

- 1) Bijsluiter betrekkingslijnen **2012-2013\_V2**  
geldigheidsbereik 1 november 2012 - 31 oktober 2013

## Document 1 van 4

- 1) "Bijsluiter betrekkingslijnen 2012-2013\_V2"
- 2) "Betrekkingslijnen Maas versie 2012-2013\_V2"
- 3) "Effect thans lopende wijzigingen Maas"
- 4) "Ligging meetpunten Maas"

*Rijkswaterstaat Dienst Limburg  
Afdeling ANI  
Avenue Ceramique 125  
6221 KV Maastricht  
[dlb-ani-frontoffice@rws.nl](mailto:dlb-ani-frontoffice@rws.nl)  
043-3294321*

Eén van de taken van de Dienst Limburg als beheerder van de Maas is om inzicht te verwerven in het waterstand- en afvoerloop van de rivier onder alle omstandigheden. Deze kennis vormt de basis voor het dagelijks beheer van de rivier. Bijvoorbeeld als scheepvaartroute maar ook voor het terrein beheer binnen het winterbed. Daarnaast vraagt de samenleving inzicht in de te verwachten waterstanden bij een dreigend hoogwater. Een middel om snel dit inzicht te verkrijgen zijn de betrekkinglijnen. Een betrekkinglijn geeft de relatie weer tussen de waterstanden ter plaatse van twee meetstations. De verbindende factor tussen twee meetstations is de afvoer. De afvoer die bij het ene meetpunt is gepasseerd, gaat ook het tweede meetpunt passeren. Voor de Maas werd deze relatie traditioneel vastgelegd tussen het meetpunt Borgharen-dorp en de overige meetpunten. Door ingrepen in het kader van uitvoering van Maaswerken is het meetpunt Borgharen-dorp vanaf het hoogwaterseizoen 2009-2010 niet meer bruikbaar als basis voor de betrekkinglijnen. **Daarom is er overgestapt op het meetpunt St. Pieter.**

Op basis van de afvoer bij St.Pieter kan met de betrekkinglijnen een eerste schatting van de waterstanden op benedenstrooms gelegen stations t/m km. 230 worden gegeven. Een betrekkinglijn is nooit te gebruiken als een momentane verhanglijn, maar slechts als een relatie tussen een afvoer bij St. Pieter en een verwachtingswaarde van een top waterstand op een benedenstrooms meetpunt.

Sinds 2007 is de methodiek en de frequentie van het opstellen van de betrekkinglijnen opgezet als een jaarlijkse activiteit. De methode is thans gebaseerd op:

- Jaarlijkse actualisatie op 1 november met maximale geldigheidsduur van 1 jaar,
- In de betrekkinglijnen staan alleen de meetpunten van het huidige MSW-meetnet,
- Geen afronding meer van waterstanden op eenheden van 5 centimeter,
- In het hoge afvoerbereik gebaseerd op modelresultaten met de meest actuele modellen,
- De betrekkinglijnen gaan vergezeld van een extra tabel die inzicht geeft in de effecten van uitgevoerde en geplande ingrepen, die nog niet meegenomen zijn in het actuele model.

De onderhavige betrekkinglijnen Maas versie 2012\_2013 van 1 november 2012 vervangen de betrekkinglijnen Maas versie 2011\_2012 van 1 november 2011. In de betrekkinglijnen zijn resultaten van SOBEK-, en WAQUA-model J12\_4 opgenomen. Daardoor bevatten de betrekkinglijnen de best beschikbare inschatting van de actuele situatie.

Na 1984 zijn veel hoogwaters opgetreden. Na het hoogwater van december 1993 werd de Commissie Watersnood Maas (CWM) ingesteld. Het hoogwater van januari/februari 1995 onderstreepte de noodzaak tot uitvoering van de door CWM voorgestelde maatregelen. Na het hoogwater van 1995 gaf de regering uitwerking aan de door CWM voorgestelde maatregelen door het Deltaplan Grote Rivieren (DGR), dat voorziet in een versnelde aanleg van kaden, en door instelling van de projectorganisatie Maaswerken. De kadeaanleg is inmiddels voltooid. Doel van de kaden in de onbedijkte Maas was het bieden van een beschermingsniveau van circa 1\*/50 jaar. Na uitvoering van de verruimingsmaatregelen door de Maaswerken en aanvullende beperkte kadeverhoging moet het beschermingsniveau van de kaden zijn toegenomen tot minimaal 1\*/250 jaar.

Met de herziening van de betrekkinglijnen worden ook de bijbehorende waterstandtabellen aangepast.

De nauwkeurigheid van de betrekkinglijnen en de bijbehorende tabellen is beperkt. Ze moeten dan ook met de nodige voorzichtigheid gebruikt worden. Aandachtspunten zijn daarbij in volgorde van belang:

- De vorm (spits of stomp) van de afvoergolven bij Borgharen/ St. Pieter
- De voortgang van werkzaamheden van de Maaswerken
- De looptijd van afvoergolven
- De afvoeren van de zijrivieren en de beken langs de Vlaamse en Nederlandse Maas

Het gecombineerde effect van deze factoren heeft in benedenstroomse richting grote invloed op de waterstanden. De invloed van golfvorm en Maaswerken is indicatief zichtbaar gemaakt in Tabel 1. Op basis van Tabel 1 wordt de beperkte geldigheid en geldigheidsduur van de betrekkinglijnen nogmaals benadrukt.

Meetpunt	Hoogwater jan. 1995 (meting) [m+ NAP]	Hoogwater jan. 2003 (meting) [m+ NAP]	Hoogwater jan. 1995 (indicatie 2015 na Maaswerken) <sup>1</sup> [m+ NAP]	Resultaat betrekkinglijn 2012_2013 <sup>2</sup> [m+ NAP]
Borgharen-dorp	45.71	45.65	44.67	45.13
Well-dorp	15.43	14.95	15.06	15.24
Lith-dorp	6.54	5.74	6.36	6.15

Tabel 1: Gemeten waterstanden en berekende waterstanden hoogwaters in vergelijking tot betrekkinglijn

In de hoogwatervoorspelling van Rijkswaterstaat wordt zo goed mogelijk rekening gehouden met bovengenoemde aandachtspunten. Bij een hoogwatersituatie moet dan ook uitgegaan worden van de waterstandverwachting voor nabijgelegen hoofdmeetpunten (Teletekst pagina 724). Met de betrekkinglijnen en de bijbehorende tabellen kan vervolgens een doorvertaling gemaakt worden naar individuele rivierkilometers.

<sup>1</sup> Berekend met het WAQUA-model 'vka\_v42doro\_zbob' (Grensmaas: VKA conform MER Grensmaas 2003 [Agtersloot,2003]; Passende beoordeling Variant 3 inclusief Kotem, grindrug en grinddrempels [Maaswerken,2005]; Ontwerp Roosteren uit 2005 [HKV/WitBo, 2005]; geen bodem- en oeverbescherming; Zandmaas: Scope 2001 [Meijer, D.G.,2005])

<sup>2</sup> QSt. Pieter hoogwater januari 1995 = 2770 m3/s

2) **Betrekkinglijnen Maas versie 2012-2013\_V2**  
geldigheidsbereik 1 november 2012 - 31 oktober 2013

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<b>Betrekingslijnen Maas versie 2012_2013_V2</b>																			<b>geldigheidsbereik 1 november 2012 - 31 oktober 2013</b>									
Informatiebron		Gemeten waterstand 1 juli 2011 - 30 juni 2012							WAQUA en SOBEK in bereik recente hoogwaters										WAQUA									
Waterstand Borgharen-dorp [m]		37.91	38.45	39.07	40.08	41.88	42.65	43.14	43.37	44.12	44.51	44.89	45.07	45.17	45.24	45.36	45.44	45.62	46.04									
aantal dagen/jr dat ws hoger is		272	187	108	44	8	4	1																				
Afvoer St. Pieter [m3/s]		80	155	280	530	1030	1280	1500	1626	1993	2264	2537	2689	2789	2869	3011	3112	3435	4003									
herh. tijd v/d topafvoer in jaren									2	5	10	20	30	40	50	75	100	250	1250									
Afvoer Borgharen-dorp [m3/s]		(50)	(125)	(250)	(500)	(1000)	(1250)	(1470)	1627	1987	2260	2533	2685	2786	2865	3008	3109	3431	4000									
peilschaal op MSW-punt	kmr	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws									
<b>Eijsden grens</b>	<b>2.56</b>	<b>44.16</b>	<b>44.38</b>	<b>44.75</b>	<b>45.53</b>	<b>46.72</b>	<b>47.26</b>	<b>47.78</b>	<b>48.12</b>	<b>48.90</b>	<b>49.32</b>	<b>49.70</b>	<b>49.91</b>	<b>50.04</b>	<b>50.15</b>	<b>50.35</b>	<b>50.50</b>	<b>50.88</b>	<b>51.38</b>									
	3	44.06	44.16	44.48	45.22	46.39	46.96	47.49	47.83	48.64	49.06	49.44	49.64	49.77	49.88	50.07	50.23	50.62	51.25									
	4	44.06	44.16	44.44	45.10	46.12	46.65	47.11	47.39	48.17	48.57	48.93	49.11	49.22	49.32	49.48	49.59	49.93	50.44									
	5	44.06	44.12	44.26	44.72	45.68	46.21	46.70	46.99	47.85	48.26	48.61	48.79	48.90	48.99	49.13	49.23	49.54	50.00									
	6	44.06	44.11	44.22	44.61	45.52	46.05	46.54	46.83	47.73	48.14	48.49	48.67	48.78	48.87	49.01	49.11	49.43	49.92									
	7	44.06	44.11	44.19	44.52	45.30	45.80	46.26	46.52	47.34	47.74	48.11	48.28	48.38	48.47	48.61	48.71	49.04	49.55									
	8	44.06	44.10	44.17	44.46	45.13	45.60	46.03	46.27	47.08	47.53	47.96	48.16	48.28	48.37	48.52	48.63	48.97	49.48									
	9	44.06	44.10	44.16	44.42	45.02	45.47	45.88	46.11	46.92	47.39	47.86	48.07	48.19	48.29	48.46	48.57	48.94	49.46									
	10	44.06	44.10	44.14	44.35	44.83	45.25	45.64	45.85	46.65	47.06	47.41	47.59	47.71	47.80	47.97	48.09	48.47	49.11									
<b>St. Pieter</b>	<b>10.80</b>	<b>44.06</b>	<b>44.10</b>	<b>44.12</b>	<b>44.31</b>	<b>44.71</b>	<b>45.08</b>	<b>45.44</b>	<b>45.64</b>	<b>46.44</b>	<b>46.85</b>	<b>47.19</b>	<b>47.38</b>	<b>47.50</b>	<b>47.59</b>	<b>47.77</b>	<b>47.90</b>	<b>48.29</b>	<b>48.93</b>									
	11	44.06	44.09	44.12	44.29	44.67	45.04	45.40	45.60	46.39	46.79	47.12	47.29	47.40	47.49	47.65	47.76	48.14	48.79									
	12	44.06	44.08	44.11	44.25	44.57	44.89	45.23	45.43	46.19	46.58	46.90	47.06	47.16	47.24	47.39	47.50	47.84	48.41									
	13	44.05	44.07	44.08	44.17	44.38	44.60	44.86	45.07	45.75	46.08	46.35	46.48	46.56	46.63	46.78	46.87	47.13	47.55									
	14	44.05	44.06	44.06	44.11	44.21	44.33	44.55	44.78	45.43	45.74	45.99	46.11	46.18	46.25	46.40	46.48	46.72	47.08									
	15	44.05	44.05	44.04	44.04	44.04	44.03	44.21	44.48	45.17	45.48	45.71	45.83	45.91	45.97	46.06	46.12	46.32	46.62									
<b>Borgharen JK</b>	<b>15.25</b>	<b>44.05</b>	<b>44.05</b>	<b>44.05</b>	<b>44.05</b>	<b>44.05</b>	<b>44.05</b>	<b>44.22</b>	<b>44.50</b>	<b>45.19</b>	<b>45.51</b>	<b>45.76</b>	<b>45.88</b>	<b>45.96</b>	<b>46.02</b>	<b>46.13</b>	<b>46.20</b>	<b>46.42</b>	<b>46.73</b>									
<b>Stuw Borgharen</b>	<b>15.40</b>																											
<b>Borgharen dorp</b>	<b>16.00</b>	<b>37.91</b>	<b>38.45</b>	<b>39.07</b>	<b>40.08</b>	<b>41.88</b>	<b>42.65</b>	<b>43.14</b>	<b>43.37</b>	<b>44.12</b>	<b>44.51</b>	<b>44.89</b>	<b>45.07</b>	<b>45.17</b>	<b>45.24</b>	<b>45.36</b>	<b>45.44</b>	<b>45.62</b>	<b>46.04</b>									
	17	37.73	38.20	38.83	39.86	41.64	42.41	42.97	43.11	43.85	44.19	44.46	44.61	44.70	44.76	44.87	44.95	45.12	45.54									
	18	36.98	37.64	38.53	39.69	41.56	42.36	42.91	43.07	43.80	44.11	44.35	44.50	44.58	44.64	44.74	44.81	44.98	45.38									
	19	36.83	37.47	38.34	39.52	41.46	42.28	42.84	43.01	43.74	44.05	44.29	44.43	44.51	44.57	44.67	44.74	44.91	45.29									
	20	36.80	37.41	38.25	39.37	41.26	42.13	42.70	42.89	43.62	43.93	44.16	44.29	44.37	44.42	44.52	44.59	44.74	45.09									
	21	36.78	37.35	38.13	39.15	40.95	41.81	42.34	42.56	43.30	43.60	43.85	44.01	44.11	44.17	44.29	44.37	44.56	44.94									
	22	36.74	37.28	38.04	39.04	40.78	41.64	42.17	42.42	43.18	43.48	43.74	43.90	43.99	44.06	44.18	44.27	44.46	44.84									
	23	36.71	37.17	37.84	38.74	40.45	41.33	41.86	42.17	42.98	43.29	43.56	43.72	43.82	43.89	44.01	44.10	44.30	44.68									
	24	35.51	36.12	36.85	37.76	39.49	40.29	40.62	41.11	42.17	42.72	43.11	43.31	43.43	43.52	43.66	43.76	43.99	44.39									
	25	35.40	35.95	36.61	37.46	39.15	39.95	40.21	40.66	41.53	41.88	42.14	42.29	42.37	42.43	42.55	42.62	42.84	43.42									
	26	34.64	35.17	35.81	36.78	38.57	39.36	39.59	40.03	40.97	41.33	41.65	41.81	41.90	41.97	42.11	42.19	42.44	42.98									
	27	33.89	34.54	35.28	36.24	38.00	38.80	39.20	39.48	40.76	41.16	41.48	41.65	41.74	41.81	41.95	42.04	42.29	42.81									

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peilschaal op MSW-punt	kmr	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	
	28	33.57	34.15	34.85	35.79	37.55	38.32	38.70	38.98	40.20	40.62	40.95	41.12	41.21	41.29	41.43	41.52	41.77	42.30	
	29	33.53	34.06	34.70	35.56	37.23	38.01	38.38	38.67	39.49	39.85	40.12	40.26	40.34	40.41	40.53	40.61	40.85	41.37	
<b>Elsloo</b>	<b>29.33</b>	<b>33.51</b>	<b>34.00</b>	<b>34.58</b>	<b>35.40</b>	<b>37.02</b>	<b>37.77</b>	<b>38.15</b>	<b>38.40</b>	<b>39.33</b>	<b>39.67</b>	<b>39.93</b>	<b>40.06</b>	<b>40.14</b>	<b>40.20</b>	<b>40.31</b>	<b>40.39</b>	<b>40.57</b>	<b>41.10</b>	
	30	33.47	33.89	34.38	35.05	36.52	37.23	37.59	37.63	38.87	39.26	39.55	39.69	39.78	39.84	39.97	40.06	40.32	40.85	
	31	33.45	33.85	34.27	34.80	36.05	36.69	37.04	37.19	37.75	38.06	38.31	38.41	38.47	38.52	38.63	38.70	38.90	39.27	
	32	32.64	33.10	33.64	34.40	35.93	36.63	37.00	37.16	37.78	38.08	38.33	38.43	38.49	38.54	38.64	38.72	38.92	39.24	
	33	31.14	31.71	32.40	33.27	34.65	35.23	35.73	36.06	37.18	37.70	38.03	38.15	38.22	38.27	38.39	38.47	38.69	38.99	
	34	29.78	30.24	30.66	31.79	33.74	34.65	35.11	35.50	36.37	36.98	37.45	37.63	37.74	37.82	37.98	38.09	38.38	38.73	
	35	28.34	29.14	30.06	31.33	33.35	34.25	34.73	34.97	35.83	36.36	36.77	36.97	37.10	37.18	37.36	37.48	37.78	38.26	
	36	28.13	28.81	29.72	31.00	32.95	33.82	34.26	34.48	35.07	35.60	36.03	36.21	36.32	36.41	36.57	36.68	36.99	37.64	
	37	28.05	28.64	29.52	30.72	32.59	33.35	33.78	33.99	34.56	35.06	35.49	35.71	35.86	35.96	36.16	36.29	36.64	37.30	
	38	27.35	28.17	29.12	30.32	32.16	32.92	33.27	33.47	34.04	34.55	34.95	35.14	35.27	35.37	35.54	35.66	35.96	36.53	
	39	27.00	27.77	28.69	29.91	31.69	32.41	32.77	32.96	33.54	33.99	34.32	34.47	34.57	34.64	34.78	34.87	35.10	35.46	
	40	26.78	27.50	28.34	29.53	31.30	32.03	32.36	32.55	33.11	33.52	33.83	33.95	34.02	34.08	34.18	34.25	34.46	34.82	
	41	26.34	27.13	27.99	29.19	30.97	31.68	32.18	32.41	33.10	33.55	33.88	34.01	34.08	34.14	34.25	34.33	34.52	34.84	
	42	25.92	26.66	27.53	28.75	30.77	31.51	32.03	32.29	33.02	33.47	33.79	33.91	33.98	34.04	34.14	34.22	34.40	34.70	
	43	25.80	26.42	27.20	28.35	30.19	30.91	31.41	31.65	32.29	32.75	33.12	33.26	33.34	33.41	33.54	33.62	33.81	34.10	
	44	25.05	25.75	26.66	27.93	29.83	30.55	31.07	31.32	31.89	32.19	32.43	32.55	32.62	32.68	32.77	32.84	33.01	33.26	
<b>Grevenbicht</b>	<b>44.95</b>	<b>25.01</b>	<b>25.67</b>	<b>26.56</b>	<b>27.82</b>	<b>29.74</b>	<b>30.52</b>	<b>31.07</b>	<b>31.32</b>	<b>31.86</b>	<b>32.13</b>	<b>32.35</b>	<b>32.46</b>	<b>32.53</b>	<b>32.59</b>	<b>32.68</b>	<b>32.75</b>	<b>32.92</b>	<b>33.17</b>	
	45	25.01	25.67	26.56	27.82	29.74	30.52	31.07	31.32	31.86	32.13	32.35	32.46	32.53	32.58	32.68	32.74	32.92	33.17	
	46	24.77	25.36	26.17	27.38	29.36	30.20	30.83	31.11	31.79	32.07	32.29	32.39	32.46	32.51	32.60	32.66	32.83	33.07	
	47	23.89	24.65	25.55	26.65	28.27	28.93	29.67	30.04	31.31	31.63	31.87	31.99	32.05	32.11	32.20	32.26	32.44	32.67	
	48	23.67	24.26	25.05	26.04	27.65	28.40	29.10	29.41	30.48	30.94	31.26	31.40	31.49	31.56	31.68	31.75	31.98	32.23	
	49	23.28	23.74	24.32	25.32	26.94	27.61	28.30	28.57	29.86	30.36	30.78	30.95	31.05	31.13	31.25	31.33	31.58	31.85	
	50	22.60	23.04	23.73	24.70	26.37	27.18	27.82	28.12	29.55	30.07	30.49	30.65	30.75	30.83	30.94	31.02	31.26	31.47	
	51	22.38	22.77	23.38	24.25	25.94	26.75	27.41	27.59	28.66	29.30	29.82	30.04	30.17	30.26	30.39	30.48	30.77	31.00	
	52	21.25	21.66	22.44	23.78	25.70	26.59	27.31	27.52	28.41	28.97	29.38	29.55	29.64	29.71	29.80	29.87	30.14	30.39	
<b>Maaseik</b>	<b>52.73</b>	<b>21.08</b>	<b>21.45</b>	<b>22.25</b>	<b>23.56</b>	<b>25.40</b>	<b>26.24</b>	<b>26.97</b>	<b>27.35</b>	<b>28.28</b>	<b>28.80</b>	<b>29.19</b>	<b>29.35</b>	<b>29.45</b>	<b>29.51</b>	<b>29.61</b>	<b>29.67</b>	<b>29.94</b>	<b>30.19</b>	
	53	21.05	21.39	22.16	23.45	25.30	26.13	26.83	27.07	27.97	28.52	28.79	29.11	29.21	29.30	29.41	29.48	29.77	30.05	
	54	20.99	21.23	21.88	23.05	24.84	25.63	26.26	26.50	27.24	27.74	28.24	28.42	28.57	28.67	28.82	28.89	29.20	29.56	

<b>Betrekkinglijnen Maas versie 2012_2013_V2</b>																			<b>geldigheidsbereik 1 november 2012 - 31 oktober 2013</b>									
Informatiebron		Gemeten waterstand 1 juli 2011 - 30 juni 2012							WAQUA en SOBEK in bereik recente hoogwaters										WAQUA									
Waterstand Borgharen-dorp [m]		37.91	38.45	39.07	40.08	41.88	42.65	43.14	43.37	44.12	44.51	44.89	45.07	45.17	45.24	45.36	45.44	45.62	46.04									
aantal dagen/jr dat ws hoger is		272	187	108	44	8	4	1																				
Afvoer St. Pieter [m3/s]		80	155	280	530	1030	1280	1500	1626	1993	2264	2537	2689	2789	2869	3011	3112	3435	4003									
herh. tijd v/d topafvoer in jaren									2	5	10	20	30	40	50	75	100	250	1250									
Afvoer Borgharen-dorp [m3/s]		(50)	(125)	(250)	(500)	(1000)	(1250)	(1470)	1627	1987	2260	2533	2685	2786	2865	3008	3109	3431	4000									
peilschaal op MSW-punt		kmr																										
		ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws									
55	20.96	21.13	21.63	22.68	24.43	25.25	25.85	26.11	26.72	27.17	27.56	27.74	27.84	27.92	28.05	28.09	28.40	28.71										
56	20.94	21.04	21.41	22.33	24.02	24.85	25.42	25.66	26.26	26.65	26.99	27.13	27.18	27.23	27.33	27.36	27.80	28.09										
57	20.93	21.00	21.31	22.12	23.77	24.61	25.16	25.40	25.97	26.30	26.58	26.70	26.78	26.83	26.93	27.00	27.18	27.88										
58	20.92	20.98	21.23	21.97	23.54	24.27	24.89	25.15	25.74	26.08	26.35	26.47	26.54	26.60	26.67	26.73	26.89	27.24										
59	20.92	20.96	21.18	21.83	23.32	24.03	24.60	24.88	25.60	25.98	26.26	26.38	26.45	26.51	26.59	26.65	26.80	27.15										
60	20.91	20.95	21.13	21.72	23.14	23.82	24.37	24.60	25.12	25.39	25.60	25.70	25.76	25.80	25.87	25.92	26.06	26.35										
61	20.91	20.93	21.07	21.57	22.87	23.49	24.06	24.28	24.92	25.21	25.44	25.54	25.60	25.65	25.74	25.79	25.94	26.23										
<b>Stevensweert</b>	<b>61.57</b>	<b>20.91</b>	<b>20.93</b>	<b>21.05</b>	<b>21.56</b>	<b>22.87</b>	<b>23.46</b>	<b>23.89</b>	<b>24.11</b>	<b>24.60</b>	<b>24.87</b>	<b>25.09</b>	<b>25.19</b>	<b>25.26</b>	<b>25.30</b>	<b>25.38</b>	<b>25.44</b>	<b>25.59</b>	<b>25.88</b>									
62	20.90	20.92	21.03	21.46	22.63	23.16	23.57	23.78	24.20	24.45	24.62	24.71	24.74	24.78	24.84	24.87	24.99	25.21										
63	20.89	20.90	20.99	21.34	22.32	22.90	23.35	23.57	24.00	24.25	24.42	24.51	24.55	24.59	24.65	24.69	24.80	25.04										
64	20.88	20.88	20.95	21.21	21.99	22.47	22.98	23.20	23.64	23.91	24.14	24.24	24.29	24.33	24.40	24.44	24.57	24.79										
65	20.87	20.87	20.91	21.06	21.57	21.94	22.57	22.82	23.25	23.46	23.65	23.73	23.79	23.83	23.90	23.95	24.10	24.37										
66	20.86	20.86	20.89	20.97	21.29	21.53	22.17	22.47	23.12	23.32	23.50	23.59	23.65	23.70	23.77	23.82	23.99	24.28										
67.00z	66.5	20.86	20.85	20.87	20.91	21.09	21.63	21.85	22.39	22.76	23.03	23.16	23.22	23.27	23.35	23.40	23.56	23.87										
68.00z	67	20.85	20.85	20.86	20.86	20.92	20.97	21.29	21.51	22.04	22.44	22.73	22.86	22.92	22.96	23.03	23.08	23.22	23.46									
67.00n	67.5	20.85	20.85	20.85	20.85	20.85	20.86	21.14	21.35	21.83	22.18	22.44	22.57	22.63	22.69	22.76	22.82	22.99	23.25									
<b>Heel boven</b>	<b>67.34</b>	<b>20.85</b>	<b>20.85</b>	<b>20.85</b>	<b>20.85</b>	<b>20.85</b>	<b>20.85</b>	<b>21.15</b>	<b>21.36</b>	<b>21.84</b>	<b>22.19</b>	<b>22.44</b>	<b>22.56</b>	<b>22.62</b>	<b>22.67</b>	<b>22.74</b>	<b>22.79</b>	<b>22.95</b>	<b>23.22</b>									
68.00n	68	20.85	20.84	20.84	20.80	20.72	20.63	20.70	20.94	21.48	21.87	22.16	22.27	22.36	22.43	22.53	22.60	22.79	23.10									
<b>Stuw Linne</b>	<b>68.55</b>																											
69	16.89	16.93	17.09	17.64	18.97	19.59	20.23	20.50	21.18	21.59	21.94	22.05	22.15	22.22	22.35	22.43	22.62	22.95										
70	16.88	16.92	17.07	17.59	18.90	19.51	20.14	20.41	20.84	21.19	21.53	21.61	21.72	21.80	21.95	22.05	22.25	22.63										
<b>Linne beneden</b>	<b>70.40</b>	<b>16.88</b>	<b>16.92</b>	<b>17.06</b>	<b>17.58</b>	<b>18.86</b>	<b>19.44</b>	<b>20.08</b>	<b>20.36</b>	<b>20.85</b>	<b>21.19</b>	<b>21.51</b>	<b>21.57</b>	<b>21.68</b>	<b>21.77</b>	<b>21.92</b>	<b>22.01</b>	<b>22.21</b>	<b>22.59</b>									
71	16.88	16.91	17.03	17.45	18.54	19.14	19.59	19.86	20.47	20.91	21.30	21.40	21.52	21.61	21.77	21.88	22.12	22.51										
72	16.88	16.90	17.01	17.40	18.44	19.02	19.45	19.70	20.22	20.67	21.10	21.24	21.37	21.47	21.65	21.77	22.04	22.45										
73	16.87	16.89	16.99	17.34	18.28	18.85	19.20	19.48	20.14	20.61	21.04	21.18	21.30	21.40	21.58	21.70	21.96	22.37										
74	16.87	16.88	16.96	17.23	17.99	18.55	18.79	19.04	19.60	20.10	20.54	20.71	20.85	20.94	21.13	21.27	21.62	22.07										
75	16.86	16.88	16.94	17.17	17.83	18.44	18.68	18.94	19.48	19.98	20.44	20.62	20.77	20.86	21.05	21.19	21.55	22.02										
76	16.86	16.87	16.92	17.12	17.72	18.37	18.65	18.90	19.41	19.90	20.33	20.51	20.66	20.74	20.93	21.07	21.46	21.95										
77	16.86	16.86	16.90	17.03	17.42	18.07	18.50	18.79	19.37	19.87	20.32	20.50	20.65	20.73	20.93	21.06	21.45	21.94										
78	16.85	16.86	16.87	16.93	17.14	17.97	18.46	18.75	19.34	19.85	20.31	20.49	20.64	20.72	20.92	21.06	21.44	21.94										

Betrekkingslijnen Maas versie 2012_2013_V2																			geldigheidsbereik 1 november 2012 - 31 oktober 2013									
Informatiebron	Gemeten waterstand 1 juli 2011 - 30 juni 2012							WAQUA en SOBEK in bereik recente hoogwaters										WAQUA										
Waterstand Borgharen-dorp [m]	37.91	38.45	39.07	40.08	41.88	42.65	43.14	43.37	44.12	44.51	44.89	45.07	45.17	45.24	45.36	45.44	45.62	46.04										
aantal dagen/jr dat ws hoger is	272	187	108	44	8	4	1																					
Afvoer St. Pieter [m3/s]	80	155	280	530	1030	1280	1500	1626	1993	2264	2537	2689	2789	2869	3011	3112	3435	4003										
herh. tijd v/d topafvoer in jaren								2	5	10	20	30	40	50	75	100	250	1250										
Afvoer Borgharen-dorp [m3/s]	(50)	(125)	(250)	(500)	(1000)	(1250)	(1470)	1627	1987	2260	2533	2685	2786	2865	3008	3109	3431	4000										
peilschaal op MSW-punt	kmr	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws										
	79	16.85	16.85	16.86	16.88	16.94	17.76	18.37	18.68	19.30	19.81	20.26	20.44	20.60	20.68	20.87	21.01	21.41	21.91									
Roermond boven	79.75	16.85	16.85	16.85	16.85	16.85	17.57	18.20	18.51	19.16	19.67	20.11	20.30	20.45	20.52	20.70	20.85	21.26	21.77									
	80	16.85	16.85	16.85	16.84	16.81	17.54	18.19	18.50	19.16	19.67	20.11	20.30	20.45	20.52	20.70	20.85	21.26	21.77									
Stuw Roermond	80.91																											
	81	14.17	14.22	14.37	14.87	16.41	17.19	17.93	18.32	19.10	19.62	20.06	20.25	20.41	20.50	20.69	20.82	21.22	21.75									
	84	14.17	14.21	14.35	14.82	16.30	17.05	17.82	18.22	18.96	19.49	19.98	20.19	20.35	20.47	20.67	20.80	21.18	21.71									
	85	14.16	14.20	14.31	14.72	16.08	16.87	17.74	18.16	18.93	19.44	19.89	20.10	20.25	20.41	20.62	20.73	21.06	21.56									
Heel beneden	85.08	14.16	14.20	14.32	14.73	16.11	16.90	17.78	18.20	18.97	19.49	19.97	20.19	20.35	20.47	20.66	20.79	21.20	21.83									
	86	14.16	14.19	14.30	14.67	16.01	16.76	17.62	18.09	18.85	19.37	19.81	20.05	20.21	20.33	20.52	20.65	21.02	21.52									
	87	14.16	14.18	14.27	14.60	15.89	16.69	17.58	18.05	18.81	19.34	19.79	20.03	20.19	20.31	20.50	20.63	21.01	21.52									
	88	14.16	14.18	14.25	14.56	15.81	16.62	17.50	17.99	18.76	19.31	19.76	20.01	20.17	20.29	20.48	20.61	20.99	21.50									
	89	14.16	14.18	14.24	14.52	15.74	16.57	17.46	17.96	18.73	19.28	19.72	19.98	20.14	20.26	20.45	20.58	20.96	21.47									
	90	14.16	14.18	14.24	14.52	15.72	16.53	17.40	17.91	18.68	19.24	19.68	19.95	20.11	20.23	20.42	20.55	20.92	21.43									
Neer	90.12	14.16	14.17	14.24	14.52	15.72	16.52	17.39	17.90	18.67	19.23	19.67	19.94	20.10	20.22	20.42	20.54	20.92	21.43									
	91	14.16	14.17	14.23	14.49	15.68	16.49	17.37	17.88	18.65	19.21	19.66	19.93	20.09	20.21	20.40	20.53	20.90	21.41									
	92	14.16	14.17	14.23	14.46	15.60	16.40	17.28	17.79	18.56	19.12	19.57	19.84	20.00	20.11	20.30	20.43	20.80	21.30									
	93	14.16	14.17	14.21	14.42	15.51	16.28	17.14	17.63	18.38	18.92	19.36	19.61	19.76	19.88	20.06	20.19	20.58	21.08									
	94	14.16	14.16	14.20	14.38	15.42	16.19	17.07	17.57	18.33	18.87	19.31	19.57	19.71	19.83	20.01	20.13	20.51	21.00									
	95	14.15	14.16	14.19	14.34	15.36	16.09	16.95	17.43	18.18	18.71	19.14	19.39	19.54	19.65	19.83	19.95	20.33	20.81									
	96	14.15	14.16	14.19	14.30	15.26	15.99	16.84	17.33	18.09	18.62	19.06	19.30	19.44	19.55	19.72	19.83	20.20	20.66									
	97	14.15	14.16	14.18	14.27	15.16	15.88	16.74	17.22	17.99	18.52	18.97	19.21	19.36	19.46	19.63	19.75	20.11	20.57									
	98	14.15	14.15	14.17	14.23	15.07	15.78	16.63	17.10	17.87	18.41	18.86	19.10	19.24	19.35	19.52	19.63	20.00	20.46									
	99	14.15	14.15	14.16	14.21	15.01	15.70	16.54	17.01	17.77	18.29	18.75	18.99	19.13	19.24	19.41	19.52	19.90	20.36									
	100	14.15	14.15	14.16	14.18	14.95	15.63	16.47	16.92	17.67	18.18	18.63	18.87	19.01	19.11	19.27	19.38	19.76	20.22									
Belfeld boven	100.75	14.15	14.15	14.15	14.15	14.87	15.58	16.45	16.91	17.67	18.19	18.64	18.88	19.02	19.12	19.28	19.39	19.76	20.22									
Stuw Belfeld	100.79																											
	101	10.99	11.18	11.63	12.73	14.78	15.54	16.39	16.85	17.63	18.16	18.61	18.85	19.00	19.10	19.27	19.38	19.74	20.20									
	102	10.98	11.16	11.57	12.63	14.66	15.51	16.31	16.77	17.56	18.10	18.57	18.80	18.96	19.07	19.24	19.35	19.69	20.15									
Belfeld beneden	102.70	10.98	11.14	11.54	12.56	14.55	15.48	16.22	16.68	17.46	18.00	18.47	18.69	18.87	19.00	19.19	19.29	19.57	20.01									



<b>Betrekkinglijnen Maas versie 2012_2013_V2</b>																			<b>geldigheidsbereik 1 november 2012 - 31 oktober 2013</b>			
Informatiebron		Gemeten waterstand 1 juli 2011 - 30 juni 2012							WAQUA en SOBEK in bereik recente hoogwaters									WAQUA				
Waterstand Borgharen-dorp [m]		37.91	38.45	39.07	40.08	41.88	42.65	43.14	43.37	44.12	44.51	44.89	45.07	45.17	45.24	45.36	45.44	45.62	46.04			
aantal dagen/jr dat ws hoger is		272	187	108	44	8	4	1														
Afvoer St. Pieter [m3/s]		80	155	280	530	1030	1280	1500	1626	1993	2264	2537	2689	2789	2869	3011	3112	3435	4003			
herh. tijd v/d topafvoer in jaren									2	5	10	20	30	40	50	75	100	250	1250			
Afvoer Borgharen-dorp [m3/s]		(50)	(125)	(250)	(500)	(1000)	(1250)	(1470)	1627	1987	2260	2533	2685	2786	2865	3008	3109	3431	4000			
peilschaal op MSW-punt		kmr																				
		ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws			
103		10.98	11.14	11.53	12.54	14.52	15.45	16.20	16.65	17.43	17.96	18.43	18.65	18.83	18.96	19.14	19.25	19.53	19.98			
104		10.97	11.13	11.50	12.48	14.46	15.37	16.11	16.54	17.32	17.83	18.28	18.50	18.66	18.78	18.96	19.07	19.38	19.81			
105		10.97	11.12	11.47	12.42	14.39	15.29	16.04	16.45	17.23	17.71	18.16	18.37	18.52	18.63	18.81	18.92	19.22	19.66			
106		10.97	11.12	11.45	12.37	14.34	15.24	15.99	16.38	17.15	17.63	18.07	18.28	18.42	18.52	18.69	18.80	19.11	19.52			
107		10.97	11.11	11.43	12.32	14.29	15.18	15.94	16.32	17.09	17.55	17.98	18.19	18.32	18.42	18.59	18.70	19.01	19.41			
<b>Venlo</b>	<b>107.47</b>	<b>10.97</b>	<b>11.11</b>	<b>11.42</b>	<b>12.30</b>	<b>14.27</b>	<b>15.15</b>	<b>15.90</b>	<b>16.27</b>	<b>17.03</b>	<b>17.48</b>	<b>17.91</b>	<b>18.11</b>	<b>18.23</b>	<b>18.33</b>	<b>18.49</b>	<b>18.59</b>	<b>18.90</b>	<b>19.28</b>			
108		10.97	11.10	11.41	12.29	14.24	15.12	15.86	16.23	16.99	17.42	17.85	18.05	18.18	18.27	18.43	18.54	18.84	19.20			
109		10.96	11.09	11.39	12.23	14.14	15.02	15.75	16.12	16.87	17.30	17.71	17.91	18.03	18.12	18.28	18.38	18.65	19.00			
110		10.95	11.07	11.36	12.18	14.06	14.92	15.65	16.02	16.76	17.18	17.58	17.78	17.90	17.99	18.14	18.24	18.50	18.84			
111		10.95	11.06	11.33	12.13	13.97	14.84	15.56	15.93	16.66	17.08	17.48	17.68	17.80	17.89	18.04	18.13	18.38	18.71			
112		10.94	11.05	11.31	12.08	13.89	14.75	15.47	15.84	16.56	16.97	17.37	17.57	17.68	17.78	17.93	18.02	18.27	18.60			
113		10.94	11.04	11.29	12.04	13.83	14.68	15.39	15.76	16.47	16.88	17.27	17.46	17.58	17.67	17.82	17.91	18.15	18.48			
114		10.93	11.03	11.27	12.00	13.75	14.59	15.30	15.66	16.36	16.77	17.16	17.35	17.47	17.55	17.70	17.79	18.03	18.34			
115		10.92	11.02	11.25	11.95	13.65	14.49	15.20	15.57	16.27	16.67	17.05	17.24	17.36	17.44	17.59	17.68	17.92	18.24			
116		10.92	11.01	11.23	11.92	13.59	14.42	15.13	15.49	16.16	16.55	16.91	17.10	17.22	17.30	17.45	17.53	17.77	18.12			
117		10.91	11.00	11.21	11.88	13.53	14.35	15.07	15.42	16.11	16.50	16.86	17.05	17.17	17.25	17.40	17.48	17.72	18.07			
118		10.91	10.99	11.20	11.85	13.46	14.27	14.97	15.33	15.99	16.37	16.72	16.91	17.03	17.12	17.26	17.35	17.56	17.88			
119		10.91	10.98	11.18	11.81	13.40	14.20	14.90	15.26	15.91	16.27	16.62	16.81	16.92	17.01	17.14	17.23	17.44	17.76			
120		10.90	10.98	11.17	11.77	13.32	14.11	14.81	15.16	15.80	16.18	16.53	16.72	16.84	16.93	17.07	17.16	17.36	17.67			
121		10.90	10.97	11.15	11.73	13.24	14.02	14.72	15.08	15.73	16.11	16.45	16.64	16.76	16.85	16.99	17.08	17.27	17.58			
122		10.89	10.96	11.12	11.68	13.15	13.92	14.62	14.97	15.60	15.97	16.30	16.49	16.60	16.69	16.82	16.92	17.12	17.43			
123		10.89	10.95	11.11	11.64	13.06	13.82	14.52	14.87	15.47	15.82	16.14	16.32	16.43	16.52	16.65	16.74	16.93	17.23			
124		10.88	10.94	11.09	11.61	13.00	13.74	14.44	14.78	15.38	15.73	16.05	16.23	16.35	16.44	16.57	16.66	16.83	17.11			
125		10.88	10.93	11.08	11.56	12.91	13.64	14.33	14.67	15.24	15.58	15.89	16.07	16.18	16.26	16.40	16.48	16.65	16.94			
126		10.88	10.92	11.06	11.52	12.81	13.54	14.22	14.56	15.13	15.46	15.76	15.93	16.04	16.12	16.26	16.34	16.51	16.80			
127		10.87	10.92	11.04	11.48	12.75	13.47	14.15	14.49	15.05	15.37	15.66	15.83	15.94	16.02	16.15	16.24	16.41	16.71			
128		10.87	10.91	11.03	11.45	12.67	13.39	14.06	14.40	14.96	15.27	15.55	15.72	15.83	15.91	16.04	16.12	16.30	16.60			
129		10.87	10.90	11.02	11.41	12.59	13.29	13.96	14.29	14.82	15.12	15.38	15.54	15.65	15.72	15.85	15.94	16.13	16.46			
130		10.86	10.90	11.00	11.37	12.49	13.18	13.84	14.17	14.72	15.02	15.27	15.44	15.54	15.61	15.74	15.82	16.01	16.34			
131		10.86	10.89	10.98	11.32	12.39	13.06	13.70	14.02	14.58	14.90	15.17	15.34	15.44	15.52	15.65	15.73	15.93	16.26			

<b>Betrekingslijnen Maas versie 2012_2013_V2</b>																			<b>geldigheidsbereik 1 november 2012 - 31 oktober 2013</b>									
Informatiebron		Gemeten waterstand 1 juli 2011 - 30 juni 2012							WAQUA en SOBEK in bereik recente hoogwaters										WAQUA									
Waterstand Borgharen-dorp [m]		37.91	38.45	39.07	40.08	41.88	42.65	43.14	43.37	44.12	44.51	44.89	45.07	45.17	45.24	45.36	45.44	45.62	46.04									
aantal dagen/jr dat ws hoger is		272	187	108	44	8	4	1																				
Afvoer St. Pieter [m3/s]		80	155	280	530	1030	1280	1500	1626	1993	2264	2537	2689	2789	2869	3011	3112	3435	4003									
herh. tijd v/d topafvoer in jaren									2	5	10	20	30	40	50	75	100	250	1250									
Afvoer Borgharen-dorp [m3/s]		(50)	(125)	(250)	(500)	(1000)	(1470)	1627	1987	2260	2533	2685	2786	2865	3008	3109	3431	4000										
peilschaal op MSW-punt		kmr		ws		ws		ws		ws		ws		ws		ws		ws										
	132	10.86	10.88	10.97	11.28	12.30	12.95	13.60	13.92	14.47	14.77	15.02	15.19	15.29	15.37	15.50	15.58	15.78	16.12									
<b>Well dorp</b>	<b>132.10</b>	<b>10.86</b>	<b>10.88</b>	<b>10.97</b>	<b>11.28</b>	<b>12.30</b>	<b>12.95</b>	<b>13.60</b>	<b>13.92</b>	<b>14.46</b>	<b>14.76</b>	<b>15.01</b>	<b>15.18</b>	<b>15.28</b>	<b>15.35</b>	<b>15.48</b>	<b>15.56</b>	<b>15.77</b>	<b>16.10</b>									
	133	10.85	10.88	10.96	11.25	12.22	12.85	13.50	13.82	14.34	14.62	14.86	15.01	15.11	15.18	15.30	15.39	15.60	15.95									
	134	10.85	10.88	10.95	11.21	12.11	12.73	13.37	13.69	14.19	14.47	14.70	14.85	14.93	15.00	15.12	15.21	15.43	15.82									
	135	10.85	10.87	10.94	11.18	12.02	12.63	13.25	13.57	14.07	14.36	14.60	14.75	14.83	14.90	15.02	15.11	15.33	15.73									
	136	10.85	10.87	10.93	11.15	11.92	12.51	13.13	13.45	13.94	14.24	14.48	14.63	14.72	14.78	14.91	14.99	15.21	15.62									
	137	10.85	10.87	10.92	11.11	11.80	12.39	13.00	13.32	13.81	14.11	14.36	14.50	14.59	14.66	14.78	14.86	15.08	15.50									
	138	10.85	10.87	10.91	11.08	11.69	12.26	12.87	13.20	13.68	13.99	14.24	14.38	14.47	14.54	14.66	14.74	14.97	15.39									
	139	10.85	10.86	10.90	11.04	11.57	12.13	12.72	13.05	13.53	13.85	14.11	14.25	14.34	14.40	14.52	14.61	14.84	15.27									
	140	10.85	10.86	10.89	11.01	11.46	12.01	12.60	12.93	13.41	13.74	14.01	14.15	14.24	14.30	14.43	14.51	14.75	15.20									
	141	10.85	10.86	10.88	10.97	11.34	11.86	12.45	12.77	13.26	13.60	13.87	14.01	14.10	14.17	14.29	14.37	14.63	15.10									
	142	10.85	10.86	10.87	10.95	11.23	11.73	12.31	12.64	13.14	13.49	13.78	13.92	14.01	14.08	14.21	14.29	14.56	15.03									
	143	10.85	10.86	10.86	10.91	11.12	11.60	12.17	12.50	12.99	13.35	13.65	13.79	13.88	13.95	14.08	14.17	14.44	14.93									
	144	10.85	10.85	10.86	10.89	11.00	11.45	12.02	12.35	12.87	13.25	13.55	13.70	13.79	13.86	13.99	14.07	14.36	14.85									
<b>Sambeek boven</b>	<b>144.96</b>	<b>10.85</b>	<b>10.85</b>	<b>10.85</b>	<b>10.85</b>	<b>10.85</b>	<b>11.28</b>	<b>11.85</b>	<b>12.18</b>	<b>12.70</b>	<b>13.09</b>	<b>13.41</b>	<b>13.57</b>	<b>13.66</b>	<b>13.74</b>	<b>13.86</b>	<b>13.95</b>	<b>14.25</b>	<b>14.74</b>									
	145	10.85	10.85	10.85	10.84	10.85	11.27	11.83	12.16	12.68	13.06	13.38	13.54	13.64	13.71	13.84	13.93	14.23	14.73									
	146	10.85	10.85	10.84	10.84	10.75	11.07	11.78	12.12	12.62	12.95	13.27	13.43	13.54	13.62	13.76	13.86	14.18	14.68									
<b>Stuw Sambeek</b>	<b>146.55</b>																											
	147	7.78	7.84	8.02	8.57	10.00	10.69	11.51	11.84	12.38	12.71	13.08	13.27	13.39	13.48	13.64	13.75	14.11	14.61									
<b>Sambeek beneden</b>	<b>147.70</b>	<b>7.78</b>	<b>7.84</b>	<b>8.02</b>	<b>8.57</b>	<b>9.99</b>	<b>10.69</b>	<b>11.50</b>	<b>11.83</b>	<b>12.35</b>	<b>12.67</b>	<b>13.04</b>	<b>13.23</b>	<b>13.35</b>	<b>13.44</b>	<b>13.61</b>	<b>13.72</b>	<b>14.08</b>	<b>14.58</b>									
	148	7.78	7.84	8.01	8.54	9.95	10.65	11.47	11.80	12.32	12.65	13.01	13.20	13.32	13.42	13.58	13.70	14.06	14.56									
	150	7.77	7.83	7.99	8.49	9.86	10.55	11.36	11.71	12.29	12.62	12.99	13.17	13.30	13.39	13.56	13.67	14.03	14.53									
	151	7.77	7.82	7.96	8.41	9.72	10.41	11.22	11.57	12.21	12.56	12.92	13.10	13.22	13.32	13.49	13.61	13.97	14.47									
	152	7.76	7.81	7.94	8.34	9.60	10.28	11.06	11.41	12.09	12.46	12.82	13.00	13.13	13.23	13.41	13.53	13.89	14.39									
	153	7.76	7.80	7.91	8.27	9.47	10.14	10.90	11.26	12.01	12.39	12.75	12.92	13.06	13.16	13.34	13.46	13.83	14.32									
	154	7.76	7.79	7.88	8.20	9.35	10.04	10.81	11.18	11.93	12.32	12.68	12.85	12.99	13.10	13.28	13.40	13.76	14.26									
	155	7.75	7.78	7.86	8.13	9.22	9.88	10.62	10.99	11.72	12.09	12.41	12.54	12.68	12.79	12.98	13.10	13.43	13.87									
<b>Gennepe</b>	<b>155.10</b>	<b>7.75</b>	<b>7.78</b>	<b>7.85</b>	<b>8.12</b>	<b>9.19</b>	<b>9.86</b>	<b>10.60</b>	<b>10.97</b>	<b>11.71</b>	<b>12.09</b>	<b>12.41</b>	<b>12.54</b>	<b>12.68</b>	<b>12.79</b>	<b>12.98</b>	<b>13.10</b>	<b>13.43</b>	<b>13.87</b>									
	156	7.75	7.77	7.84	8.07	9.09	9.73	10.44	10.81	11.57	11.99	12.33	12.47	12.61	12.72	12.91	13.03	13.37	13.81									
	157	7.75	7.77	7.82	8.02	8.98	9.60	10.29	10.65	11.43	11.89	12.25	12.40	12.55	12.66	12.84	12.97	13.31	13.75									

<b>Betrekingslijnen Maas versie 2012_2013_V2</b>																			<b>geldigheidsbereik 1 november 2012 - 31 oktober 2013</b>																		
Informatiebron		Gemeten waterstand 1 juli 2011 - 30 juni 2012							WAQUA en SOBEK in bereik recente hoogwaters										WAQUA																		
Waterstand Borgharen-dorp [m]		37.91	38.45	39.07	40.08	41.88	42.65	43.14	43.37	44.12	44.51	44.89	45.07	45.17	45.24	45.36	45.44	45.62	46.04																		
aantal dagen/jr dat ws hoger is		272	187	108	44	8	4	1																													
Afvoer St. Pieter [m3/s]		80	155	280	530	1030	1280	1500	1626	1993	2264	2537	2689	2789	2869	3011	3112	3435	4003																		
herh. tijd v/d topafvoer in jaren									2	5	10	20	30	40	50	75	100	250	1250																		
Afvoer Borgharen-dorp [m3/s]		(50)	(125)	(250)	(500)	(1000)	(1250)	(1470)	1627	1987	2260	2533	2685	2786	2865	3008	3109	3431	4000																		
peilschaal op MSW-punt		kmr	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws																		
158		7.75	7.77	7.81	7.98	8.86	9.46	10.13	10.49	11.32	11.76	12.13	12.28	12.43	12.54	12.72	12.84	13.18	13.62																		
159		7.75	7.76	7.80	7.95	8.77	9.34	10.00	10.36	11.22	11.66	12.04	12.19	12.34	12.45	12.63	12.74	13.09	13.52																		
160		7.74	7.76	7.79	7.91	8.65	9.20	9.85	10.20	11.05	11.50	11.89	12.05	12.19	12.30	12.48	12.59	12.94	13.36																		
161		7.74	7.75	7.78	7.87	8.55	9.08	9.72	10.07	10.93	11.39	11.80	11.96	12.11	12.22	12.40	12.50	12.86	13.29																		
162		7.74	7.75	7.77	7.84	8.44	8.95	9.57	9.91	10.77	11.25	11.70	11.87	12.02	12.13	12.30	12.41	12.77	13.21																		
163		7.74	7.75	7.76	7.80	8.35	8.83	9.40	9.74	10.61	11.09	11.54	11.72	11.88	11.99	12.15	12.25	12.62	13.05																		
164		7.74	7.74	7.75	7.77	8.25	8.71	9.26	9.60	10.48	10.93	11.38	11.55	11.70	11.81	11.96	12.05	12.41	12.83																		
165		7.74	7.74	7.74	7.75	8.18	8.62	9.15	9.48	10.37	10.79	11.24	11.41	11.56	11.66	11.80	11.88	12.22	12.63																		
Mook	165.80	7.74	7.74	7.74	7.73	8.12	8.54	9.05	9.38	10.28	10.70	11.15	11.32	11.47	11.57	11.71	11.79	12.12	12.53																		
166		7.74	7.74	7.73	7.72	8.06	8.47	8.98	9.32	10.25	10.68	11.13	11.30	11.45	11.55	11.69	11.76	12.10	12.50																		
167		7.74	7.74	7.73	7.70	7.97	8.37	8.84	9.17	10.06	10.51	10.96	11.14	11.29	11.38	11.52	11.60	11.93	12.34																		
168		7.74	7.74	7.73	7.68	7.89	8.28	8.74	9.07	9.95	10.39	10.83	11.01	11.15	11.24	11.39	11.47	11.79	12.20																		
169		7.74	7.74	7.72	7.67	7.84	8.22	8.65	8.98	9.85	10.29	10.73	10.91	11.04	11.13	11.28	11.36	11.67	12.07																		
170		7.74	7.74	7.72	7.66	7.77	8.14	8.56	8.88	9.74	10.19	10.62	10.81	10.94	11.03	11.18	11.26	11.56	11.95																		
171		7.74	7.73	7.72	7.64	7.69	8.03	8.43	8.75	9.59	10.04	10.46	10.65	10.78	10.87	11.01	11.10	11.39	11.78																		
172		7.74	7.73	7.71	7.63	7.62	7.95	8.34	8.66	9.50	9.95	10.37	10.55	10.68	10.77	10.91	11.00	11.27	11.66																		
173		7.74	7.73	7.71	7.61	7.52	7.82	8.20	8.51	9.32	9.80	10.22	10.41	10.54	10.63	10.78	10.88	11.15	11.54																		
174		7.74	7.73	7.71	7.59	7.42	7.70	8.05	8.37	9.17	9.66	10.10	10.30	10.43	10.53	10.69	10.79	11.06	11.47																		
Grave boven	174.62	7.74	7.73	7.70	7.57	7.30	7.54	7.87	8.18	8.98	9.49	9.92	10.14	10.27	10.37	10.53	10.64	10.91	11.32																		
175		7.74	7.73	7.70	7.56	7.27	7.49	7.83	8.14	8.98	9.49	9.92	10.14	10.27	10.37	10.53	10.64	10.91	11.32																		
Stuw Grave	175.65																																				
176		4.91	4.94	5.04	5.46	6.56	7.12	7.60	7.86	8.77	9.33	9.77	9.97	10.10	10.18	10.33	10.47	10.72	11.13																		
Grave beneden	177.00	4.91	4.93	5.04	5.43	6.52	7.08	7.54	7.79	8.69	9.23	9.67	9.87	9.99	10.06	10.21	10.36	10.60	11.01																		
178		4.91	4.93	5.03	5.41	6.45	6.99	7.44	7.68	8.57	9.11	9.55	9.75	9.87	9.94	10.09	10.24	10.48	10.89																		
179		4.91	4.93	5.02	5.38	6.38	6.91	7.35	7.58	8.48	9.03	9.47	9.67	9.80	9.87	10.02	10.16	10.41	10.82																		
180		4.91	4.93	5.01	5.36	6.33	6.85	7.28	7.51	8.40	8.95	9.39	9.59	9.71	9.79	9.94	10.08	10.33	10.73																		
181		4.91	4.92	5.01	5.35	6.29	6.81	7.23	7.46	8.33	8.89	9.33	9.53	9.65	9.72	9.87	10.01	10.26	10.65																		
182		4.91	4.92	4.98	5.29	6.13	6.62	7.02	7.24	8.13	8.66	9.08	9.28	9.40	9.47	9.62	9.75	9.98	10.37																		
183		4.91	4.92	4.97	5.26	6.06	6.53	6.92	7.15	8.01	8.53	8.93	9.13	9.25	9.32	9.46	9.59	9.82	10.19																		

<b>Betrekkinglijnen Maas versie 2012_2013_V2</b>																			<b>geldigheidsbereik 1 november 2012 - 31 oktober 2013</b>			
Informatiebron	Gemeten waterstand 1 juli 2011 - 30 juni 2012							WAQUA en SOBEK in bereik recente hoogwaters										WAQUA				
Waterstand Borgharen-dorp [m]	37.91	38.45	39.07	40.08	41.88	42.65	43.14	43.37	44.12	44.51	44.89	45.07	45.17	45.24	45.36	45.44	45.62	46.04				
aantal dagen/jr dat ws hoger is	272	187	108	44	8	4	1															
Afvoer St. Pieter [m3/s]	80	155	280	530	1030	1280	1500	1626	1993	2264	2537	2689	2789	2869	3011	3112	3435	4003				
herh. tijd v/d topafvoer in jaren								2	5	10	20	30	40	50	75	100	250	1250				
Afvoer Borgharen-dorp [m3/s]	(50)	(125)	(250)	(500)	(1000)	(1250)	(1470)	1627	1987	2260	2533	2685	2786	2865	3008	3109	3431	4000				
peilschaal op MSW-punt	kmr	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws				
184	4.91	4.92	4.96	5.23	5.95	6.39	6.77	6.99	7.86	8.39	8.81	9.01	9.13	9.20	9.35	9.47	9.71	10.08				
185	4.91	4.91	4.95	5.19	5.86	6.29	6.69	6.90	7.79	8.31	8.73	8.93	9.05	9.12	9.27	9.39	9.63	10.01				
186	4.91	4.91	4.94	5.16	5.76	6.16	6.54	6.76	7.60	8.12	8.53	8.72	8.84	8.93	9.07	9.18	9.43	9.80				
187	4.91	4.91	4.92	5.12	5.65	6.02	6.41	6.62	7.48	8.00	8.41	8.60	8.72	8.80	8.95	9.06	9.30	9.67				
188	4.91	4.91	4.91	5.10	5.56	5.91	6.28	6.49	7.31	7.83	8.23	8.43	8.55	8.63	8.78	8.88	9.12	9.49				
189	4.91	4.91	4.91	5.07	5.48	5.80	6.16	6.36	7.18	7.71	8.12	8.32	8.45	8.54	8.69	8.79	9.04	9.42				
190	4.91	4.90	4.90	5.04	5.40	5.69	5.99	6.19	7.00	7.53	7.96	8.17	8.30	8.39	8.54	8.65	8.91	9.29				
Megen	190.75	4.91	4.90	4.90	5.02	5.32	5.59	5.89	6.09	6.92	7.41	7.85	8.06	8.19	8.28	8.44	8.54	8.80	9.19			
191	4.91	4.90	4.90	5.02	5.31	5.56	5.85	6.06	6.88	7.41	7.84	8.05	8.18	8.28	8.43	8.53	8.80	9.18				
192	4.91	4.90	4.90	5.00	5.24	5.38	5.63	5.87	6.82	7.36	7.80	8.01	8.13	8.23	8.38	8.48	8.74	9.12				
193	4.91	4.90	4.90	4.98	5.20	5.25	5.51	5.68	6.55	7.10	7.55	7.77	7.90	8.00	8.16	8.26	8.54	8.93				
194	4.91	4.90	4.90	4.97	5.15	5.13	5.38	5.54	6.40	6.96	7.41	7.62	7.76	7.86	8.02	8.12	8.40	8.80				
195	4.91	4.90	4.90	4.96	5.11	5.01	5.22	5.38	6.24	6.79	7.21	7.42	7.54	7.63	7.79	7.88	8.16	8.54				
196	4.90	4.90	4.90	4.95	5.08	4.91	5.12	5.27	6.02	6.58	7.00	7.20	7.33	7.42	7.57	7.66	7.94	8.32				
197	4.90	4.90	4.90	4.93	5.03	4.77	4.97	5.11	5.83	6.35	6.80	7.03	7.16	7.26	7.42	7.52	7.82	8.22				
198	4.90	4.90	4.90	4.92	4.99	4.63	4.82	4.96	5.65	6.16	6.60	6.81	6.94	7.04	7.19	7.29	7.59	7.98				
199	4.90	4.90	4.90	4.91	4.95	4.52	4.70	4.83	5.50	5.94	6.37	6.58	6.72	6.81	6.96	7.06	7.36	7.75				
200	4.90	4.90	4.90	4.91	4.92	4.41	4.58	4.71	5.37	5.78	6.22	6.43	6.57	6.66	6.82	6.92	7.24	7.64				
Lith boven	200.70	4.90	4.90	4.90	4.90	4.90	4.34	4.50	4.70	5.25	5.65	6.09	6.32	6.45	6.55	6.71	6.82	7.14	7.56			
Stuw Lith	200.87																					
201	0.56	0.66	0.94	1.72	3.26	4.18	4.41	4.61	5.20	5.59	6.02	6.23	6.39	6.50	6.67	6.79	7.09	7.50				
202	0.56	0.66	0.93	1.69	3.20	3.90	4.26	4.55	5.11	5.50	5.94	6.11	6.26	6.38	6.57	6.70	6.92	7.33				
Lith dorp	202.37	0.56	0.66	0.92	1.67	3.17	3.74	4.16	4.52	5.05	5.45	5.90	6.06	6.21	6.34	6.54	6.67	6.86	7.28			
203	0.55	0.65	0.91	1.65	3.13	3.69	4.11	4.46	4.98	5.38	5.81	5.97	6.12	6.24	6.44	6.57	6.77	7.20				
204	0.55	0.64	0.90	1.61	3.06	3.62	4.05	4.41	4.94	5.33	5.77	5.92	6.08	6.20	6.40	6.52	6.73	7.16				
205	0.54	0.63	0.88	1.57	3.00	3.55	4.00	4.36	4.89	5.29	5.74	5.90	6.06	6.18	6.38	6.50	6.71	7.14				
206	0.54	0.63	0.87	1.55	2.95	3.48	3.95	4.30	4.87	5.27	5.71	5.87	6.03	6.15	6.35	6.48	6.68	7.11				
207	0.54	0.62	0.85	1.51	2.88	3.41	3.89	4.24	4.84	5.25	5.70	5.86	6.02	6.14	6.34	6.46	6.67	7.10				
208	0.53	0.61	0.84	1.47	2.81	3.34	3.83	4.19	4.80	5.23	5.68	5.84	6.00	6.12	6.32	6.45	6.66	7.09				
209	0.53	0.61	0.83	1.44	2.75	3.26	3.73	4.07	4.66	5.09	5.55	5.72	5.88	6.01	6.21	6.34	6.56	6.99				

<b>Betrekkinglijnen Maas versie 2012_2013_V2</b>																				<b>geldigheidsbereik 1 november 2012 - 31 oktober 2013</b>			
Informatiebron		Gemeten waterstand 1 juli 2011 - 30 juni 2012							WAQUA en SOBEK in bereik recente hoogwaters										WAQUA				
Waterstand Borgharen-dorp [m]		37.91	38.45	39.07	40.08	41.88	42.65	43.14	43.37	44.12	44.51	44.89	45.07	45.17	45.24	45.36	45.44	45.62	46.04				
aantal dagen/jr dat ws hoger is		272	187	108	44	8	4	1															
Afvoer St. Pieter [m3/s]		80	155	280	530	1030	1280	1500	1626	1993	2264	2537	2689	2789	2869	3011	3112	3435	4003				
herh. tijd v/d topafvoer in jaren									2	5	10	20	30	40	50	75	100	250	1250				
Afvoer Borgharen-dorp [m3/s]		(50)	(125)	(250)	(500)	(1000)	(1250)	(1470)	1627	1987	2260	2533	2685	2786	2865	3008	3109	3431	4000				
peilschaal op MSW-punt		kmr																					
		ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws			
210	0.53	0.60	0.82	1.41	2.69	3.20	3.65	4.00	4.58	4.99	5.44	5.60	5.76	5.88	6.09	6.21	6.43	6.86					
211	0.53	0.60	0.80	1.38	2.61	3.12	3.59	3.94	4.51	4.92	5.37	5.54	5.69	5.81	6.02	6.14	6.36	6.80					
212	0.53	0.59	0.79	1.35	2.55	3.06	3.53	3.87	4.44	4.84	5.28	5.46	5.62	5.73	5.95	6.08	6.30	6.74					
213	0.52	0.59	0.78	1.31	2.48	3.00	3.49	3.84	4.41	4.83	5.27	5.45	5.61	5.73	5.94	6.07	6.29	6.73					
214	0.52	0.58	0.77	1.30	2.44	2.93	3.41	3.75	4.34	4.77	5.23	5.40	5.57	5.68	5.90	6.03	6.25	6.70					
215	0.52	0.58	0.76	1.27	2.38	2.86	3.33	3.67	4.24	4.67	5.13	5.31	5.47	5.59	5.81	5.94	6.16	6.61					
216	0.52	0.58	0.75	1.25	2.33	2.79	3.25	3.60	4.16	4.58	5.02	5.20	5.37	5.48	5.70	5.83	6.07	6.52					
217	0.51	0.57	0.74	1.23	2.27	2.73	3.17	3.51	4.06	4.49	4.93	5.12	5.28	5.40	5.61	5.74	5.97	6.43					
218	0.51	0.57	0.73	1.20	2.22	2.65	3.08	3.43	3.99	4.42	4.86	5.05	5.20	5.32	5.54	5.66	5.89	6.34					
219	0.51	0.56	0.72	1.18	2.17	2.60	3.00	3.34	3.88	4.31	4.76	4.96	5.12	5.23	5.45	5.58	5.81	6.26					
220	0.51	0.56	0.71	1.16	2.12	2.53	2.92	3.26	3.77	4.18	4.62	4.81	4.96	5.07	5.28	5.41	5.62	6.06					
221	0.50	0.56	0.70	1.14	2.08	2.47	2.85	3.18	3.69	4.09	4.51	4.71	4.85	4.96	5.18	5.30	5.52	5.96					
222	0.50	0.55	0.70	1.12	2.03	2.41	2.78	3.11	3.60	3.99	4.40	4.59	4.74	4.85	5.06	5.18	5.41	5.86					
223	0.50	0.55	0.69	1.10	1.99	2.36	2.72	3.05	3.54	3.93	4.33	4.52	4.66	4.77	4.98	5.09	5.32	5.75					
224	0.50	0.55	0.68	1.08	1.94	2.30	2.65	2.97	3.45	3.82	4.21	4.41	4.55	4.65	4.86	4.97	5.19	5.63					
225	0.50	0.54	0.68	1.06	1.89	2.24	2.57	2.88	3.35	3.71	4.09	4.28	4.42	4.52	4.73	4.83	5.06	5.48					
226	0.49	0.54	0.67	1.04	1.84	2.17	2.48	2.80	3.26	3.63	4.02	4.22	4.35	4.45	4.66	4.76	4.99	5.42					
227	0.49	0.54	0.66	1.02	1.80	2.12	2.40	2.71	3.16	3.51	3.88	4.08	4.21	4.30	4.51	4.60	4.83	5.25					
228	0.49	0.53	0.65	1.01	1.76	2.07	2.32	2.63	3.06	3.41	3.77	3.97	4.10	4.19	4.40	4.48	4.71	5.14					
229	0.49	0.53	0.65	0.99	1.71	2.01	2.25	2.55	2.97	3.30	3.62	3.83	3.96	4.05	4.27	4.35	4.59	5.03					
230	0.49	0.53	0.64	0.97	1.66	1.96	2.18	2.48	2.89	3.21	3.52	3.72	3.84	3.93	4.15	4.22	4.47	4.91					
Heesbeen	230.61	0.49	0.53	0.64	0.96	1.65	1.93	2.15	2.45	2.85	3.17	3.48	3.68	3.80	3.89	4.10	4.17	4.42	4.85				
231								2.12	2.42	2.82	3.14	3.45	3.65	3.77	3.86	4.06	4.14	4.38	4.81				
232								2.08	2.37	2.77	3.08	3.39	3.58	3.70	3.79	3.99	4.07	4.31	4.73				
233								2.03	2.31	2.70	3.01	3.31	3.51	3.63	3.71	3.91	3.99	4.23	4.65				
234								1.97	2.24	2.64	2.94	3.24	3.43	3.55	3.64	3.83	3.91	4.14	4.56				
235								1.92	2.17	2.56	2.86	3.15	3.34	3.46	3.54	3.72	3.81	4.04	4.46				
236								1.88	2.11	2.48	2.77	3.06	3.25	3.37	3.45	3.63	3.72	3.95	4.35				
237								1.82	2.05	2.41	2.69	2.97	3.15	3.26	3.35	3.51	3.60	3.83	4.23				
238								1.77	1.98	2.33	2.61	2.88	3.06	3.17	3.25	3.41	3.51	3.73	4.13				

<b>Betrekkinglijnen Maas versie 2012_2013_V2</b>																		<b>geldigheidsbereik 1 november 2012 - 31 oktober 2013</b>																	
Informatiebron		Gemeten waterstand 1 juli 2011 - 30 juni 2012							WAQUA en SOBEK in bereik recente hoogwaters										WAQUA																
Waterstand Borgharen-dorp [m]		37.91	38.45	39.07	40.08	41.88	42.65	43.14	43.37	44.12	44.51	44.89	45.07	45.17	45.24	45.36	45.44	45.62	46.04																
aantal dagen/jr dat ws hoger is		272	187	108	44	8	4	1																											
Afvoer St. Pieter [m3/s]		80	155	280	530	1030	1280	1500	1626	1993	2264	2537	2689	2789	2869	3011	3112	3435	4003																
herh. tijd v/d topafvoer in jaren									2	5	10	20	30	40	50	75	100	250	1250																
Afvoer Borgharen-dorp [m3/s]		(50)	(125)	(250)	(500)	(1000)	(1250)	(1470)	1627	1987	2260	2533	2685	2786	2865	3008	3109	3431	4000																
peilschaal op MSW-punt	kmr	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws																
	239								1.72	1.91	2.26	2.54	2.80	2.98	3.08	3.16	3.32	3.41	3.64	4.02															
	240								1.67	1.85	2.19	2.45	2.71	2.88	2.99	3.06	3.21	3.31	3.53	3.91															
	241								1.62	1.78	2.12	2.37	2.62	2.79	2.89	2.96	3.10	3.21	3.42	3.79															
	242								1.57	1.72	2.04	2.29	2.53	2.69	2.80	2.87	3.00	3.11	3.32	3.69															
	243								1.52	1.66	1.95	2.20	2.44	2.60	2.69	2.77	2.89	3.00	3.21	3.57															
	244								1.48	1.60	1.87	2.11	2.33	2.49	2.59	2.66	2.77	2.89	3.09	3.44															
	245								1.44	1.55	1.80	2.01	2.24	2.39	2.48	2.55	2.65	2.77	2.97	3.31															
	246								1.39	1.49	1.72	1.93	2.14	2.29	2.38	2.45	2.54	2.66	2.85	3.19															
	247								1.34	1.42	1.64	1.84	2.04	2.18	2.27	2.33	2.42	2.54	2.73	3.05															
Keizersveer	247.60								1.32	1.39	1.60	1.78	1.97	2.10	2.19	2.25	2.32	2.45	2.63	2.93															

### 3) Effect thans lopende wijzigingen Maas

#### Document 3 van 4

- 1) "Bijsluiter betrekkingslijnen 2012-2013\_V2"
- 2) "Betrekkingslijnen Maas versie 2012-2013\_V2"
- 3) "Effect thans lopende wijzigingen Maas"
- 4) "Ligging meetpunten Maas"

*Rijkswaterstaat Dienst Limburg  
Afdeling ANI  
Avenue Ceramique 125  
6221 KV Maastricht  
[dlb-ani-frontoffice@rws.nl](mailto:dlb-ani-frontoffice@rws.nl)  
043-3294321*

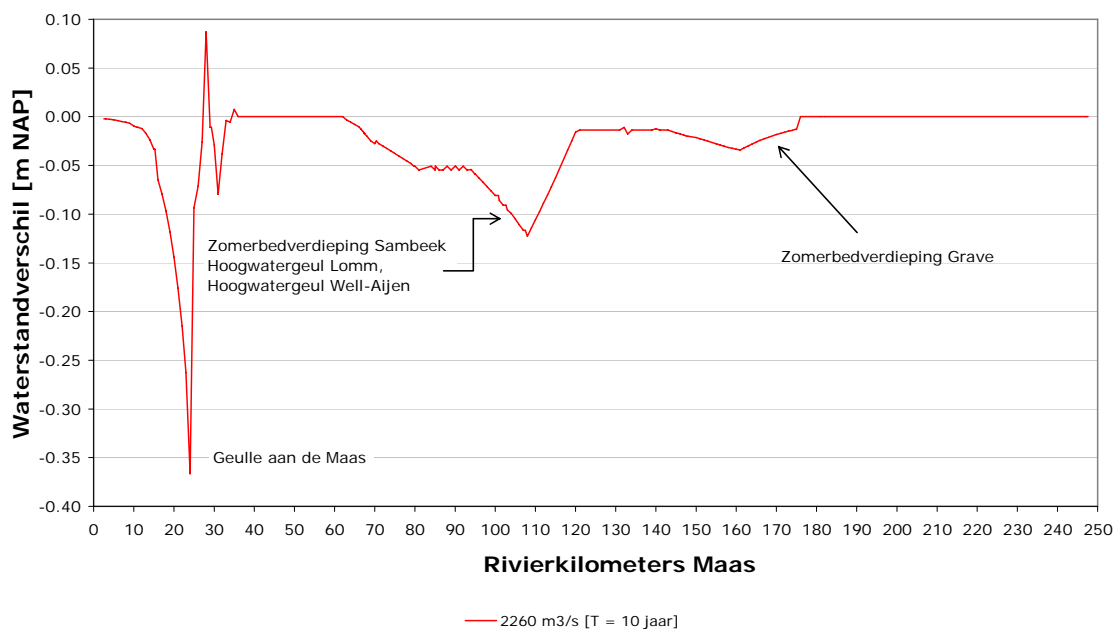
De betrekkinglijnen zijn o.a. gebaseerd op het WAQUA-model J12\_4. In dit model zijn er diverse geplande en/of in uitvoering zijnde ingrepen nog niet volledig verwerkt (zie Tabel 1). Voor deze ingrepen zijn de verwachte effecten bepaald van de werkzaamheden die gedurende het komende hoogwaterseizoen worden verder uitgevoerd. De waterstandverschillen per rivierkilometer staan weergegeven in Figuur 1 en tabel op pagina 17 t/m 22. (Op de website [www.maaswerken.nl](http://www.maaswerken.nl) is meer informatie over de individuele projecten te vinden).

Betrekkinglijnen zijn geldig voor punten in de as van de rivier. Tabel 1 geeft het overzicht van de niet-verwerkte ingrepen en Figuur 1 laat de ruimtelijke effecten zien in stroomafwaartse richting. Het verschil in waterstand is het verschil t.o.v. de reeds opgestelde betrekkinglijnen (WAQUA-resultaten). De maximale waterstandsval ( $Q_{\text{borgh-dorp}} = 2260 \text{ m}^3/\text{s}$ ) is 37 cm door de ingreep Geulle aan de Maas. Mogelijk andere ingrepen, die hier niet genoemd worden zullen ook effecten hebben op de waterstand, echter door de lange doorlooptijden zullen de effecten in het komende hoogwaterseizoen beperkt blijven.

INGREPEN NIET VOLLEDIG MEEGENOMEN BIJ DE BETREKKINGSLIJNEN MET GELDIGHEIDSBEREIK 1 NOV 2012 - 31 OKT 2013

ingreep	periode van ontgraven	effect op waterstand		$Q_{\text{borgh}} = 2260 \text{ m}^3/\text{s} (1:10)$		
		begin KM	eind KM	gemiddelde effect [m]	maximale verlaging [m]	maximale verhoging [m]
<i>Ingreep Bosscherveld</i>	start 2009 doorloop tot 2017	3	17	-0.02	-0.08	0.00
<i>Ingreep Itteren</i>	april 2009 doorloop tot 2016	19.5	23	-0.18	-0.26	-0.12
<i>Geulle aan de Maas</i>	start 2013 doorloop tot 2014	23	28.5	-0.11	-0.37	0.09
<i>Meers na proefproject</i>	start 2008 doorloop tot 2023	31	33	-0.04	-0.08	0.00
Zomerbedverdieping Sambeek	start 2013 doorloop tot 2015	109	120	-0.07	-0.11	-0.02
Hoogwatergeul Lomm	start juli 2007 doorloop tot 2015	115	117	-0.08	-0.11	-0.04
Hoogwatergeul Well-Aijen	start 2013 doorloop tot 2015	133	138	-0.01	-0.02	-0.01
Zomerbedverdieping Grave	najaar 2009 doorloop tot 2013	155	176	-0.02	-0.03	0.00
Natuurontwikkeling Keent	start 2010 doorloop tot 2013	177	179	0.00	0.00	0.00

Tabel 1: Overzicht ingrepen, nog niet verwerkt in betrekkinglijnen <sup>3</sup>



Figuur 1: waterstand effecten van in uitvoering zijnde ingrepen die nog niet in de betrekkinglijnen zijn verwerkt

<sup>3</sup> Ingreep Bosscherveld en ingreep Itteren hebben geen ontgravingen in 2012-2013. Genoemd effect is het doorwerkend effect van de ontgraving in Geulle aan de Maas



<b>Betrekingslijnen Maas versie 2012_2013_V2</b>																			
<b>geldigheidsbereik 1 november 2012 - 31 oktober 2013</b>																			
Informatiebron		Gemeten waterstand 1 juli 2011 - 30 juni 2012							WAQUA en SOBEK in bereik recente hoogwaters								WAQUA		
Waterstand Borgharen-dorp [m]		37.91	38.45	39.07	40.08	41.88	42.65	43.14	43.37	44.12	44.51	44.89	45.07	45.17	45.24	45.36	45.44	45.62	46.04
aantal dagen/jr dat ws hoger is		272	187	108	44	8	4	1											
Afvoer St. Pieter [m3/s]		80	155	280	530	1030	1280	1500	1626	1993	2264	2537	2689	2789	2869	3011	3112	3435	4003
herh. tijd v/d topafvoer in jaren									2	5	10	20	30	40	50	75	100	250	1250
Afvoer Borgharen-dorp [m3/s]		(50)	(125)	(250)	(500)	(1000)	(1250)	(1470)	1627	1987	2260	2533	2685	2786	2865	3008	3109	3431	4000
peilschaal op MSW-punt	kmr	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws
<b>Eijsden grens</b>	<b>2.56</b>								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6								-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	7								-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	8								-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	9								-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.00	0.00
	10								-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
<b>St. Pieter</b>	<b>10.80</b>								-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
	11								-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
	12								-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
	13								-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01
	14								-0.03	-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
	15								-0.04	-0.04	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.02
<b>Borgharen JK</b>	<b>15.25</b>								-0.04	-0.04	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.02
<b>Stuw Borgharen</b>	<b>15.4</b>																		
<b>Borgharen dorp</b>	<b>16.00</b>								-0.08	-0.07	-0.06	-0.06	-0.06	-0.06	-0.05	-0.05	-0.05	-0.05	-0.04
	17								-0.10	-0.09	-0.08	-0.07	-0.07	-0.07	-0.07	-0.06	-0.06	-0.06	-0.05
	18								-0.12	-0.11	-0.10	-0.09	-0.09	-0.08	-0.08	-0.08	-0.08	-0.07	-0.06
	19								-0.15	-0.13	-0.12	-0.11	-0.10	-0.10	-0.10	-0.10	-0.09	-0.09	-0.08
	20								-0.18	-0.16	-0.14	-0.13	-0.13	-0.12	-0.12	-0.12	-0.11	-0.11	-0.09
	21								-0.22	-0.19	-0.18	-0.16	-0.16	-0.15	-0.15	-0.14	-0.14	-0.13	-0.12
	22								-0.27	-0.24	-0.21	-0.20	-0.19	-0.18	-0.18	-0.17	-0.17	-0.16	-0.14
	23								-0.34	-0.29	-0.26	-0.24	-0.23	-0.22	-0.22	-0.21	-0.21	-0.19	-0.17
	24								-0.47	-0.41	-0.37	-0.34	-0.32	-0.31	-0.31	-0.30	-0.29	-0.27	-0.24
	25								-0.12	-0.10	-0.09	-0.09	-0.08	-0.08	-0.08	-0.08	-0.07	-0.07	-0.06
	26								-0.09	-0.08	-0.07	-0.07	-0.06	-0.06	-0.06	-0.06	-0.06	-0.05	-0.05
	27								-0.03	-0.03	-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
	28								0.11	0.10	0.09	0.08	0.08	0.07	0.07	0.07	0.07	0.06	0.06
	29								-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
<b>Eisloo</b>	<b>29.33</b>								-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01

<b>Betrekkinglijnen Maas versie 2012_2013_V2</b>		<b>geldigheidsbereik 1 november 2012 - 31 oktober 2013</b>																	
Informatiebron		Gemeten waterstand 1 juli 2011 - 30 juni 2012						WAQUA en SOBEK in bereik recente hoogwaters									WAQUA		
Waterstand Borgharen-dorp [m]		37.91	38.45	39.07	40.08	41.88	42.65	43.14	43.37	44.12	44.51	44.89	45.07	45.17	45.24	45.36	45.44	45.62	46.04
aantal dagen/jr dat ws hoger is		272	187	108	44	8	4	1											
Afvoer St. Pieter [m3/s]		80	155	280	530	1030	1280	1500	1626	1993	2264	2537	2689	2789	2869	3011	3112	3435	4003
herh. tijd v/d topafvoer in jaren									2	5	10	20	30	40	50	75	100	250	1250
Afvoer Borgharen-dorp [m3/s]		(50)	(125)	(250)	(500)	(1000)	(1250)	(1470)	1627	1987	2260	2533	2685	2786	2865	3008	3109	3431	4000
peilschaal op MSW-punt	kmr	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws
	30								-0.04	-0.03	-0.03	-0.03	-0.03	-0.03	-0.02	-0.02	-0.02	-0.02	-0.02
	31								-0.10	-0.09	-0.08	-0.07	-0.07	-0.07	-0.07	-0.06	-0.06	-0.06	-0.05
	32								-0.05	-0.04	-0.04	-0.04	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03
	33								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	34								-0.01	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
	35								0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	36								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	37								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	38								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	39								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	40								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	41								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	42								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	43								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	44								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grevenbicht	44.95								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maaseik	52.72								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stevensweert	61.57								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	62								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	63								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	64								-0.01	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
	65								-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
	66								-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
67.00z	66.5								-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
68.00z	67								-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
67.00n	67.5								-0.02	-0.02	-0.02	-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Heel boven	67.34								-0.02	-0.02	-0.02	-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
68.00n	68								-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.01
Stuw Linne	68.2																		
	69								-0.03	-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
	70								-0.04	-0.03	-0.03	-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Linne beneden	70.40								-0.03	-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02

<b>Betrekingslijnen Maas versie 2012_2013_V2</b>																					
<b>geldigheidsbereik 1 november 2012 - 31 oktober 2013</b>																					
Informatiebron		Gemeten waterstand 1 juli 2011 - 30 juni 2012							WAQUA en SOBEK in bereik recente hoogwaters										WAQUA		
Waterstand Borgharen-dorp [m]		37.91	38.45	39.07	40.08	41.88	42.65	43.14	43.37	44.12	44.51	44.89	45.07	45.17	45.24	45.36	45.44	45.62	46.04		
aantal dagen/jr dat ws hoger is		272	187	108	44	8	4	1													
Afvoer St. Pieter [m3/s]		80	155	280	530	1030	1280	1500	1626	1993	2264	2537	2689	2789	2869	3011	3112	3435	4003		
herh. tijd v/d topafvoer in jaren									2	5	10	20	30	40	50	75	100	250	1250		
Afvoer Borgharen-dorp [m3/s]		(50)	(125)	(250)	(500)	(1000)	(1250)	(1470)	1627	1987	2260	2533	2685	2786	2865	3008	3109	3431	4000		
peilschaal op MSW-punt	kmr	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws		
	71								-0.04	-0.03	-0.03	-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02		
	72								-0.04	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.02	-0.02	-0.02	-0.02		
	73								-0.04	-0.04	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.02		
	74								-0.04	-0.04	-0.04	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.02		
	75								-0.05	-0.04	-0.04	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.02		
	76								-0.05	-0.04	-0.04	-0.04	-0.04	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03		
	77								-0.05	-0.05	-0.04	-0.04	-0.04	-0.04	-0.04	-0.03	-0.03	-0.03	-0.03		
	78								-0.06	-0.05	-0.05	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.03	-0.03		
	79								-0.06	-0.05	-0.05	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.03		
Roermond boven	79.75								-0.06	-0.06	-0.05	-0.05	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.03		
	80								-0.06	-0.06	-0.05	-0.05	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.03		
Stuw Roermond	80.91																				
	81								-0.07	-0.06	-0.05	-0.05	-0.05	-0.05	-0.05	-0.04	-0.04	-0.04	-0.04		
	84								-0.06	-0.06	-0.05	-0.05	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.03		
	85								-0.07	-0.06	-0.05	-0.05	-0.05	-0.05	-0.05	-0.04	-0.04	-0.04	-0.04		
Heel beneden	85.08								-0.06	-0.06	-0.05	-0.05	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.03		
	86								-0.07	-0.06	-0.05	-0.05	-0.05	-0.05	-0.05	-0.04	-0.04	-0.04	-0.04		
	87								-0.07	-0.06	-0.05	-0.05	-0.05	-0.05	-0.05	-0.04	-0.04	-0.04	-0.04		
	88								-0.06	-0.06	-0.05	-0.05	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.03		
	89								-0.07	-0.06	-0.05	-0.05	-0.05	-0.05	-0.05	-0.04	-0.04	-0.04	-0.04		
	90								-0.06	-0.06	-0.05	-0.05	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.03		
Neer	90.11								-0.06	-0.06	-0.05	-0.05	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.03		
	91								-0.07	-0.06	-0.05	-0.05	-0.05	-0.05	-0.05	-0.04	-0.04	-0.04	-0.04		
	92								-0.06	-0.06	-0.05	-0.05	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.03		
	93								-0.07	-0.06	-0.05	-0.05	-0.05	-0.05	-0.05	-0.04	-0.04	-0.04	-0.04		
	94								-0.07	-0.06	-0.05	-0.05	-0.05	-0.05	-0.05	-0.04	-0.04	-0.04	-0.04		
	95								-0.07	-0.06	-0.06	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.04		
	96								-0.08	-0.07	-0.06	-0.06	-0.06	-0.05	-0.05	-0.05	-0.05	-0.05	-0.04		
	97								-0.09	-0.07	-0.07	-0.06	-0.06	-0.06	-0.06	-0.05	-0.05	-0.05	-0.04		
	98								-0.09	-0.08	-0.07	-0.07	-0.06	-0.06	-0.06	-0.06	-0.06	-0.06	-0.05		
	99								-0.10	-0.08	-0.08	-0.07	-0.07	-0.07	-0.06	-0.06	-0.06	-0.06	-0.05		
	100								-0.10	-0.09	-0.08	-0.07	-0.07	-0.07	-0.07	-0.07	-0.06	-0.06	-0.05		

<b>Betrekkinglijnen Maas versie 2012_2013_V2</b>		<b>geldigheidsbereik 1 november 2012 - 31 oktober 2013</b>																		
Informatiebron		Gemeten waterstand 1 juli 2011 - 30 juni 2012							WAQUA en SOBEK in bereik recente hoogwaters										WAQUA	
Waterstand Borgharen-dorp [m]		37.91	38.45	39.07	40.08	41.88	42.65	43.14	43.37	44.12	44.51	44.89	45.07	45.17	45.24	45.36	45.44	45.62	46.04	
aantal dagen/jr dat ws hoger is		272	187	108	44	8	4	1												
Afvoer St. Pieter [m3/s]		80	155	280	530	1030	1280	1500	1626	1993	2264	2537	2689	2789	2869	3011	3112	3435	4003	
herh. tijd v/d topafvoer in jaren									2	5	10	20	30	40	50	75	100	250	1250	
Afvoer Borgharen-dorp [m3/s]		(50)	(125)	(250)	(500)	(1000)	(1250)	(1470)	1627	1987	2260	2533	2685	2786	2865	3008	3109	3431	4000	
peilschaal op MSW-punt	kmr	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	
<b>Belfeld boven</b>	<b>100.75</b>								<b>-0.10</b>	<b>-0.09</b>	<b>-0.08</b>	<b>-0.07</b>	<b>-0.07</b>	<b>-0.07</b>	<b>-0.07</b>	<b>-0.07</b>	<b>-0.06</b>	<b>-0.06</b>	<b>-0.05</b>	
Stuw Belfeld	100.80																			
	101								-0.11	-0.09	-0.09	-0.08	-0.08	-0.07	-0.07	-0.07	-0.07	-0.06	-0.06	
	102								-0.12	-0.10	-0.09	-0.08	-0.08	-0.08	-0.08	-0.07	-0.07	-0.07	-0.06	
<b>Belfeld beneden</b>	<b>102.70</b>								<b>-0.12</b>	<b>-0.10</b>	<b>-0.09</b>	<b>-0.08</b>	<b>-0.08</b>	<b>-0.08</b>	<b>-0.08</b>	<b>-0.07</b>	<b>-0.07</b>	<b>-0.07</b>	<b>-0.06</b>	
	103								-0.12	-0.11	-0.10	-0.09	-0.08	-0.08	-0.08	-0.08	-0.08	-0.07	-0.06	
	104								-0.13	-0.11	-0.10	-0.09	-0.09	-0.08	-0.08	-0.08	-0.08	-0.07	-0.07	
	105								-0.13	-0.12	-0.11	-0.10	-0.09	-0.09	-0.09	-0.09	-0.08	-0.08	-0.07	
	106								-0.14	-0.12	-0.11	-0.10	-0.10	-0.09	-0.09	-0.09	-0.09	-0.08	-0.07	
	107								-0.15	-0.13	-0.12	-0.11	-0.10	-0.10	-0.10	-0.09	-0.09	-0.09	-0.08	
<b>Venlo</b>	<b>107.47</b>								<b>-0.15</b>	<b>-0.13</b>	<b>-0.12</b>	<b>-0.11</b>	<b>-0.10</b>	<b>-0.10</b>	<b>-0.10</b>	<b>-0.09</b>	<b>-0.09</b>	<b>-0.09</b>	<b>-0.08</b>	
	108								-0.16	-0.14	-0.12	-0.11	-0.11	-0.10	-0.10	-0.10	-0.10	-0.09	-0.08	
	109								-0.15	-0.13	-0.11	-0.11	-0.10	-0.10	-0.10	-0.09	-0.09	-0.08	-0.08	
	110								-0.14	-0.12	-0.11	-0.10	-0.09	-0.09	-0.09	-0.09	-0.08	-0.08	-0.07	
	111								-0.12	-0.11	-0.10	-0.09	-0.09	-0.08	-0.08	-0.08	-0.08	-0.07	-0.06	
	112								-0.11	-0.10	-0.09	-0.08	-0.08	-0.08	-0.07	-0.07	-0.07	-0.06	-0.06	
	113								-0.10	-0.09	-0.08	-0.07	-0.07	-0.07	-0.07	-0.07	-0.06	-0.06	-0.05	
	114								-0.09	-0.08	-0.07	-0.07	-0.06	-0.06	-0.06	-0.06	-0.06	-0.05	-0.05	
	115								-0.08	-0.07	-0.06	-0.06	-0.06	-0.05	-0.05	-0.05	-0.05	-0.05	-0.04	
	116								-0.07	-0.06	-0.05	-0.05	-0.05	-0.05	-0.04	-0.04	-0.04	-0.04	-0.03	
	117								-0.06	-0.05	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.03	-0.03	-0.03	
	118								-0.04	-0.04	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.02	
	119								-0.03	-0.03	-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	
	120								-0.02	-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	
	121								-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	
	122								-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	
	123								-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	
	124								-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	
	125								-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	
	126								-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	
	127								-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	
	128								-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	
	129								-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	
	130								-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	

<b>Betrekkinglijnen Maas versie 2012_2013_V2</b>		<b>geldigheidsbereik 1 november 2012 - 31 oktober 2013</b>																		
Informatiebron		Gemeten waterstand 1 juli 2011 - 30 juni 2012							WAQUA en SOBEK in bereik recente hoogwaters										WAQUA	
Waterstand Borgharen-dorp [m]		37.91	38.45	39.07	40.08	41.88	42.65	43.14	43.37	44.12	44.51	44.89	45.07	45.17	45.24	45.36	45.44	45.62	46.04	
aantal dagen/jr dat ws hoger is		272	187	108	44	8	4	1												
Afvoer St. Pieter [m3/s]		80	155	280	530	1030	1280	1500	1626	1993	2264	2537	2689	2789	2869	3011	3112	3435	4003	
herh. tijd v/d topafvoer in jaren									2	5	10	20	30	40	50	75	100	250	1250	
Afvoer Borgharen-dorp [m3/s]		(50)	(125)	(250)	(500)	(1000)	(1250)	(1470)	1627	1987	2260	2533	2685	2786	2865	3008	3109	3431	4000	
peilschaal op MSW-punt	kmr	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	
	131								-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	
	132								-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	
<b>Well dorp</b>	<b>132.10</b>								<b>-0.01</b>	<b>-0.01</b>	<b>-0.01</b>	<b>-0.01</b>	<b>-0.01</b>	<b>-0.01</b>	<b>-0.01</b>	<b>-0.01</b>	<b>-0.01</b>	<b>-0.01</b>	<b>-0.01</b>	
	133								-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	
	134								-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	
	135								-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	
	136								-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	
	137								-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	
	138								-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	
	139								-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	
	140								-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	
	141								-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	
	142								-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	
	143								-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	
	144								-0.02	-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	
<b>Sambeek boven</b>	<b>144.96</b>								<b>-0.02</b>	<b>-0.02</b>	<b>-0.02</b>	<b>-0.02</b>	<b>-0.01</b>	<b>-0.01</b>	<b>-0.01</b>	<b>-0.01</b>	<b>-0.01</b>	<b>-0.01</b>	<b>-0.01</b>	
	145								-0.02	-0.02	-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	
	146								-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	
<b>Stuw Sambeek</b>	<b>146.55</b>																			
	147								-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.01	-0.01	-0.01	
<b>Sambeek beneden</b>	<b>147.70</b>								<b>-0.03</b>	<b>-0.02</b>	<b>-0.02</b>	<b>-0.02</b>	<b>-0.02</b>	<b>-0.02</b>	<b>-0.02</b>	<b>-0.02</b>	<b>-0.02</b>	<b>-0.02</b>	<b>-0.01</b>	
	148								-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.01	
	150								-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	
	151								-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.01	
	152								-0.03	-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	
	153								-0.03	-0.03	-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	
	154								-0.03	-0.03	-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	
	155								-0.04	-0.03	-0.03	-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	
<b>Gennep</b>	<b>155.100</b>								<b>-0.04</b>	<b>-0.03</b>	<b>-0.03</b>	<b>-0.03</b>	<b>-0.02</b>	<b>-0.02</b>	<b>-0.02</b>	<b>-0.02</b>	<b>-0.02</b>	<b>-0.02</b>	<b>-0.02</b>	
	156								-0.04	-0.03	-0.03	-0.03	-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	
	157								-0.04	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.02	-0.02	-0.02	
	158								-0.04	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.02	-0.02	
	159								-0.04	-0.04	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.02	
	160								-0.04	-0.04	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.02	

<b>Betrekingslijnen Maas versie 2012_2013_V2</b>																			<b>geldigheidsbereik 1 november 2012 - 31 oktober 2013</b>									
Informatiebron		Gemeten waterstand 1 juli 2011 - 30 juni 2012							WAQUA en SOBEK in bereik recente hoogwaters										WAQUA									
Waterstand Borgharen-dorp [m]		37.91	38.45	39.07	40.08	41.88	42.65	43.14	43.37	44.12	44.51	44.89	45.07	45.17	45.24	45.36	45.44	45.62	46.04									
aantal dagen/jr dat ws hoger is		272	187	108	44	8	4	1																				
Afvoer St. Pieter [m3/s]		80	155	280	530	1030	1280	1500	1626	1993	2264	2537	2689	2789	2869	3011	3112	3435	4003									
herh. tijd v/d topafvoer in jaren									2	5	10	20	30	40	50	75	100	250	1250									
Afvoer Borgharen-dorp [m3/s]		(50)	(125)	(250)	(500)	(1000)	(1250)	(1470)	1627	1987	2260	2533	2685	2786	2865	3008	3109	3431	4000									
peilschaal op MSW-punt	kmr	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws									
	161								-0.04	-0.04	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.02									
	162								-0.04	-0.04	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.02									
	163								-0.04	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.02	-0.02	-0.02	-0.02									
	164								-0.04	-0.03	-0.03	-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02									
	165								-0.03	-0.03	-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02									
<b>Mook</b>	<b>165.80</b>								<b>-0.03</b>	<b>-0.03</b>	<b>-0.02</b>	<b>-0.02</b>	<b>-0.02</b>	<b>-0.02</b>	<b>-0.02</b>	<b>-0.02</b>	<b>-0.02</b>	<b>-0.02</b>	<b>-0.02</b>									
	166								-0.03	-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02									
	167								-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.01									
	168								-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.01									
	169								-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.01									
	170								-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.01	-0.01	-0.01	-0.01									
	171								-0.02	-0.02	-0.02	-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01									
	172								-0.02	-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01									
	173								-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01									
	174								-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01									
<b>Grave boven</b>	<b>174.62</b>								<b>-0.02</b>	<b>-0.01</b>	<b>-0.01</b>	<b>-0.01</b>	<b>-0.01</b>	<b>-0.01</b>	<b>-0.01</b>	<b>-0.01</b>	<b>-0.01</b>	<b>-0.01</b>	<b>-0.01</b>									
	175								-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01									
<b>Stuw Grave</b>	<b>175.65</b>																											
	176								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	177								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
<b>Grave beneden</b>	<b>177.00</b>								<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>									
<b>Megen</b>	<b>190.75</b>								<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>									
<b>Lith boven</b>	<b>200.70</b>								<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>									
<b>Stuw Lith</b>	<b>200.87</b>																											
<b>Lith dorp</b>	<b>202.37</b>								<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>									
<b>Heesbeen</b>	<b>230.61</b>								<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>									
<b>Keizersveer</b>	<b>247.60</b>								<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>									

## 4) Ligging meetpunten Maas

### Document 4 van 4

- 1) "Bijsluiter betrekkinglijnen 2012-2013\_V2"
- 2) "Betrekkingslijnen Maas versie 2012-2013\_V2"
- 3) "Effect thans lopende wijzigingen Maas"
- 4) "Ligging meetpunten Maas"

*Rijkswaterstaat Dienst Limburg  
Afdeling ANI  
Avenue Ceramique 125  
6221 KV Maastricht  
[dlb-ani-frontoffice@rws.nl](mailto:dlb-ani-frontoffice@rws.nl)  
043-3294321*

