2018 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995 Local Air Quality Management

June, 2018

Local Authority Officer	Alison Old
Department	Environmental Quality Team
Address	aold@s-norfolk.gov.uk
Telephone	01508 533723
E-mail	envserv@s-norfolk.gov.uk
Report Reference number	S-N2018v1
Date	22nd June 2018

Executive Summary: Air Quality in Our Area

Air Quality in South Norfolk

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children and older people, and those with heart and lung conditions. There is also often a strong correlation with equalities issues, because areas with poor air quality are also often the less affluent areas[1,2].

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion[3].

Air Quality in South Norfolk is generally good with no recorded exceedance of air quality objectives. There are no declared Air Quality Management Areas (AQMA's) within the district.

The main pollutant of local concern is nitrogen dioxide (NO_2) arising from road traffic and stationary combustion sources. This is typical of a primarily rural area such as South Norfolk. Monitoring for NO_2 takes place at 29 locations across the district.

We have a couple of monitoring locations in Long Stratton where the annual mean concentration of NO_2 are close to, but not breaching, the objective. As highlighted in previous years, a by-pass is proposed for Long Stratton and the planning application for this is currently being processed by our planning team.

We work closely with colleagues in Public Health and the Norfolk Environmental Protection Air Quality sub group. We consider the impact of existing local industrial processes. We also consider new developments to ensure that local air quality is protected and monitored via the planning process.

A detailed assessment is not required for any pollutants and the Council will progress to the next Annual Status report for 2018.

[1] Environmental equity, air quality, socioeconomic status and respiratory health, 2010
[2] Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006
[3] Defra. Abatement cost guidance for valuing changes in air quality, May 2013

Actions to Improve Air Quality

The District does not have any AQMA's and as such has no formal action plan to improve air quality. However, we work closely with a range of partners across the county as air pollution is a transboundary issue. The Norfolk Environmental Protection Group is the principal body across the County coordinating and seeking consistency in the management of air quality.

Additionally, a group of representatives from local authorities within the Greater Norwich Growth Area has been set up to develop a multi-authority approach to improving air quality with regard to impact from transport sources. These representatives comprise officers from Norfolk County Council, Broadland District Council, Norwich City Council and South Norfolk District Council.

The aims of the group are:

- To produce a positive change to air quality by reducing transport related emissions.
- To develop better education of all road users to the effect of transport emissions on human health and the wider environment.
- Commit to working as a team to consider air quality as a cross boundary issue.
- Commit to working with stakeholders to develop and implement projects that improve air quality.
- Identify joint funding opportunities for delivering air quality projects.
- Collate data on air quality before, during and after projects.
- Evaluate the impact of air quality improvement projects and determine if they have been effective and appropriate to be adopted elsewhere.
- Share findings of projects with interested third parties.

Local Authorities regulate a range of industries that may cause emissions to air, this work also forms part of our response to protection air quality in the district. We work closely with businesses to ensure that no adverse impacts arise from industrial processed as part of the Local Authority Pollution Control regime

We also work closely with our Development Management colleagues to ensure that local air quality is protected by the planning process.

Conclusions and Priorities

All monitoring results are below the Air Quality objectives and as such there is no requirement for further detailed assessment.

The focus of our work will continue to be air quality impacts associated with road traffic. We will continue to monitor NO_2 using non-automatic diffusion tubes and work towards completion of our Annual Status Report for 2018 data.

The location of the diffusion tubes is constantly under review to ensure they remain relevant.

We will continue supporting work on the Long Stratton by-pass and associated residential development plans and will continue our collaborative work with our partners to educate and seek air quality improvements where possible.

Local Engagement and How to get Involved

Residents and businesses can discuss any concerns or questions in relation to air quality with the Environmental Quality team.

If people would like to find out more about air quality, and how they can contribute to improving it in their area, these links can provide further information:

- DEFRA UK AIR - https://uk-air.defra.gov.uk/
- Sustrans' 'CleanSpace' sustainable transport and air quality movement: http://www.sustrans.org.uk/what-you-can-do/use-your-car-less/join-air-quality-movement
- 'Air Pollution' website – college/university level: http://www.air-quality.org.uk/index.php
- BBC 'Bitesize' – GCSE air quality http://www.bbc.co.uk/schools/gcsebitesize/science/21c/air_quality/
- 'Clean Air Kids' – air quality website for children aged 5-11: http://www.clean-air-kids.org.uk/index.html
- Evolution of WHO air quality guidelines: past, present and future (2017) – report on the World Health Organisation's evolving advice: http://www.euro.who.int/en/health-topics/environment-and-health/air-quality/publications/2017/evolution-of-who-air-quality-guidelines-past,-present-and-future-2017

Table of Contents

1 Local Air Quality Management

This report provides an overview of air quality in South Norfolk during 2017. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by South Norfolk Council to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England can be found in Table E.1 in Appendix E.

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority must prepare an Air Quality Action Plan (AQAP) within 12-18 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

South Norfolk Council currently does not have any AQMAs. For reference, a map of our monitoring locations is available in Appendix D.

2.2 Progress and Impact of Measures to address Air Quality in South Norfolk

Defra's appraisal of last year's ASR concluded that on the basis of the evidence provided the conclusions reached were acceptable for all sources and pollutants and that the next step for South Norfolk Council was to submit this report in 2018

As such no measures to address air quality were required.

2.3 $PM_{2.5}$ – Local Authority Approach to Reducing Emissions and/or Concentrations

As detailed in Policy Guidance LAQM.PG16 (Chapter 7), local authorities are expected to work towards reducing emissions and/or concentrations of $PM_{2.5}$ (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that $PM_{2.5}$ has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

South Norfolk Council is taking the following measures to address $PM_{2.5}$:

- The Council is working to ensure regular two-way engagement with representatives of Public Health England, and the Director of Public Health at Norfolk County Council;
- The Council is looking to work directly with Public Health England including working to encourage active travel resulting in improvements to air quality;
- We have also been working with local industrial processes to ensure local air quality is safeguarded

- We review planning applications for new developments to ensure local air quality is safeguarded via the planning regime.

South Norfolk Council is not required to monitor for PM2.5 as there is no statutory requirement to do so. Instead the UK government has a network of air quality monitoring stations across the UK which monitors levels of PM2.5 The results show that the UK currently complies with the 25µg/m3 limit value set by the EU air quality directive.

3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

South Norfolk Council does not undertake any continuous monitoring

3.1.2 Non-Automatic Monitoring Sites

South Norfolk Council undertook non- automatic (passive) monitoring of NO_2 at 29 sites during 2017. Table A.1~~Table A.2~~ in Appendix A shows the details of the sites.

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including bias adjustments and any other adjustments applied (e.g. “annualisation” and/or distance correction), are included in Appendix C.

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, “annualisation” and distance correction. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO_2)

Appendix A: Monitoring Results

Table A.2~~Table A.3~~ in Appendix A compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past 5 years with the air quality objective of 40µg/m^3.

For diffusion tubes, the full 2017 dataset of monthly mean values is provided in Appendix B.

Error! Reference source not found.~~Table A.4~~ in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year.

Table A.12 – Details of Non-Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
DT1	46a Old Newmarket Road, Cringleford	Suburban	619208	304645	NO_2	NO	0	15	NO	1.5
DT2	131 Longwater Lane, Costessey	Suburban	616797	310477	NO_2	NO	0	15	NO	1.5
DT3	90 The Street, Poringland	Suburban	626803	302092	NO_2	NO	0	5	NO	1.5
DT4	87 Denmark Street, Diss	Suburban	611223	279637	NO_2	NO	0	3	NO	1.5
DT5	131 Victoria Road, Diss	Suburban	611945	279572	NO_2	NO	0	3	NO	1.8
DT6	21 Church Plain, Loddon	Suburban	636192	298751	NO_2	NO	0	3	NO	1.5
DT7	A140 Long Stratton	Roadside	619722	292745	NO_2	NO	3	1	NO	2.1
DT8	Fairland Street, Wymondham	Kerbside	611129	301425	NO_2	NO	0	3	NO	2.1
DT9	Kirby Bedon Road, Bixley	Kerbside	625439	305944	NO_2	NO	20	2	NO	2.1
DT10	209 Norwich Road, Wymondham	Suburban	612515	302652	NO_2	NO	0	15	NO	1.5
DT11	2 Thickthorn Cottages	Rural	618137	305678	NO_2	NO	0	10	NO	1.5

DT12	Rightup Lane, Wymondham	Suburban	611528	300987	NO_2	NO	20	3	NO	2.1
DT13	233 Norwich Road, Wymondham	Suburban	612663	302751	NO_2	NO	0	12	NO	1.5
DT14	28 Norwich Road, Wymondham	Suburban	611380	302751	NO_2	NO	0	8	NO	1.5
DT15	Harleston, Hotel	Roadside	624484	283276	NO_2	NO	5	2	NO	2.1
DT16	Diss Road, Scole	Roadside	614895	283276	NO_2	NO	8	1	NO	1.8
DT17	84 West End, Costessey	Roadside	616652	311650	NO_2	NO	4	1	NO	2.1
DT18	Long Stratton Chinese	Roadside	619710	292730	NO_2	NO	1	1	NO	2.1
DT19	Long Stratton Traffic Light East	Roadside	619732	292740	NO_2	NO	7	1	NO	2.1
DT20	Long Stratton Funeral Directors	Suburban	619642	292346	NO_2	NO	0	5	NO	1.5
DT21	Long Stratton Southbound 60m	Suburban	619694	292653	NO_2	NO	0	2	NO	2.1
DT22	Long Stratton Swan Lane Co-op chemist	Roadside	619710	292722	NO_2	NO	5	2	NO	2.1
DT23	3 Norwich Road, Costessey	Suburban	618991	309796	NO_2	NO	0	15	NO	1.5
DT24	14 Station Road, Wymondham	Suburban	618823	293032	NO_2	NO	0	5	NO	1.5
DT25	Long Stratton Bus Stop Norwich Road	Roadside	619823	293032	NO_2	NO	5	4	NO	2.1
DT26	Newmarket Road, Cringleford	Roadside	619801	305859	NO_2	NO	20	2	NO	2.1

DT27	Lord Nelson Drive, Costessey	Roadside	616348	310585	NO_2	NO	100	1	NO	2.1
DT28	Riverside Court, Costessey	Suburban	616797	311225	NO_2	NO	0	15	NO	1.5
DT29	25 Broad St, Harleston	Suburban	619131	305633	NO_2	NO	8	0	NO	1.5

Notes:

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on/adjacent to the façade of a residential property).

(2) N/A if not applicable.

Appendix A: Monitoring Results

Table A.~~2~~3 – Annual Mean NO_2 Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2017 (%) [2]	NO_2 Annual Mean Concentration (µg/m^3) [3]				
					2013	2014	2015	2016	2017
DT1	Suburban	Diffusion Tube	100	100	19.5	21.5	17.1	20.2	21.21
DT2	Suburban	Diffusion Tube	100	100	18.7	20.3	18.1	21.2	21.66
DT3	Suburban	Diffusion Tube	100	100	17.3	18	15.4	19.3	19.95
DT4	Suburban	Diffusion Tube	100	100	24.1	24.1	20.9	29.2	26.70
DT5	Suburban	Diffusion Tube	100	100	25.3	33	25.9	29.9	28.18
DT6	Suburban	Diffusion Tube	97	83	13	12	10.4	13.5	20.20
DT7	Roadside	Diffusion Tube	100	100	36.1	37.8	31.9	33.5	37.23
DT8	Kerbside	Diffusion Tube	100	100	23.5	23.4	18.4	23.3	21.95
DT9	Kerbside	Diffusion Tube	100	100	22.8	26.7	21.4	25.4	24.85
DT10	Suburban	Diffusion Tube	100	100	17.1	16.7	12	18	16.47
DT11	Rural	Diffusion Tube	100	100	15	15.9	12.8	15.8	14.91
DT12	Suburban	Diffusion Tube	98	92	18	21.4	16.3	21.9	21.20
DT13	Suburban	Diffusion Tube	100	100	13.7	14.2	11.9	15.9	16.09
DT14	Suburban	Diffusion Tube	100	100	17.7	18.1	13.3	17	16.17
DT15	Roadside	Diffusion Tube	100	100	25.3	28.1	25.1	27.6	26.18
DT16	Roadside	Diffusion Tube	100	100	21	20.5	18.1	21.4	19.28
DT17	Roadside	Diffusion Tube	100	100		13.1	10.8	19.4	20.54
DT18	Roadside	Diffusion Tube	100	100	28.4	27.4	25.9	29.8	26.63
DT19	Roadside	Diffusion Tube	98	92	34.2	36.3	30.6	36.9	34.31

DT20	Suburban	Diffusion Tube	18	92					30.99
DT21	Suburban	Diffusion Tube	100	100	36.6	35.1	26.9	31.1	28.48
DT22	Roadside	Diffusion Tube	100	100	23.3	26.4	23.2	25.2	20.54
DT23	Suburban	Diffusion Tube	100	100	15.9	16.2	13	16.7	15.58
DT24	Suburban	Diffusion Tube	100	100	16.9	17.1	13.9	17.4	16.09
DT25	Roadside	Diffusion Tube	100	100	33	31.7	29.3	30.1	29.00
DT26	Roadside	Diffusion Tube	100	100	33	24.4	21.4	25.5	24.10
DT27	Roadside	Diffusion Tube	100	100	29	28.3	23.1	28.4	25.44
DT28	Suburban	Diffusion Tube	100	100			16.3	14.1	13.87
DT29	Suburban	Diffusion Tube	95	75	38.9	38.6	31.8	38.2	30.35
CM2	Select	Select	100	50	27	28.2	31.5	27.8	24.2

☒ **Diffusion tube data has been bias corrected**

☒ **Annualisation has been conducted where data capture is <75%**

Notes:

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.

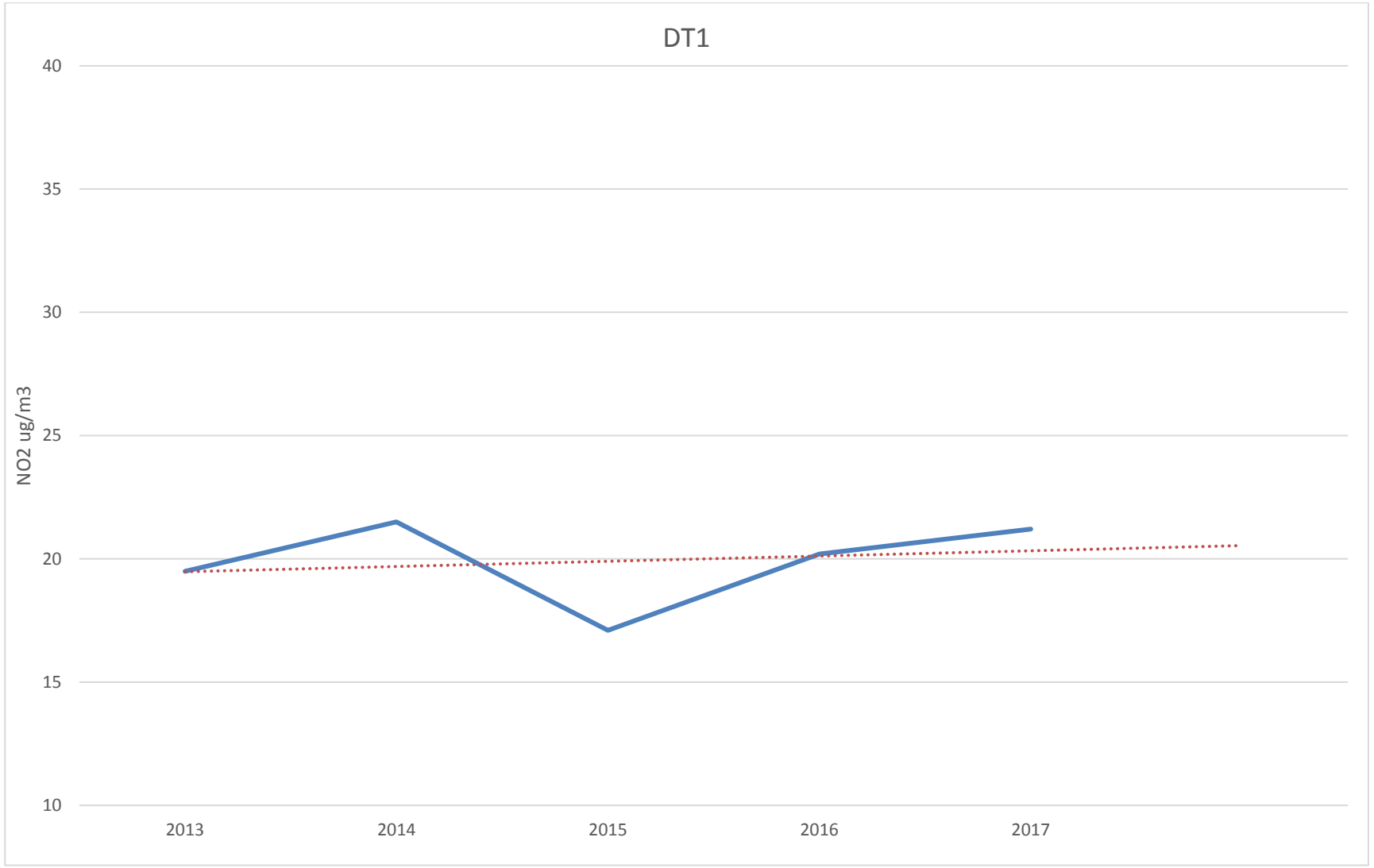
NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined.**

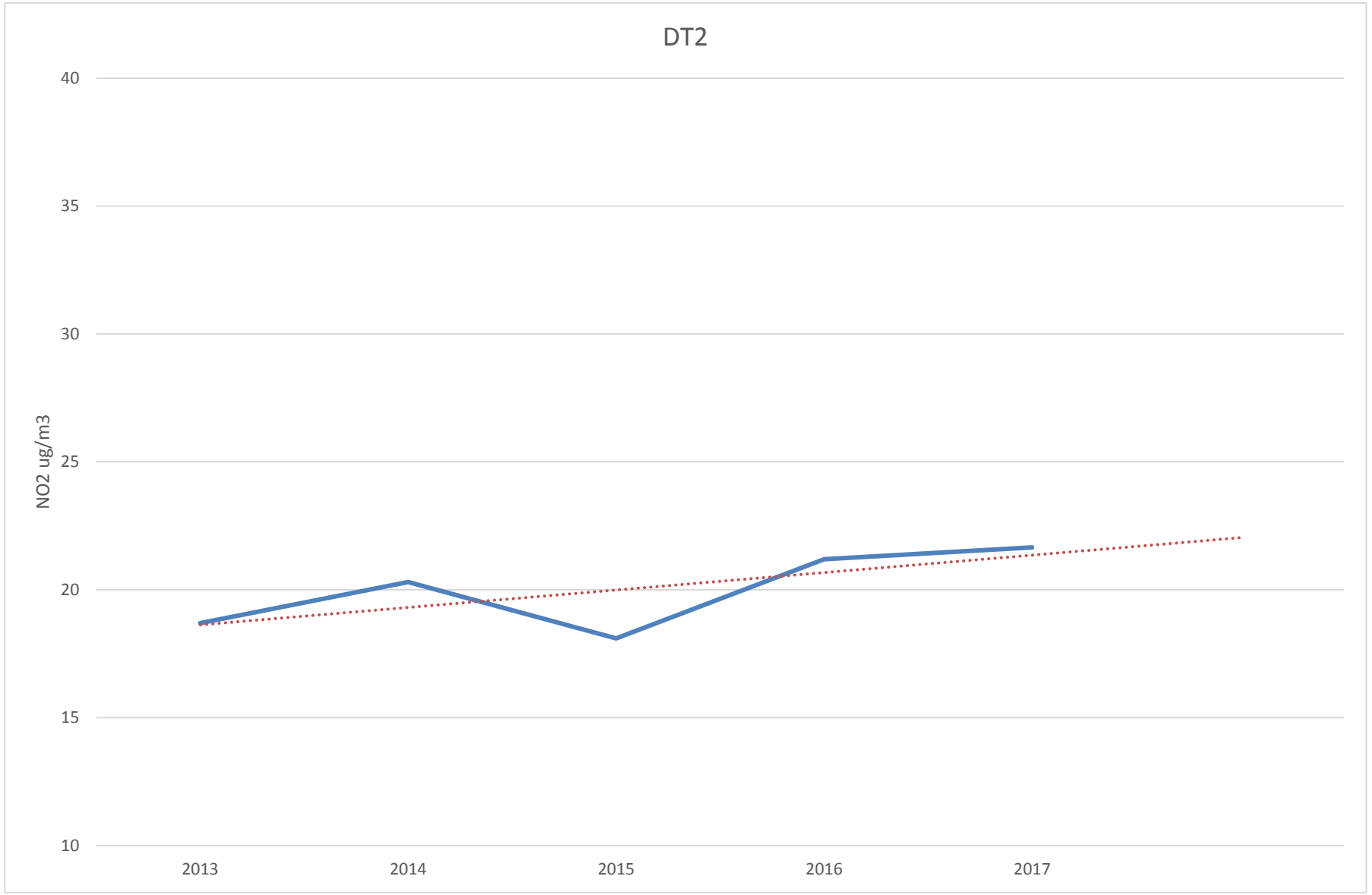
(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

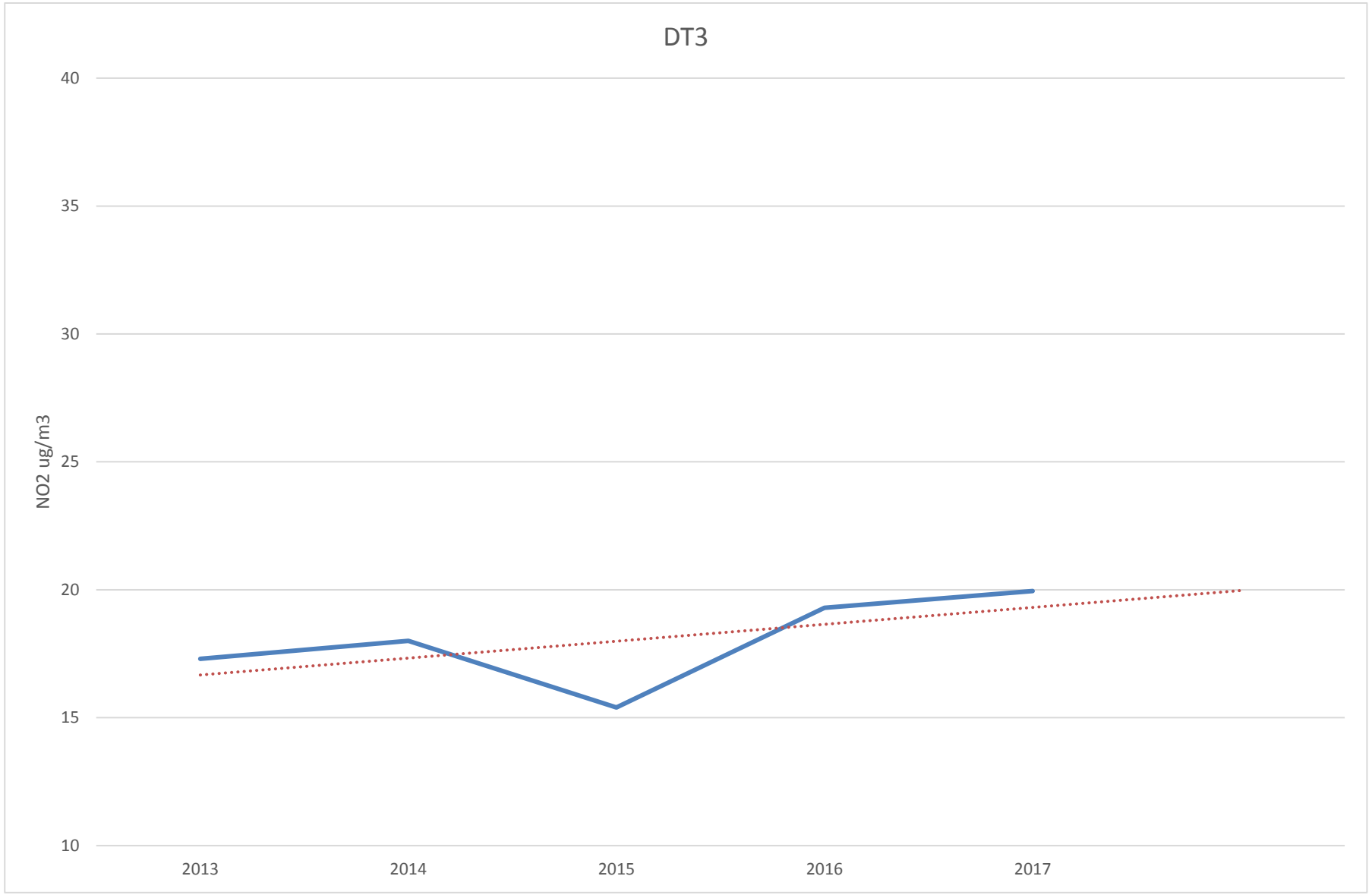
(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

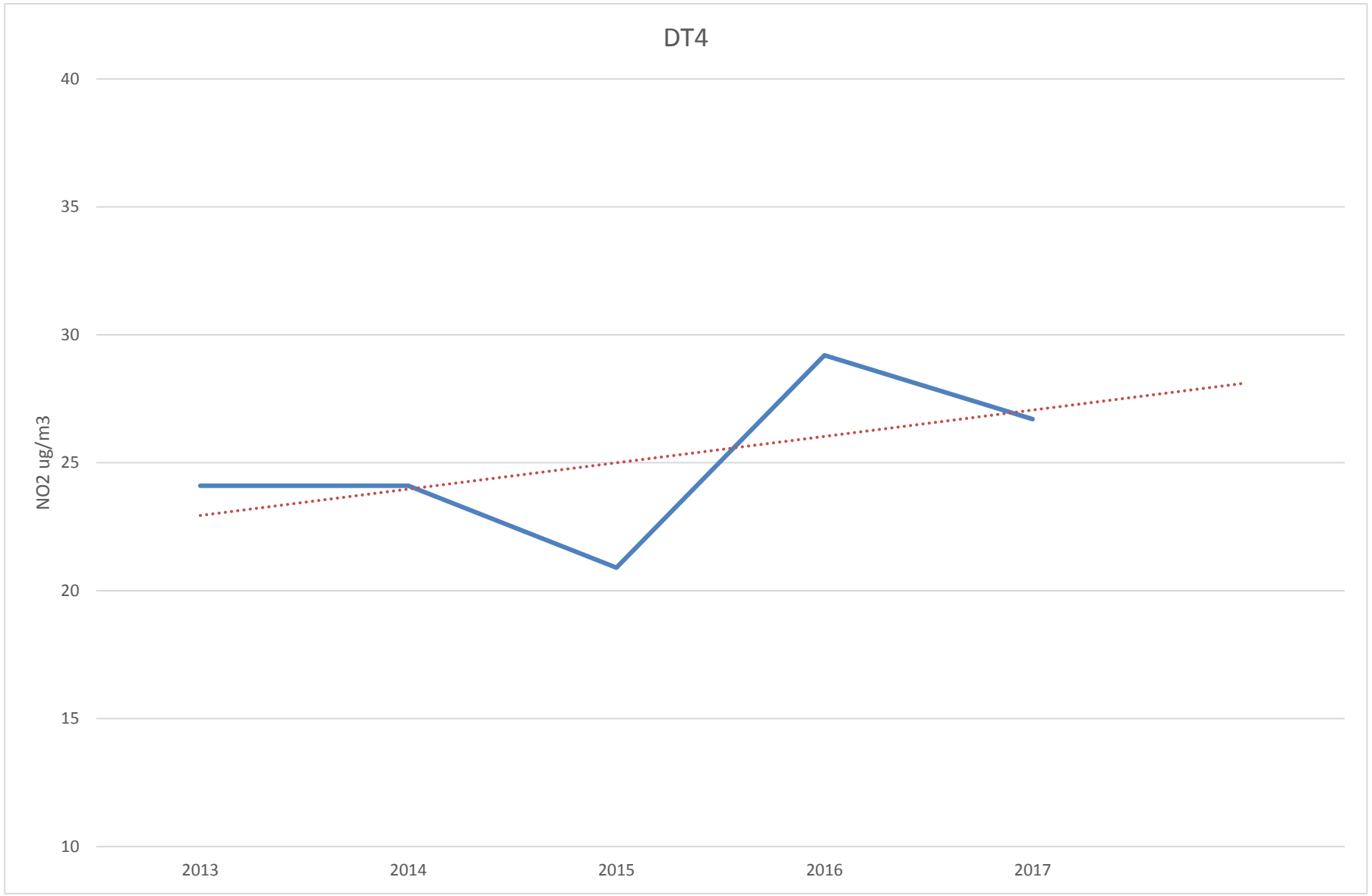
(3) Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per Boxes 7.9 and 7.10 in LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

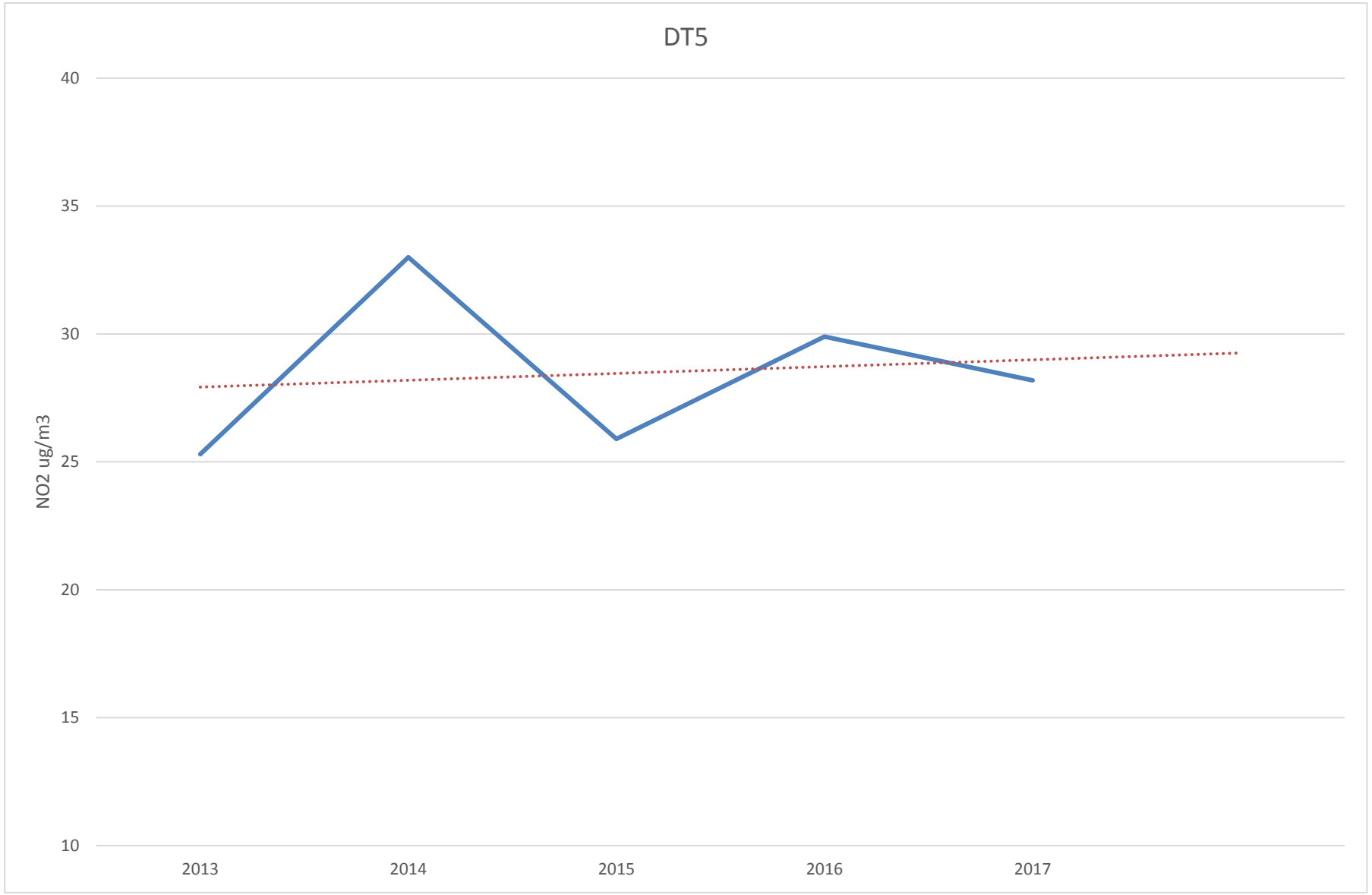
Figure A.1 – Trends in Annual Mean NO_2 Concentrations

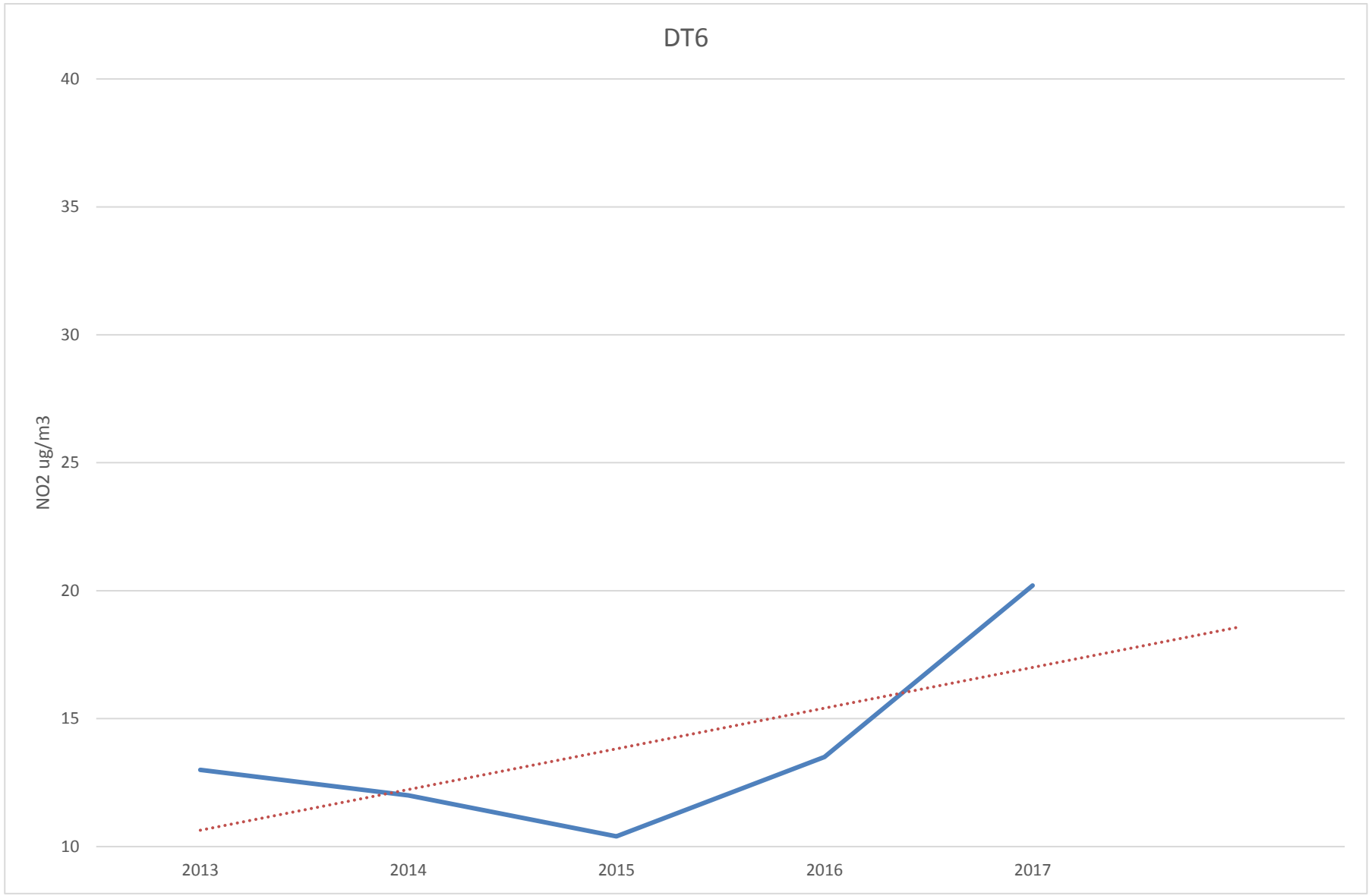


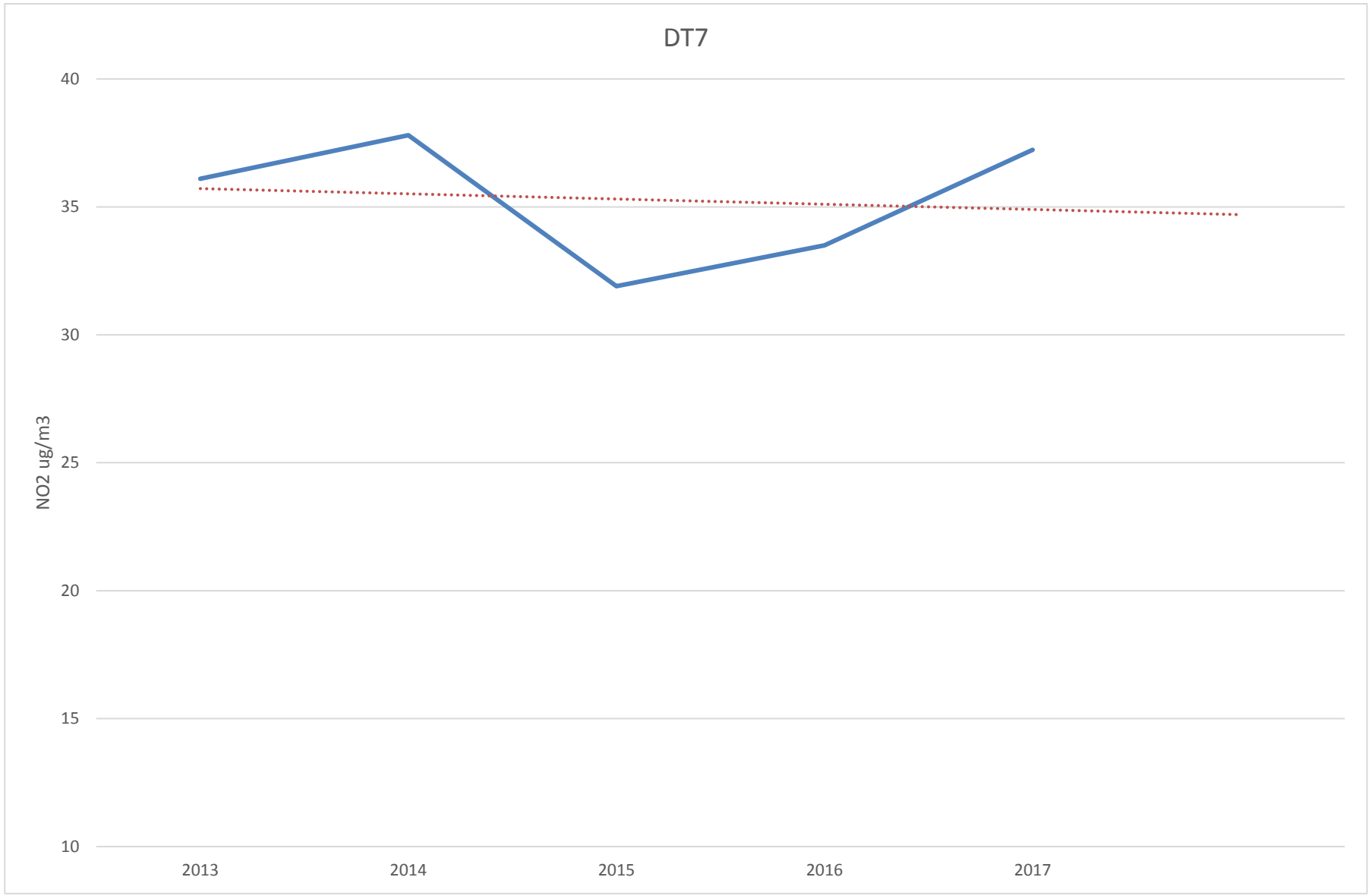

DT2
40
35
30
25
20
15
10
NO2 ug/m3
2013
2014
2015
2016
2017

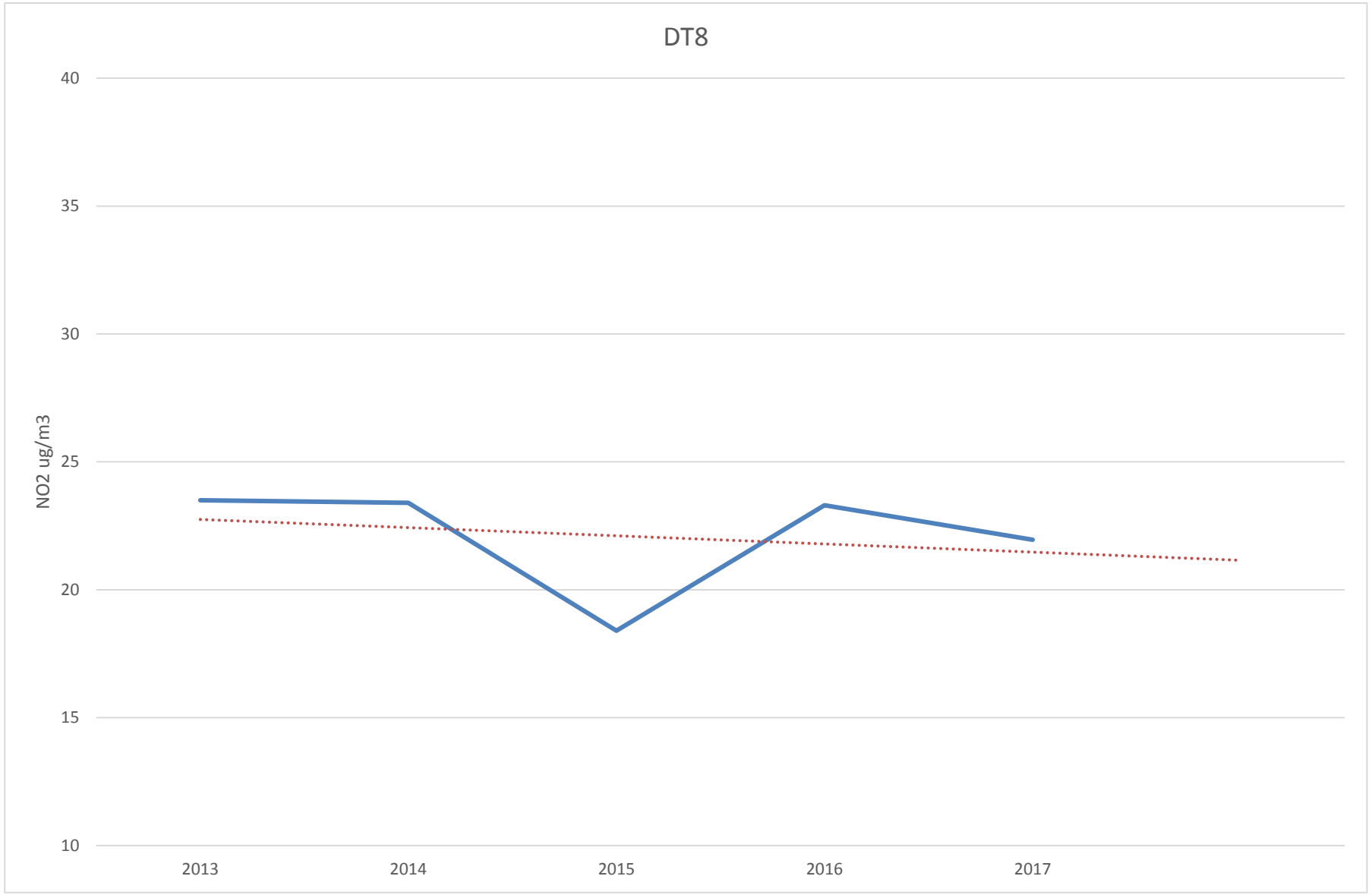

DT3
40
35
30
25
20
15
10
NO2 ug/m3
2013
2014
2015
2016
2017

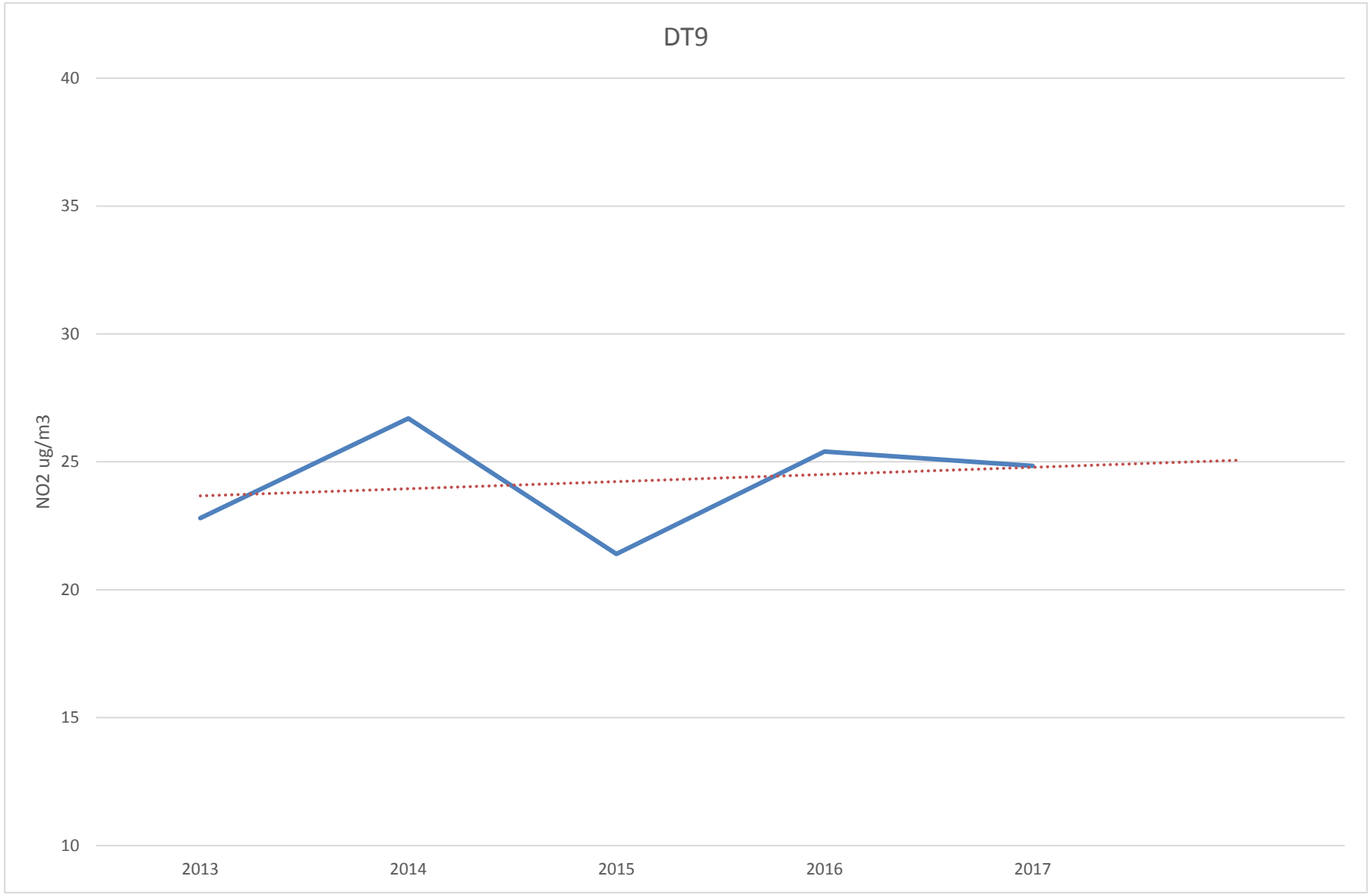

DT4
40
35
30
25
20
15
10
NO2 ug/m3
2013
2014
2015
2016
2017

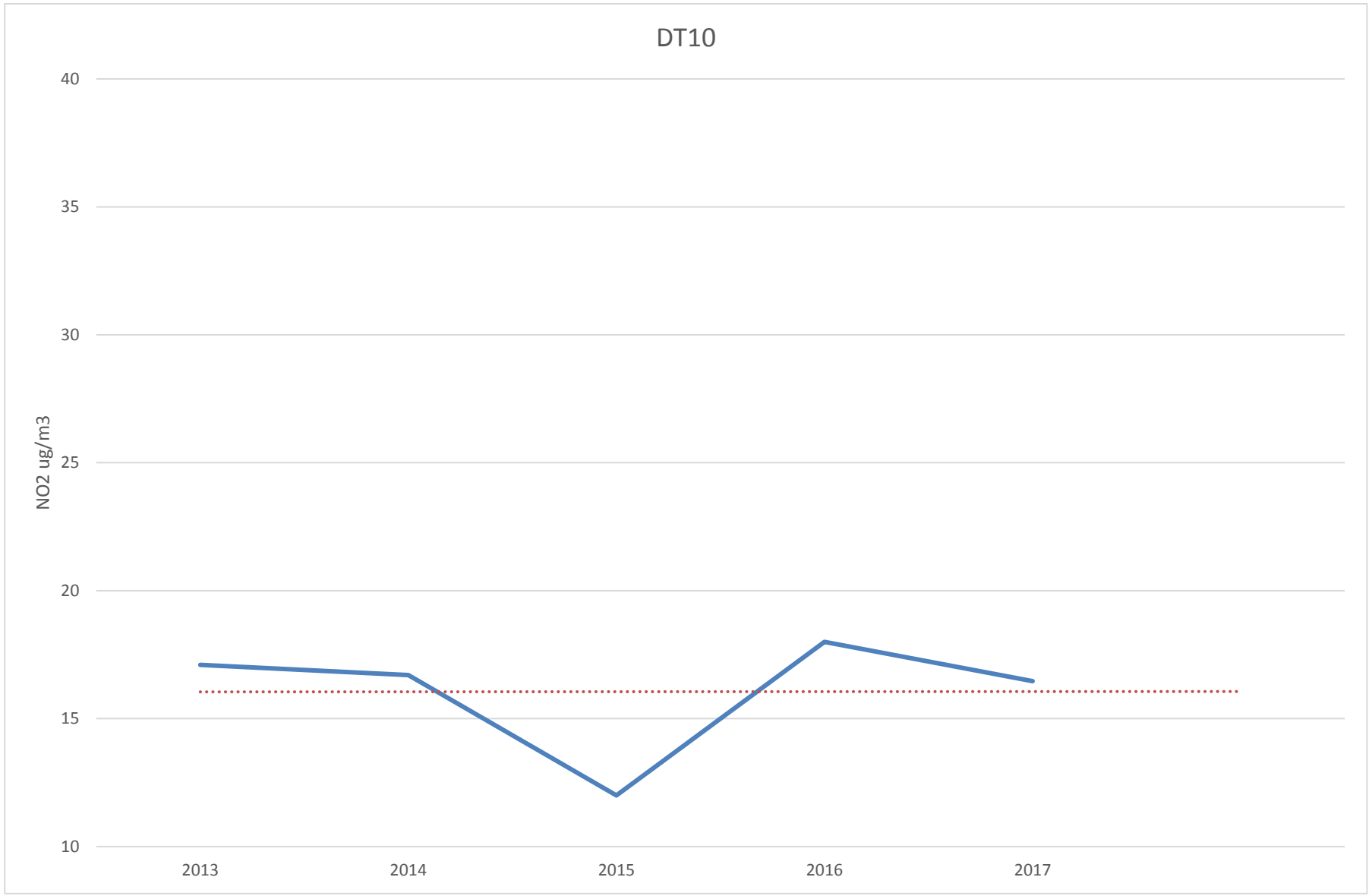

DT5
40
35
30
25
20
15
10
NO2 ug/m3
2013
2014
2015
2016
2017

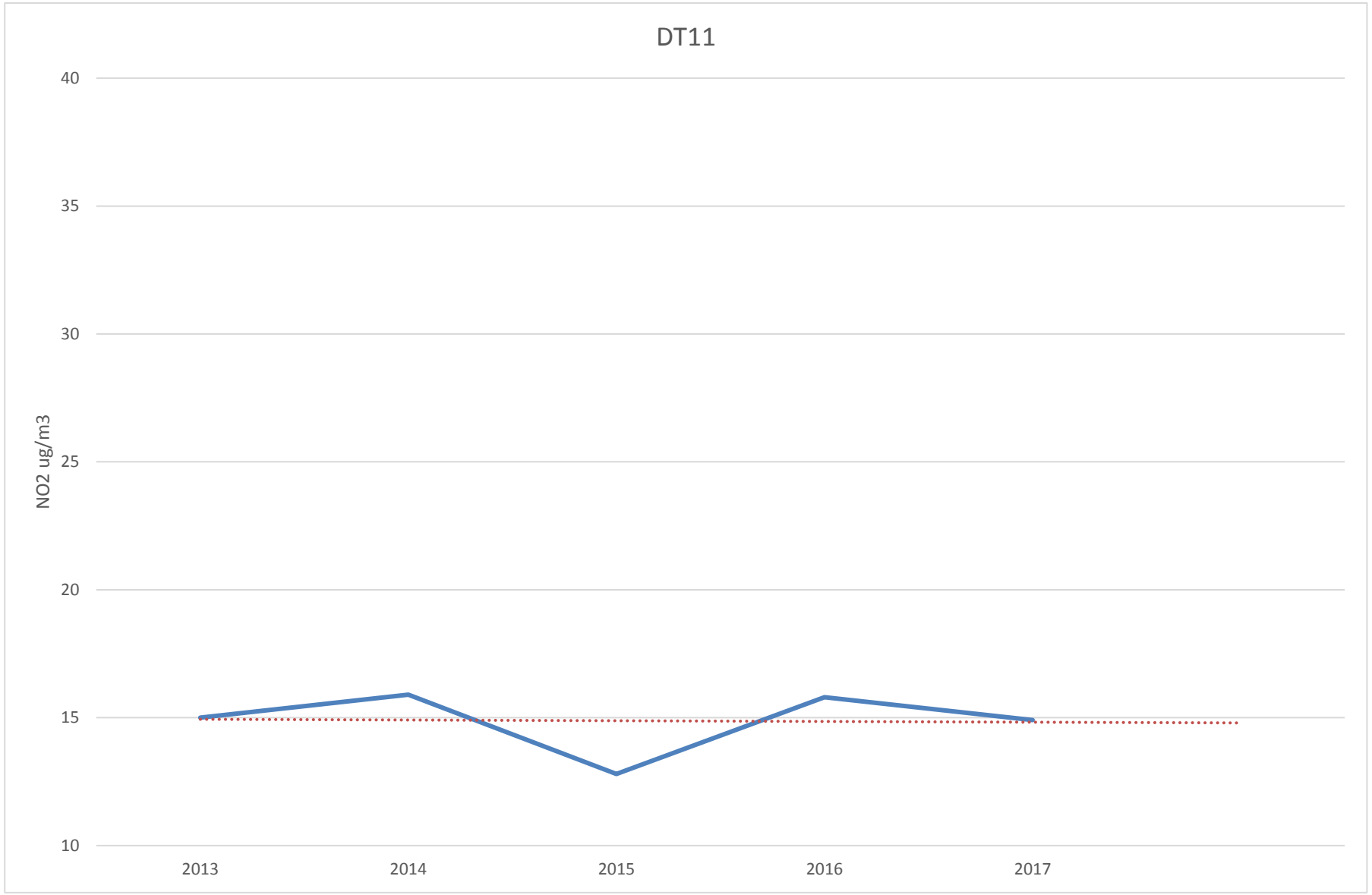

DT6
40
35
30
25
20
15
10
NO2 ug/m3
2013
2014
2015
2016
2017

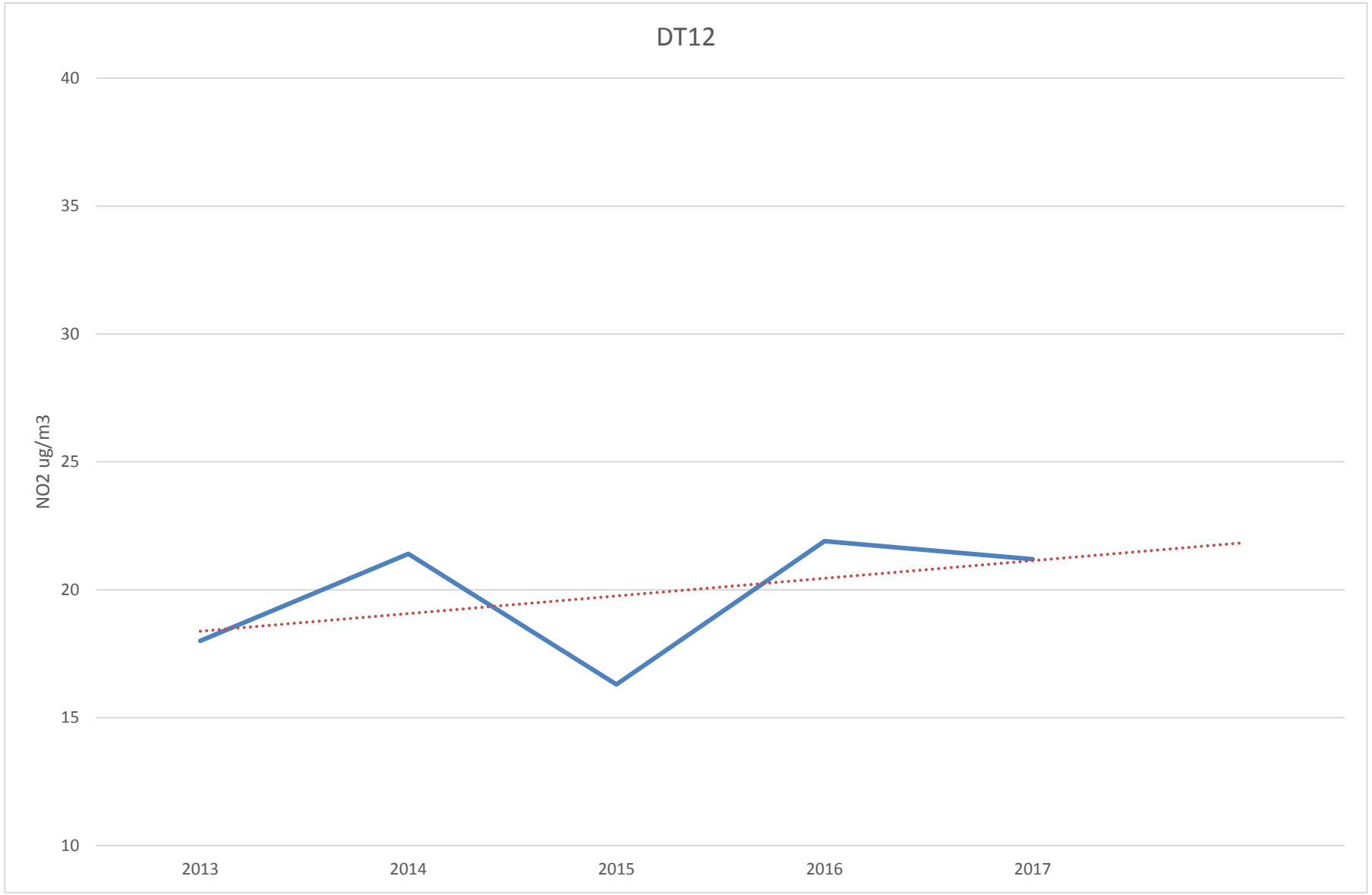

DT7
40
35
30
25
20
15
10
NO2 ug/m3
2013
2014
2015
2016
2017

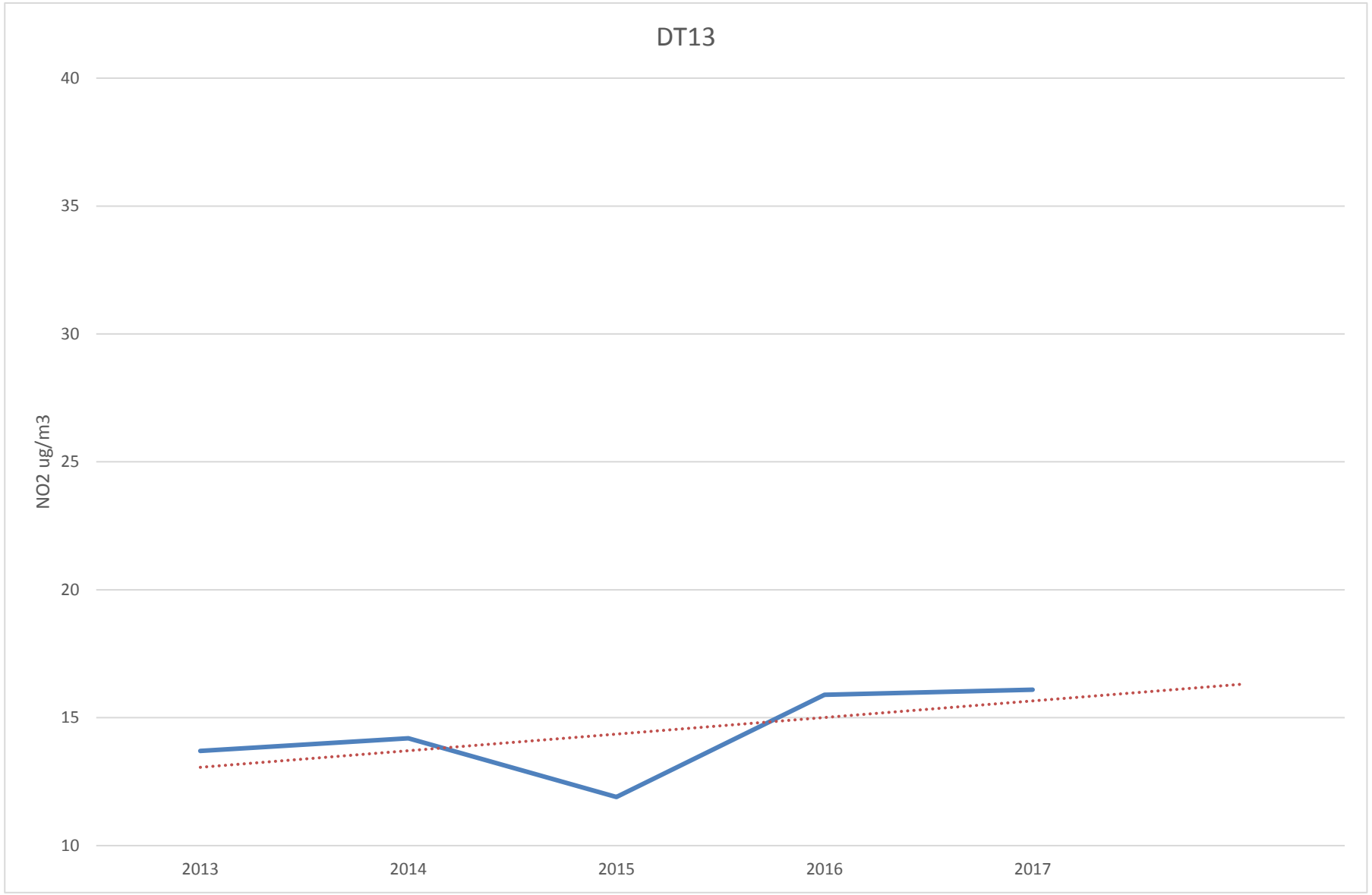

DT8
40
35
30
25
20
15
10
NO2 ug/m3
2013
2014
2015
2016
2017

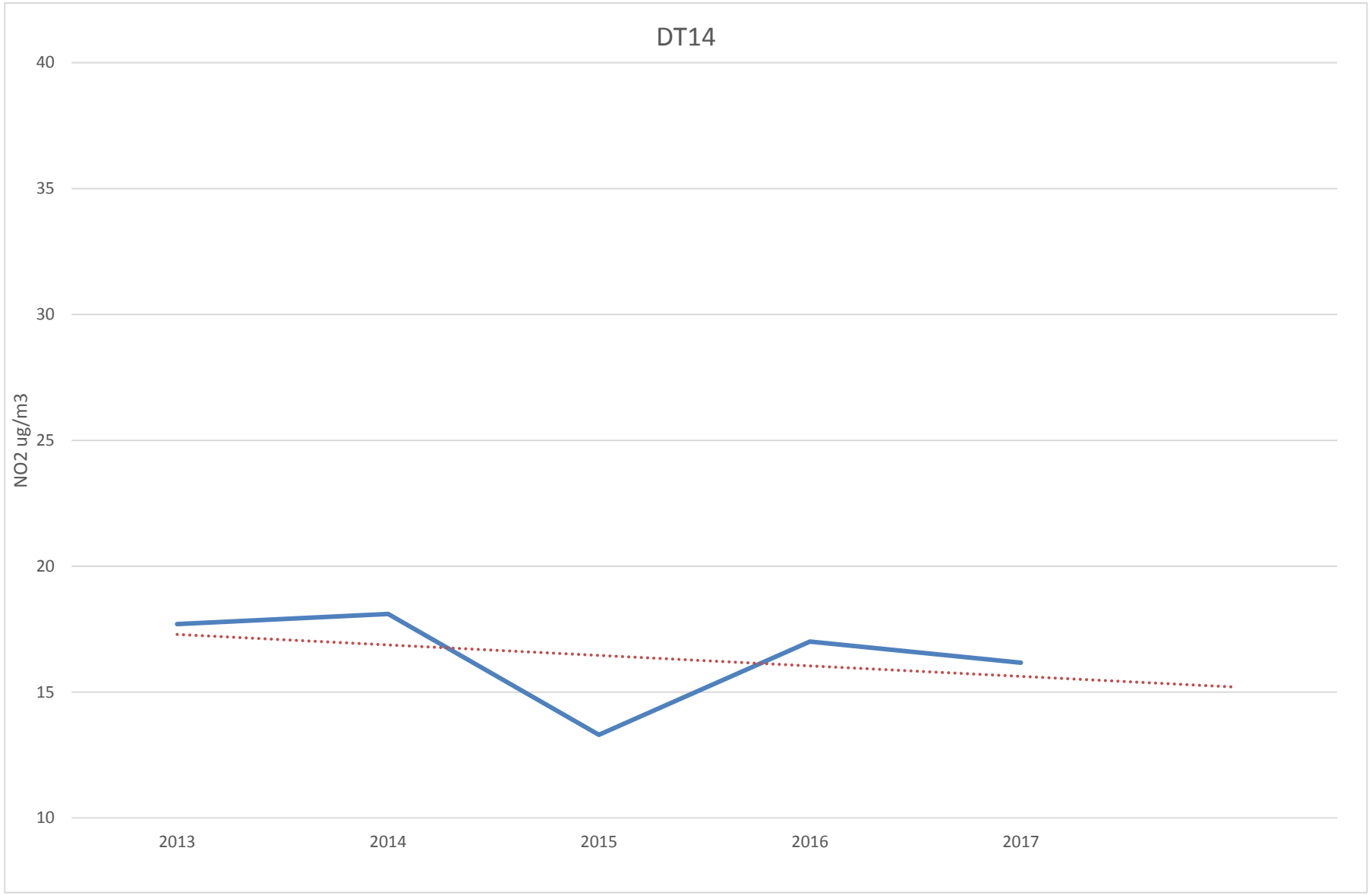

DT9
40
35
30
25
20
15
10
NO2 ug/m3
2013
2014
2015
2016
2017

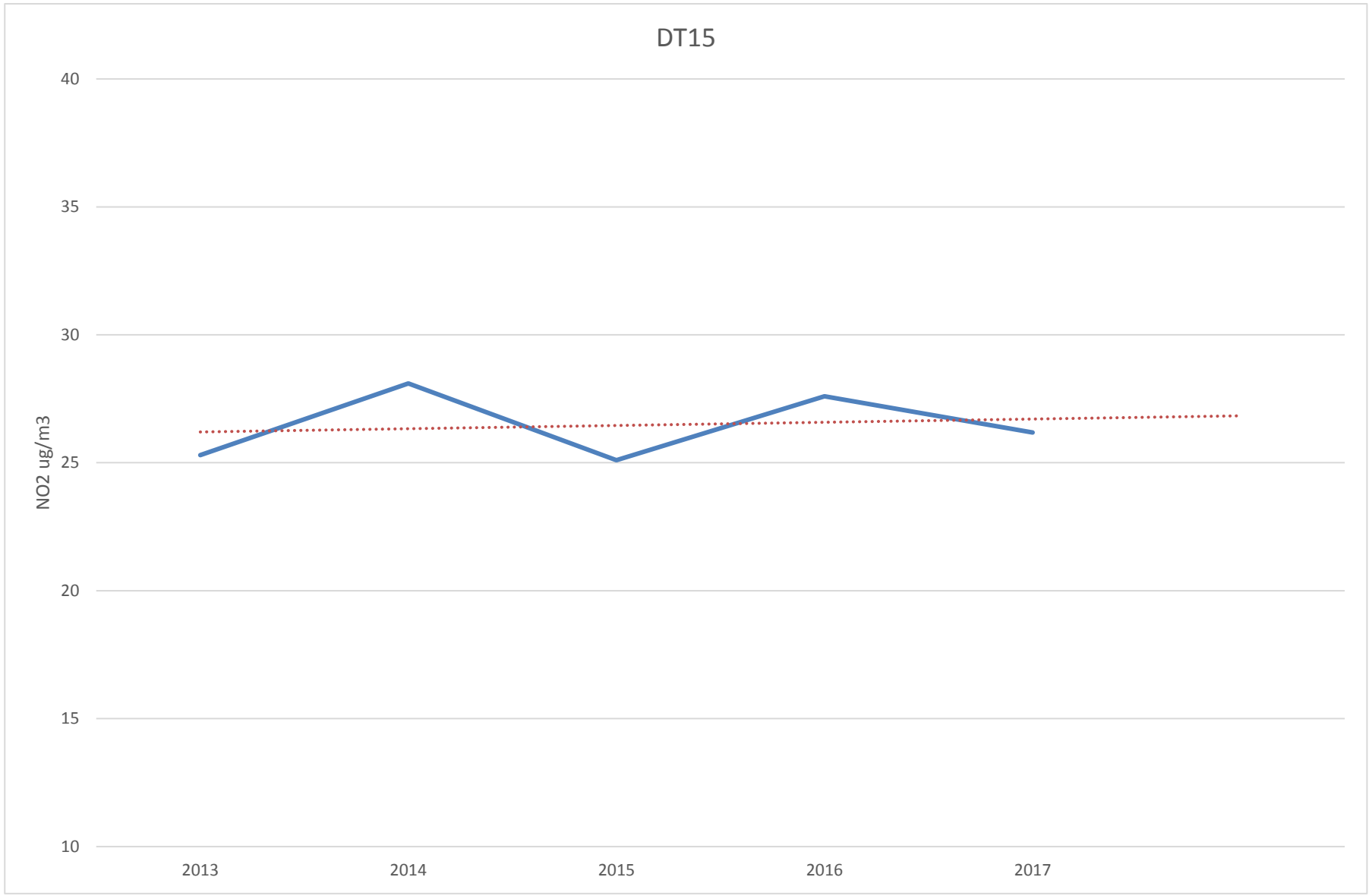

DT10
40
35
30
25
20
15
10
NO2 ug/m3
2013
2014
2015
2016
2017

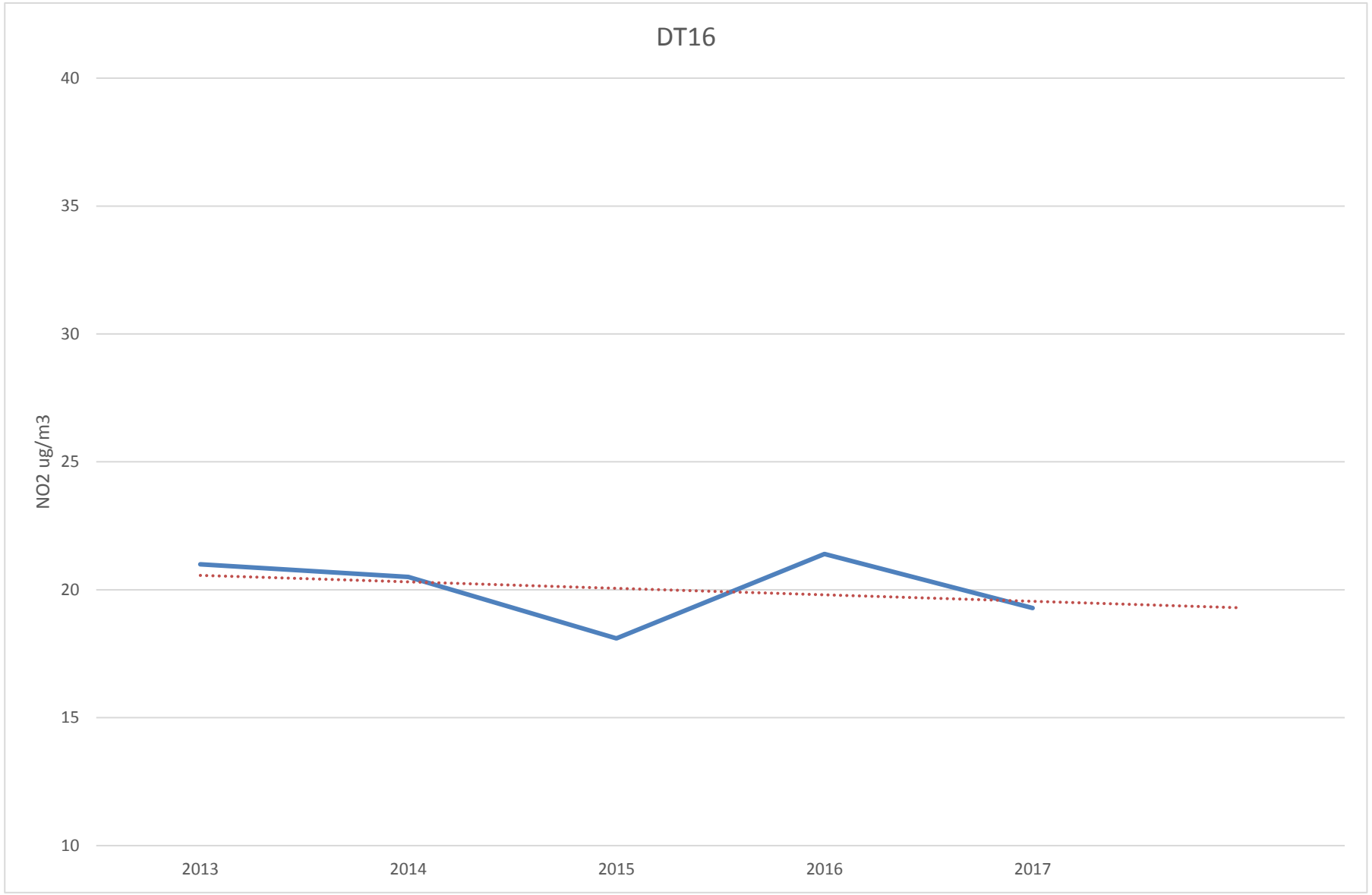

DT11
40
35
30
25
20
15
10
NO2 ug/m3
2013
2014
2015
2016
2017

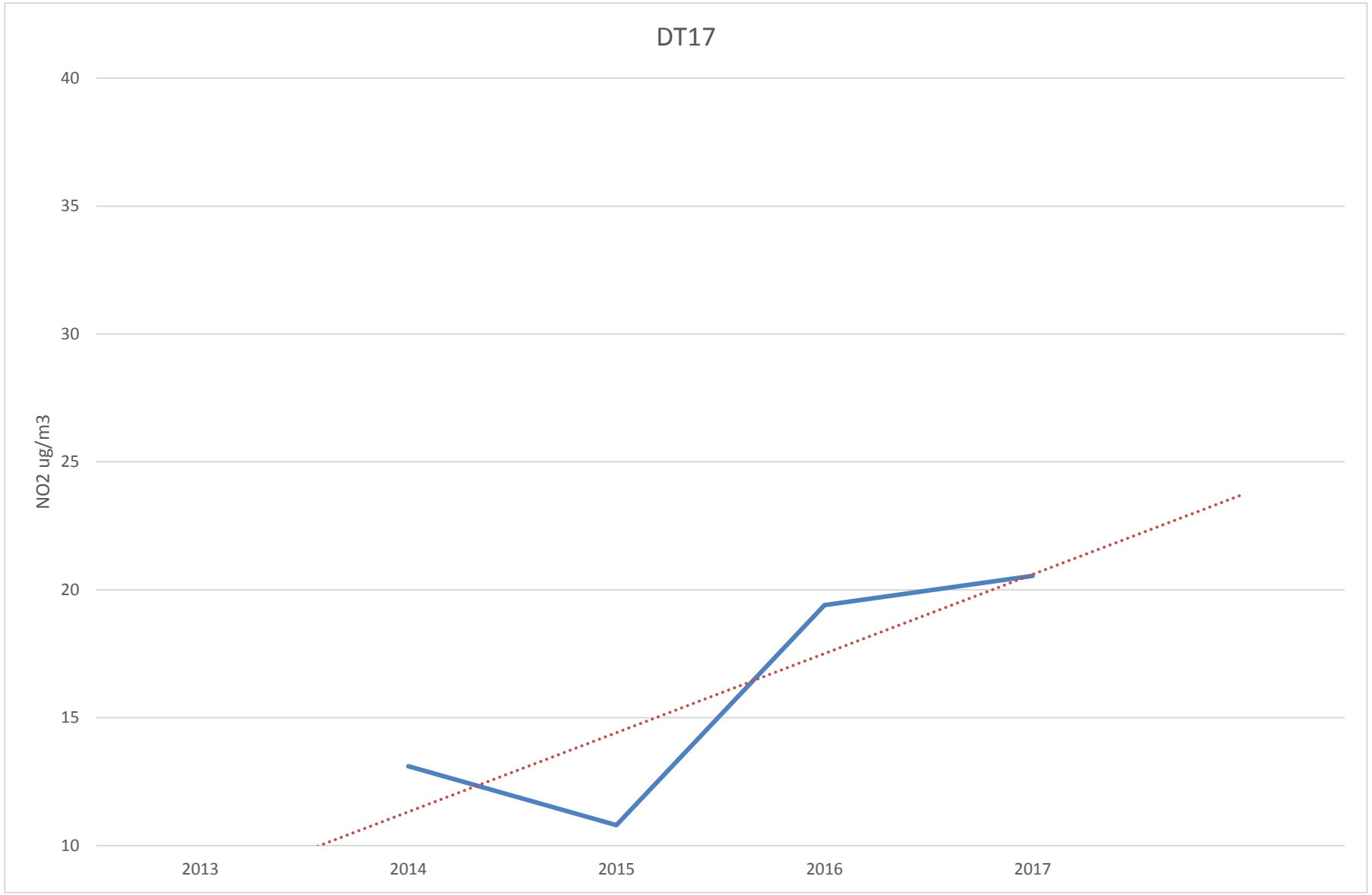

DT12
40
35
30
25
20
15
10
NO2 ug/m3
2013
2014
2015
2016
2017

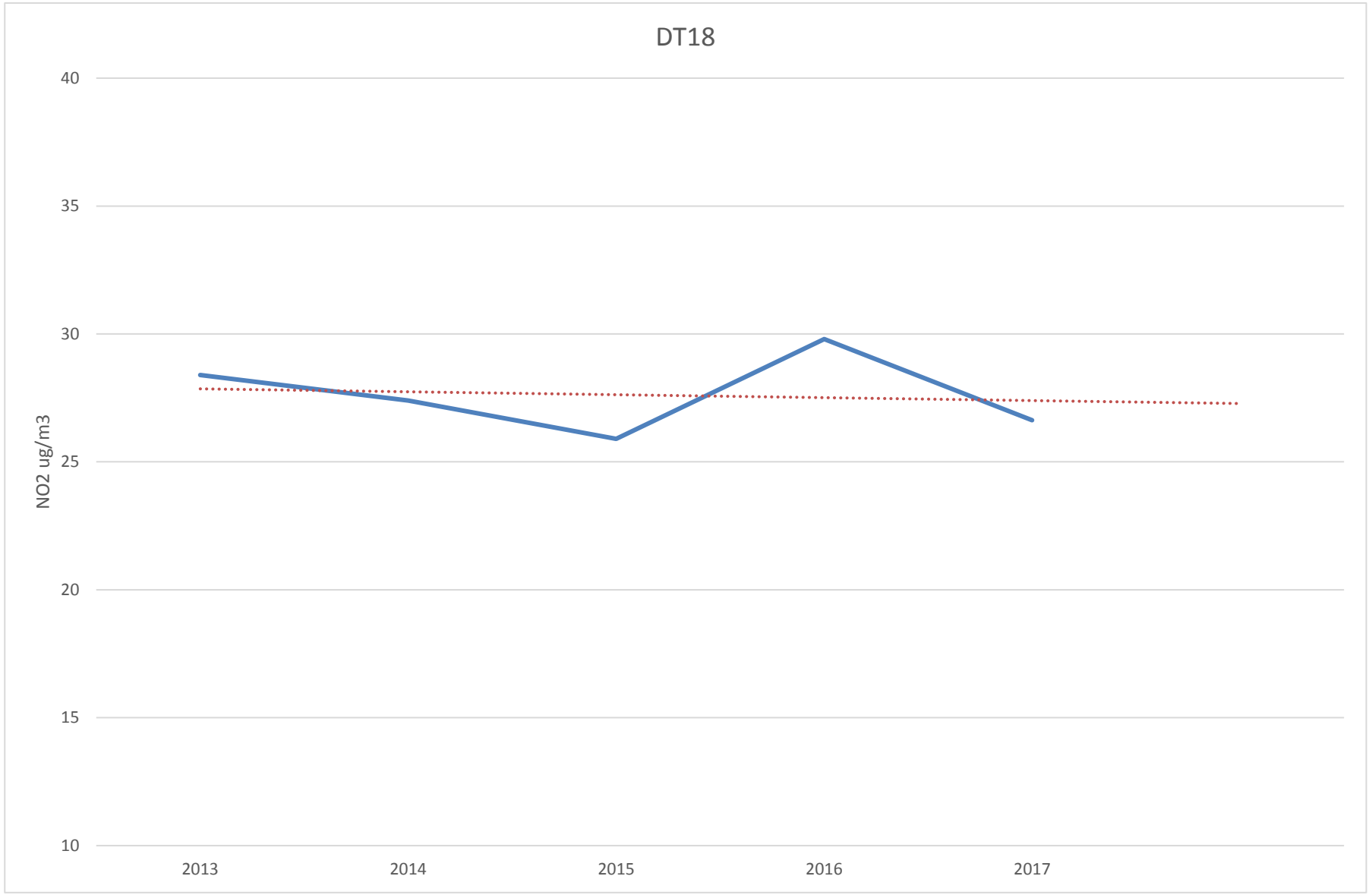

DT13
40
35
30
25
20
15
10
NO2 ug/m3
2013
2014
2015
2016
2017

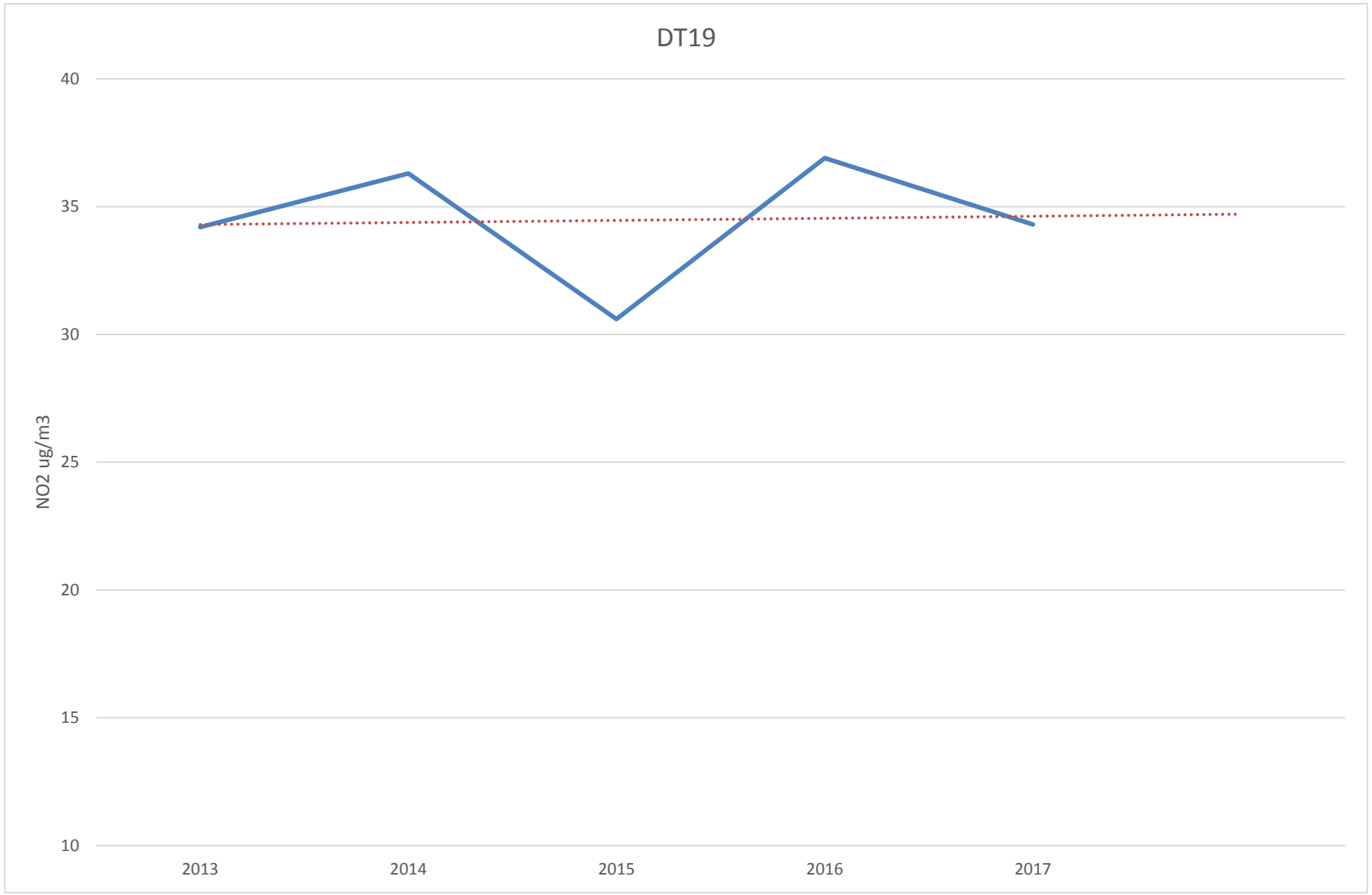

DT14
40
35
30
25
20
15
10
NO2 ug/m3
2013
2014
2015
2016
2017

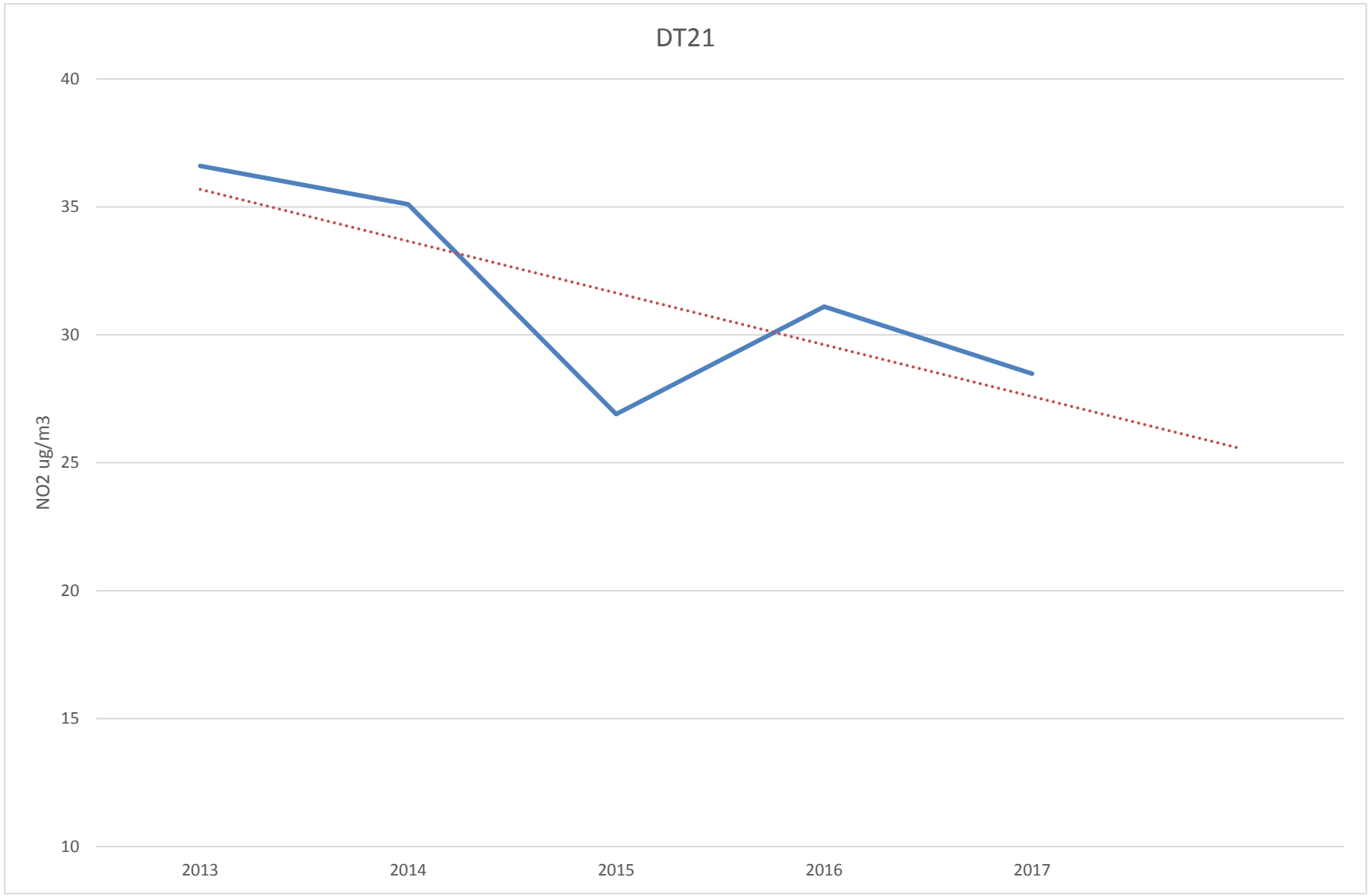

DT15
40
35
30
25
20
15
10
NO2 ug/m3
2013
2014
2015
2016
2017

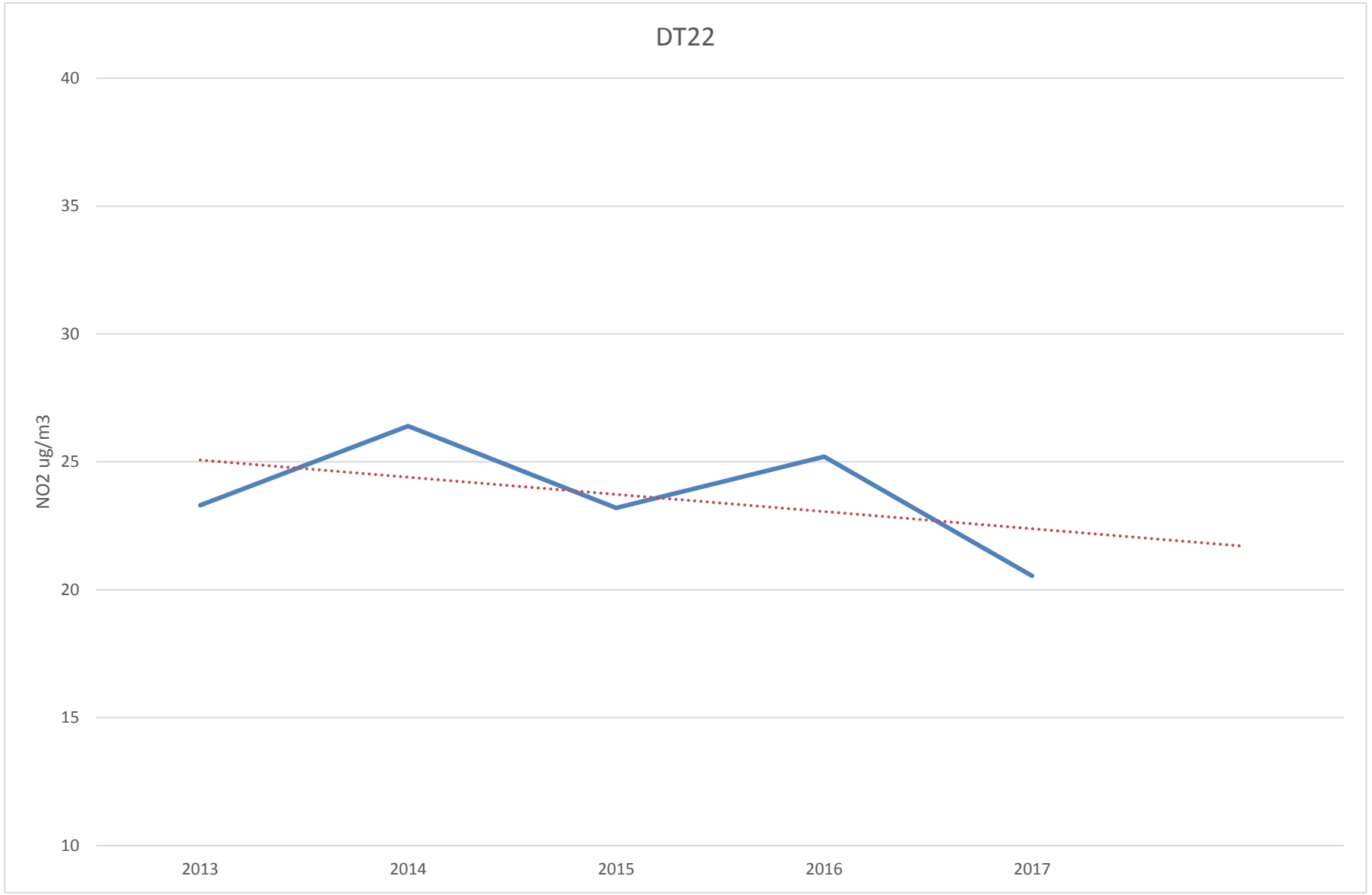

DT16
40
35
30
25
20
15
10
NO2 ug/m3
2013
2014
2015
2016
2017

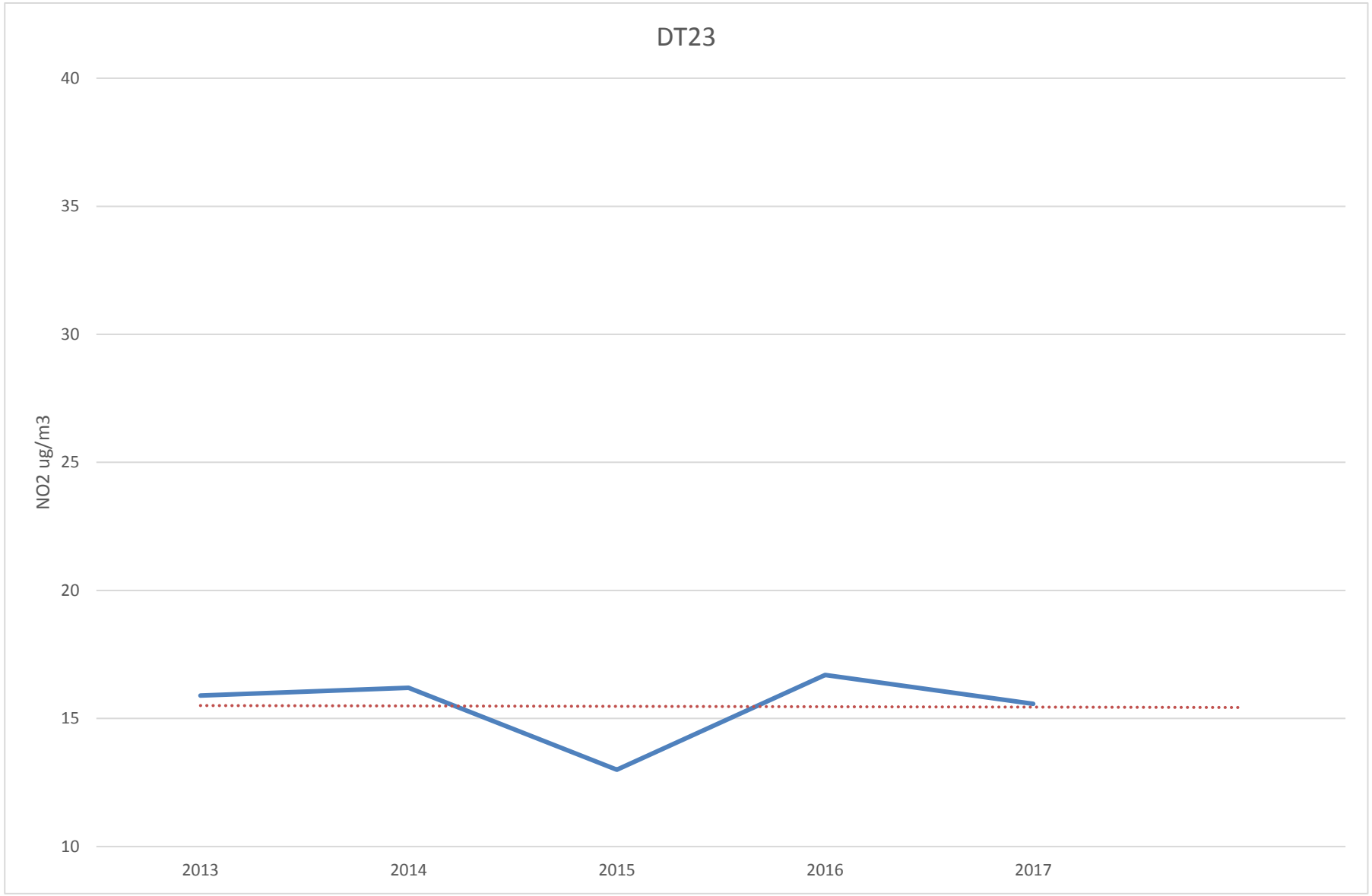

DT17
40
35
30
25
20
15
10
NO2 ug/m3
2013
2014
2015
2016
2017

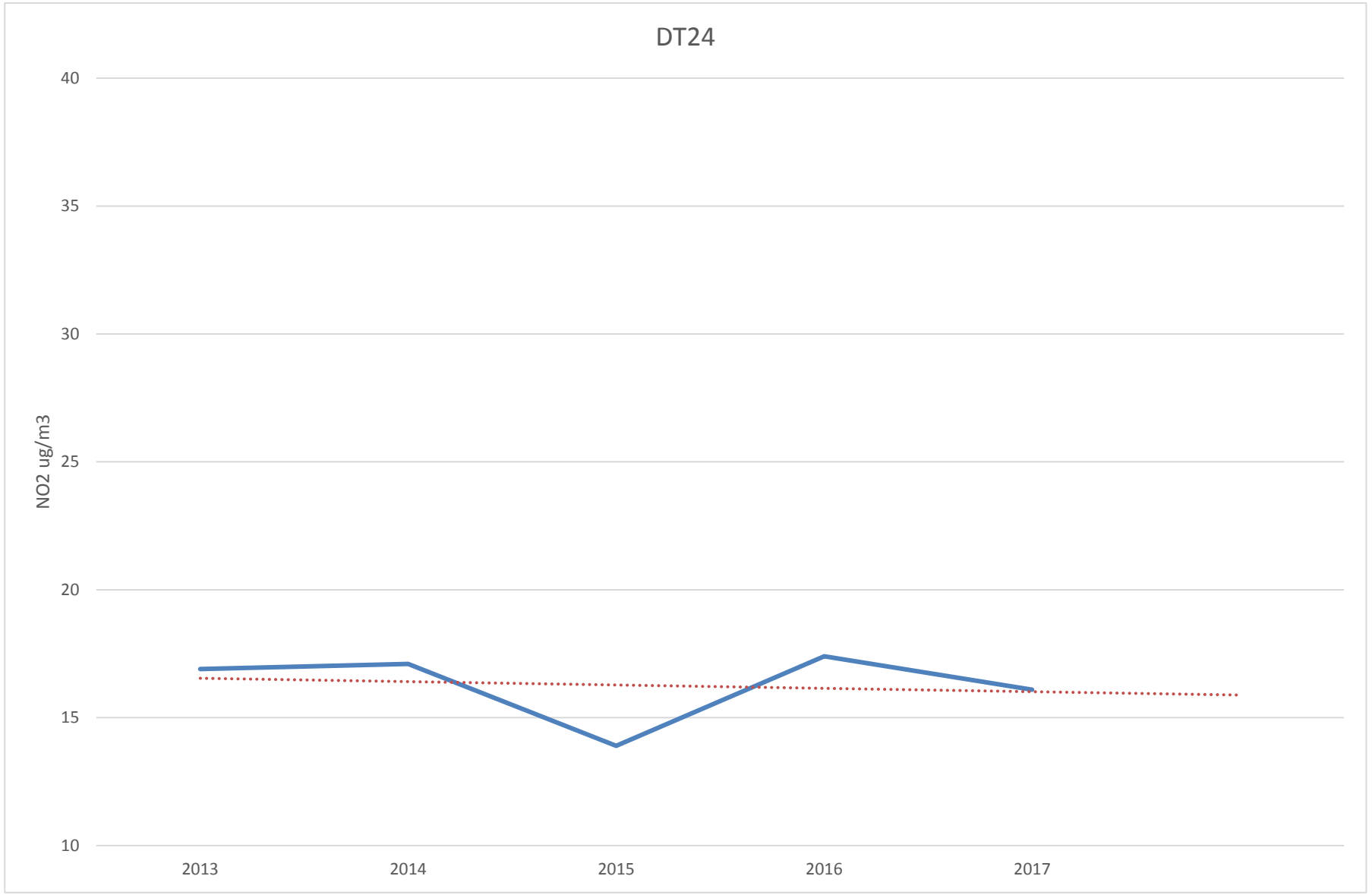

DT18
40
35
30
25
20
15
10
NO2 ug/m3
2013
2014
2015
2016
2017

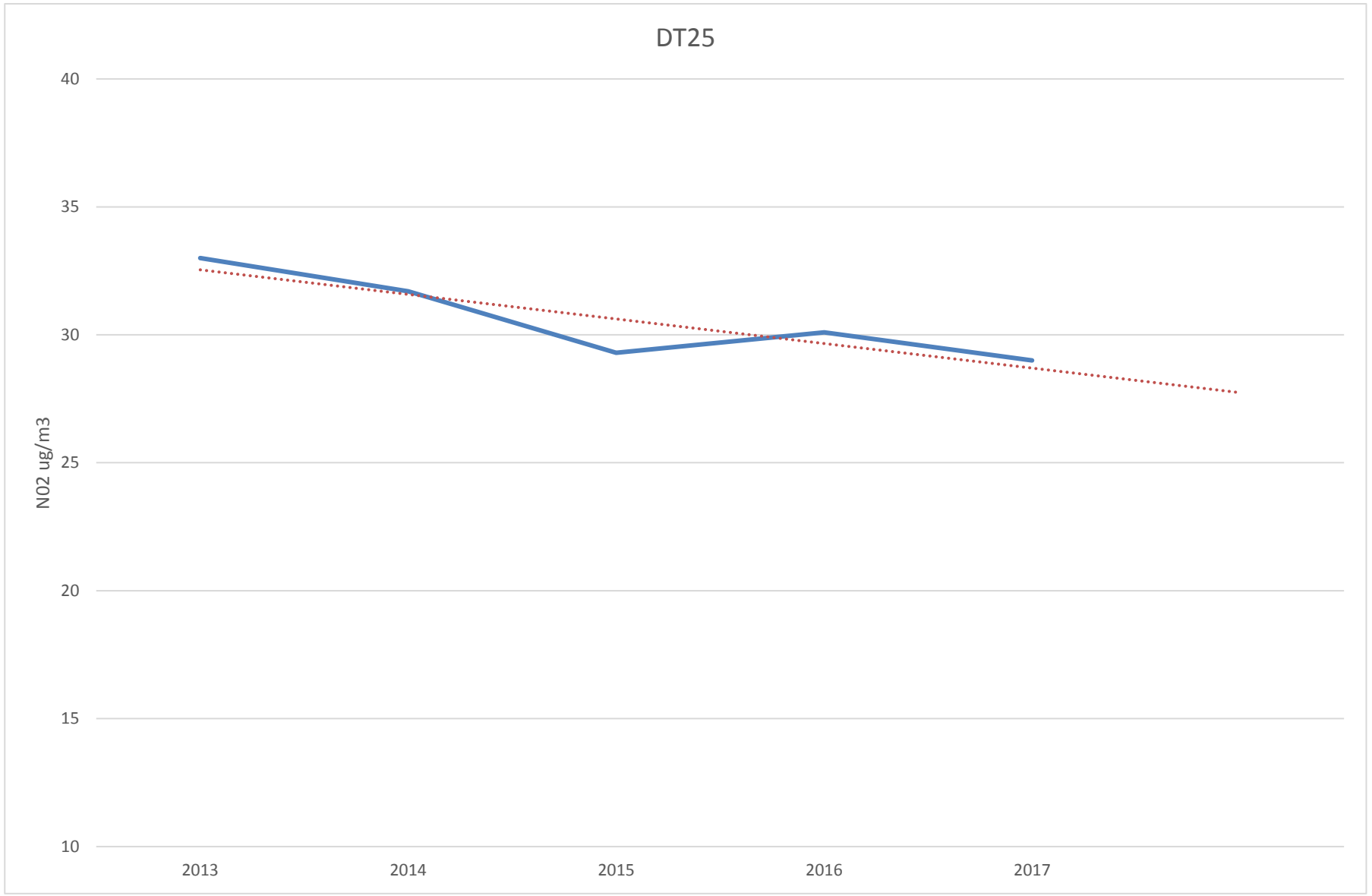

DT19
40
35
30
25
20
15
10
NO2 ug/m3
2013
2014
2015
2016
2017

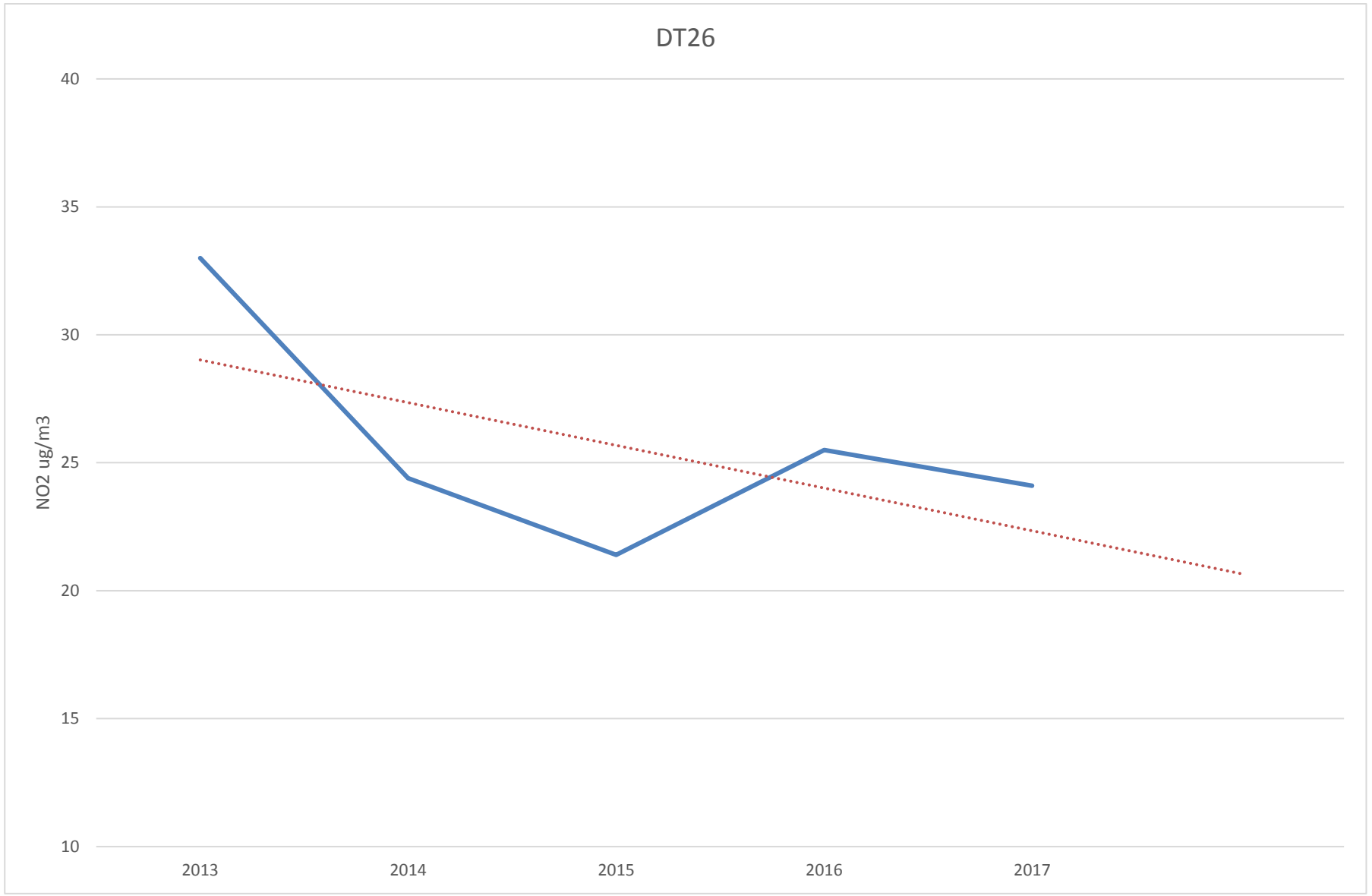

DT21
40
35
30
25
20
15
10
NO2 ug/m3
2013
2014
2015
2016
2017

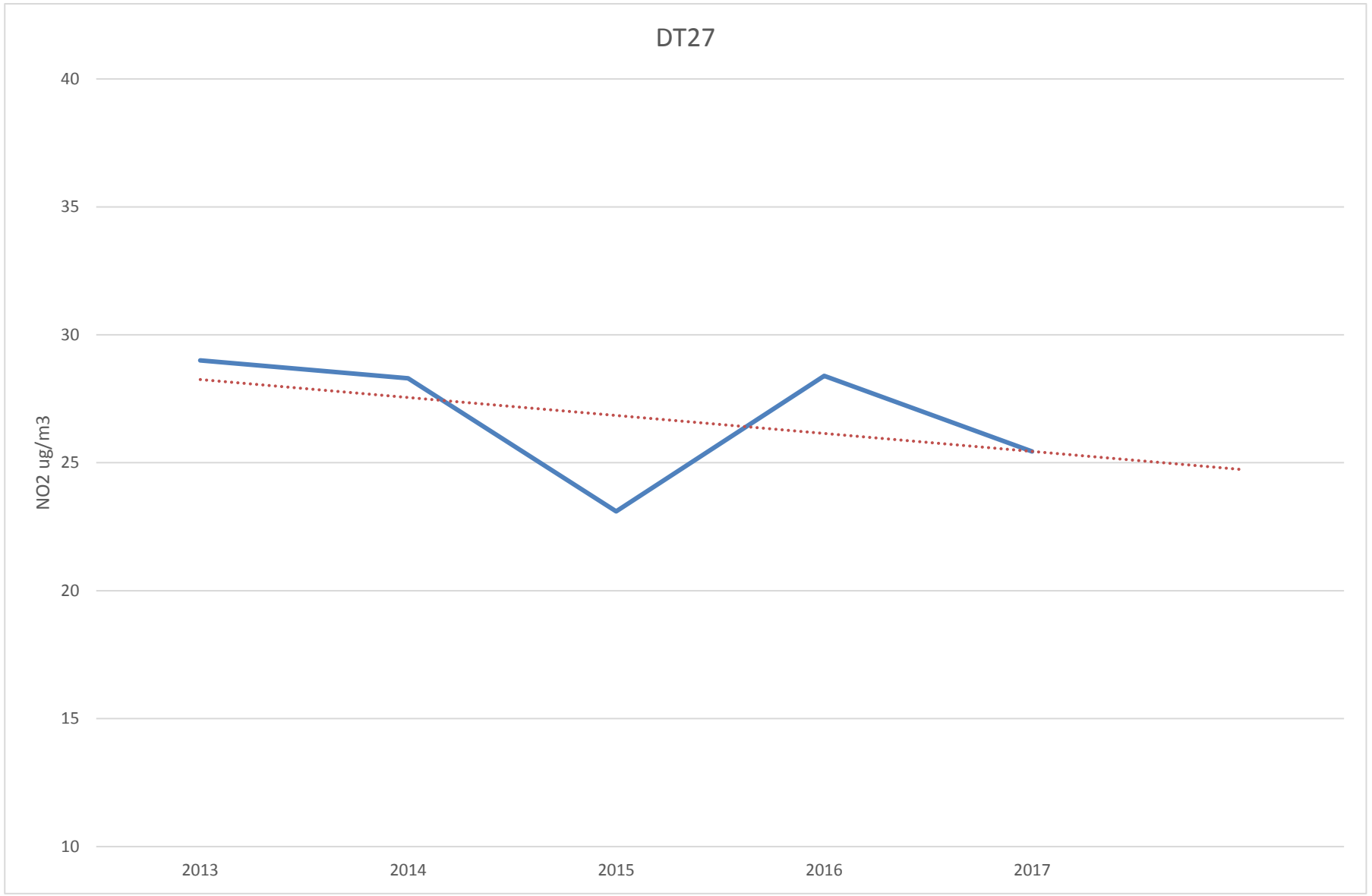

DT22
40
35
30
25
20
15
10
NO2 ug/m3
2013
2014
2015
2016
2017

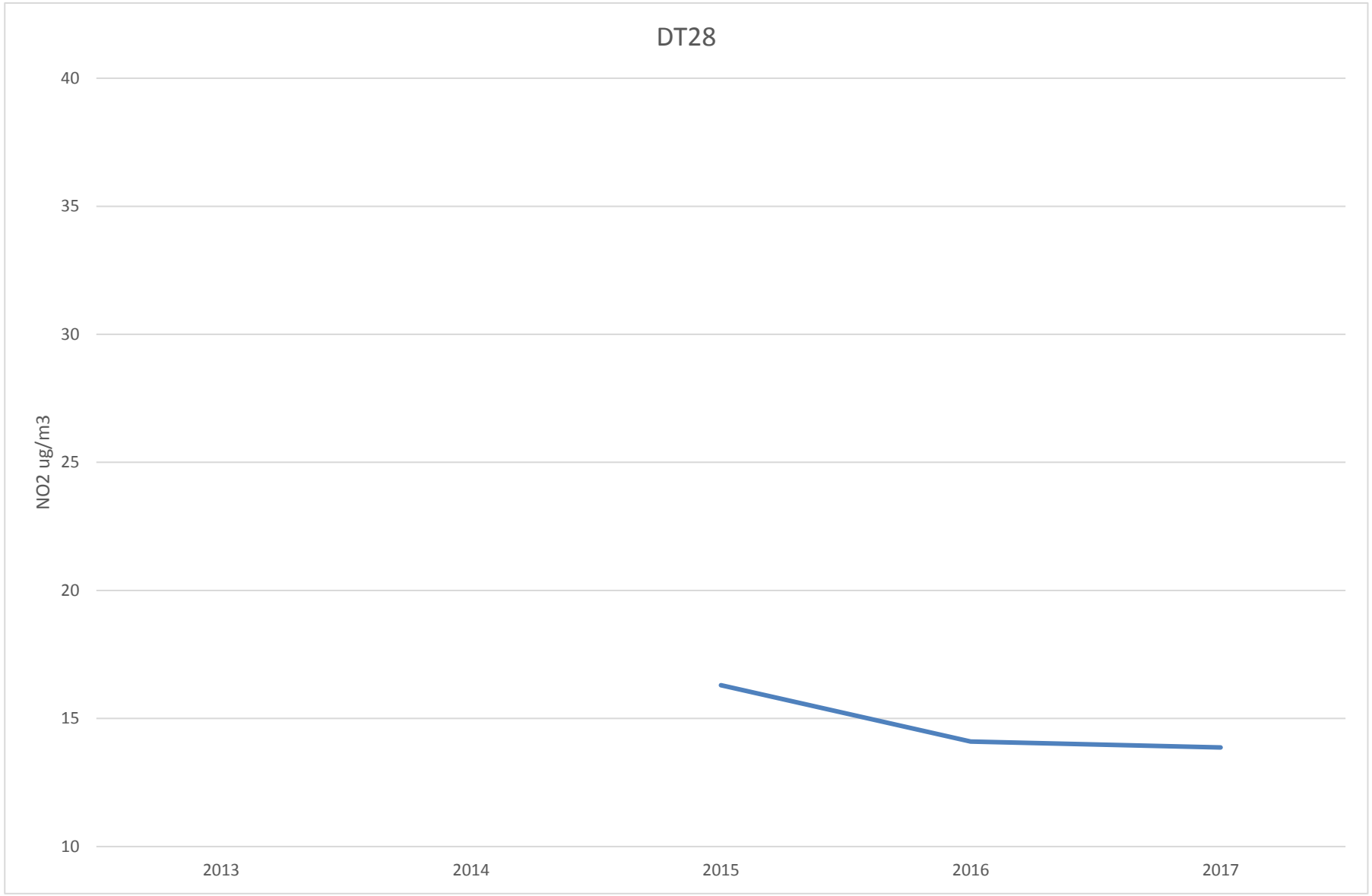

DT23
40
35
30
25
20
15
10
NO2 ug/m3
2013
2014
2015
2016
2017

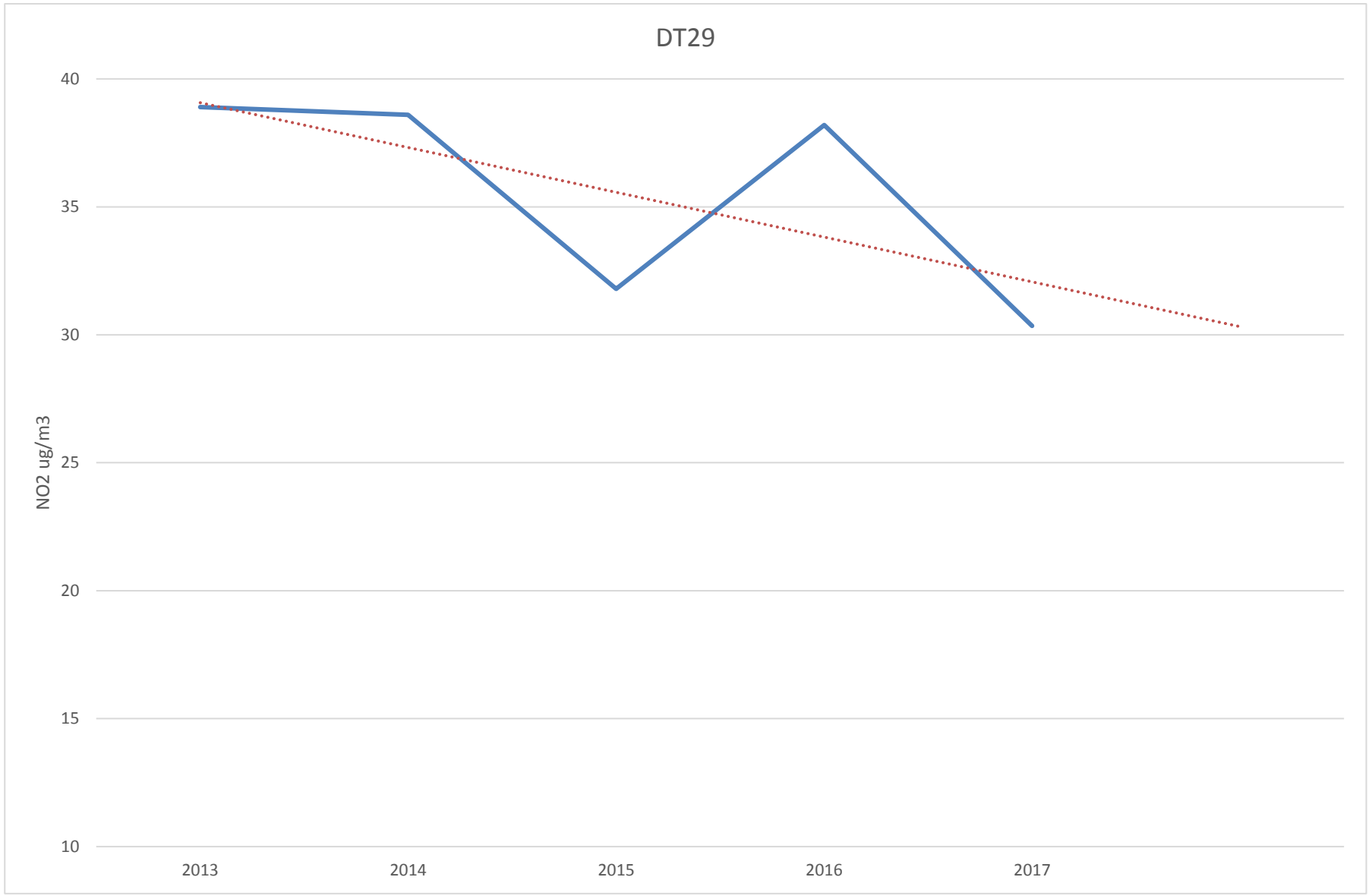

DT24
NO2 ug/m3
40
35
30
25
20
15
10
2013
2014
2015
2016
2017


DT25
40
35
30
25
20
15
10
N02 ug/m3
2013
2014
2015
2016
2017


DT26
40
35
30
25
20
15
10
NO2 ug/m3
2013
2014
2015
2016
2017


DT27
40
35
30
25
20
15
10
NO2 ug/m3
2013
2014
2015
2016
2017


DT28
40
35
30
25
20
15
10
NO2 ug/m3
2013
2014
2015
2016
2017


DT29
40
35
30
25
20
15
10
NO2 ug/m3
2013
2014
2015
2016
2017

Appendix B: Full Monthly Diffusion Tube Results for 2017

Table B.1 – NO_2 Monthly Diffusion Tube Results - 2017

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.89) and Annualised [1]	Distance Corrected to Nearest Exposure [2]
DT1	37.0	25.0	29.0	19.0	14.0	19.0	19.0	23.0	26.0	26.0	27.0	22.0	23.8	21.21	
DT2	33.0	24.0	25.0	23.0	14.0	21.0	21.0	24.0	23.0	26.0	30.0	28.0	24.3	21.66	
DT3	35	25	25	21	18	18	18	18	20	23	27	21	22.4	19.95	
DT4	40	33	31	30	27	20	23	27	24	36	32	37	30.0	26.70	
DT5	44	29	34	33	28	30	26	31	30	34	31	30	31.7	28.18	
DT6	25	17	15	-	-	16	14	16	18	33	34	39	22.7	20.20	
DT7	52	40	42	46	38	43	37	40	41	41	48	34	41.8	37.23	
DT8	35	30	29	24	21	21	19	21	22	23	27	24	24.7	21.95	
DT9	40	32	32	28	20	24	23	21	22	28	38	27	27.9	24.85	
DT10	34	25	20	13	16	14	15	14	16	17	20	18	18.5	16.47	
DT11	30	18	18	13	14	15	13	14	17	16	17	16	16.8	14.91	
DT12	32	25	23	24	20	21	22	-	20	25	28	22	23.8	21.20	
DT13	33	21	19	12	12	13	22	13	15	19	20	18	18.1	16.09	
DT14	33	22	19	17	16	13	13	12	15	19	21	18	18.2	16.17	
DT15	43	32	34	29	26	23	23	27	26	28	35	27	29.4	26.18	

DT16	34	26	26	19	19	20	17	19	19	11	26	24	21.7	19.28	
DT17	34	27	24	21	18	19	18	19	22	23	28	24	23.1	20.54	
DT18	42	32	32	28	30	27	26	26	27	29	32	28	29.9	26.63	
DT19	50	44	39	40	-	39	20	38	39	37	43	35	38.5	34.31	
DT20	46	40	37	31	28	34	-	36	32	33	34	32	34.8	30.99	
DT21	39	31	33	34	27	29	28	32	32	33	35	31	32.0	28.48	
DT22	31	26	26	20	22	20	19	21	22	24	23	23	23.1	20.54	
DT23	30	22	21	14	14	13	13	13	16	18	17	19	17.5	15.58	
DT24	30	22	23	17	15	14	13	13	14	17	20	19	18.1	16.09	
DT25	41	33	34	30	30	31	29	31	33	35	33	31	32.6	29.00	
DT26	37	31	29	24	22	23	19	23	24	31	34	28	27.1	24.10	
DT27	38	26	29	30	28	24	26	27	28	27	36	24	28.6	25.44	
DT28	24	18	17	14	9	11	10	14	13	17	20	20	15.6	13.87	
DT29	50	42	46	36	33	1	31	-	-	22	42	38	34.1	30.35	
DT2	35.7	23.3	19.7	17.1	18.2	19.5	25.7	17	27	19	33	27.6	23.6	21.2	

☐ **Local bias adjustment factor used**

☒ **National bias adjustment factor used**

☒ **Annualisation has been conducted where data capture is <75%**

☒ **Where applicable, data has been distance corrected for relevant exposure**

Notes:

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined.**

(1) See Appendix C for details on bias adjustment and annualisation.

(2) Distance corrected to nearest relevant public exposure.

Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC

QA/QC of Diffusion Tube Monitoring

The diffusion tubes are supplied by Gradko Environmental. They consist of 20% TEA (Triethanolamine) in deionised water. Once received by post the tubes are stored in a refrigerator until required. When the tubes have been placed in their holders, the end caps are removed and the tubes exposed for a month. At the end of the period the tubes are recapped and retrieved and stored in the refrigerator until returned by post to the laboratory for analysis. A travel blank is used. This travels everywhere with the exposed tubes but is not itself exposed. It is stored in the refrigerator and sent for analysis with the exposed tubes. Its purpose is to check on contamination of the tubes.

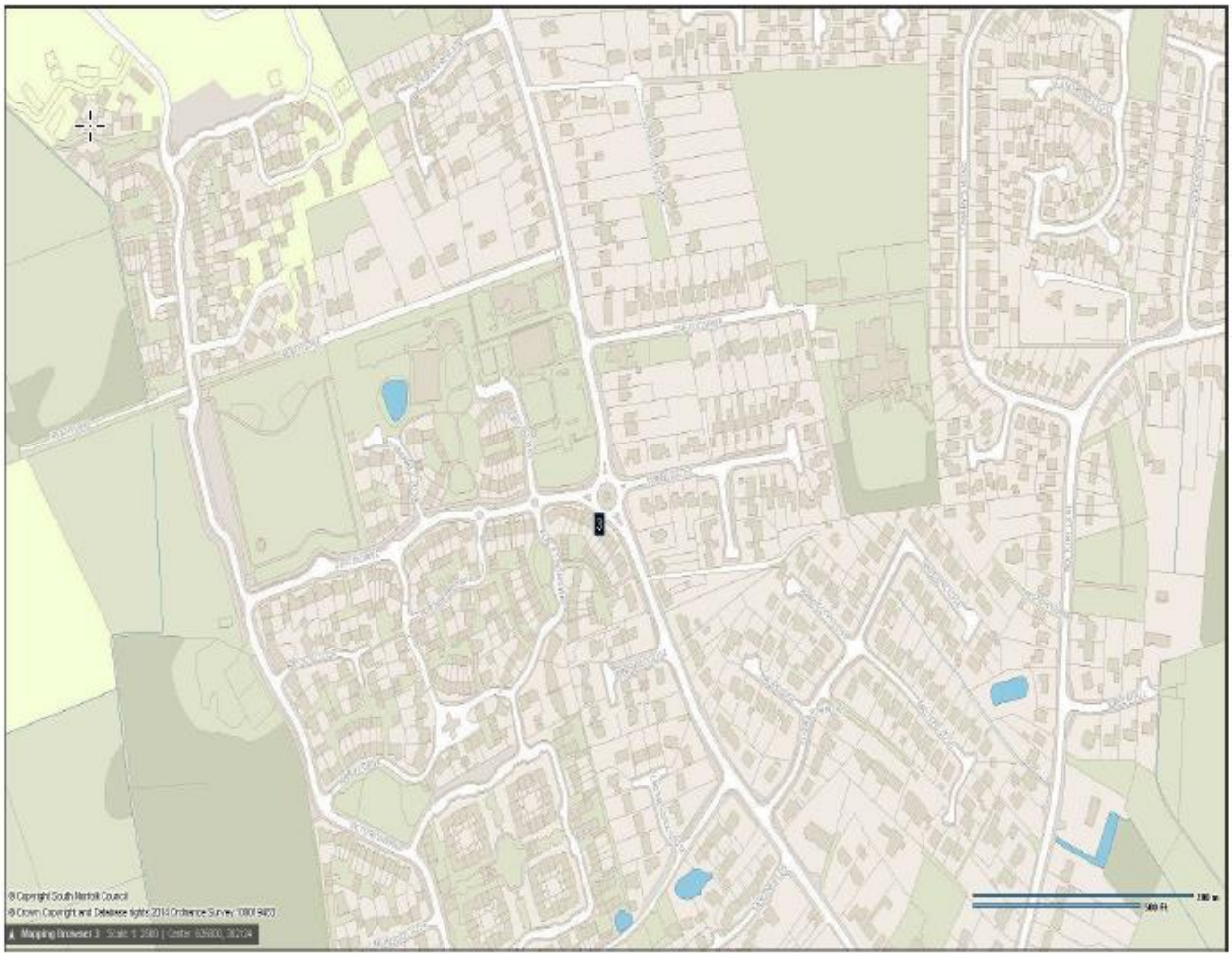
Gradko International is accredited by UKAS for the analysis of NO2.

The National bias adjustment factor for the period was 0.89 (Spreadsheet Version 03/18)

Appendix D: Map(s) of Monitoring Locations and AQMAs

Poringland

Tube I.D.	Location	Height	Grid
3	On Drain pipe Poringland.	1.5m	0626803 0302092

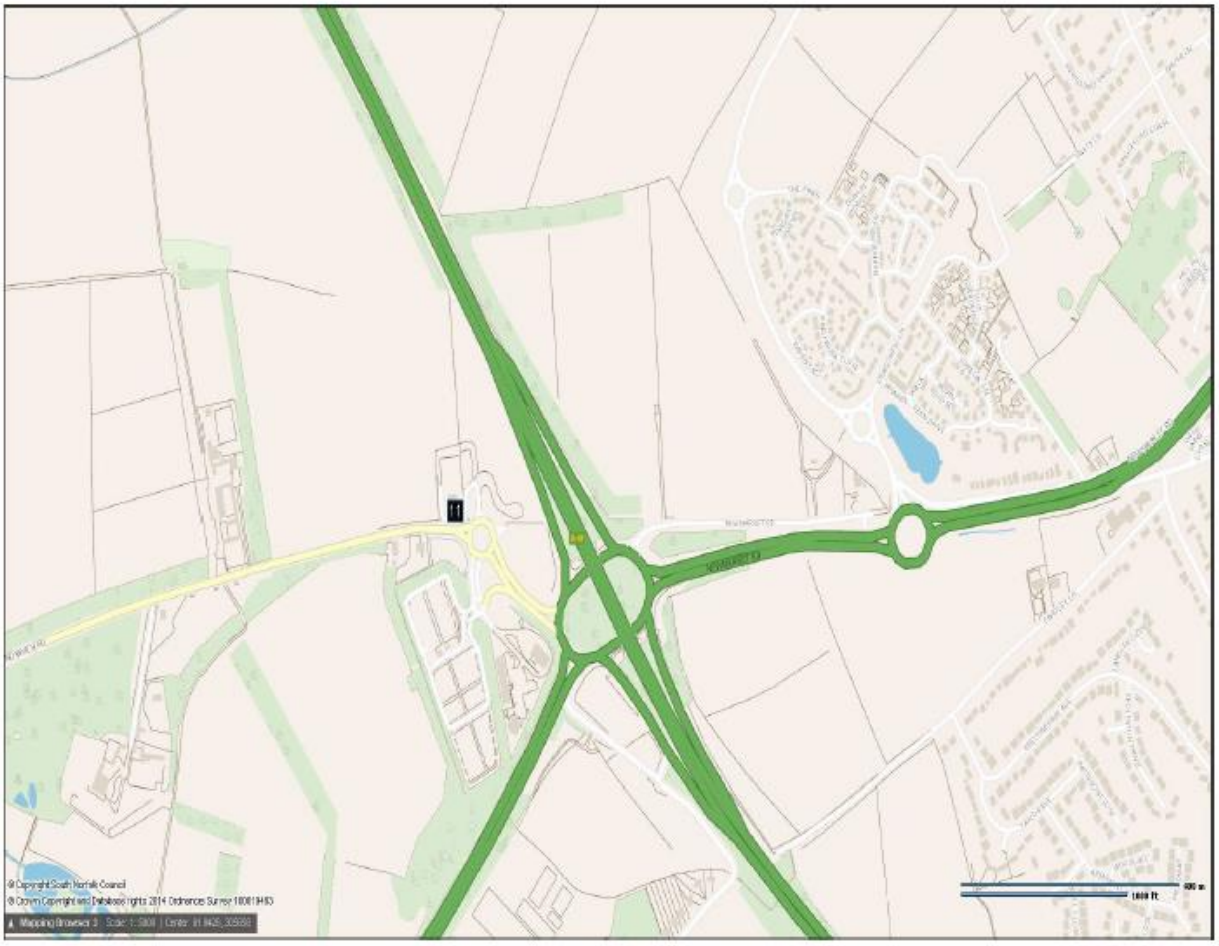


Bixley

Tube I.D.	Location	Height	Grid
9	Kirby Bedon Road Bixley.	2.1	0625439 0305944

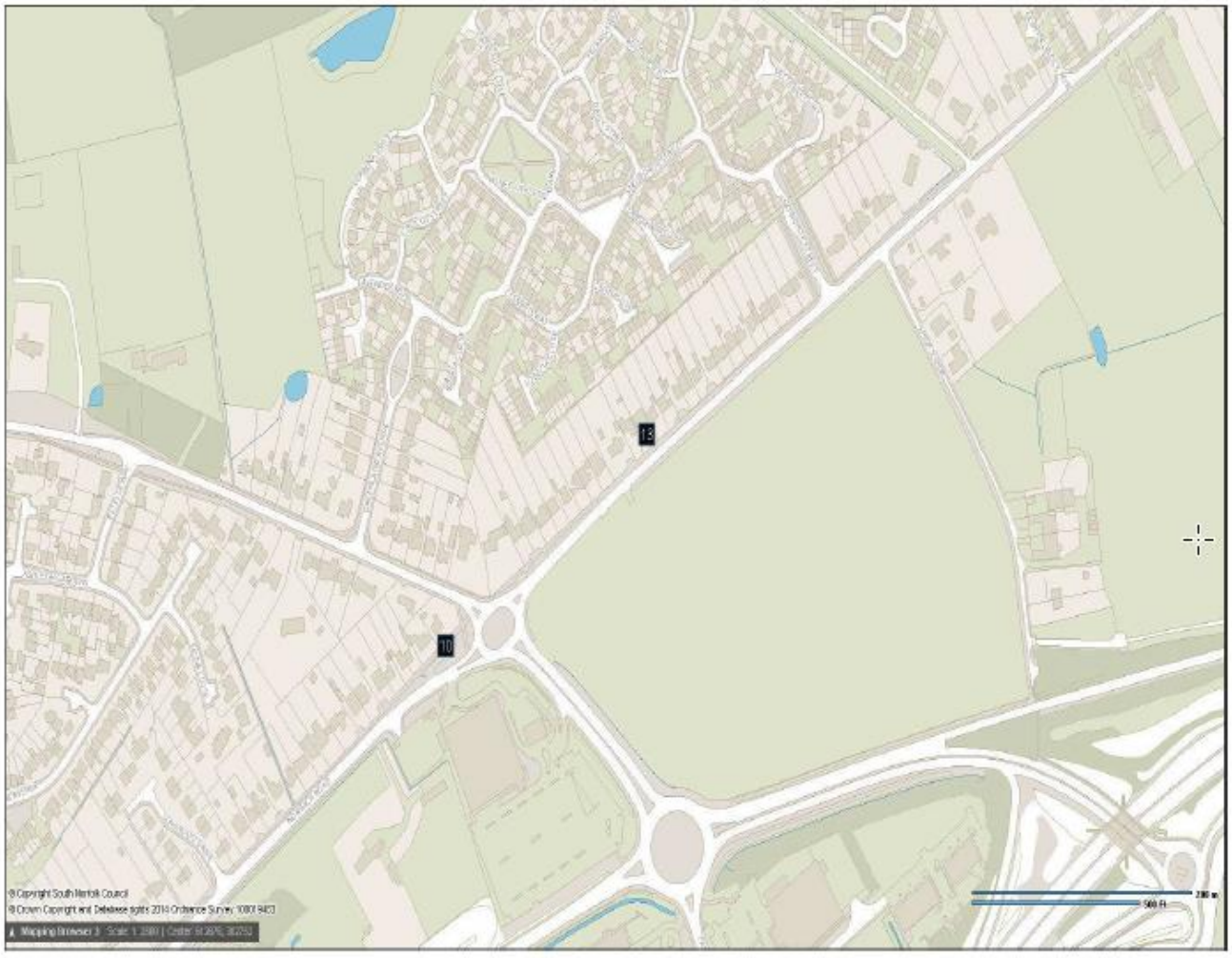
Thickthorn Roundabout A11

Tube I.D.	Location	Height	Grid
11	2 THICKTHORN COTTAGES	2.1	0618137 0305678



Wymondham

Tube I.D.	Location	Height	Grid
10	209 Norwich Wymondham	1.5	0612515 0302652
13	233 Norwich Road Wymondham	1.8	06126630302751

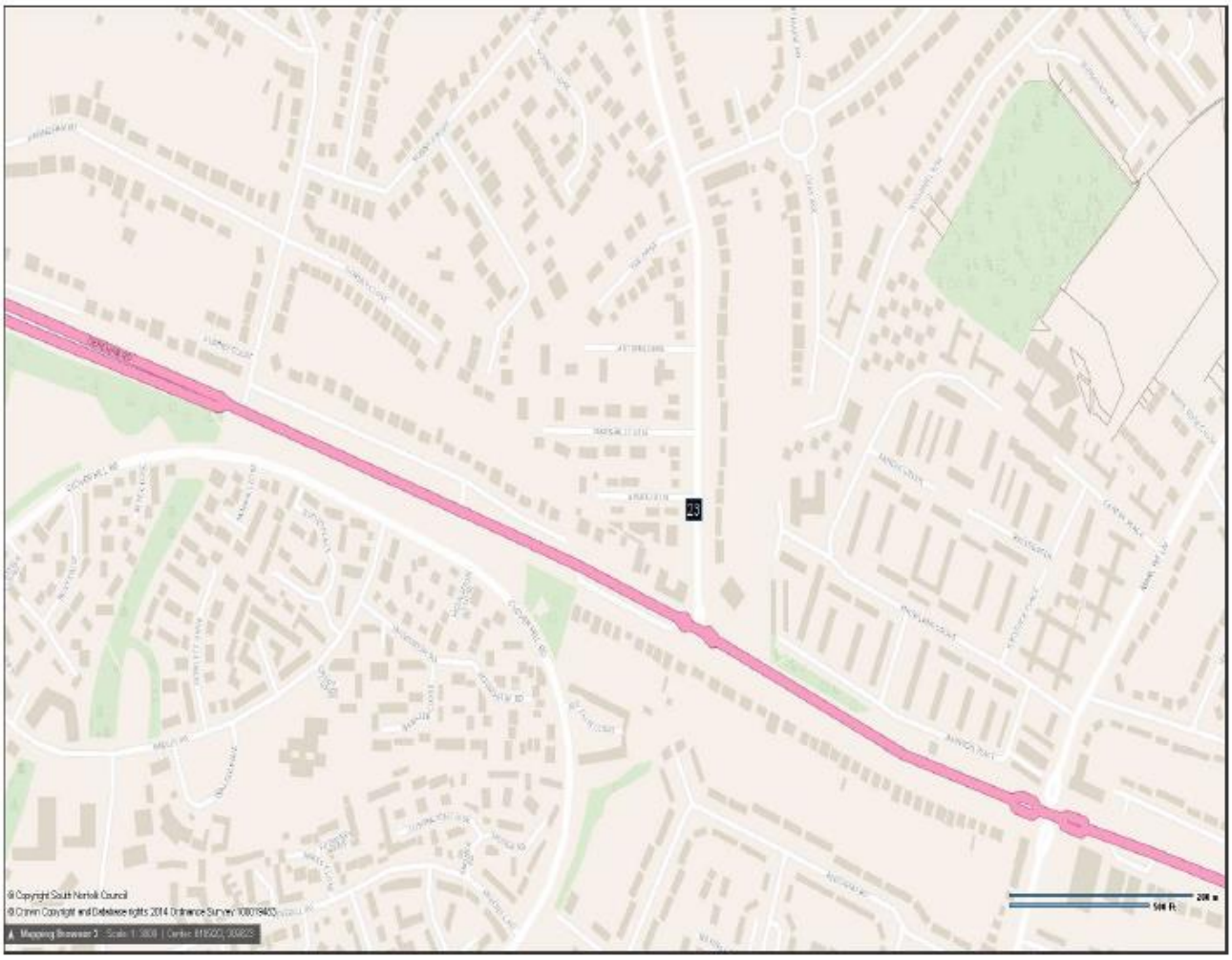


Wymondham

Tube I.D.	Location	Height	Grid
8	Fairland, Wymondham	2.1	0611129 0301425
12	Right up Lane	2.1	0611528 0300987
14	28 Norwich Road	1.5	0611380 0301638
24	14 Station Rd	1.5	0611323 0301190

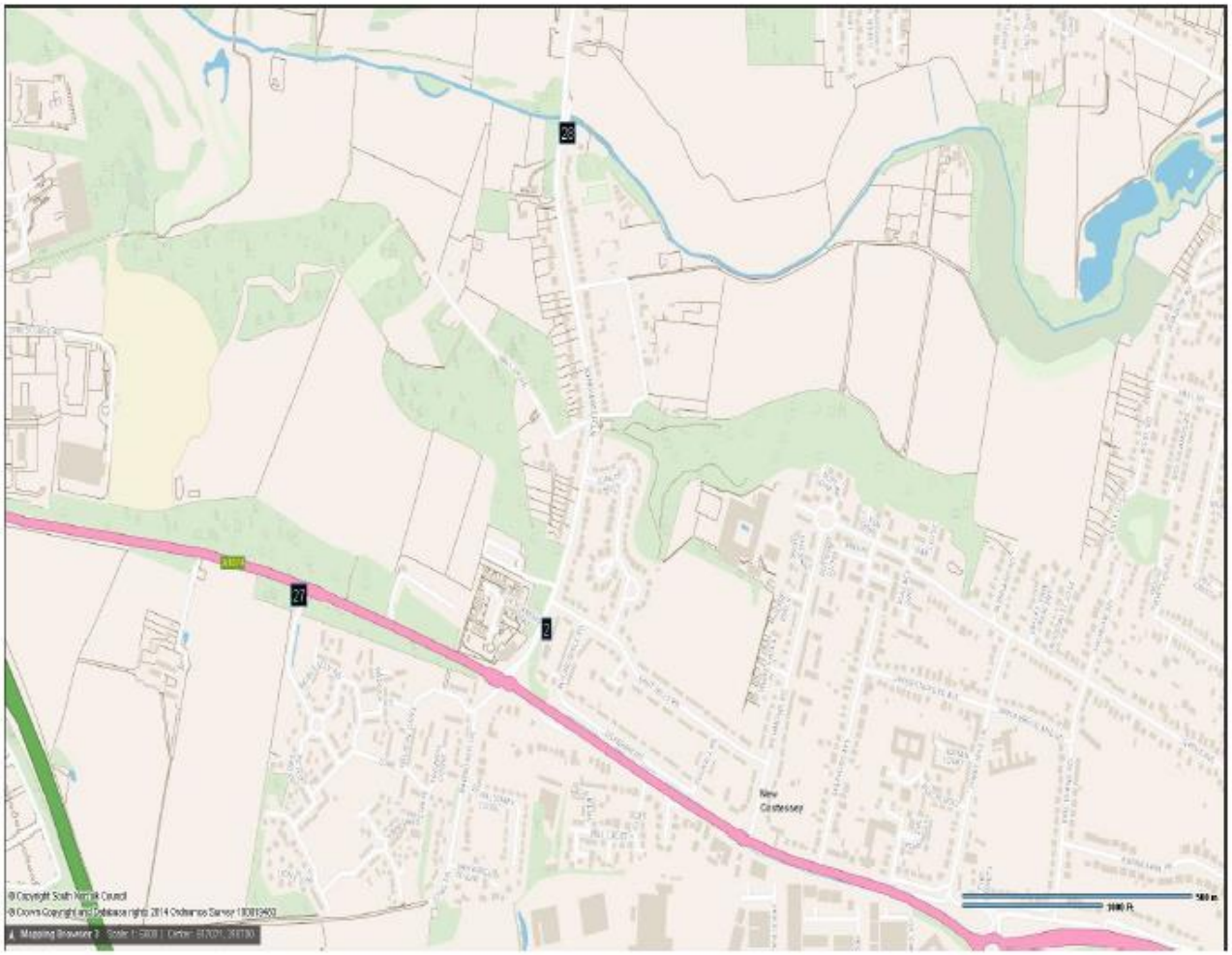
Costessey

Tube I.D.	Location	Height	Grid
23	3 Norwich Road Costessey	1.5	0618991 0309796



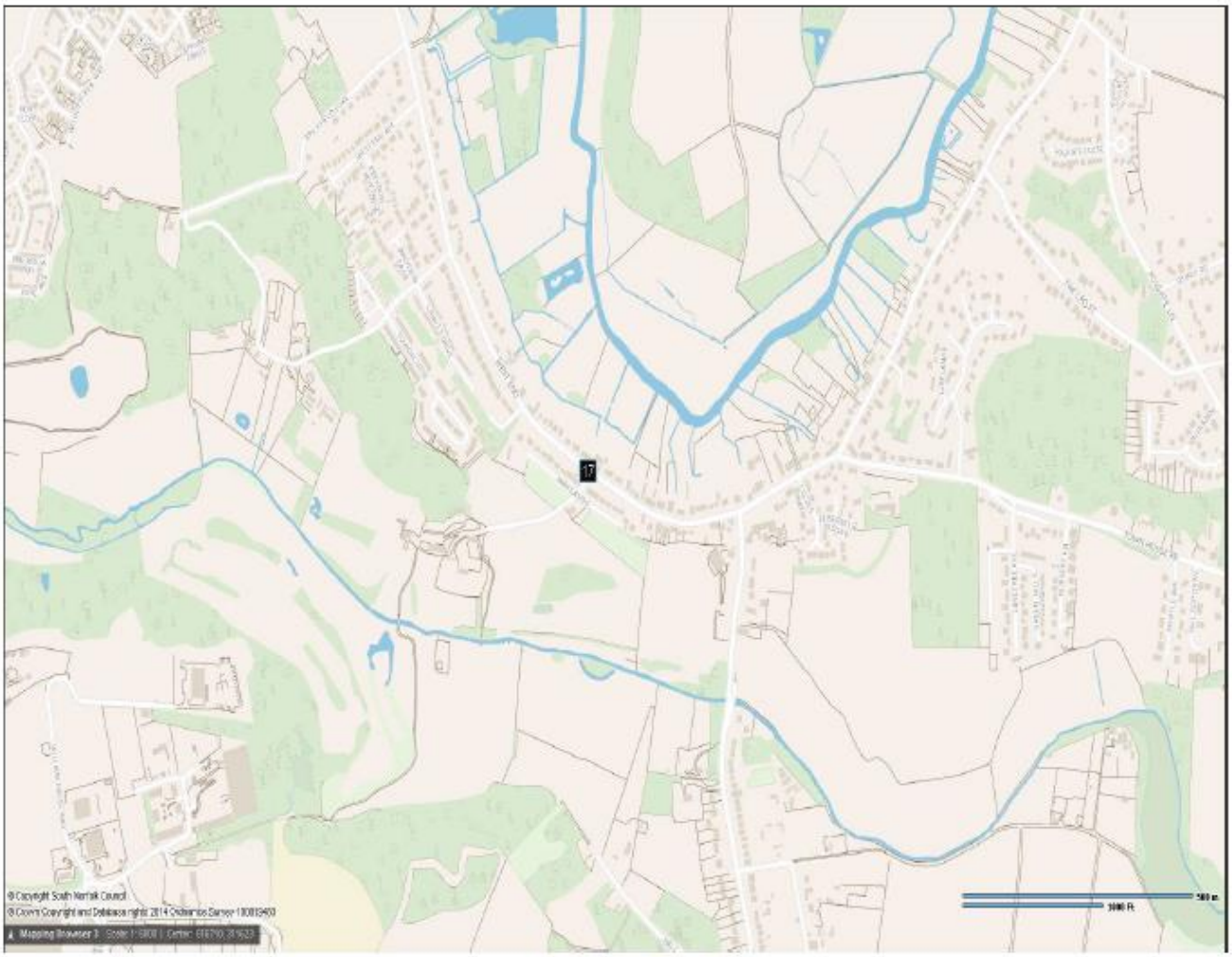
Costessey

Tube I.D.	Location	Height	Grid
2	131 Longwater Lane	1.5	0616797 0310477
27	Lord Nelson Drive	2.1	0616348 0310585
28	2 Riverside Court Costessey	1.5	0 0310585616386



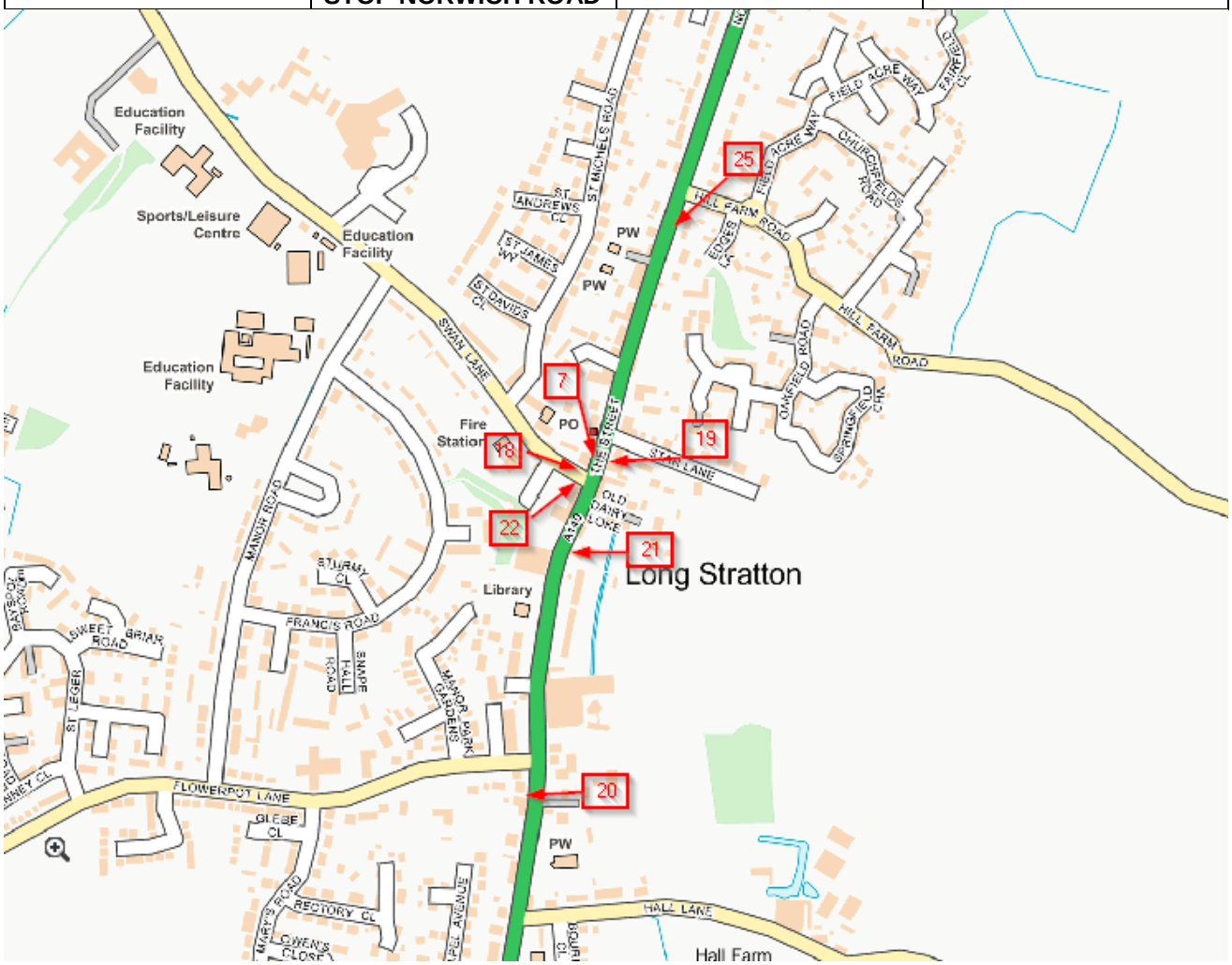
Costessey

Tube I.D.	Location	Height	Grid
17	84 West End Costessey	2.1	0616652 0311650



Long Stratton

Tube I.D	Location	Height	Grid
7	A140 LONG STRATTON	2.1	619722 292745
18	LONG STRATTON CHINESE	2.1	619710 292730
19	LONG STRATTON TRAFFIC LIGHT EAST	2.1	619732 292740
20	LONG STRATTON FUNERAL DIRECTORS	1.5	619642 292346
21	LONG STRATTON SOUTHBOUND 60m	2.1	619694 292653
22	LONG STRATTON SWAN LANE CO-OP CHEMIST	2.1	619710 292722
25	LONG STRATTON BUS STOP NORWICH ROAD	2.1	619823 293032

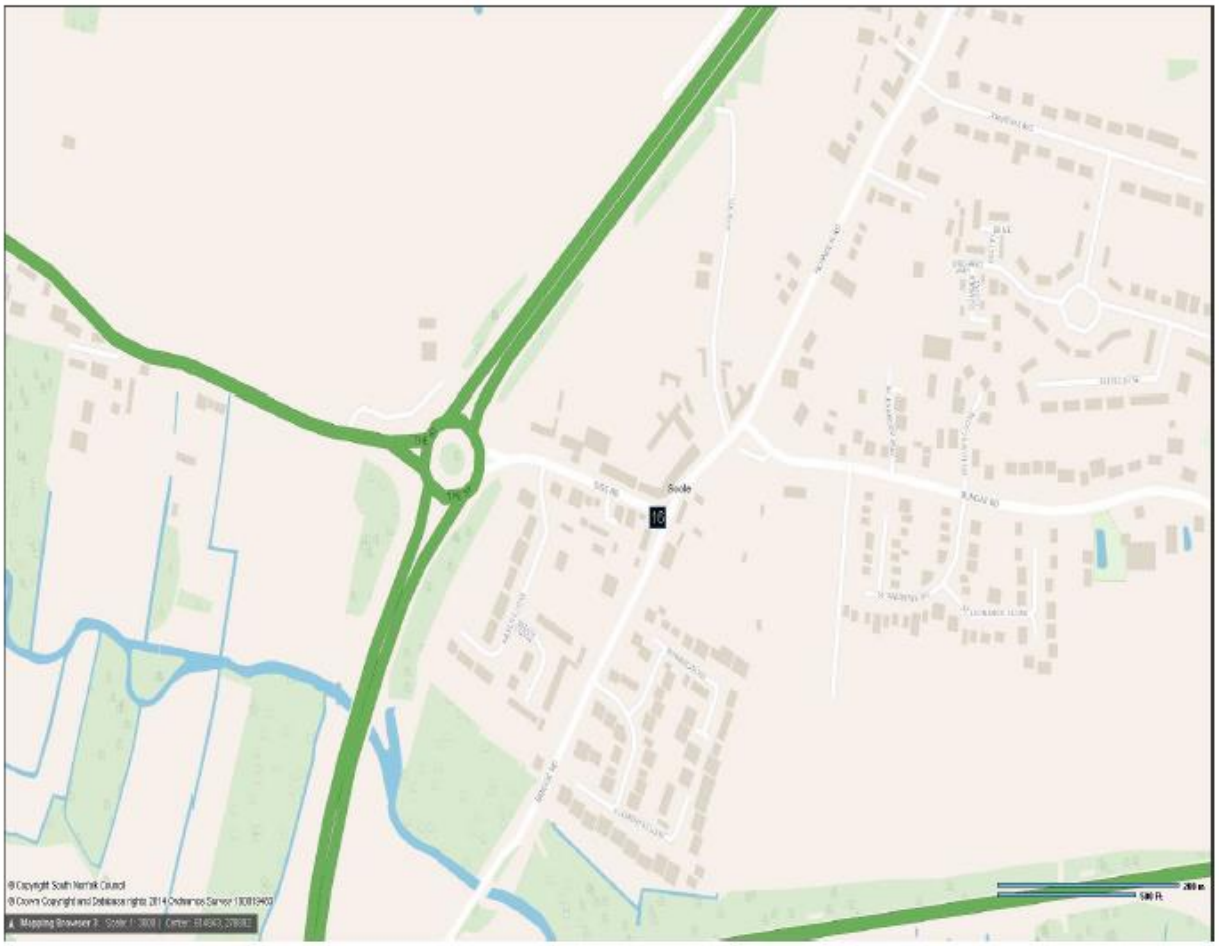


Diss

Tube I.D.	Location	Height	Grid
4	87 Denmark Street, Diss	1.5	0611223 0279637
5	131 Victoria Diss	1.8	0611945 0279572

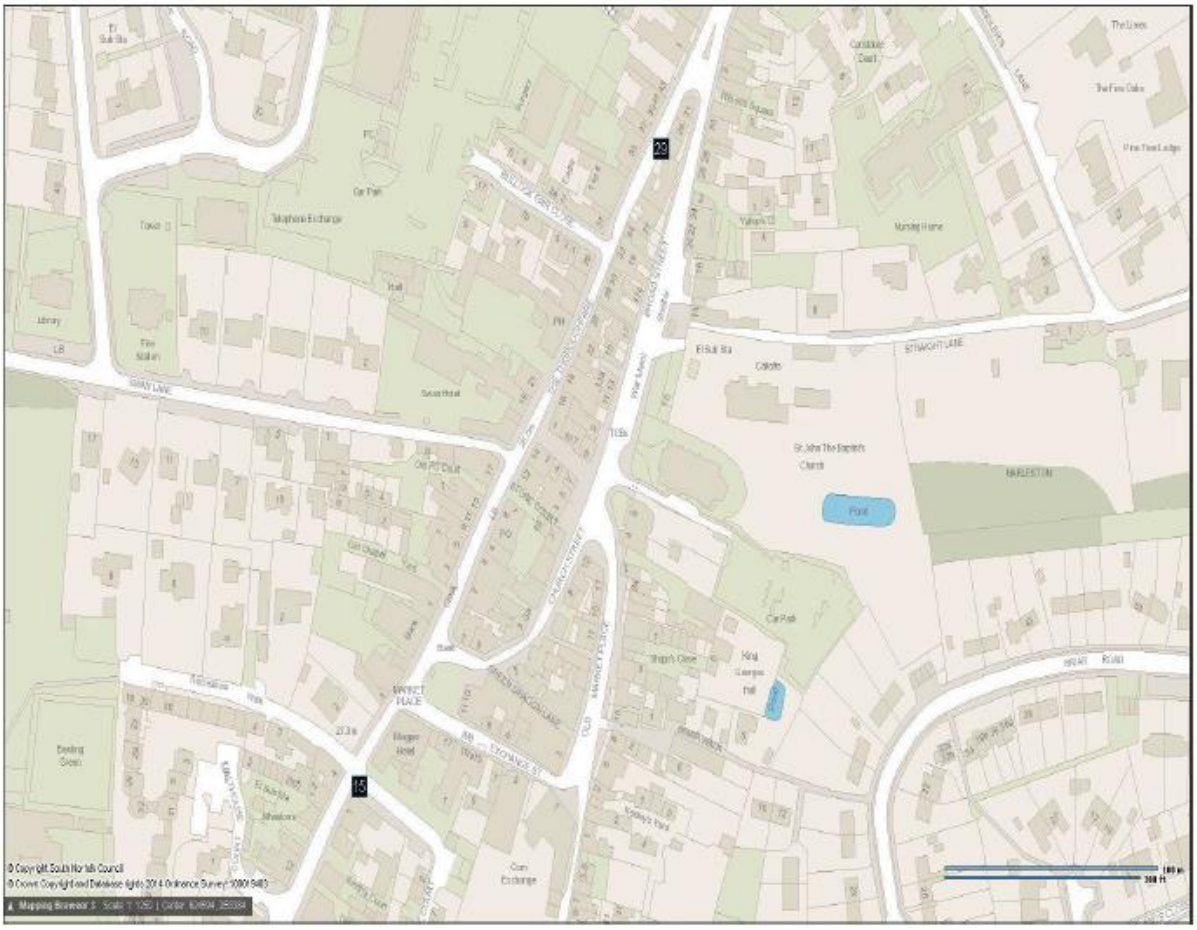
Scole

Tube I.D.	Location	Height	Grid
16	Diss Road , Scole	0614895 0278864	1.8



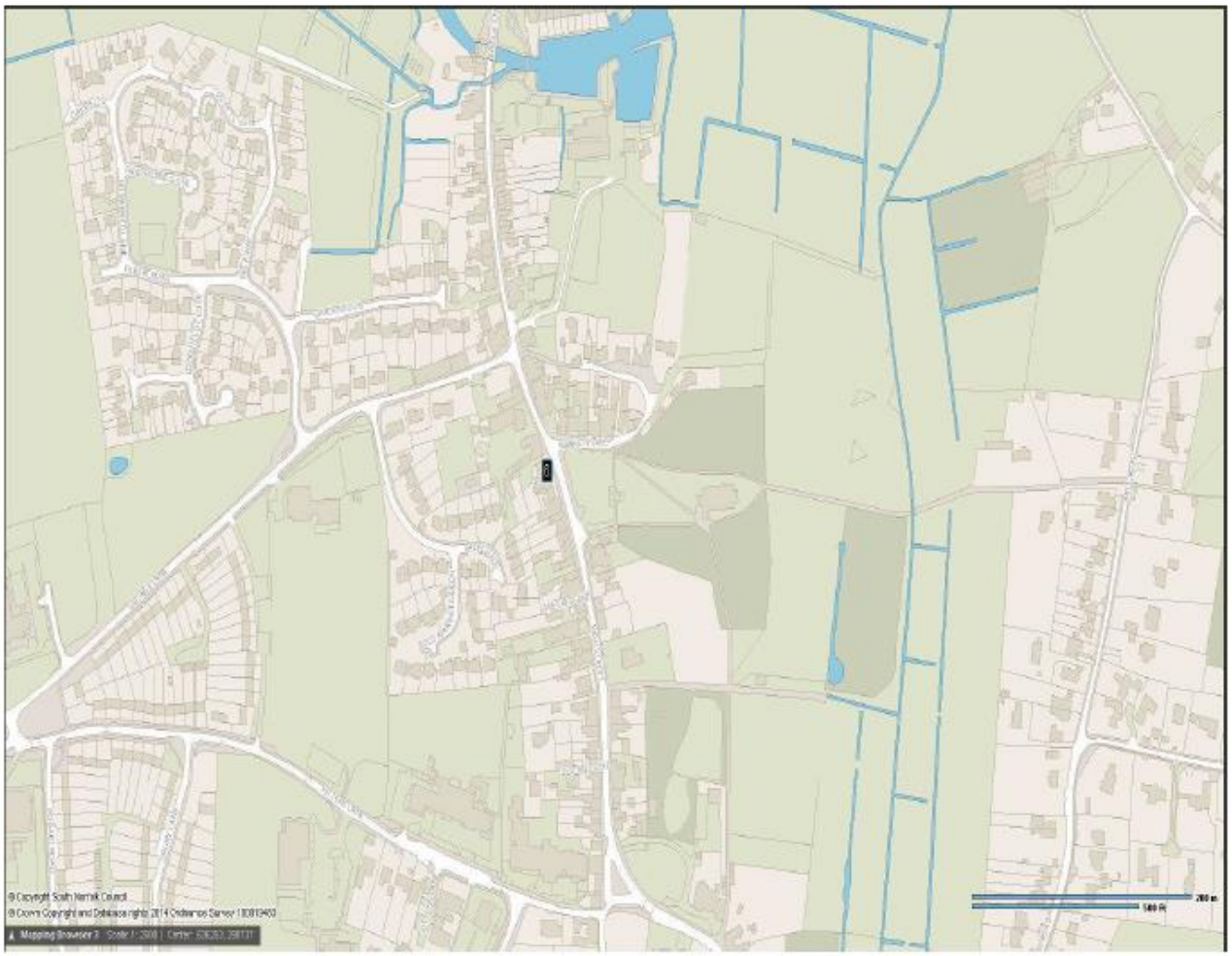
Harleston

Tube I.D.	Location	Height	Grid
15	Harleston (Hotel)	2.1	0624484 0283276
29	25 Broad Street Harleston	1.5	0615754 0310637



Loddon

Tube I.D.	Location	Height	Grid
6	21 Church Plain, Loddon	1.5	0636192 0298751



Cringleford

Tube I.D.	Location	Height	Grid
1	46a Old Newmarket Road, Cringleford	1.5	0619208 0304645
26	Newmarket Road, Cringleford	2.1	0619801 0305859

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective[4]	
	Concentration	Measured as
Nitrogen Dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m^3	Annual mean
Particulate Matter (PM_{10})	50 µg/m^3, not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m^3	Annual mean
Sulphur Dioxide (SO_2)	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean

[4] The units are in micrograms of pollutant per cubic metre of air (µg/m^3).

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Air quality Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide
…	…

References