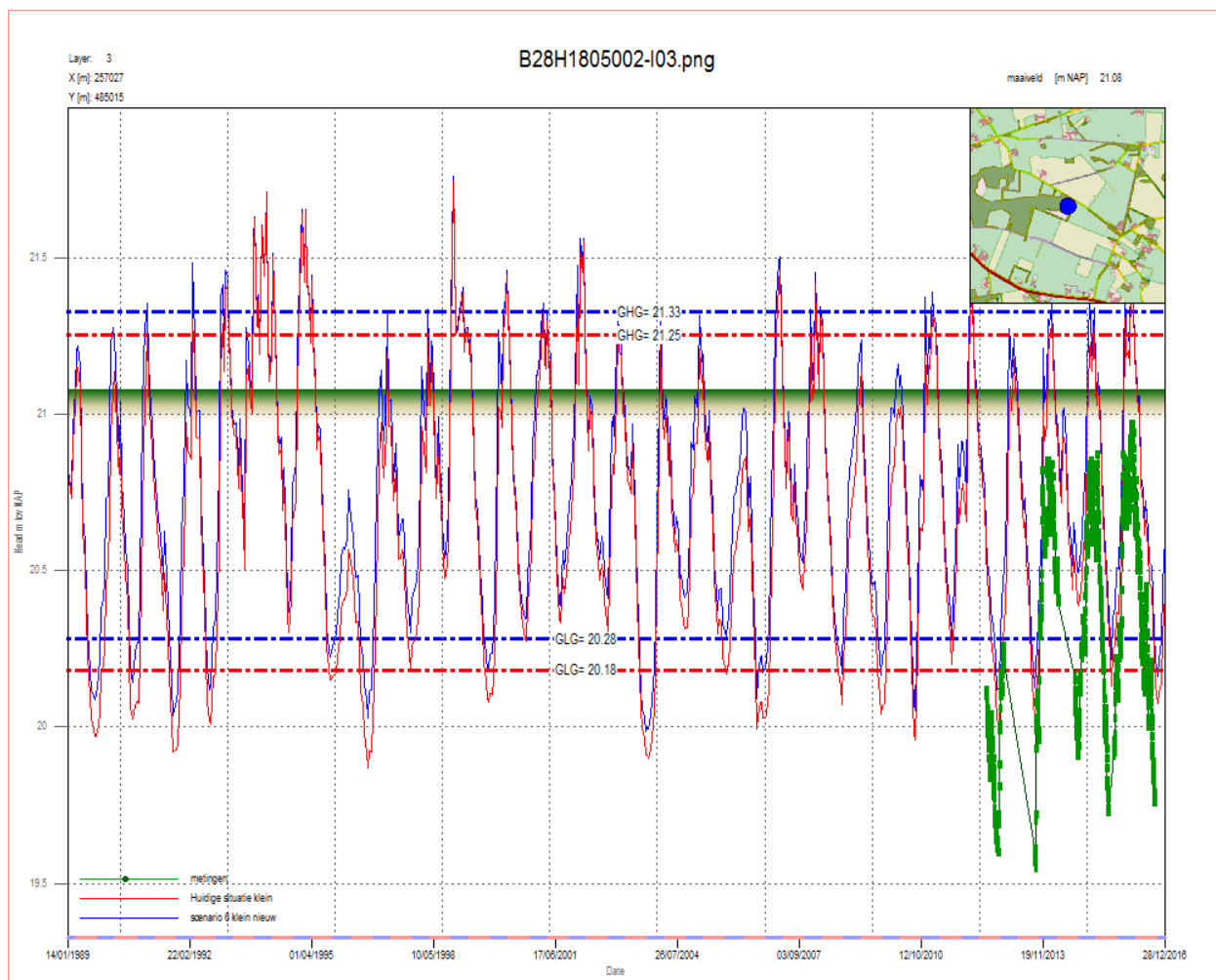


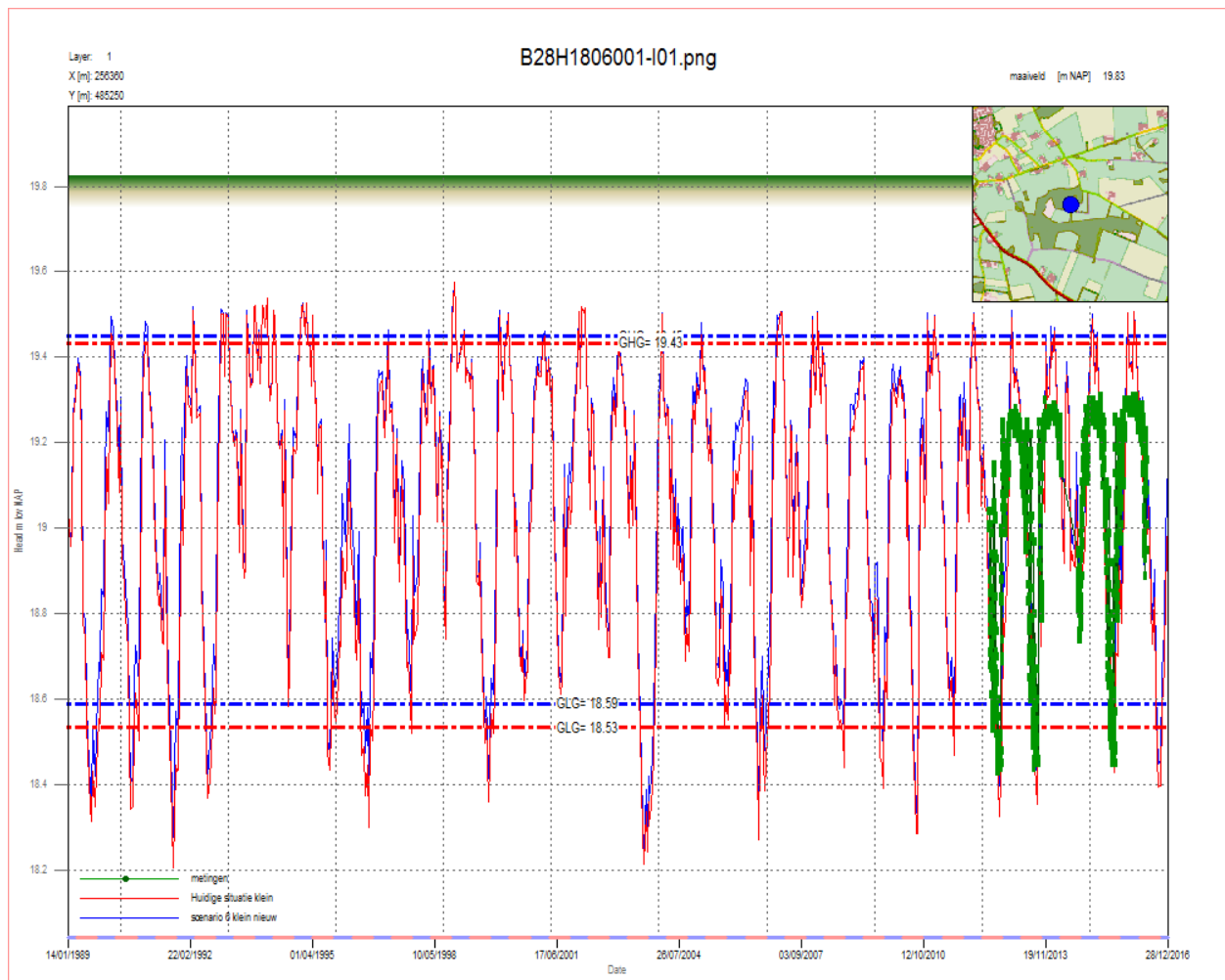


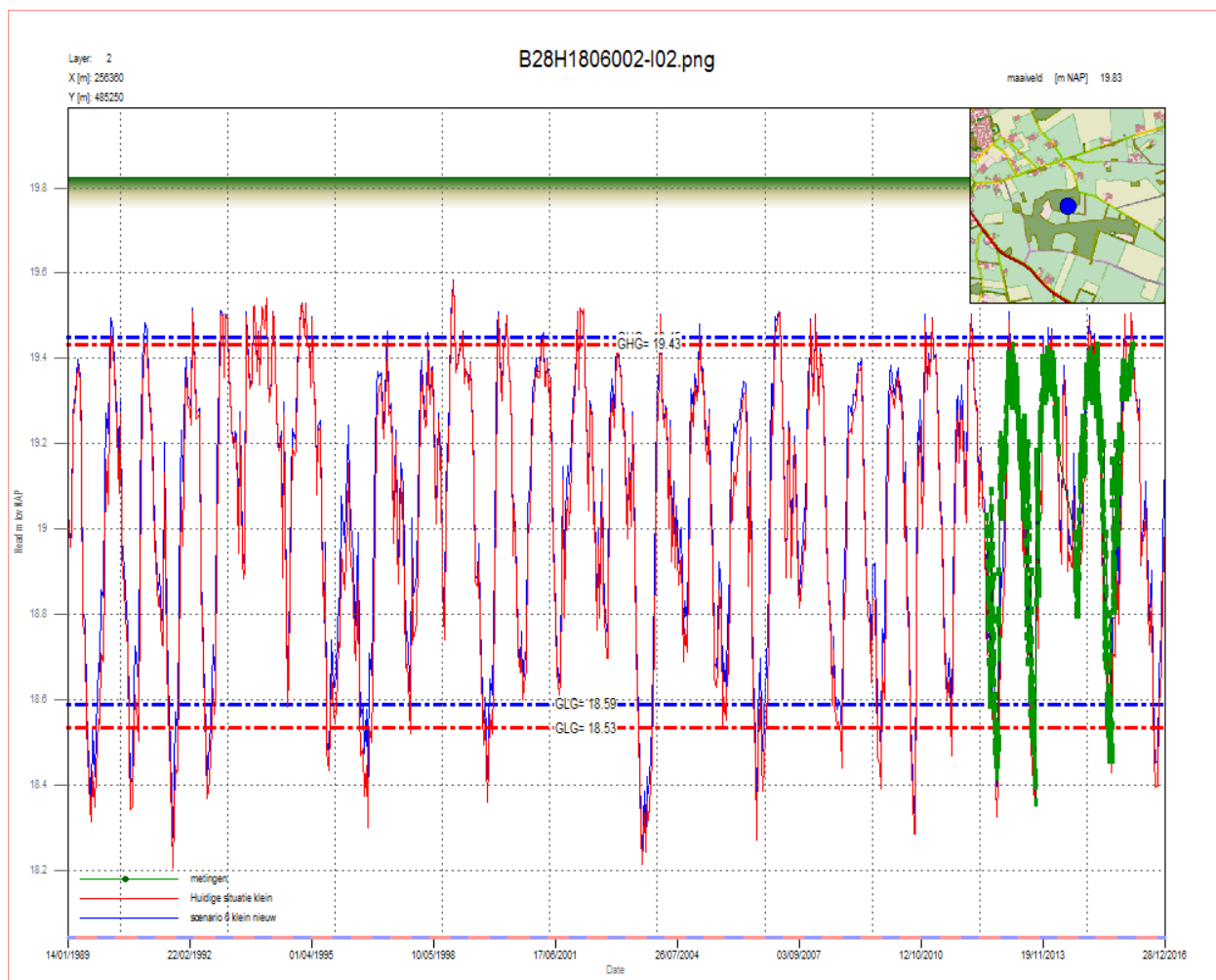


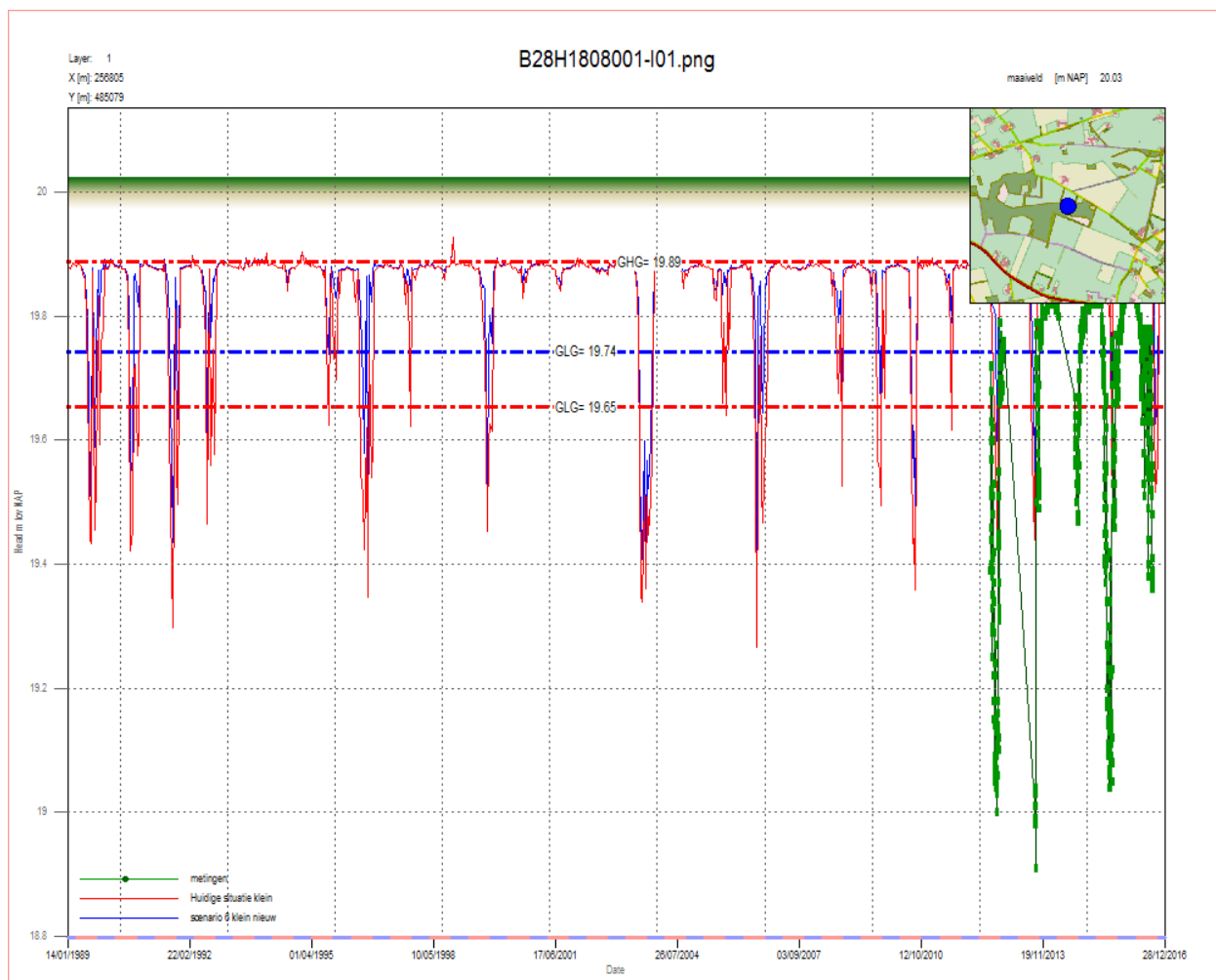


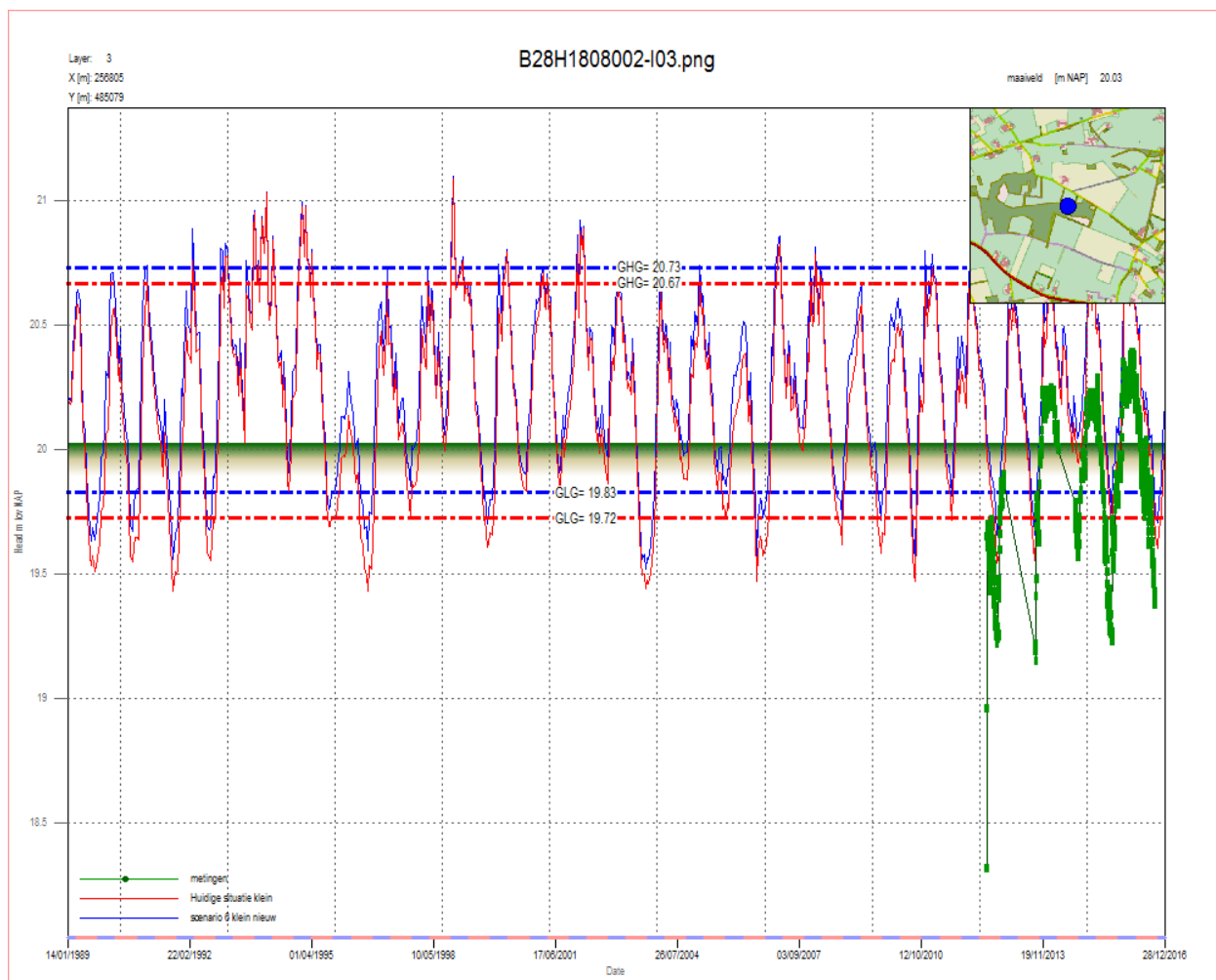


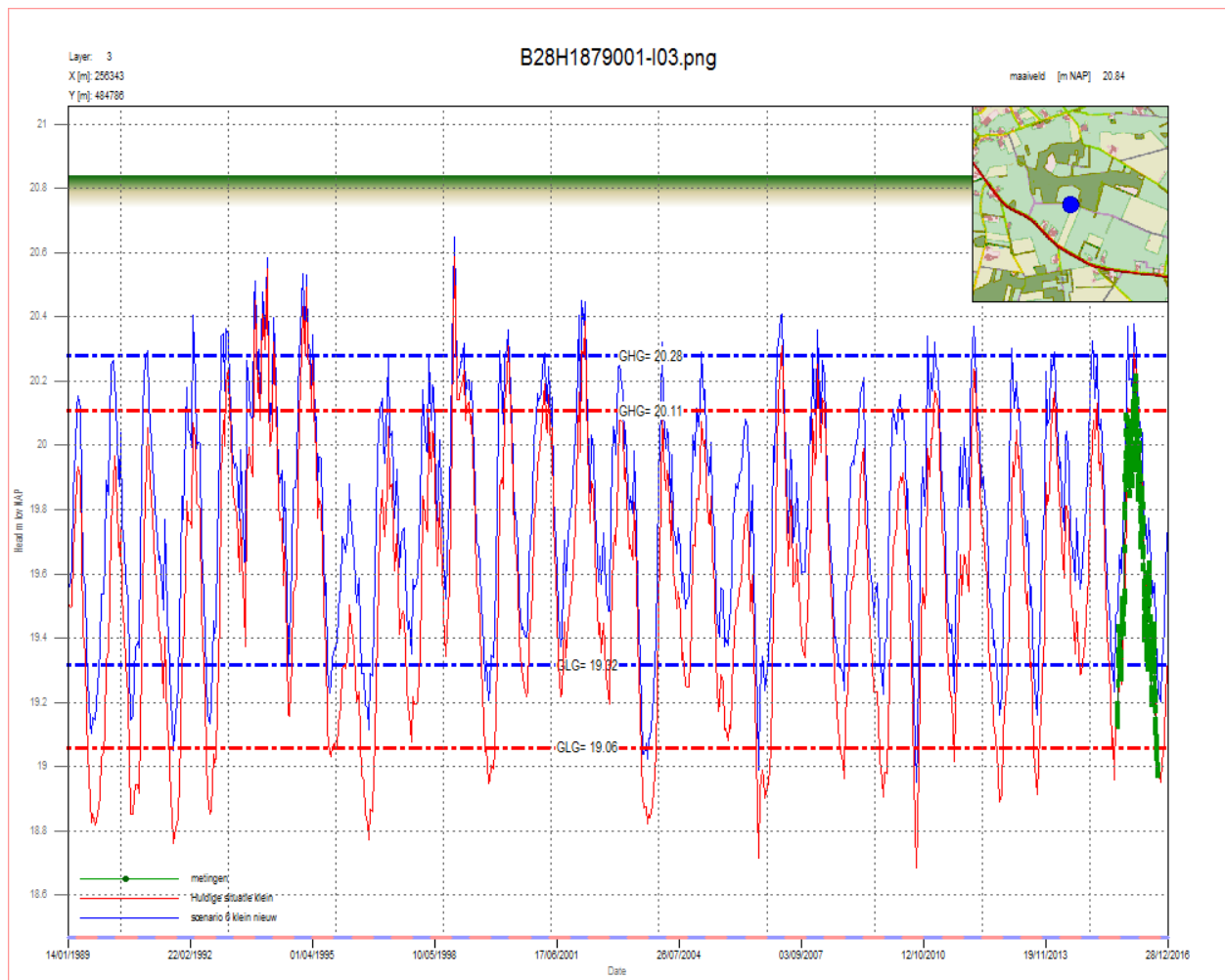


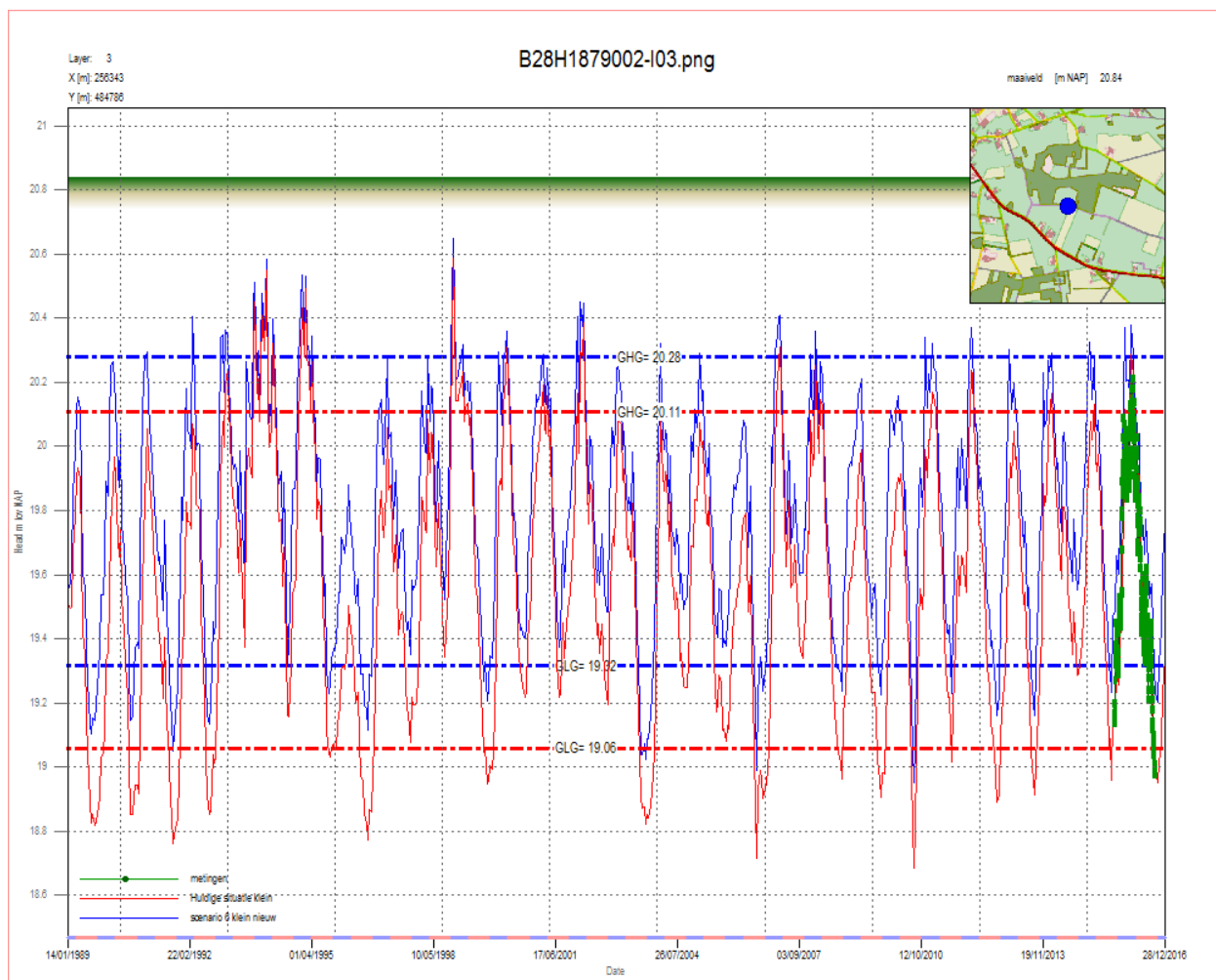


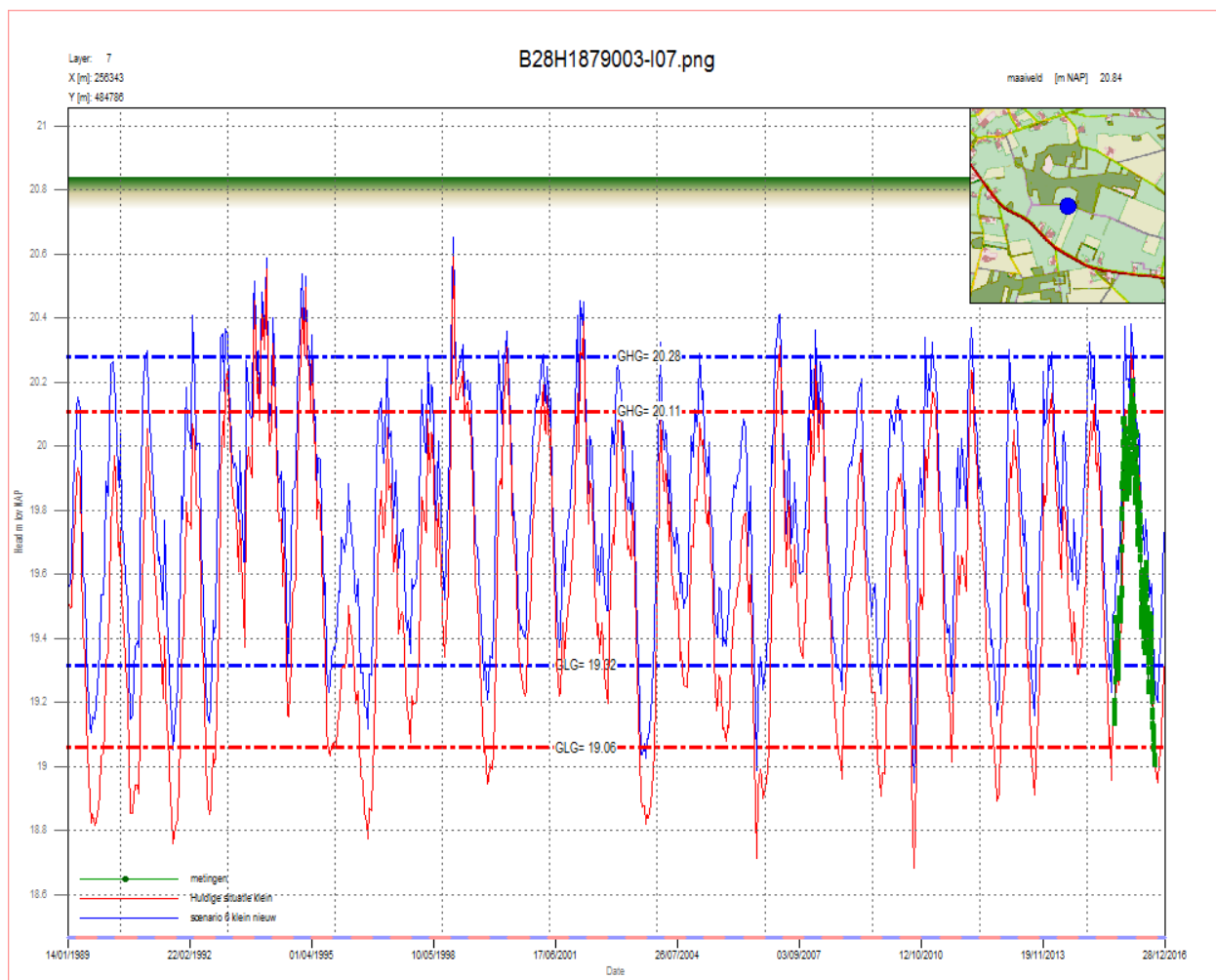


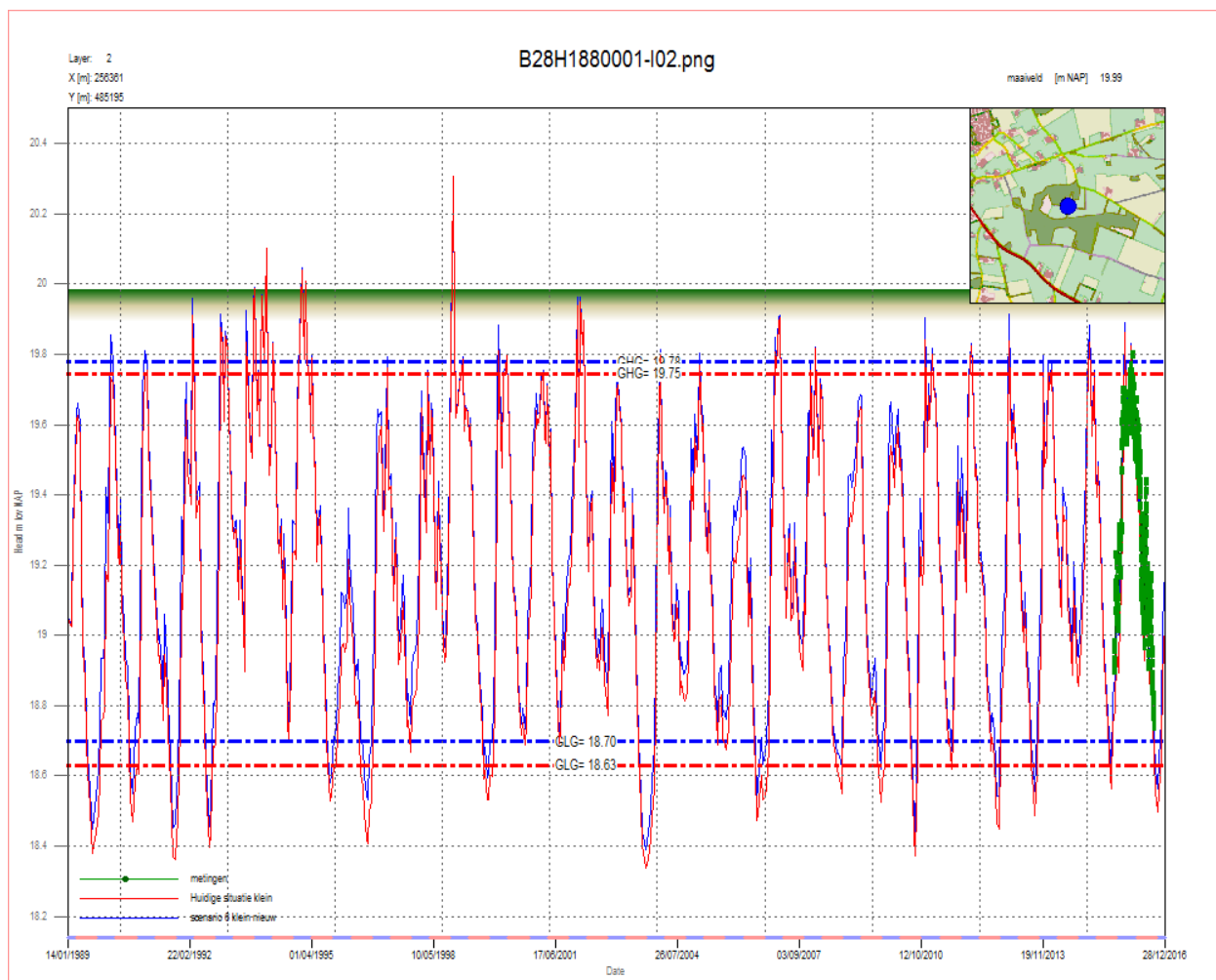


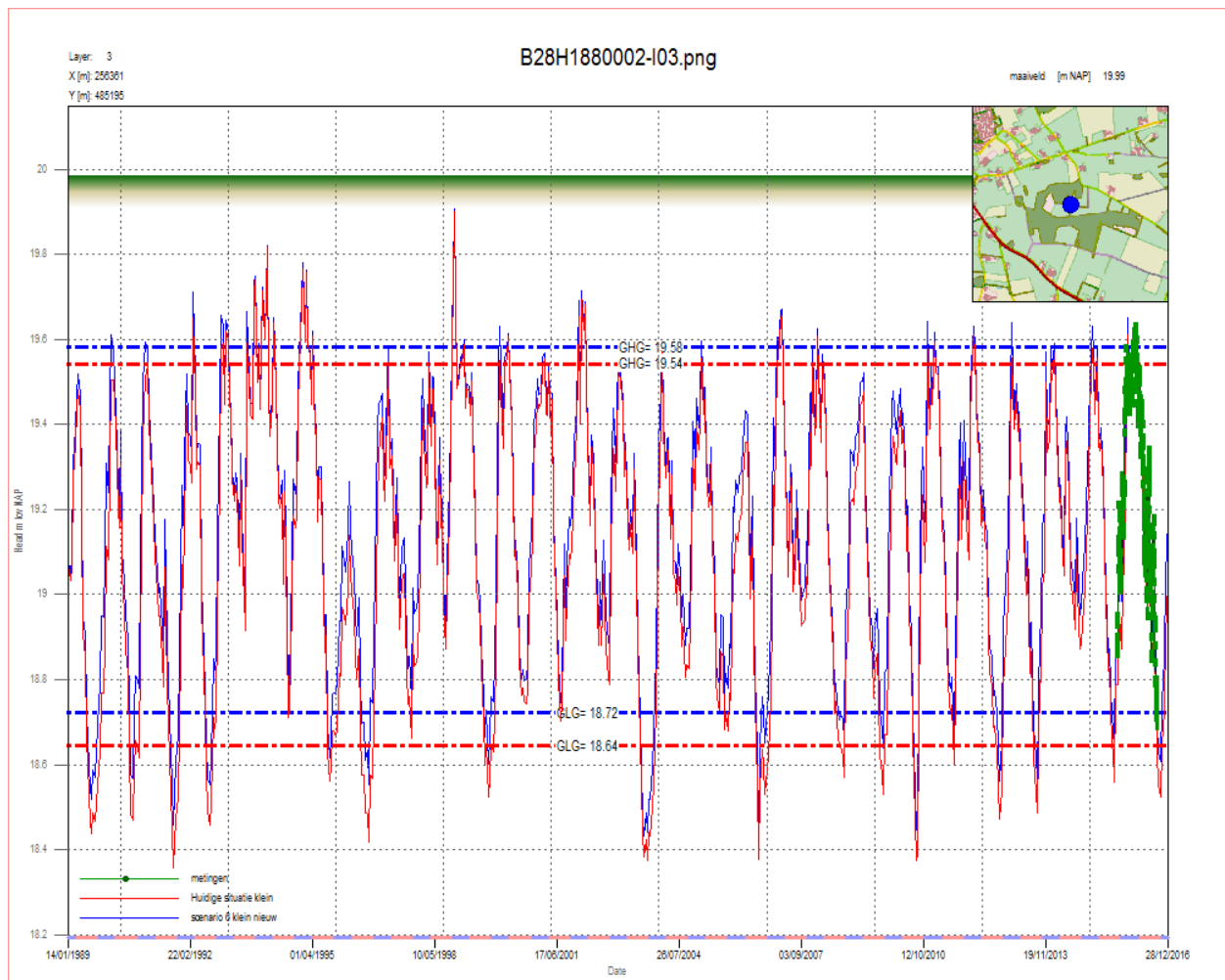


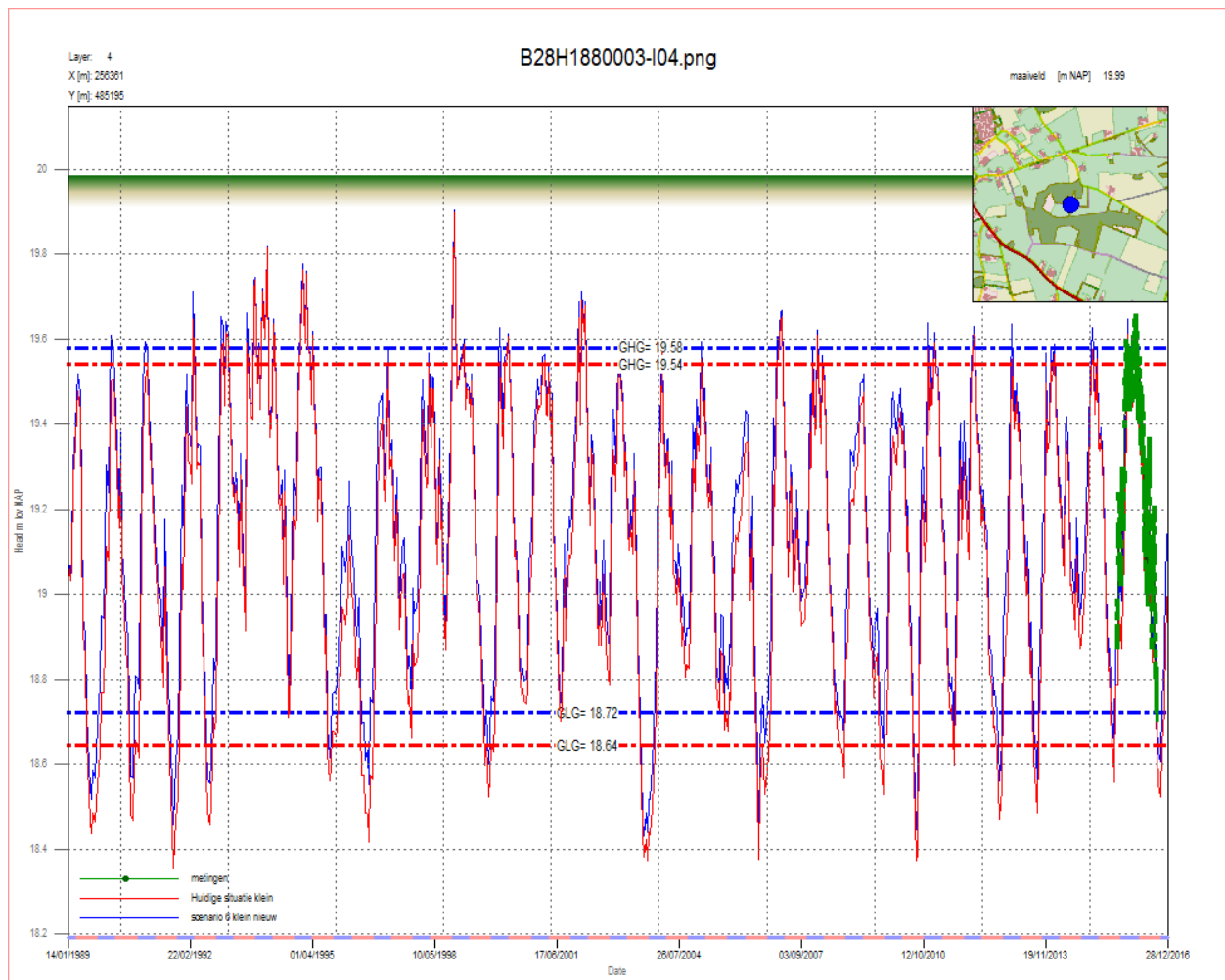


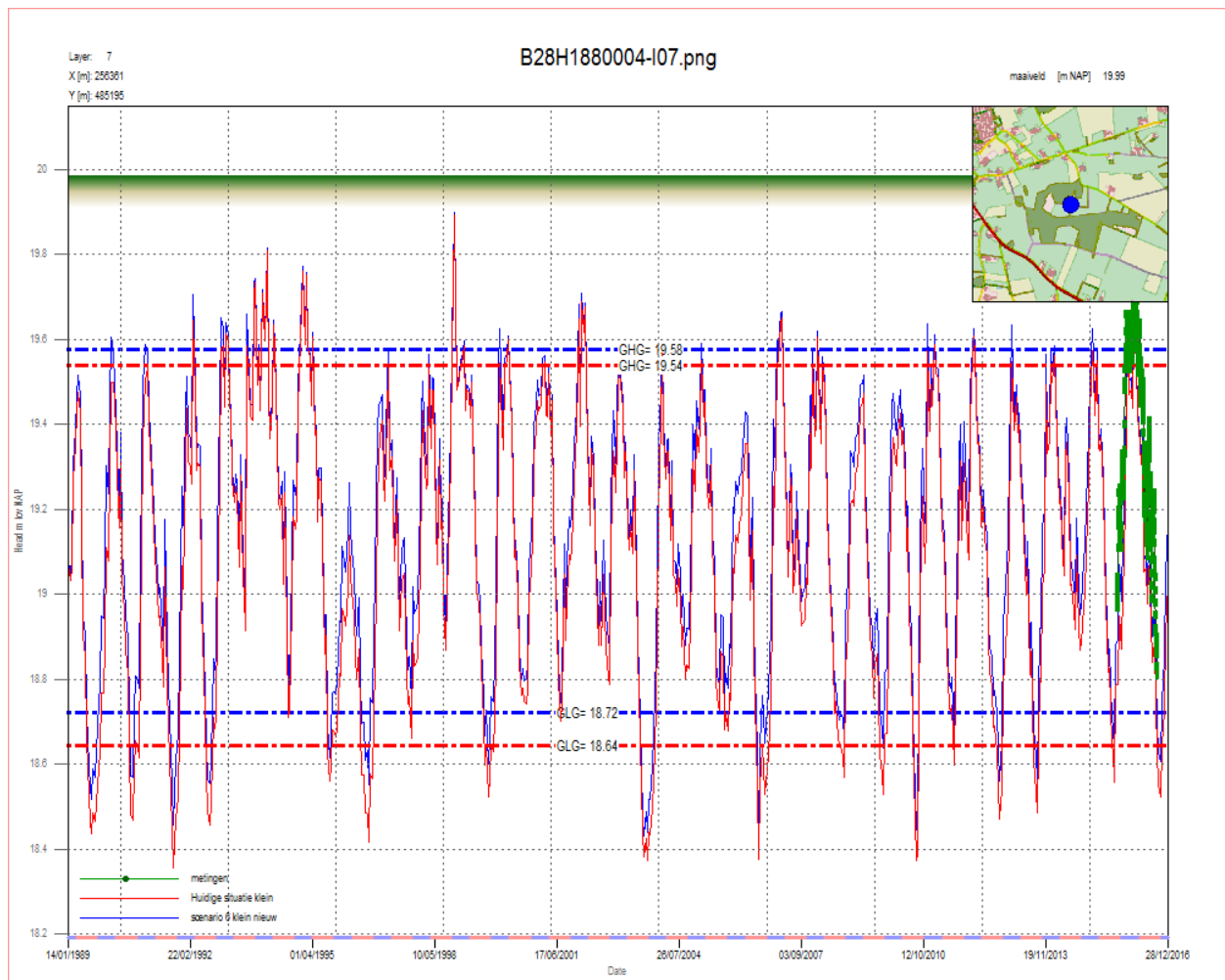


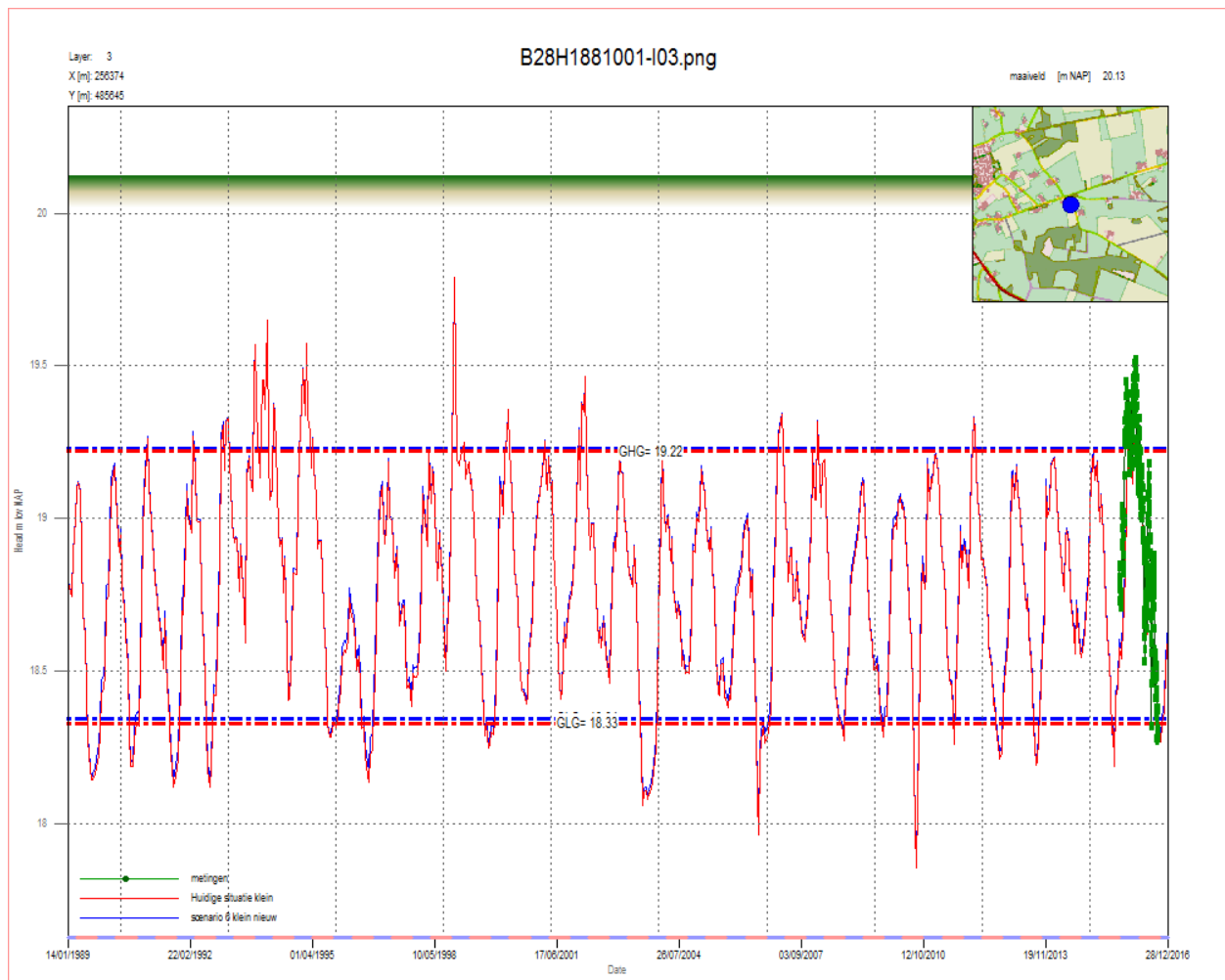








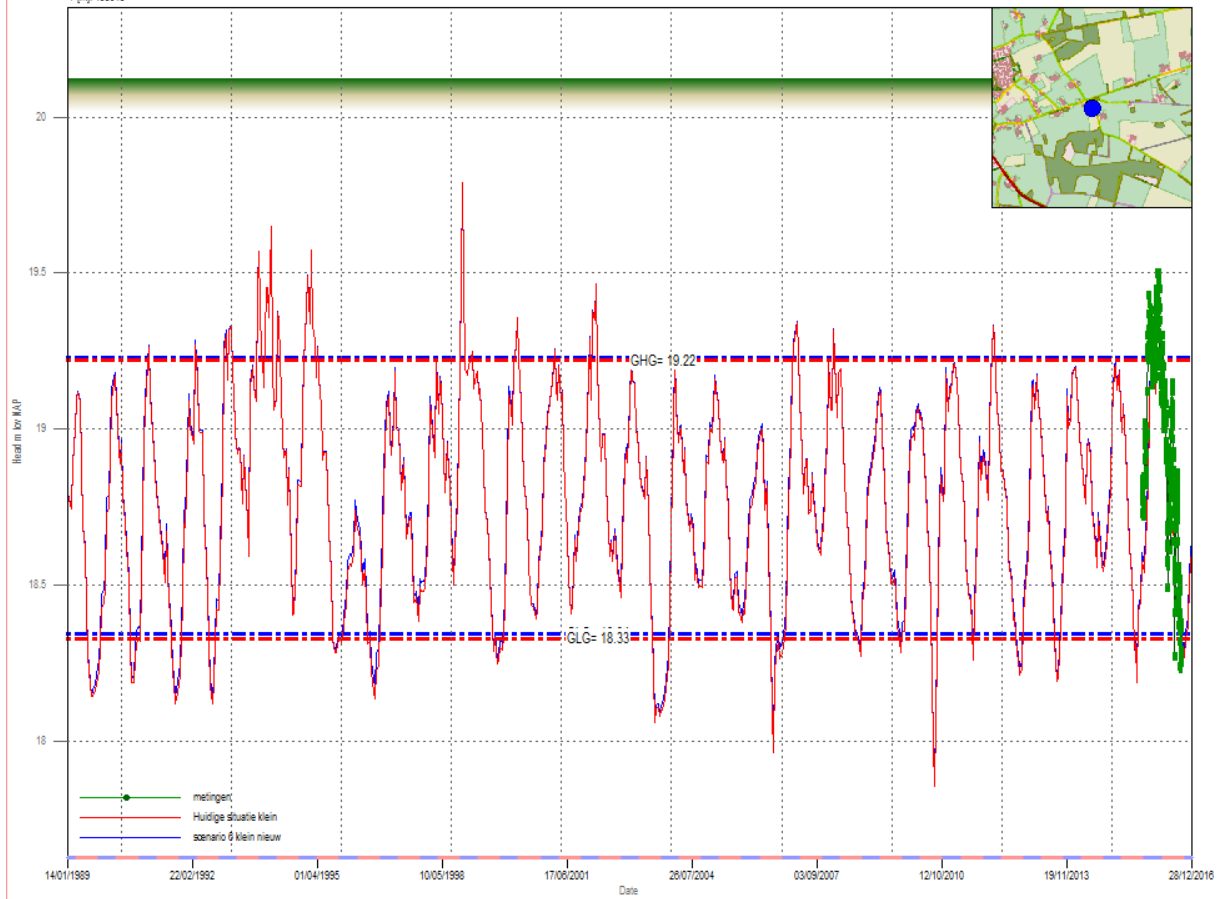




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B28H1881002-I03.png

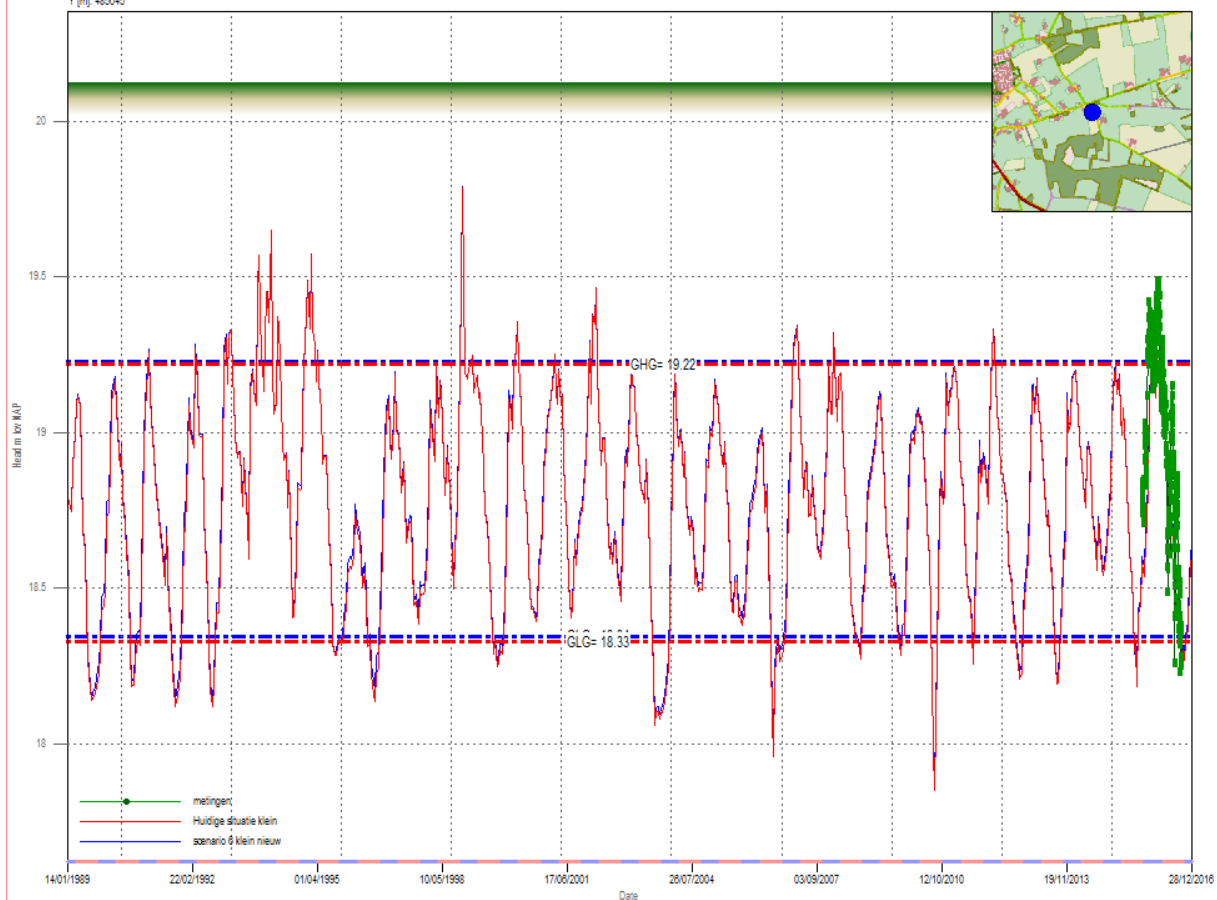
maasveld [m NAP] 20.13

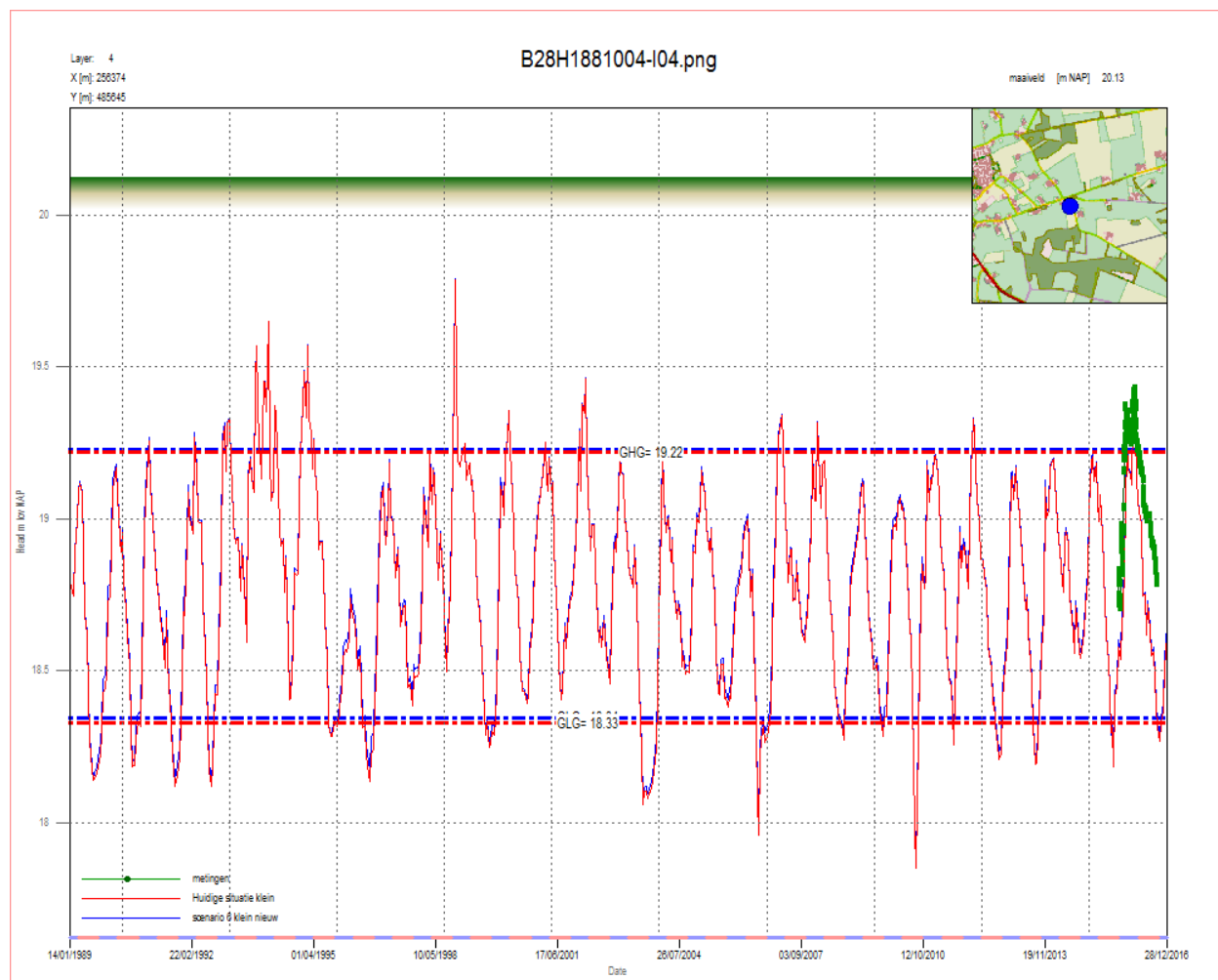


Layer: 4  
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Y [m]: 485545

B28H1881003-I04.png

maasveld [m NAP] 20.13

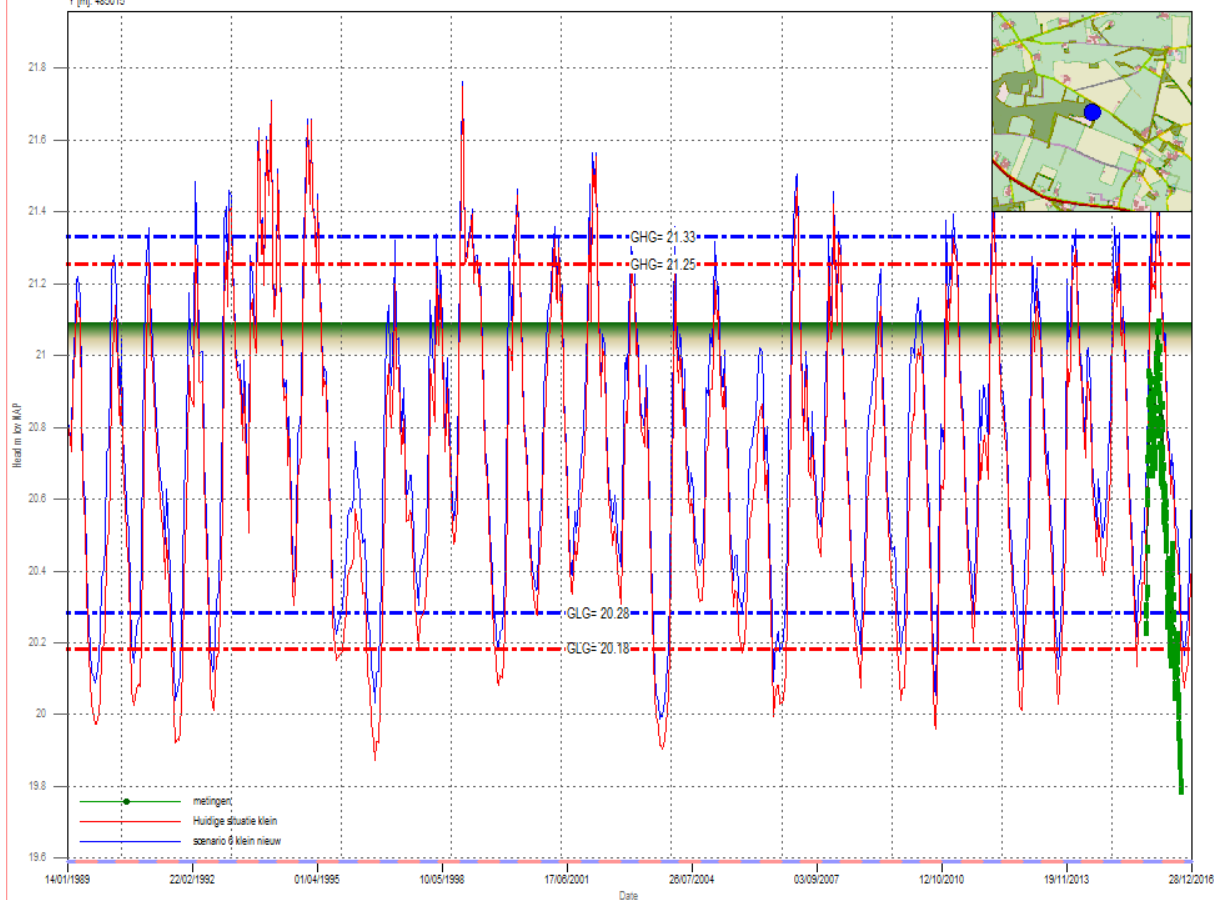




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B28H1882001-I03.png

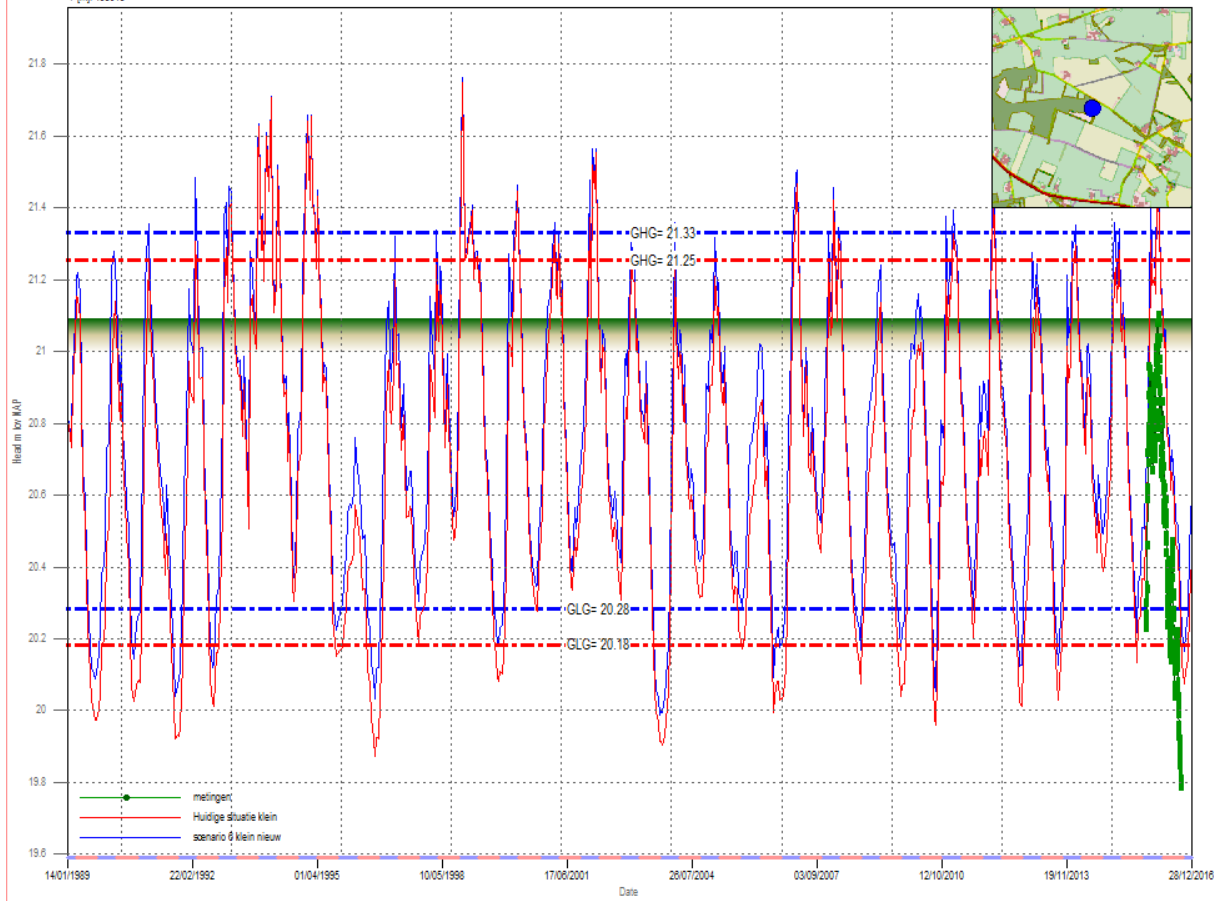
maasveld [m NAP] 21.09

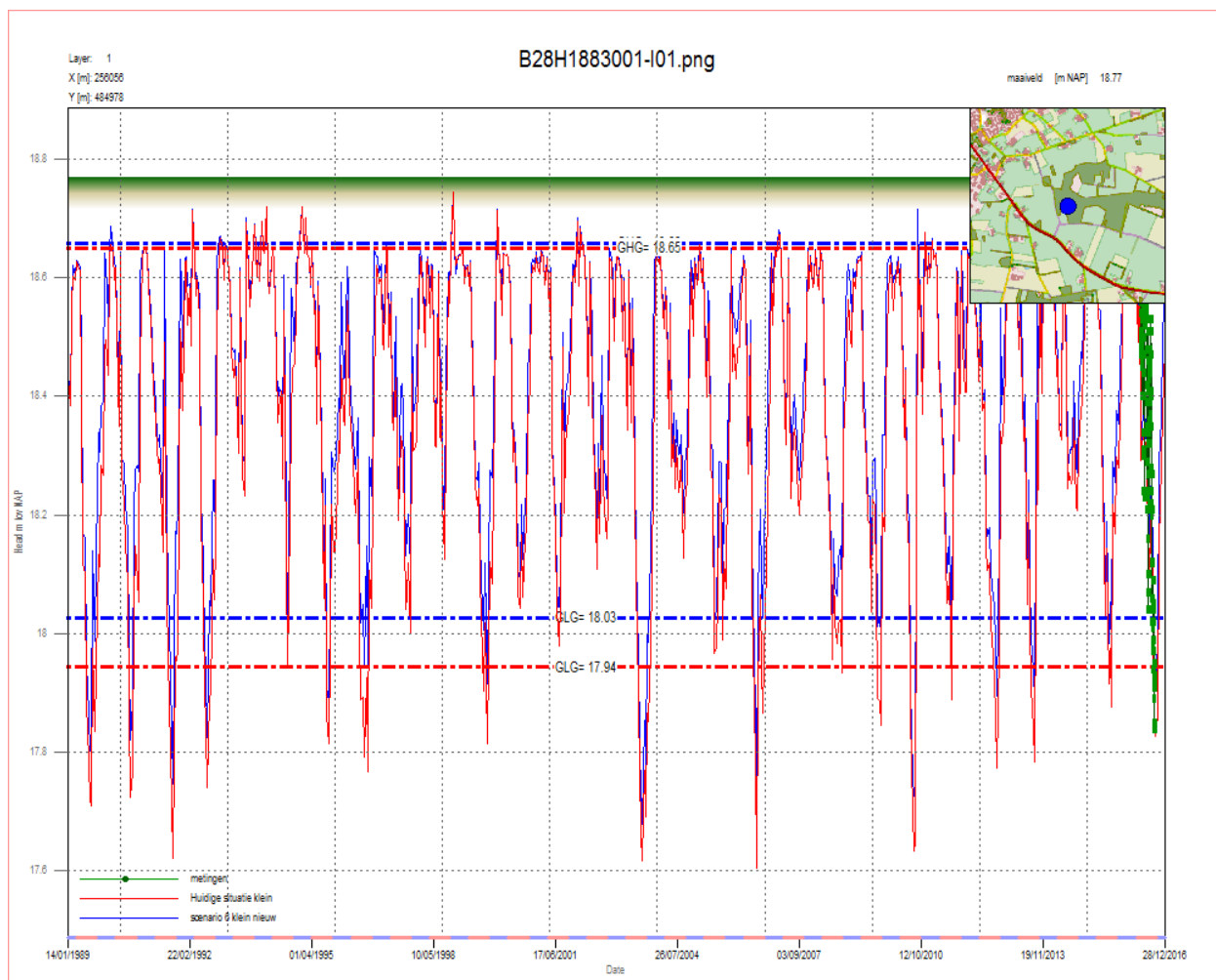


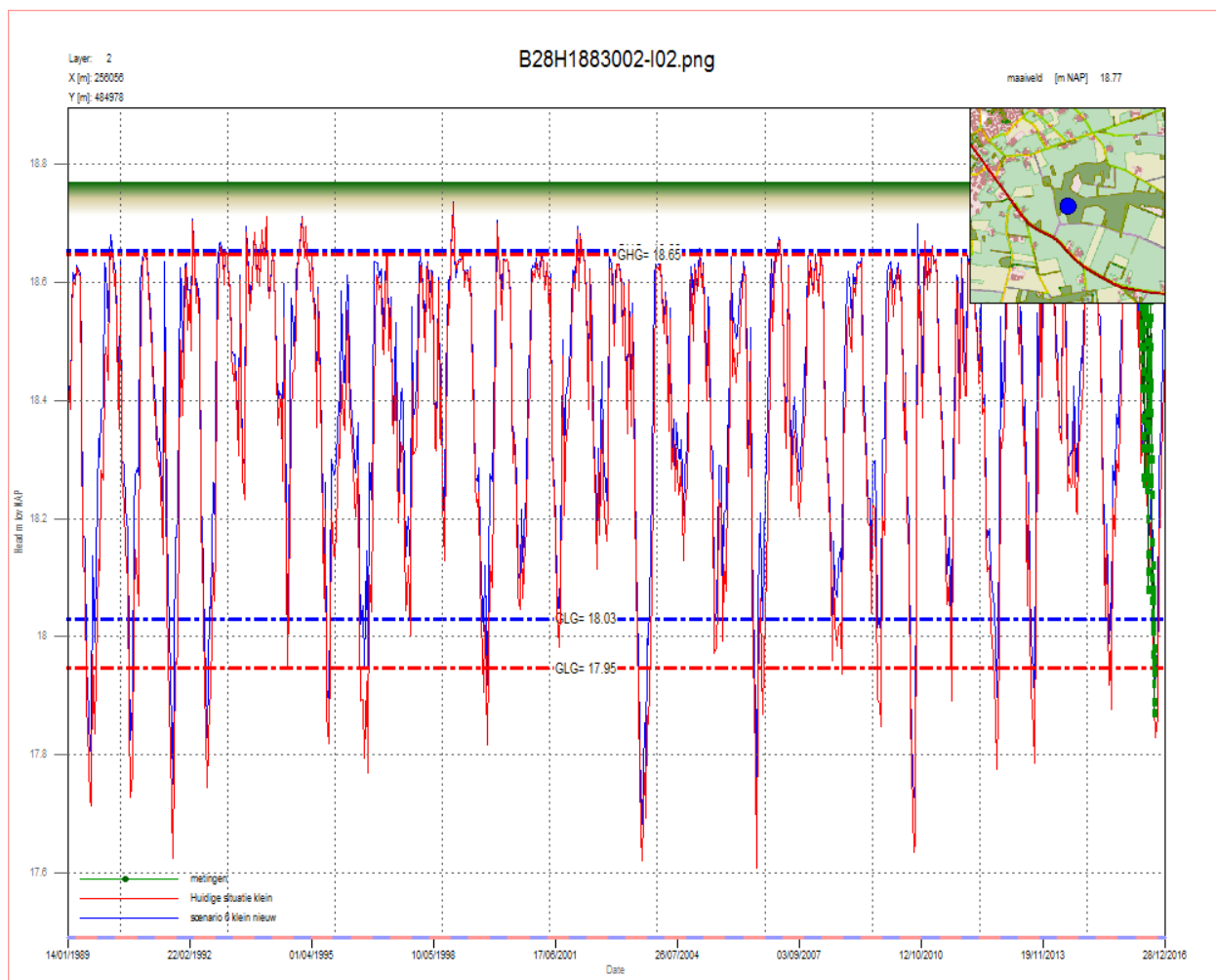
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Y [m]: 485015

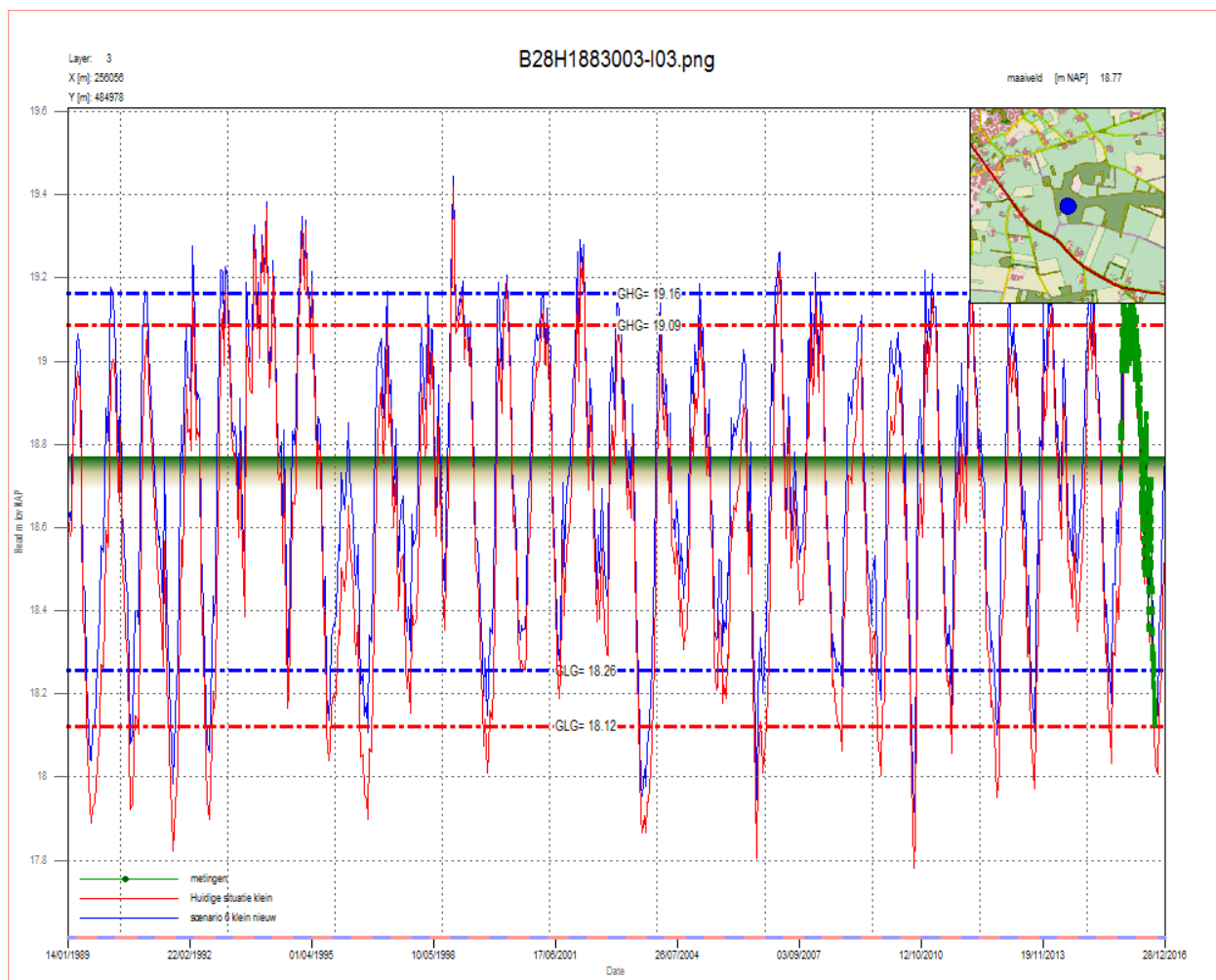
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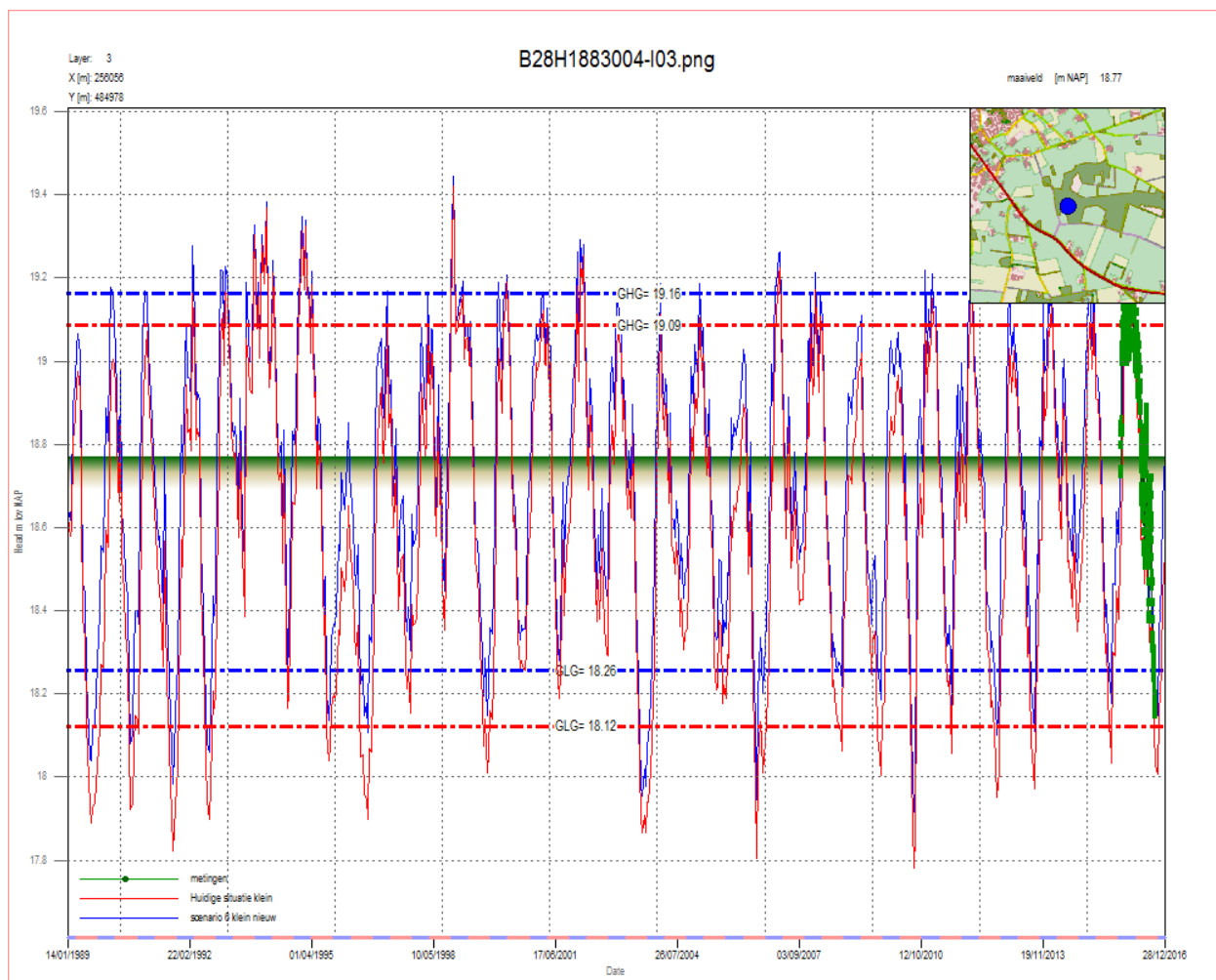
maasveld [m NAP] 21.09

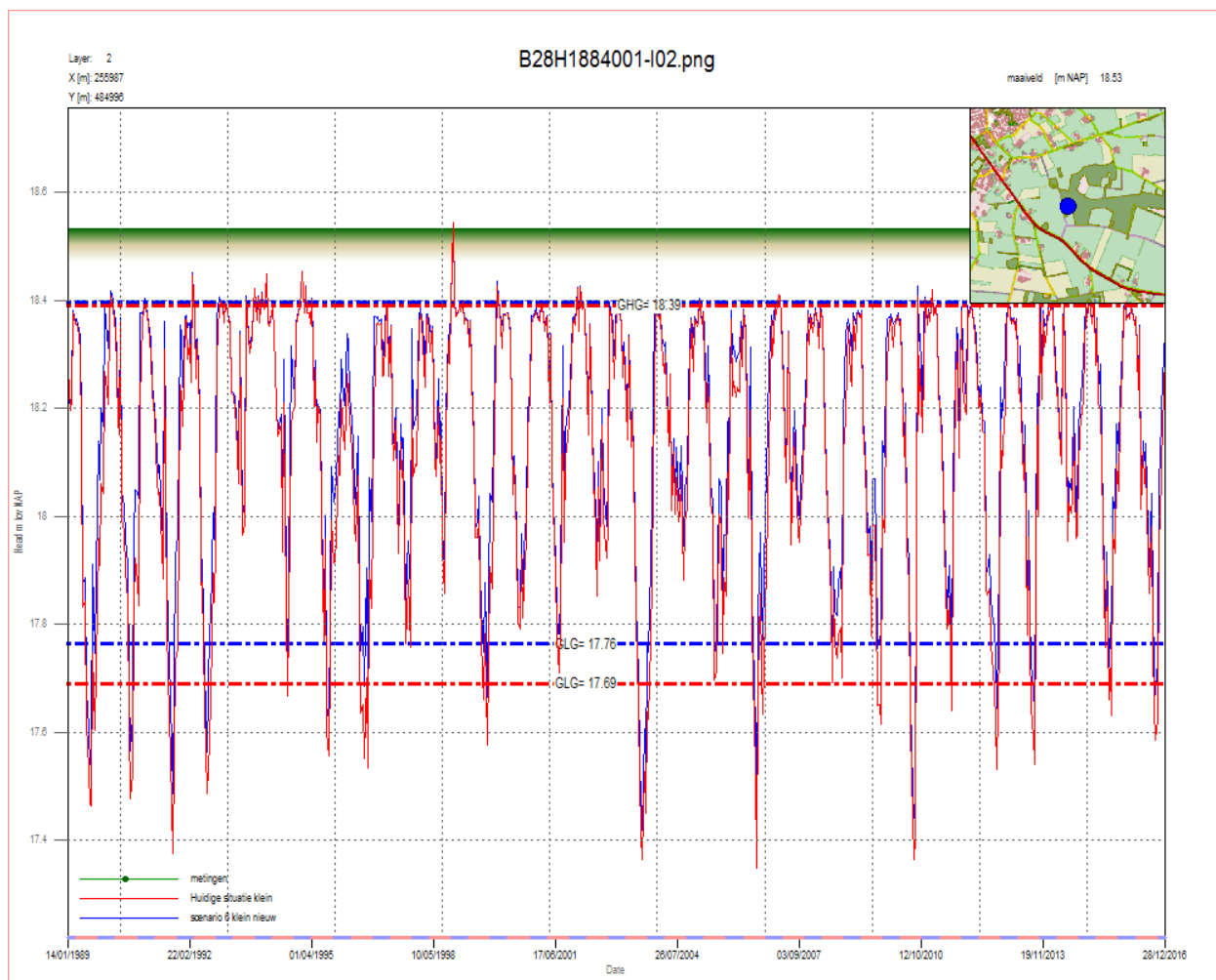


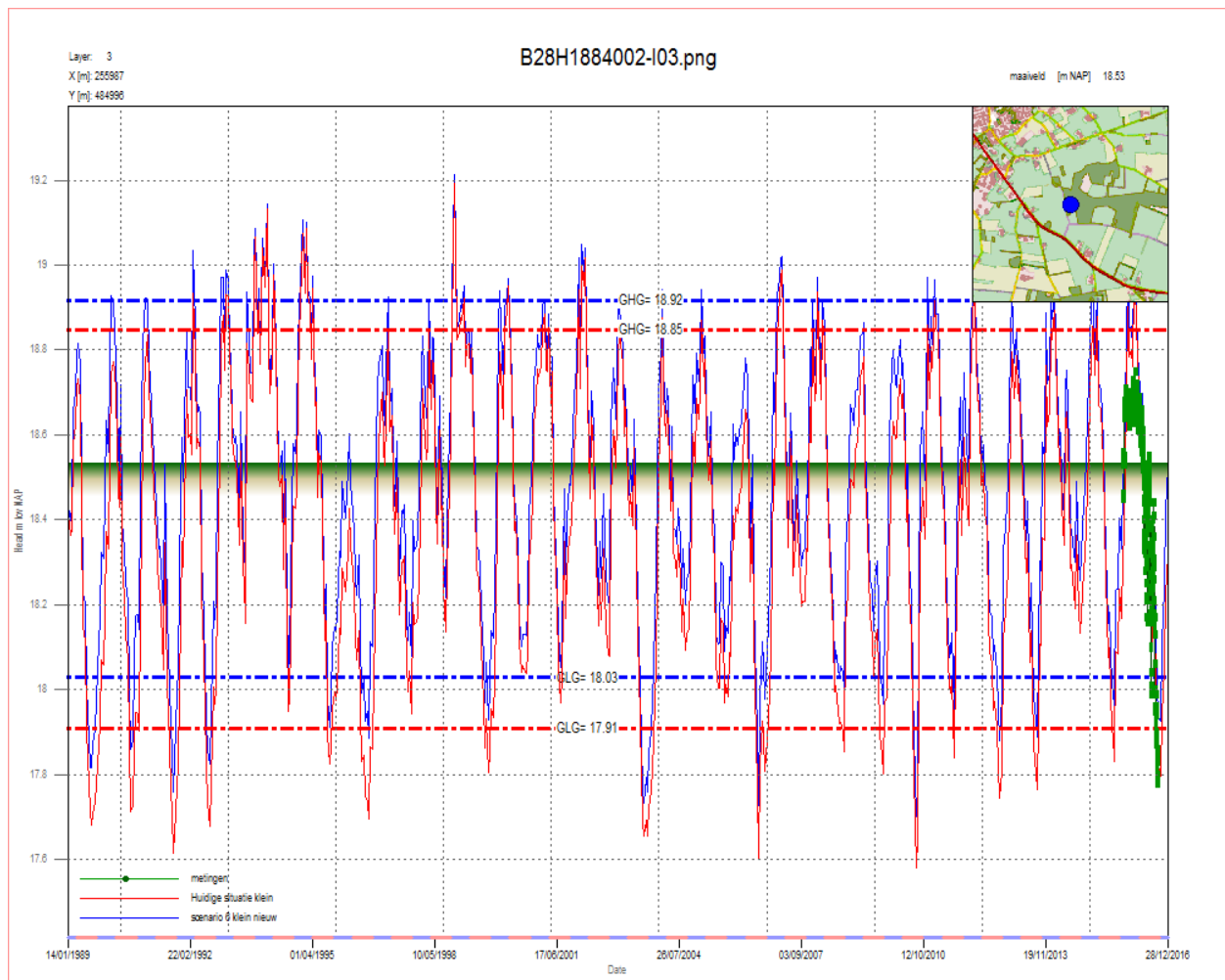


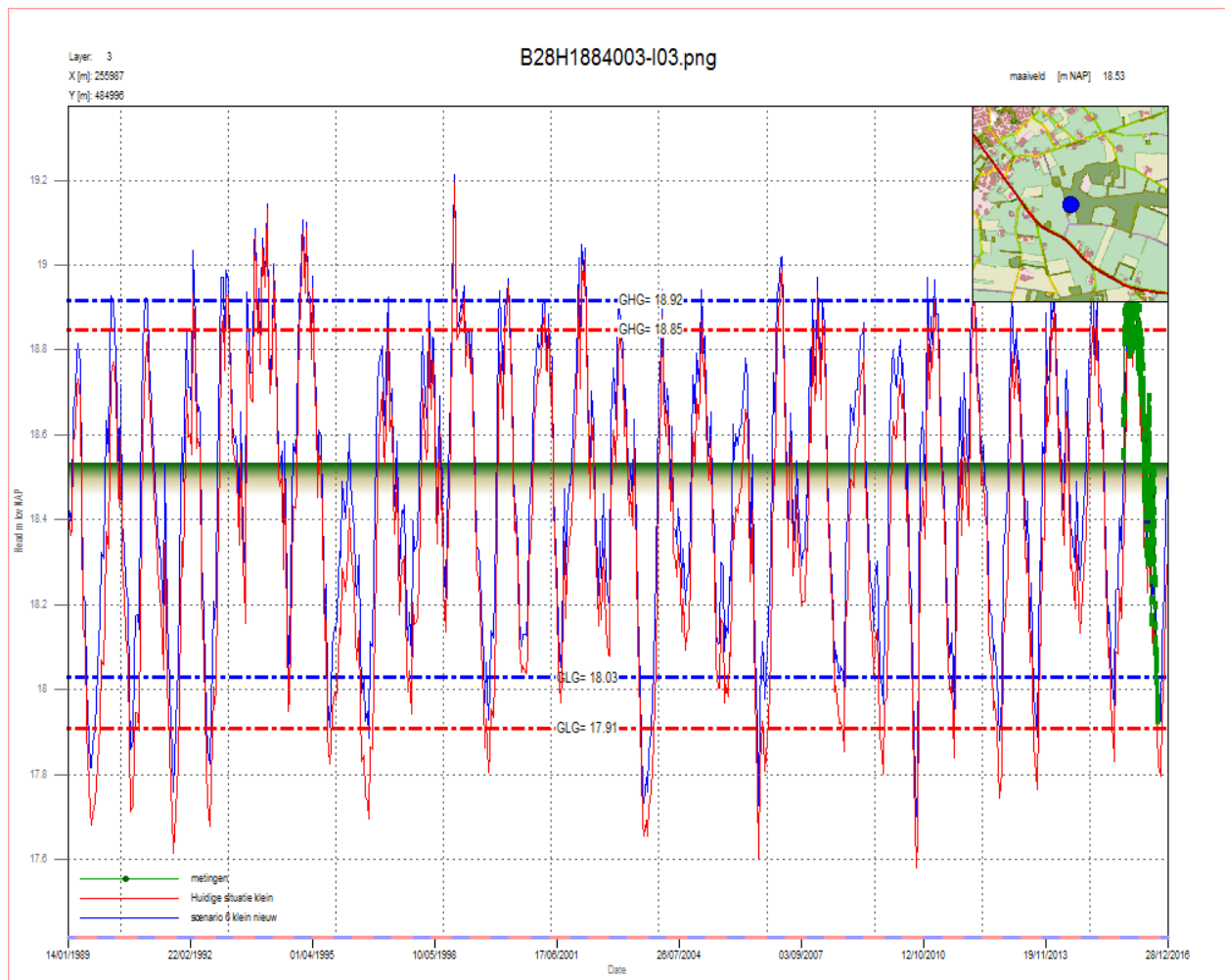


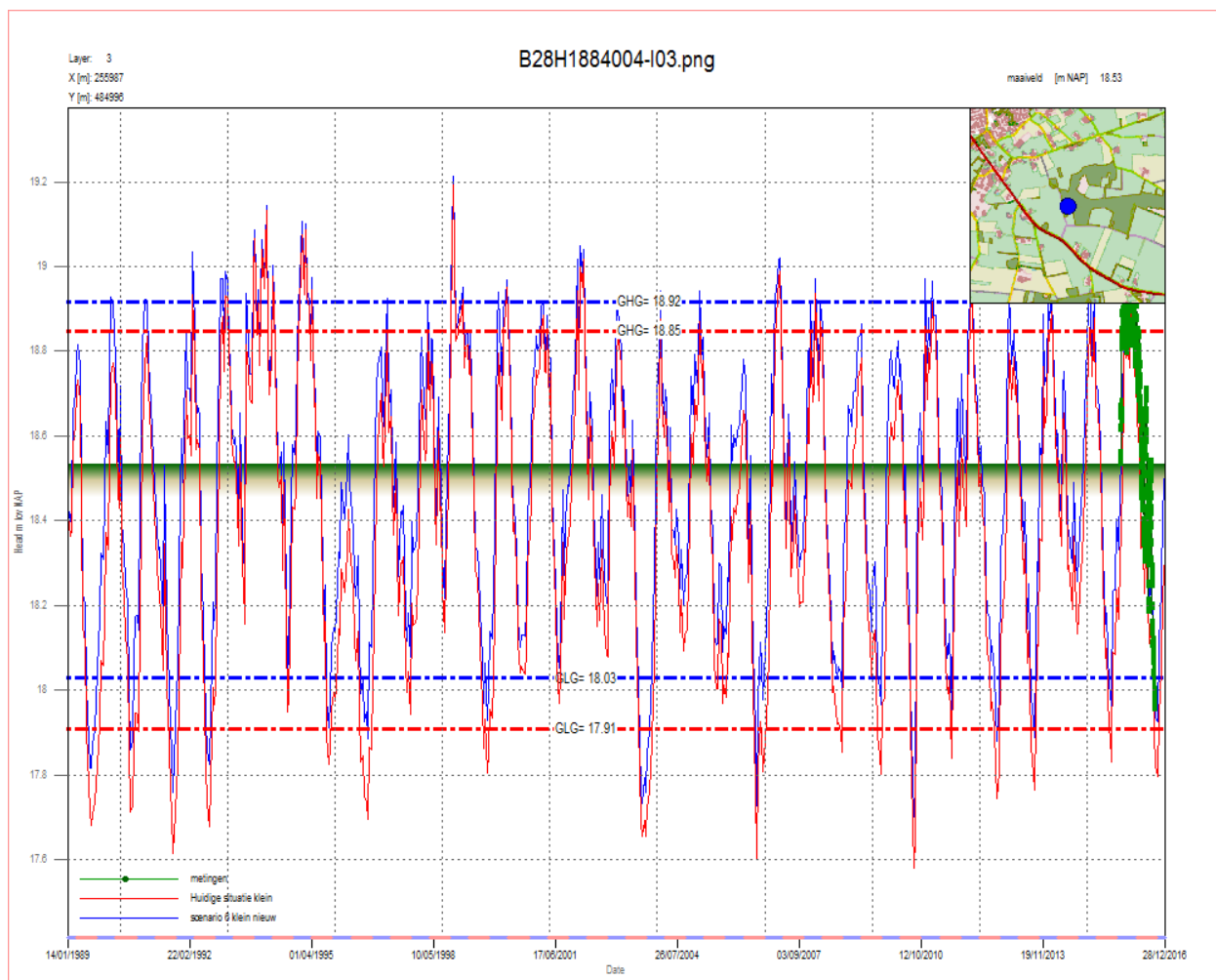


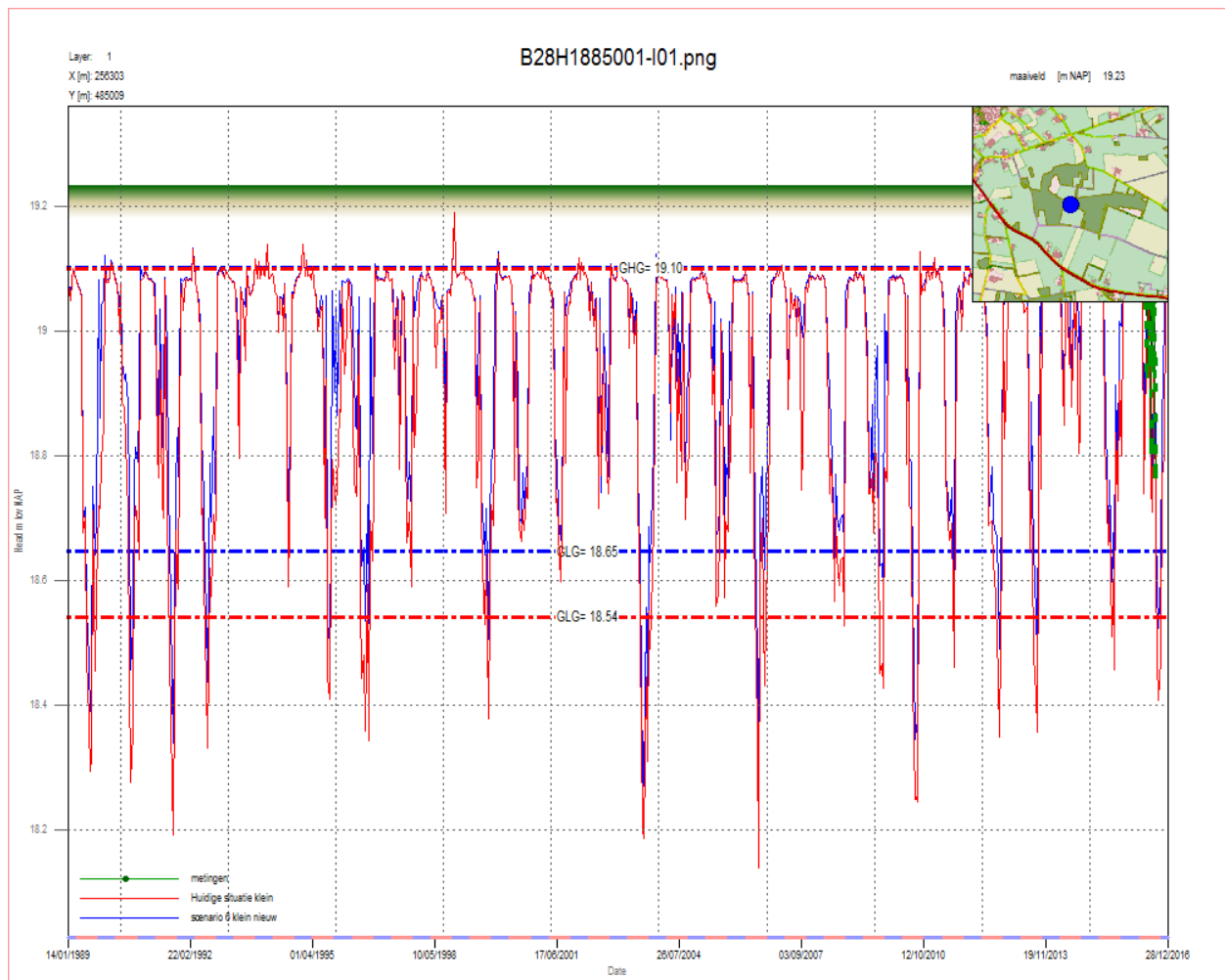


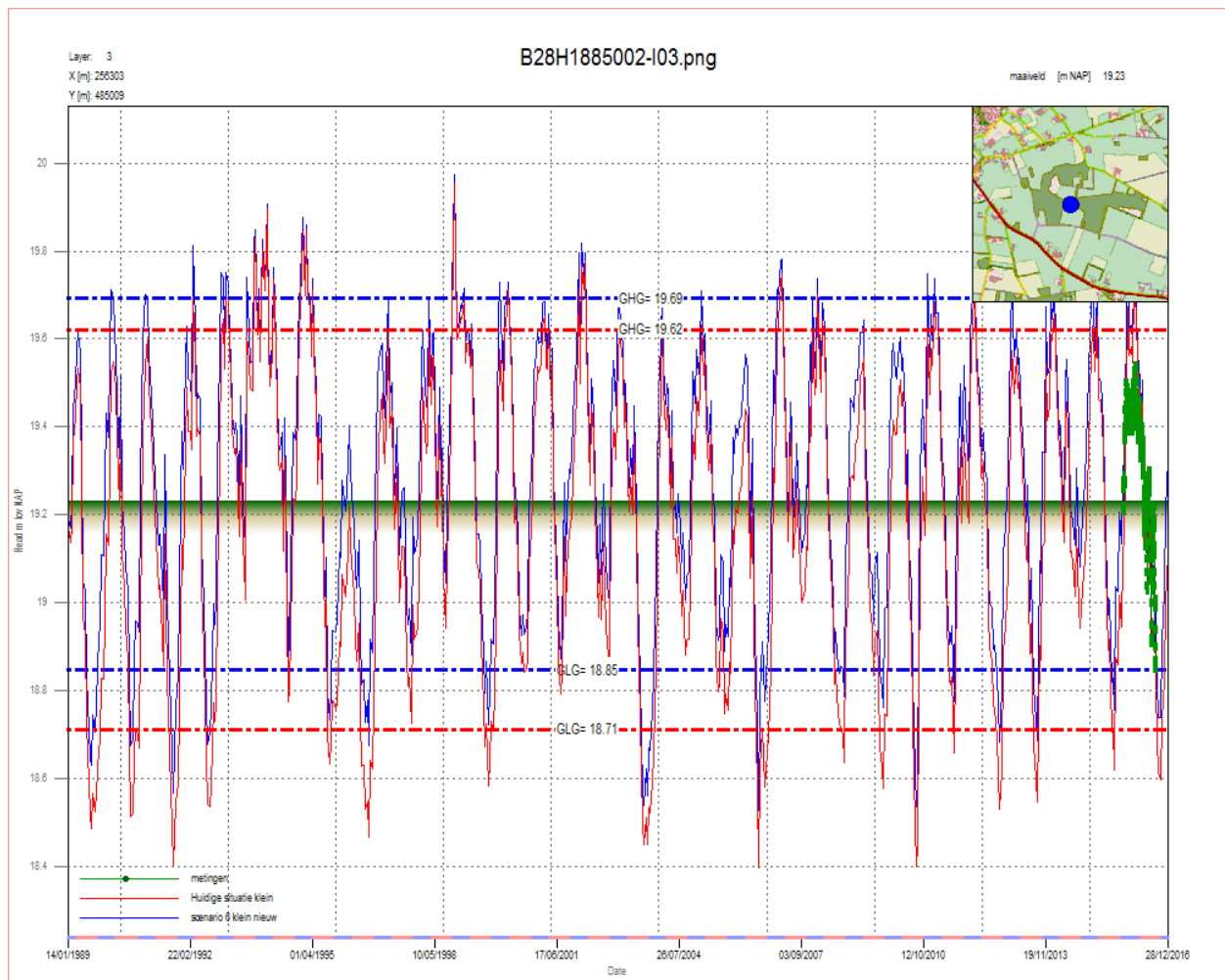


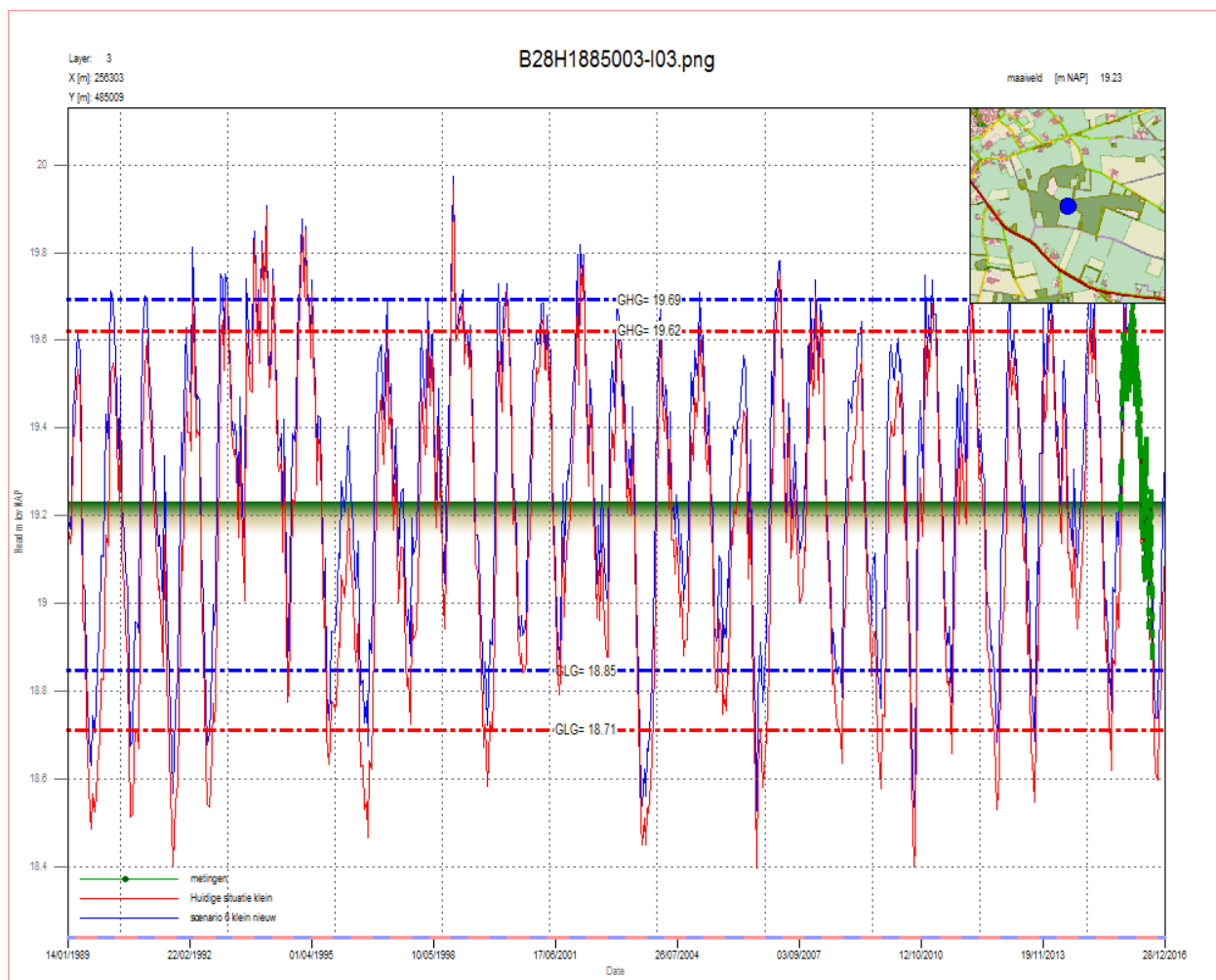


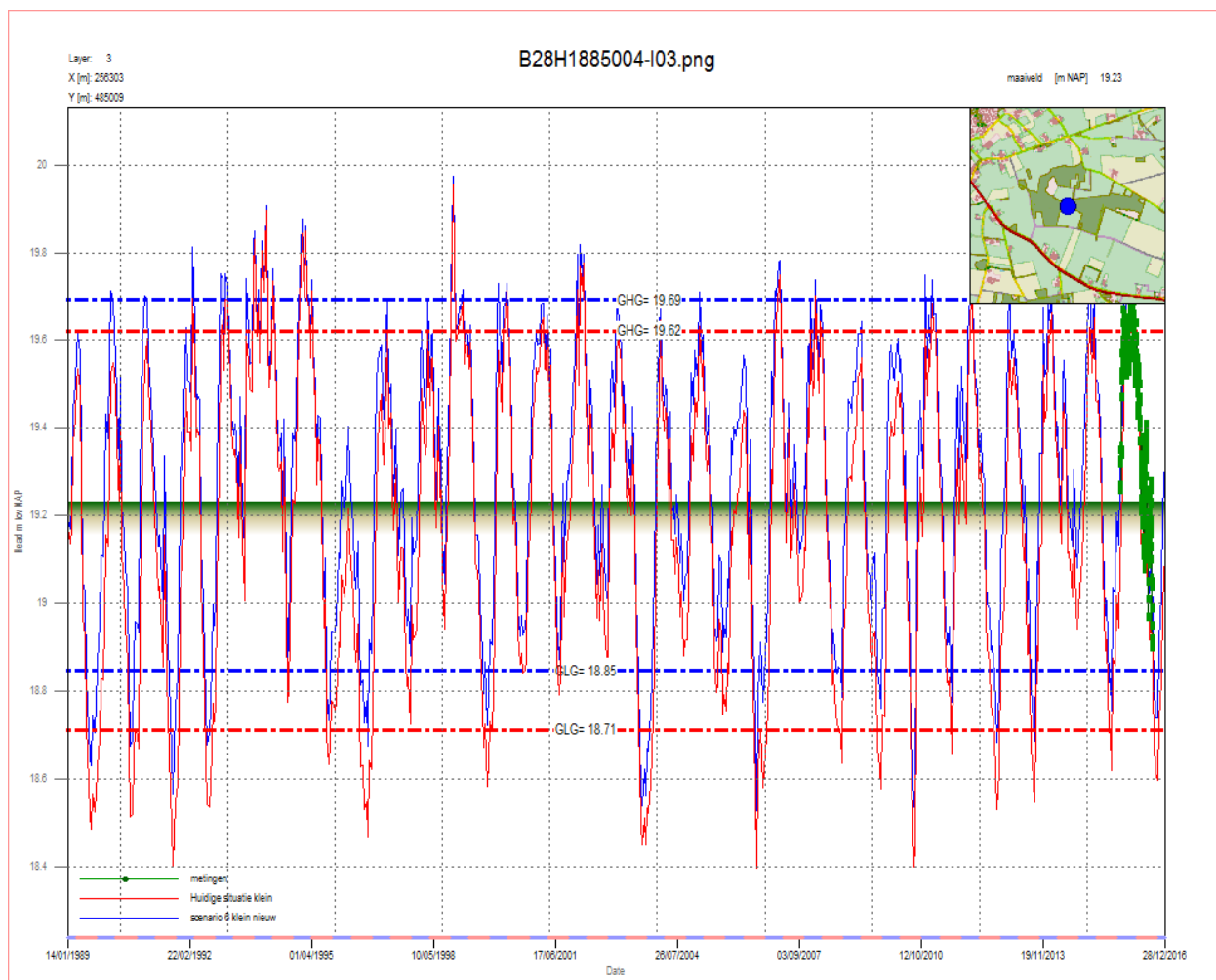


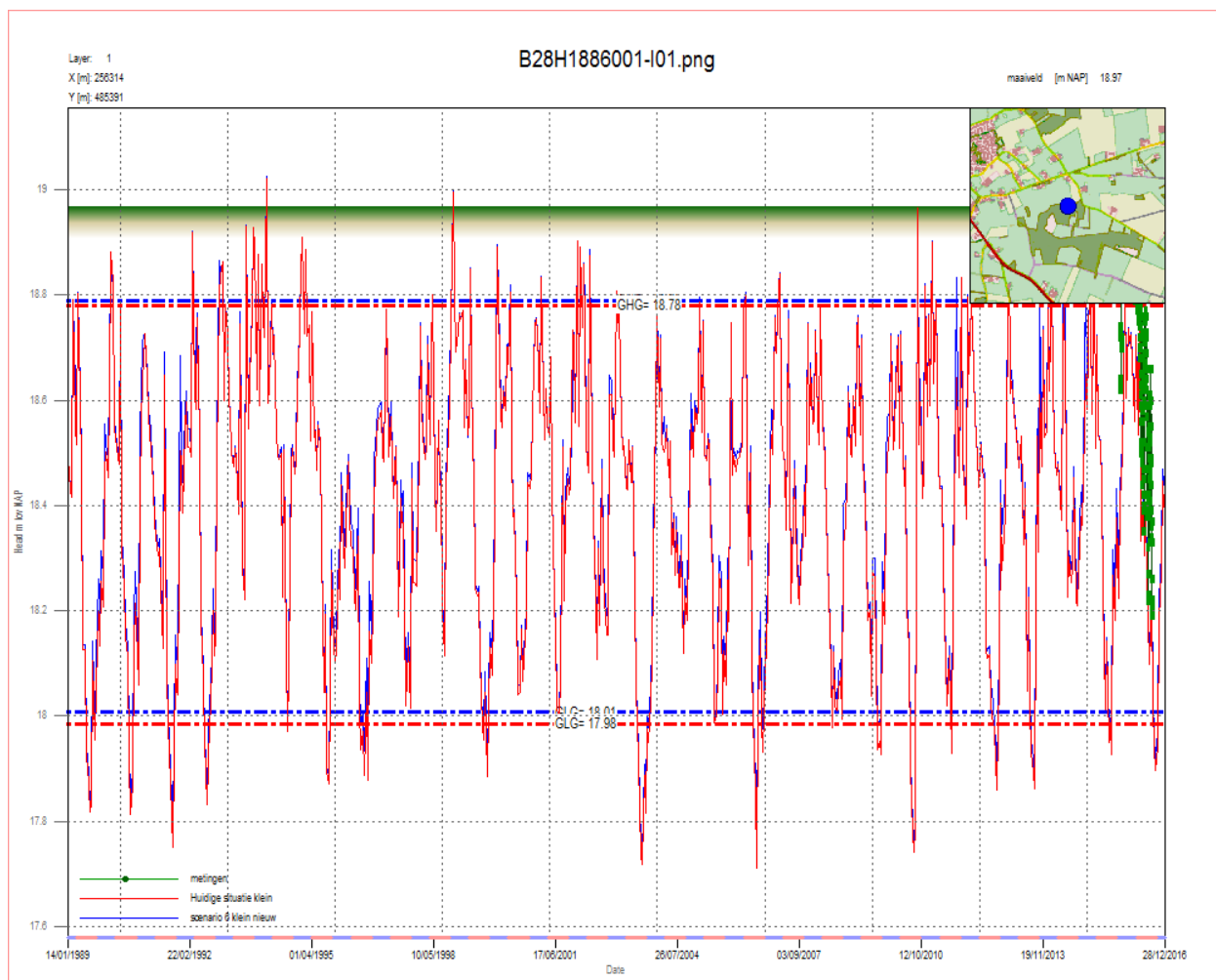


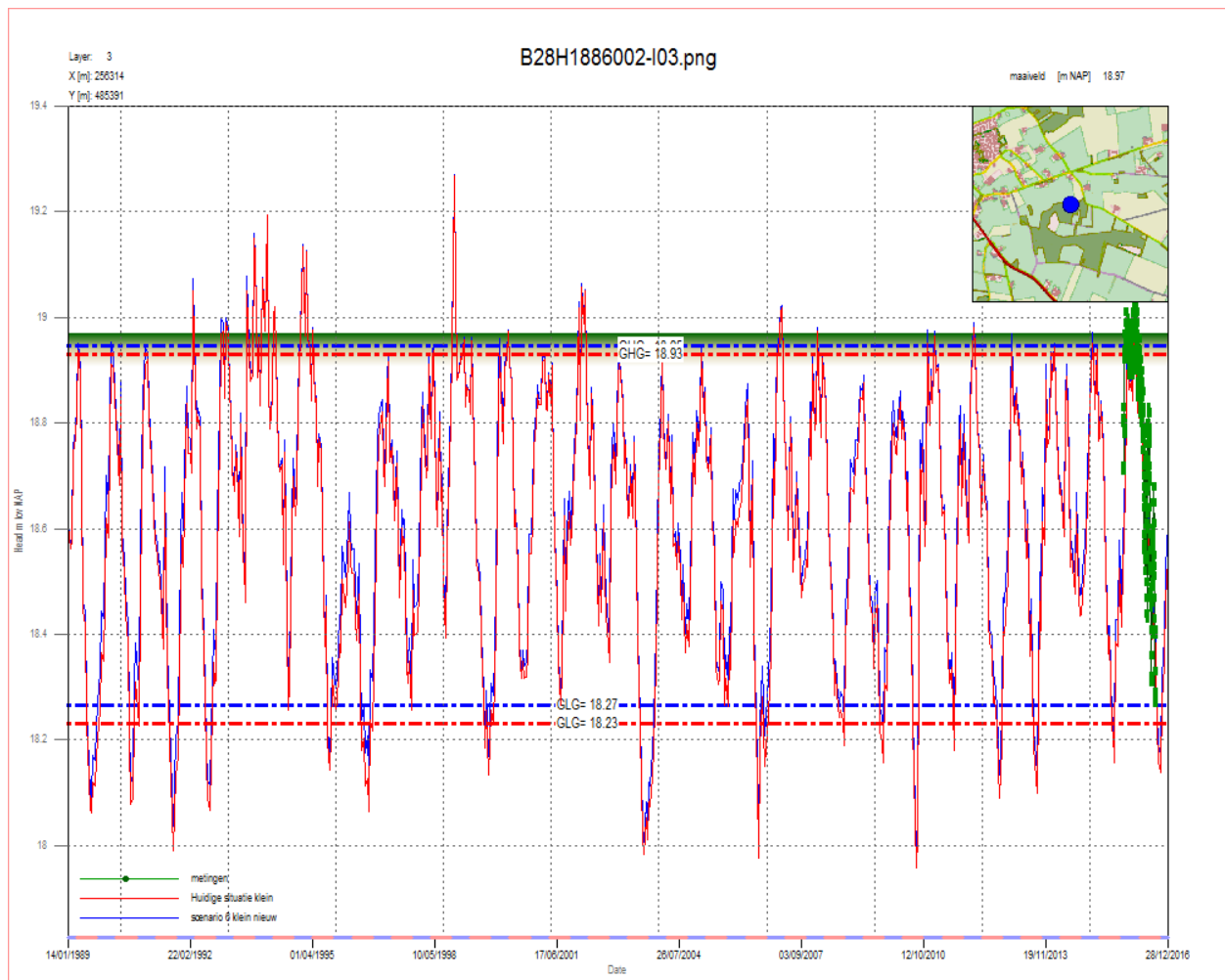


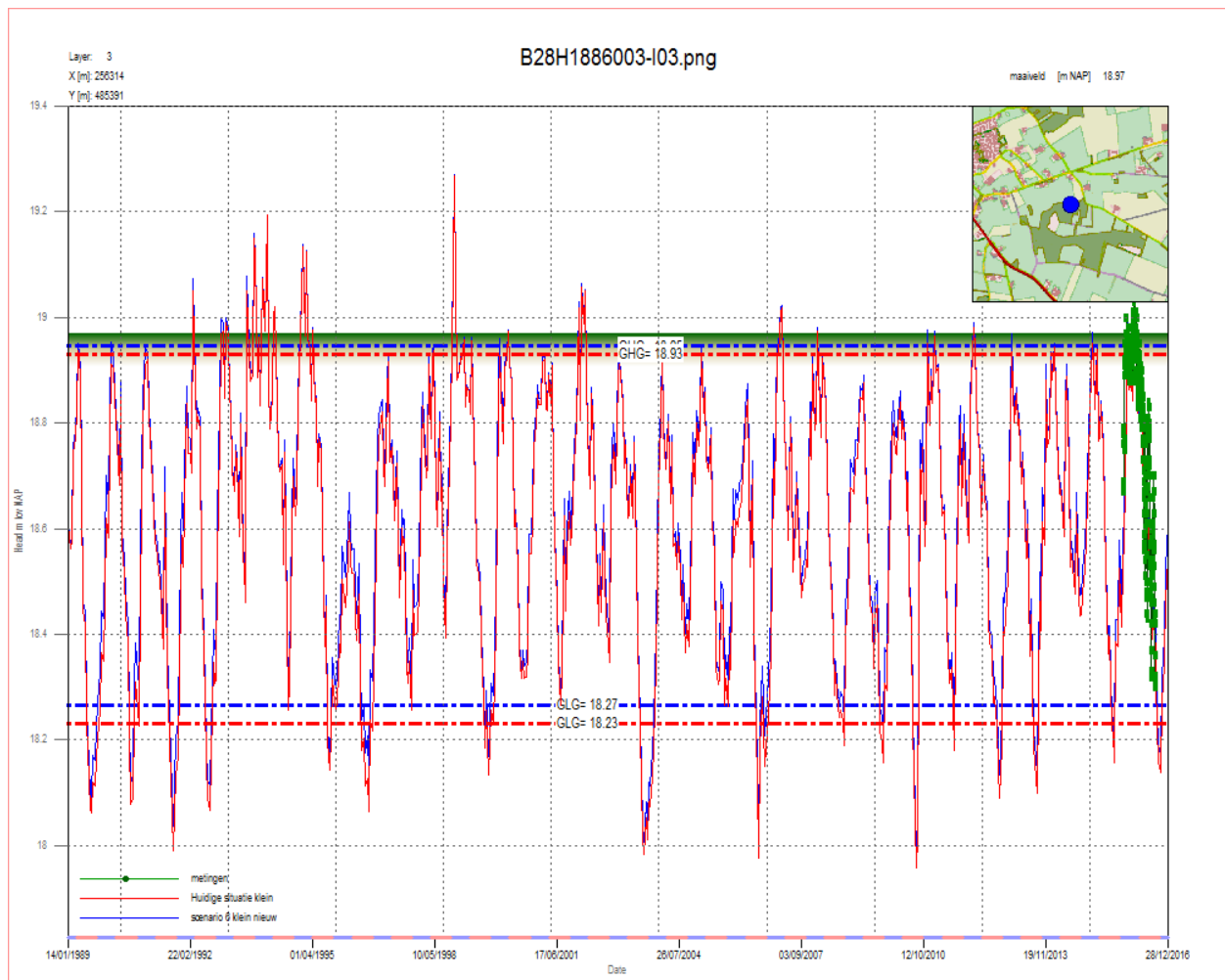


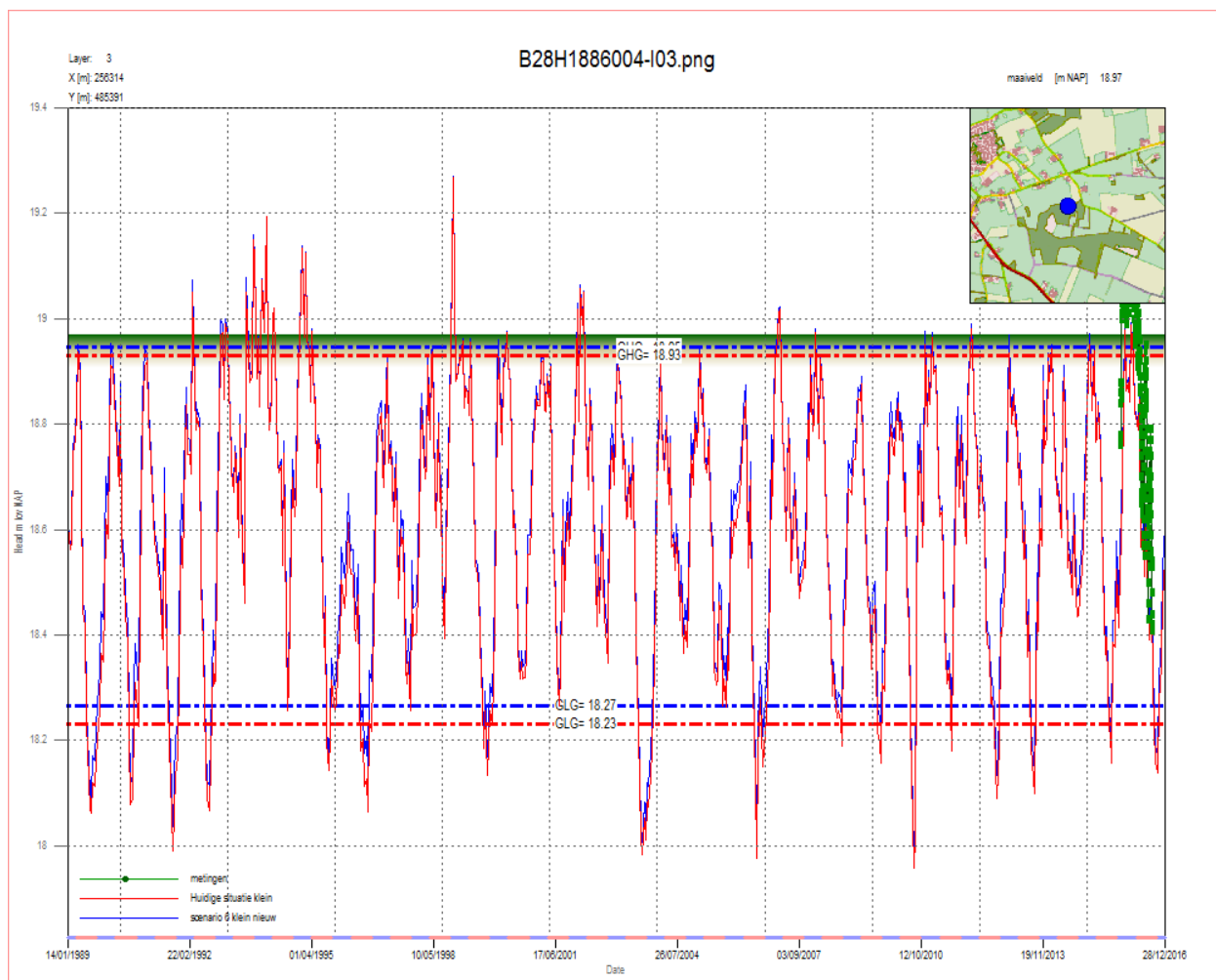














## Bijlage 2

## Berekend effect per peilbuis

| Naam        | modellaag | x      | y      | GHG<br>gemeten | GVG<br>gemeten | GLG<br>gemeten | GHG<br>residu | GVG<br>residu | GLG<br>residu | GHG<br>Scenario 6 | GVG<br>Scenario 6 | GLG<br>Scenario 6 | GHG<br>Huidige<br>situatie | GVG<br>Huidige<br>situatie | GLG<br>Huidige<br>situatie | Dif GHG | Dif GVG | Dif GLG |
|-------------|-----------|--------|--------|----------------|----------------|----------------|---------------|---------------|---------------|-------------------|-------------------|-------------------|----------------------------|----------------------------|----------------------------|---------|---------|---------|
| B28H0571001 | 1         | 254620 | 486330 | 15.25          | 15.08          | 14.44          | 0.15          | 0.21          | 0.18          | 15.40             | 15.30             | 14.63             | 15.40                      | 15.29                      | 14.62                      | 0.00    | 0.00    | 0.00    |
| B28H0655001 | 1         | 256650 | 484114 | 20.83          | 20.57          | 19.53          | 0.30          | 0.36          | 0.37          | 21.45             | 21.30             | 20.46             | 21.13                      | 20.93                      | 19.90                      | 0.32    | 0.37    | 0.56    |
| B28H0670001 | 1         | 253595 | 482745 | 16.63          | 16.26          | 15.12          | -0.53         | -0.26         | 0.22          | 16.10             | 16.00             | 15.35             | 16.10                      | 16.00                      | 15.34                      | 0.00    | 0.00    | 0.00    |
| B28H0704001 | 1         | 256080 | 485180 | 19.20          | 19.17          | 18.65          | -0.09         | -0.24         | -0.68         | 19.15             | 18.97             | 18.02             | 19.11                      | 18.93                      | 17.97                      | 0.03    | 0.04    | 0.05    |
| B28H1804001 | 1         | 256559 | 485068 | 19.51          | 19.49          | 19.05          | 0.30          | 0.24          | 0.11          | 19.83             | 19.76             | 19.26             | 19.81                      | 19.73                      | 19.16                      | 0.02    | 0.03    | 0.10    |
| B28H1805001 | 1         | 257027 | 485015 | 20.37          | 20.36          | 19.63          | 0.13          | 0.13          | 0.53          | 20.51             | 20.51             | 20.24             | 20.50                      | 20.49                      | 20.16                      | 0.01    | 0.02    | 0.07    |
| B28H1806001 | 1         | 256360 | 485250 | 19.28          | 19.23          | 18.56          | 0.14          | 0.07          | -0.02         | 19.44             | 19.32             | 18.59             | 19.42                      | 19.30                      | 18.54                      | 0.02    | 0.02    | 0.05    |
| B28H1808001 | 1         | 256805 | 485079 | 19.84          | 19.82          | 19.26          | 0.05          | 0.07          | 0.41          | 19.89             | 19.91             | 19.76             | 19.89                      | 19.89                      | 19.68                      | 0.00    | 0.02    | 0.08    |
| B28H1883001 | 1         | 256056 | 484978 | 18.67          | 18.66          | 17.94          | -0.02         | -0.10         | 0.02          | 18.65             | 18.58             | 18.04             | 18.65                      | 18.56                      | 17.96                      | 0.01    | 0.02    | 0.08    |
| B28H1885001 | 1         | 256303 | 485009 | 19.21          | 19.17          | 18.70          | -0.11         | -0.13         | -0.15         | 19.10             | 19.06             | 18.64             | 19.10                      | 19.04                      | 18.55                      | 0.00    | 0.02    | 0.10    |
| B28H1886001 | 1         | 256314 | 485391 | 18.88          | 18.84          | 18.17          | -0.10         | -0.17         | -0.18         | 18.79             | 18.68             | 18.01             | 18.78                      | 18.67                      | 17.99                      | 0.01    | 0.01    | 0.02    |
| B28F0237001 | 2         | 257100 | 487500 | 19.32          | 19.11          | 18.24          | 0.11          | 0.19          | 0.31          | 19.43             | 19.30             | 18.55             | 19.43                      | 19.30                      | 18.55                      | 0.00    | 0.00    | 0.00    |
| B28H0574001 | 2         | 255610 | 486340 | 17.73          | 17.52          | 16.55          | -0.24         | -0.22         | -0.23         | 17.49             | 17.31             | 16.32             | 17.49                      | 17.31                      | 16.32                      | 0.00    | 0.00    | 0.00    |
| B28H0580001 | 2         | 254440 | 485080 | 16.97          | 16.82          | 15.77          | 0.00          | -0.05         | -0.09         | 17.00             | 16.79             | 15.70             | 16.97                      | 16.77                      | 15.68                      | 0.02    | 0.02    | 0.02    |
| B28H0592001 | 2         | 256560 | 485365 | 19.71          | 19.57          | 18.92          | 0.04          | 0.05          | -0.03         | 19.76             | 19.64             | 18.93             | 19.75                      | 19.63                      | 18.90                      | 0.01    | 0.02    | 0.04    |
| B28H0604001 | 2         | 255350 | 484707 | 18.14          | 17.90          | 17.04          | 0.25          | 0.31          | 0.19          | 18.43             | 18.25             | 17.30             | 18.39                      | 18.21                      | 17.23                      | 0.04    | 0.05    | 0.07    |
| B28H0609001 | 2         | 255260 | 483965 | 18.79          | 18.59          | 17.76          | 0.23          | 0.25          | 0.10          | 19.14             | 18.96             | 18.00             | 19.02                      | 18.84                      | 17.86                      | 0.11    | 0.12    | 0.14    |
| B28H0617001 | 2         | 255158 | 483472 | 19.01          | 18.88          | 18.01          | 0.34          | 0.35          | 0.45          | 19.39             | 19.28             | 18.56             | 19.35                      | 19.23                      | 18.46                      | 0.04    | 0.05    | 0.10    |
| B28H0622001 | 2         | 259796 | 483283 | 34.81          | 34.64          | 33.70          | -0.50         | -0.36         | 0.17          | 34.32             | 34.28             | 33.88             | 34.32                      | 34.28                      | 33.87                      | 0.01    | 0.01    | 0.01    |
| B28H0637001 | 2         | 253750 | 485370 | 14.17          | 14.06          | 13.70          | 0.60          | 0.62          | 0.35          | 14.78             | 14.68             | 14.05             | 14.77                      | 14.68                      | 14.05                      | 0.00    | 0.00    | 0.00    |
| B28H0654001 | 2         | 256180 | 484320 | 20.28          | 19.98          | 18.93          | -0.18         | -0.07         | -0.03         | 20.57             | 20.41             | 19.52             | 20.10                      | 19.91                      | 18.90                      | 0.46    | 0.50    | 0.62    |
| B28H0656001 | 2         | 256397 | 483732 | 20.73          | 20.31          | 19.37          | -0.11         | 0.11          | 0.03          | 21.32             | 21.16             | 20.28             | 20.62                      | 20.42                      | 19.40                      | 0.71    | 0.74    | 0.88    |
| B28H0657001 | 2         | 256940 | 483780 | 21.63          | 21.42          | 20.70          | 0.46          | 0.47          | 0.18          | 22.23             | 22.07             | 21.18             | 22.09                      | 21.90                      | 20.88                      | 0.15    | 0.18    | 0.29    |
| B28H0658001 | 2         | 256280 | 483280 | 20.87          | 20.66          | 19.71          | 0.87          | 0.85          | 0.65          | 21.99             | 21.78             | 20.66             | 21.74                      | 21.51                      | 20.36                      | 0.25    | 0.26    | 0.29    |
| B28H0680001 | 2         | 253200 | 486170 | 14.29          | 14.10          | 13.36          | 0.05          | 0.16          | 0.31          | 14.34             | 14.26             | 13.67             | 14.34                      | 14.26                      | 13.67                      | 0.00    | 0.00    | 0.00    |
| B28H0687001 | 2         | 255944 | 482688 | 21.74          | 21.58          | 20.56          | 0.19          | 0.16          | 0.17          | 22.04             | 21.85             | 20.87             | 21.93                      | 21.74                      | 20.73                      | 0.11    | 0.11    | 0.14    |
| B28H0707001 | 2         | 256260 | 485330 | 19.16          | 19.06          | 18.41          | -0.02         | -0.08         | -0.33         | 19.16             | 19.00             | 18.11             | 19.14                      | 18.98                      | 18.08                      | 0.02    | 0.02    | 0.03    |

| Naam        | modellaag |        |        | GHG<br>gemeten | GVG<br>gemeten | GLG<br>gemeten | GHG<br>residu | GVG<br>residu | GLG<br>residu | GHG<br>Scenario 6 | GVG<br>Scenario 6 | GLG<br>Scenario 6 | GHG<br>Huidige<br>situatie | GVG<br>Huidige<br>situatie | GLG<br>Huidige<br>situatie | Dif GHG | Dif GVG | Dif GLG |
|-------------|-----------|--------|--------|----------------|----------------|----------------|---------------|---------------|---------------|-------------------|-------------------|-------------------|----------------------------|----------------------------|----------------------------|---------|---------|---------|
|             |           | x      | y      |                |                |                |               |               |               |                   |                   |                   |                            |                            |                            |         |         |         |
| B28H0728001 | 2         | 256380 | 485020 | 19.55          | 19.47          | 18.96          | -0.08         | -0.09         | -0.21         | 19.47             | 19.40             | 18.85             | 19.47                      | 19.38                      | 18.75                      | 0.00    | 0.02    | 0.10    |
| B28H1764001 | 2         | 253760 | 485424 | 14.11          | 13.95          | 13.73          | 0.25          | 0.38          | 0.22          | 14.37             | 14.33             | 13.95             | 14.36                      | 14.33                      | 13.95                      | 0.00    | 0.00    | 0.00    |
| B28H1806002 | 2         | 256360 | 485250 | 19.39          | 19.29          | 18.54          | 0.03          | 0.01          | 0.00          | 19.44             | 19.32             | 18.59             | 19.42                      | 19.30                      | 18.54                      | 0.02    | 0.02    | 0.05    |
| B28H1880001 | 2         | 256361 | 485195 | 19.67          | 19.58          | 18.69          | 0.05          | -0.03         | -0.04         | 19.75             | 19.59             | 18.71             | 19.72                      | 19.55                      | 18.65                      | 0.03    | 0.04    | 0.06    |
| B28H1883002 | 2         | 256056 | 484978 | 18.73          | 18.71          | 17.97          | -0.09         | -0.15         | -0.01         | 18.65             | 18.58             | 18.04             | 18.64                      | 18.56                      | 17.96                      | 0.01    | 0.02    | 0.08    |
| B28H1884001 | 2         | 255987 | 484996 | 18.65          | 18.44          | 17.61          | -0.26         | -0.14         | 0.10          | 18.39             | 18.32             | 17.78             | 18.39                      | 18.30                      | 17.71                      | 0.01    | 0.02    | 0.07    |
| B28F0237002 | 3         | 257100 | 487500 | 19.04          | 18.85          | 18.20          | 0.34          | 0.42          | 0.36          | 19.38             | 19.27             | 18.56             | 19.38                      | 19.27                      | 18.56                      | 0.00    | 0.00    | 0.00    |
| B28H0229001 | 3         | 255883 | 483959 | 19.74          | 19.54          | 18.69          | -0.02         | 0.02          | -0.01         | 20.09             | 19.98             | 19.30             | 19.72                      | 19.56                      | 18.68                      | 0.37    | 0.42    | 0.62    |
| B28H0230001 | 3         | 256228 | 484103 | 20.05          | 19.86          | 19.11          | -0.10         | -0.10         | -0.36         | 20.69             | 20.56             | 19.77             | 19.95                      | 19.76                      | 18.75                      | 0.75    | 0.80    | 1.02    |
| B28H0340001 | 3         | 257326 | 483496 | 23.14          | 22.97          | 22.23          | -0.02         | 0.00          | -0.13         | 23.26             | 23.12             | 22.29             | 23.12                      | 22.97                      | 22.10                      | 0.14    | 0.15    | 0.18    |
| B28H0424001 | 3         | 257560 | 484730 | 22.71          | 22.51          | 21.51          | -0.02         | -0.02         | -0.07         | 22.78             | 22.58             | 21.53             | 22.69                      | 22.49                      | 21.44                      | 0.09    | 0.09    | 0.09    |
| B28H0424002 | 3         | 257560 | 484730 | 22.67          | 22.45          | 21.50          | 0.02          | 0.04          | -0.06         | 22.78             | 22.58             | 21.53             | 22.69                      | 22.49                      | 21.44                      | 0.09    | 0.09    | 0.09    |
| B28H0425001 | 3         | 257881 | 482877 | 26.45          | 26.29          | 25.30          | -0.58         | -0.58         | -0.51         | 25.94             | 25.77             | 24.86             | 25.87                      | 25.71                      | 24.79                      | 0.07    | 0.07    | 0.06    |
| B28H0455001 | 3         | 258089 | 483741 | 25.48          | 25.45          | 24.56          | -0.45         | -0.56         | -0.47         | 25.10             | 24.96             | 24.16             | 25.03                      | 24.89                      | 24.09                      | 0.07    | 0.07    | 0.07    |
| B28H0456001 | 3         | 256737 | 482910 | 22.97          | 22.79          | 21.91          | -0.28         | -0.29         | -0.41         | 22.85             | 22.67             | 21.71             | 22.69                      | 22.50                      | 21.50                      | 0.16    | 0.17    | 0.21    |
| B28H0461001 | 3         | 255681 | 484112 | 19.25          | 19.09          | 18.28          | 0.13          | 0.13          | 0.06          | 19.62             | 19.49             | 18.73             | 19.38                      | 19.22                      | 18.34                      | 0.24    | 0.27    | 0.39    |
| B28H0462001 | 3         | 256061 | 483925 | 19.91          | 19.68          | 18.78          | -0.07         | -0.02         | -0.07         | 20.48             | 20.36             | 19.64             | 19.84                      | 19.66                      | 18.71                      | 0.64    | 0.70    | 0.93    |
| B28H0463001 | 3         | 255736 | 483627 | 19.87          | 19.73          | 19.08          | 0.13          | 0.13          | -0.01         | 20.19             | 20.09             | 19.42             | 20.00                      | 19.86                      | 19.07                      | 0.20    | 0.23    | 0.35    |
| B28H0463002 | 3         | 255736 | 483627 | 20.04          | 19.88          | 19.12          | -0.04         | -0.02         | -0.05         | 20.19             | 20.09             | 19.42             | 20.00                      | 19.86                      | 19.07                      | 0.20    | 0.23    | 0.35    |
| B28H0502001 | 3         | 255811 | 485236 | 18.09          | 18.00          | 17.42          | -0.38         | -0.34         | -0.22         | 17.72             | 17.68             | 17.24             | 17.71                      | 17.66                      | 17.20                      | 0.01    | 0.02    | 0.04    |
| B28H0685001 | 3         | 254990 | 485130 | 17.54          | 17.33          | 16.40          | -0.14         | -0.07         | 0.03          | 17.44             | 17.29             | 16.48             | 17.40                      | 17.26                      | 16.43                      | 0.03    | 0.04    | 0.05    |
| B28H0688001 | 3         | 255870 | 483940 | 19.77          | 19.62          | 18.69          | -0.04         | -0.05         | 0.00          | 20.08             | 19.97             | 19.30             | 19.73                      | 19.57                      | 18.69                      | 0.35    | 0.40    | 0.60    |
| B28H1804002 | 3         | 256559 | 485068 | 19.69          | 19.62          | 19.09          | 0.41          | 0.36          | 0.16          | 20.16             | 20.05             | 19.36             | 20.10                      | 19.98                      | 19.25                      | 0.06    | 0.07    | 0.11    |
| B28H1805002 | 3         | 257027 | 485015 | 20.84          | 20.66          | 19.77          | 0.38          | 0.41          | 0.43          | 21.30             | 21.15             | 20.29             | 21.22                      | 21.07                      | 20.20                      | 0.08    | 0.08    | 0.10    |

| Naam        | modellaag |        |        | GHG<br>gemeten | GVG<br>gemeten | GLG<br>gemeten | GHG<br>residu | GVG<br>residu | GLG<br>residu | GHG<br>Scenario 6 | GVG<br>Scenario 6 | GLG<br>Scenario 6 | GHG<br>Huidige<br>situatie | GVG<br>Huidige<br>situatie | GLG<br>Huidige<br>situatie | Dif GHG | Dif GVG | Dif GLG |
|-------------|-----------|--------|--------|----------------|----------------|----------------|---------------|---------------|---------------|-------------------|-------------------|-------------------|----------------------------|----------------------------|----------------------------|---------|---------|---------|
|             |           | x      | y      |                |                |                |               |               |               |                   |                   |                   |                            |                            |                            |         |         |         |
| B28H1808002 | 3         | 256805 | 485079 | 20.30          | 20.17          | 19.37          | 0.34          | 0.34          | 0.37          | 20.71             | 20.58             | 19.84             | 20.64                      | 20.51                      | 19.74                      | 0.07    | 0.07    | 0.10    |
| B28H1879001 | 3         | 256343 | 484786 | 20.05          | 19.90          | 18.95          | 0.04          | 0.04          | 0.13          | 20.26             | 20.12             | 19.33             | 20.09                      | 19.94                      | 19.08                      | 0.17    | 0.19    | 0.25    |
| B28H1879002 | 3         | 256343 | 484786 | 20.04          | 19.88          | 18.96          | 0.05          | 0.05          | 0.12          | 20.26             | 20.12             | 19.33             | 20.09                      | 19.94                      | 19.08                      | 0.17    | 0.19    | 0.25    |
| B28H1880002 | 3         | 256361 | 485195 | 19.54          | 19.39          | 18.86          | -0.02         | 0.01          | -0.20         | 19.56             | 19.44             | 18.73             | 19.52                      | 19.40                      | 18.66                      | 0.04    | 0.05    | 0.07    |
| B28H1881001 | 3         | 256374 | 485645 | 19.35          | 19.19          | 18.33          | -0.17         | -0.13         | 0.00          | 19.19             | 19.07             | 18.35             | 19.18                      | 19.06                      | 18.33                      | 0.01    | 0.01    | 0.02    |
| B28H1881002 | 3         | 256374 | 485645 | 19.34          | 19.17          | 18.32          | -0.16         | -0.11         | 0.01          | 19.19             | 19.07             | 18.35             | 19.18                      | 19.06                      | 18.33                      | 0.01    | 0.01    | 0.02    |
| B28H1882001 | 3         | 257028 | 485015 | 20.90          | 20.71          | 19.75          | 0.32          | 0.36          | 0.45          | 21.30             | 21.15             | 20.29             | 21.22                      | 21.07                      | 20.20                      | 0.08    | 0.08    | 0.10    |
| B28H1882002 | 3         | 257028 | 485015 | 20.92          | 20.70          | 19.75          | 0.30          | 0.37          | 0.45          | 21.30             | 21.15             | 20.29             | 21.22                      | 21.07                      | 20.20                      | 0.08    | 0.08    | 0.10    |
| B28H1883003 | 3         | 256056 | 484978 | 19.10          | 19.01          | 18.15          | -0.03         | -0.08         | -0.01         | 19.14             | 19.02             | 18.27             | 19.07                      | 18.93                      | 18.14                      | 0.08    | 0.09    | 0.13    |
| B28H1883004 | 3         | 256056 | 484978 | 19.12          | 19.03          | 18.17          | -0.05         | -0.10         | -0.03         | 19.14             | 19.02             | 18.27             | 19.07                      | 18.93                      | 18.14                      | 0.08    | 0.09    | 0.13    |
| B28H1884002 | 3         | 255987 | 484996 | 18.68          | 18.64          | 17.84          | 0.15          | 0.06          | 0.09          | 18.90             | 18.78             | 18.04             | 18.83                      | 18.70                      | 17.93                      | 0.07    | 0.08    | 0.12    |
| B28H1884003 | 3         | 255987 | 484996 | 18.90          | 18.81          | 17.96          | -0.07         | -0.11         | -0.03         | 18.90             | 18.78             | 18.04             | 18.83                      | 18.70                      | 17.93                      | 0.07    | 0.08    | 0.12    |
| B28H1884004 | 3         | 255987 | 484996 | 18.92          | 18.83          | 17.97          | -0.09         | -0.13         | -0.04         | 18.90             | 18.78             | 18.04             | 18.83                      | 18.70                      | 17.93                      | 0.07    | 0.08    | 0.12    |
| B28H1885002 | 3         | 256303 | 485009 | 19.46          | 19.40          | 18.74          | 0.14          | 0.08          | -0.01         | 19.67             | 19.56             | 18.86             | 19.60                      | 19.48                      | 18.73                      | 0.07    | 0.08    | 0.13    |
| B28H1885003 | 3         | 256303 | 485009 | 19.58          | 19.50          | 18.76          | 0.02          | -0.02         | -0.03         | 19.67             | 19.56             | 18.86             | 19.60                      | 19.48                      | 18.73                      | 0.07    | 0.08    | 0.13    |
| B28H1885004 | 3         | 256303 | 485009 | 19.63          | 19.55          | 18.78          | -0.03         | -0.07         | -0.05         | 19.67             | 19.56             | 18.86             | 19.60                      | 19.48                      | 18.73                      | 0.07    | 0.08    | 0.13    |
| B28H1886002 | 3         | 256314 | 485391 | 18.96          | 18.90          | 18.23          | -0.05         | -0.08         | 0.01          | 18.92             | 18.84             | 18.27             | 18.91                      | 18.82                      | 18.24                      | 0.01    | 0.02    | 0.03    |
| B28H1886003 | 3         | 256314 | 485391 | 18.96          | 18.89          | 18.22          | -0.05         | -0.07         | 0.02          | 18.92             | 18.84             | 18.27             | 18.91                      | 18.82                      | 18.24                      | 0.01    | 0.02    | 0.03    |
| B28H1886004 | 3         | 256314 | 485391 | 19.09          | 19.01          | 18.31          | -0.18         | -0.19         | -0.07         | 18.92             | 18.84             | 18.27             | 18.91                      | 18.82                      | 18.24                      | 0.01    | 0.02    | 0.03    |
| B28H0229002 | 4         | 255883 | 483959 | 19.94          | 19.69          | 18.81          | -0.22         | -0.13         | -0.13         | 20.09             | 19.98             | 19.30             | 19.72                      | 19.56                      | 18.68                      | 0.37    | 0.42    | 0.62    |
| B28H0230002 | 4         | 256228 | 484103 | 19.99          | 19.56          | 18.80          | -0.05         | 0.19          | -0.05         | 20.70             | 20.56             | 19.77             | 19.94                      | 19.75                      | 18.75                      | 0.76    | 0.81    | 1.02    |
| B28H0340002 | 4         | 257326 | 483496 | 23.14          | 22.95          | 22.28          | -0.02         | 0.02          | -0.18         | 23.26             | 23.12             | 22.29             | 23.13                      | 22.97                      | 22.10                      | 0.14    | 0.15    | 0.18    |
| B28H0424003 | 4         | 257560 | 484730 | 22.63          | 22.43          | 21.44          | 0.06          | 0.06          | 0.00          | 22.78             | 22.58             | 21.53             | 22.69                      | 22.49                      | 21.44                      | 0.09    | 0.09    | 0.09    |
| B28H0463003 | 4         | 255736 | 483627 | 20.40          | 20.21          | 19.41          | -0.39         | -0.34         | -0.34         | 20.21             | 20.10             | 19.42             | 20.01                      | 19.87                      | 19.08                      | 0.20    | 0.23    | 0.35    |

| Naam        | modellaag |        |        | GHG<br>gemeten | GVG<br>gemeten | GLG<br>gemeten | GHG<br>residu | GVG<br>residu | GLG<br>residu | GHG<br>Scenario 6 | GVG<br>Scenario 6 | GLG<br>Scenario 6 | GHG<br>Huidige<br>situatie | GVG<br>Huidige<br>situatie | GLG<br>Huidige<br>situatie | Dif GHG | Dif GVG | Dif GLG |
|-------------|-----------|--------|--------|----------------|----------------|----------------|---------------|---------------|---------------|-------------------|-------------------|-------------------|----------------------------|----------------------------|----------------------------|---------|---------|---------|
|             |           | x      | y      |                |                |                |               |               |               |                   |                   |                   |                            |                            |                            |         |         |         |
| B28H0501001 | 4         | 255685 | 484600 | 18.75          | 18.56          | 17.77          | 0.11          | 0.13          | 0.02          | 19.00             | 18.86             | 18.01             | 18.86                      | 18.69                      | 17.79                      | 0.15    | 0.16    | 0.22    |
| B28H0502002 | 4         | 255811 | 485236 | 18.22          | 18.11          | 17.48          | -0.49         | -0.43         | -0.28         | 17.75             | 17.70             | 17.24             | 17.73                      | 17.68                      | 17.20                      | 0.01    | 0.02    | 0.04    |
| B28H1880003 | 4         | 256361 | 485195 | 19.55          | 19.47          | 18.68          | -0.03         | -0.07         | -0.02         | 19.56             | 19.44             | 18.73             | 19.52                      | 19.40                      | 18.66                      | 0.04    | 0.05    | 0.07    |
| B28H1881003 | 4         | 256374 | 485645 | 19.33          | 19.17          | 18.32          | -0.15         | -0.11         | 0.01          | 19.19             | 19.07             | 18.35             | 19.18                      | 19.06                      | 18.33                      | 0.01    | 0.01    | 0.02    |
| B28H1881004 | 4         | 256374 | 485645 | 19.29          | 19.18          | 18.74          | -0.11         | -0.12         | -0.41         | 19.19             | 19.07             | 18.35             | 19.18                      | 19.06                      | 18.33                      | 0.01    | 0.01    | 0.02    |
| B28H0296001 | 5         | 259134 | 487223 | 22.32          | 22.11          | 21.39          | -0.23         | -0.13         | -0.10         | 22.09             | 21.98             | 21.29             | 22.09                      | 21.98                      | 21.29                      | 0.00    | 0.00    | 0.00    |
| B28H0425002 | 5         | 257881 | 482877 | 26.47          | 26.28          | 25.34          | -0.60         | -0.58         | -0.55         | 25.94             | 25.77             | 24.86             | 25.87                      | 25.70                      | 24.79                      | 0.07    | 0.07    | 0.06    |
| B28H0455002 | 5         | 258089 | 483741 | 24.89          | 24.82          | 24.00          | -0.05         | -0.10         | -0.02         | 24.90             | 24.78             | 24.05             | 24.84                      | 24.72                      | 23.98                      | 0.06    | 0.07    | 0.07    |
| B28H0455003 | 5         | 258089 | 483741 | 24.91          | 24.82          | 24.02          | -0.07         | -0.10         | -0.04         | 24.90             | 24.78             | 24.05             | 24.84                      | 24.72                      | 23.98                      | 0.06    | 0.07    | 0.07    |
| B28H0462002 | 5         | 256061 | 483925 | 19.90          | 19.63          | 18.88          | -0.07         | 0.03          | -0.17         | 20.48             | 20.37             | 19.64             | 19.83                      | 19.66                      | 18.71                      | 0.65    | 0.71    | 0.93    |
| B28H0228001 | 6         | 255941 | 482683 | 21.35          | 21.17          | 20.26          | 0.33          | 0.33          | 0.26          | 21.81             | 21.64             | 20.70             | 21.68                      | 21.50                      | 20.52                      | 0.13    | 0.14    | 0.18    |
| B28H0340003 | 6         | 257326 | 483496 | 23.13          | 22.96          | 22.28          | -0.01         | 0.01          | -0.18         | 23.26             | 23.12             | 22.29             | 23.12                      | 22.97                      | 22.10                      | 0.14    | 0.15    | 0.18    |
| B28H0456002 | 6         | 256737 | 482910 | 22.99          | 22.80          | 22.09          | -0.31         | -0.31         | -0.60         | 22.84             | 22.67             | 21.71             | 22.68                      | 22.49                      | 21.49                      | 0.16    | 0.17    | 0.21    |
| B28H0461002 | 6         | 255681 | 484112 | 19.23          | 19.04          | 18.37          | 0.15          | 0.18          | -0.04         | 19.61             | 19.48             | 18.73             | 19.38                      | 19.22                      | 18.34                      | 0.24    | 0.27    | 0.39    |
| B28H0218001 | 7         | 254978 | 485108 | 17.25          | 17.07          | 16.30          | 0.16          | 0.19          | 0.13          | 17.44             | 17.30             | 16.48             | 17.41                      | 17.26                      | 16.43                      | 0.03    | 0.04    | 0.05    |
| B28H0229003 | 7         | 255883 | 483959 | 19.95          | 19.66          | 18.93          | -0.23         | -0.10         | -0.25         | 20.10             | 19.99             | 19.30             | 19.72                      | 19.56                      | 18.68                      | 0.37    | 0.42    | 0.62    |
| B28H0228002 | 7         | 255941 | 482683 | 21.39          | 21.18          | 20.34          | 0.29          | 0.32          | 0.18          | 21.81             | 21.63             | 20.70             | 21.68                      | 21.50                      | 20.52                      | 0.13    | 0.14    | 0.18    |
| B28H0230003 | 7         | 256228 | 484103 | 19.94          | 19.60          | 18.64          | 0.00          | 0.15          | 0.10          | 20.70             | 20.57             | 19.77             | 19.94                      | 19.75                      | 18.74                      | 0.77    | 0.82    | 1.03    |
| B28H1879003 | 7         | 256343 | 484786 | 20.04          | 19.89          | 18.98          | 0.05          | 0.04          | 0.10          | 20.26             | 20.12             | 19.33             | 20.09                      | 19.94                      | 19.08                      | 0.17    | 0.19    | 0.25    |
| B28H1880004 | 7         | 256361 | 485195 | 19.66          | 19.56          | 18.76          | -0.14         | -0.17         | -0.11         | 19.55             | 19.44             | 18.73             | 19.52                      | 19.39                      | 18.66                      | 0.04    | 0.05    | 0.07    |
| B28H1881005 | 7         | 256374 | 485645 | 19.34          | 19.19          | 18.38          | -0.16         | -0.13         | -0.05         | 19.19             | 19.07             | 18.35             | 19.18                      | 19.06                      | 18.33                      | 0.01    | 0.01    | 0.02    |