

*FUGITIVE DUST MONITORING AT PRE-
SELECTED LOCATIONS IN COMPLIANCE
WITH THE REQUIREMENTS OF BORD NA
MÓNA'S INTEGRATED POLLUTION
CONTROL LICENCE APPLICATION*

REPORT NO:

K960-DGb

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30th September 1999

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1.0 INTRODUCTION

In compliance with the requirements of their Integrated Pollution Control licence application Bord na Móna Energy Limited initiated an environmental monitoring programme to establish the nature, source and levels of dust emissions from their facilities. Due to the expansive mass of the sites and their similarity in terms of production activity it was proposed to choose two sites as a basis for a preliminary assessment, namely the Allen Group and the Boora Group. The dust gauges were originally installed on the 20th April 1999 and the results for the first monitoring period (20/4/99 to 19-20/5/99) were presented in Bord na Mona report No. K960-DG.

The sampling locations within the Allen Group were visited by Environmental Scientists on the 15th and 19th of July to collect the dust samples for the second dust monitoring event. This covered the period from the 19th of May 1999 to the 15th and 19th of July 1999.

On the 13th of July 1999 Environmental Scientists collected the dust samples from the sampling locations within the Boora Group for their second dust monitoring event. This covered the period from the 20th of May 1999 to the 13th of July 1999.

This report details the methodology used for the dust monitoring at the Bord na Mona Energy sites and also includes a broad interpretation of the results.

2.0 METHODOLOGY

2.1 Methodology

Dust monitoring was conducted using British Standard Dust Directional Gauges conforming to the British Standard BS 1747; Part 5. Each gauge measures the lateral flux through four vertical slots to collectors arranged on a vertical support. Each complete directional dust gauge assembly comprises of ;

- one vertical supporting post set at 150mm above ground level.
- four collecting heads set at 90° to each other.
- four collecting bottles attached to the collecting heads.

On collection, adherent dust in each collecting head was washed into the appropriate collecting bottle. The collected solid material was subsequently filtered onto pre-weighed glass fibre filters, dried and re-weighed. Results are expressed in mg/m²/day.

2.2 Sampling Locations

In order to assess the level of dust emissions from various on-site activities and to assess the resultant impact of those emissions the sampling locations as described in Tables 2.1 and 2.2 below and illustrated in Appendices 1 and 2 were chosen

TABLE 2.1: SAMPLING LOCATIONS – ALLEN GROUP

Gauge Ref. No.	Grid Coordinates	Location Description	Justification
AFD-1	E266010, N221470	Control - Ballydermot South Bog	To assess background dust deposition levels within the Allen Group area
AFD-2	E270490, N228900	Perimeter of Derrybrennan Bog adjacent to Lullymore factory	To assess dust deposition levels at the perimeter of a bog
AFD-3	E269650, N228900	Perimeter of Derrybrennan Bog adjacent to Dwelling Houses	To assess dust deposition levels at the perimeter of a bog
AFD-4	E251225, N227450	LHS of railway track at Croghan Briquette factory	To assess dust deposition levels during rail operations
AFD-5	E251400, N227550	RHS of railway track at Croghan Briquette factory	To assess dust deposition levels during rail operations
AFD-6	E251450, N227420	Adjacent to peat wagons at Croghan Briquette factory	To assess dust emissions from stationary peat wagons
AFD-7	E251610, N227520	Adjacent to tippler area at Croghan Briquette factory	To assess dust emissions at unloading operations
AFD-8	E251840, N227670	Downstream of tippler area at Croghan Briquette factory	To assess dust deposition levels downstream of unloading operations

TABLE 2.2: SAMPLING LOCATIONS – BOORA GROUP

Gauge Ref. No.	Grid Coordinates	Location Description	Justification
AFD-1	E217975, N219700	Control	To assess background dust deposition levels within the Boora Group area
AFD-2	E236610, N222000	Perimeter of Derryclure Bog adjacent to Dwelling Houses	To assess dust deposition levels at the perimeter of a bog
AFD-3	E235600, N221740	Perimeter of Derryclure Bog upwind of Dwelling Houses	To assess dust deposition levels at the perimeter of a bog
AFD-4	E214920, N219990	LHS of railway track at Ferbane Station	To assess dust deposition levels during rail operations
AFD-5	E214970, N219910	RHS of railway track at Ferbane Station	To assess dust deposition levels during rail operations
AFD-7	E227110, N220220	Adjacent to tippler area at Derrinlough factory	To assess dust emissions at unloading operations
AFD-9	E208325, N214800	Upwind of tippler area at Derrinlough factory	To assess dust deposition levels downstream of unloading operations
AFD-8	E208250, N214760	Downstream of tippler area at Derrinlough factory	To assess background dust deposition levels upwind of unloading operations
AFD-6	E208670, N214910	Adjacent to lake at Boora	To assess the impact of dust emissions from the sit on an adjacent water body

Dust gauges AFD-9, AFD-7 and AFD-6 were labelled incorrectly in report K960-DG.

3.0 QUALITY CONTROL

The Environmental Limited Laboratory complex have been awarded ILAB accreditation by the ILAB secretariat. A stringent six point quality control approach is at present implemented in the laboratories.

- (i) Controlled chain of custody.
- (ii) Operator competence - all analysts must be suitably qualified to carry out the required analysis.
- (iii) Certified Reference Materials (CRM). The accuracy of a series of determinations is checked against known standards.
- (iv) Duplicate - 10% duplication is normal.
- (v) Quality Control Charts.
- (vi) Inter Laboratory Testing - The Environmental Limited Laboratories are members of the W.R.C. Aquacheck scheme.

4.0 RESULTS

TABLE 4.1: DUST MEASUREMENTS AT ALLEN PEAT

Location	Comments	Dust (mg/m ² /day)
AFD-1N	Clear, no algae or flies	5.7
AFD-1S	Small amounts of peat particles and algae	42.4
AFD-1E	Small amounts of peat particles and algae	41.3
AFD-1W	Algae	82.6
AFD-2N	Some flies and few peat particles	6.9
AFD-2S	Algae and a few peat particles	280
AFD-2E	Algae and a few peat particles	143
AFD-2W	Sample container damaged	-
AFD-3N	No algae, small amounts of peat particles	63.2
AFD-3S	No algae, small amounts of peat particles	84.6
AFD-3E	No algae, small amounts of peat particles	53.6
AFD-3W	No algae, large amount of peat particles present	1225
AFD-4N	Some algae and a large number of small flies	204
AFD-4S	Sample container damaged	-
AFD-4E	No algae, a large number of small flies, small amounts of peat particles	55
AFD-4W	Some algae and a large number of small flies, small amounts of peat particles	104
AFD-5N	No algae, a large number of small flies, small amounts of peat particles	334
AFD-5S	Some algae and a large number of small flies, small amounts of peat particles	163
AFD-5E	Some algae and a large number of small flies, small amounts of peat particles	64
AFD-5W	No algae, some small flies, small amounts of peat particles	17.2
AFD-6N	No algae, small amounts of peat particles	34.4
AFD-6S	No algae, peat particles present	101
AFD-6E	No algae, small amounts of peat particles	28.7
AFD-6W	Some algae, peat particles present	171
AFD-7N	No algae, large amount of peat particles present	654
AFD-7S	No algae, large amount of peat particles present	456
AFD-7E	No algae, large amount of peat particles present	521
AFD-7W	No algae, large amount of peat particles present	2627
AFD-8N	No algae, small amounts of peat particles	27.5
AFD-8S	Some algae, peat particles present	586
AFD-8E	No algae, large amount of peat particles present	2000
AFD-8W	Some algae, peat particles present	297

TABLE 4.2: DUST MEASUREMENTS AT BOORA GROUP

Location	Comments	Dust (mg/m ² /day)
AFD-1N	Small amounts of peat particles	25.4
AFD-1S	Small amounts of peat particles	29
AFD-1E	Small amounts of peat particles	46
AFD-1W	Small amounts of peat particles	106
AFD-2N	Small amounts of peat particles	74
AFD-2S	Large amount of peat particles present	560
AFD-2E	Small amounts of peat particles	114
AFD-2W	Large amount of peat particles present	1782
AFD-3N	Small amounts of peat particles	30
AFD-3S	Large amount of peat particles present	621
AFD-3E	Large amount of peat particles present	814
AFD-3W	Large amount of peat particles present	1690
AFD-4N	Small amounts of peat particles	46
AFD-4S	Some peat particles present and high algae content	256
AFD-4E	Small amounts of peat particles	39
AFD-4W	Some peat particles and algae present	126
AFD-5N	Small amounts of peat particles, no algae present	58
AFD-5S	Small amounts of peat particles, some algae and small flies present	83
AFD-5E	Small amounts of peat particles, some algae and a large number of small flies present	125
AFD-5W	Small amounts of peat particles, high algae content and a large number of small flies present	125
AFD-6N	Some peat particles and high algae content	563
AFD-6S	Some peat particles, algae and small flies present	288
AFD-6E	Some peat particles and high algae content	212
AFD-6W	Some peat particles present. Red tinge to particles.	*
AFD-7N	Large amount of peat particles present	467
AFD-7S	Large amount of peat particles present	363
AFD-7E	Large amount of peat particles present	649
AFD-7W	Very high peat particles content	2210
AFD-8N	Some peat particles present	41
AFD-8S	Some peat particles present	125
AFD-8E	Some peat particles present	104
AFD-8W	Some peat particles present. Red tinge to particles	212
AFD-9N	Some peat particles and algae present	167
AFD-9S	Some peat particles present. No algae present	29
AFD-9E	Some peat particles, algae and small flies present	36
AFD-9W	Some peat particles present, algae and small flies present	204

Note: AFD-1 was vandalised and subsequently moved to another location.

5.0 DISCUSSION

Tables 4.1 and 4.2 present the results of the second dust deposition monitoring programme undertaken within the Allen and Boora Groups.

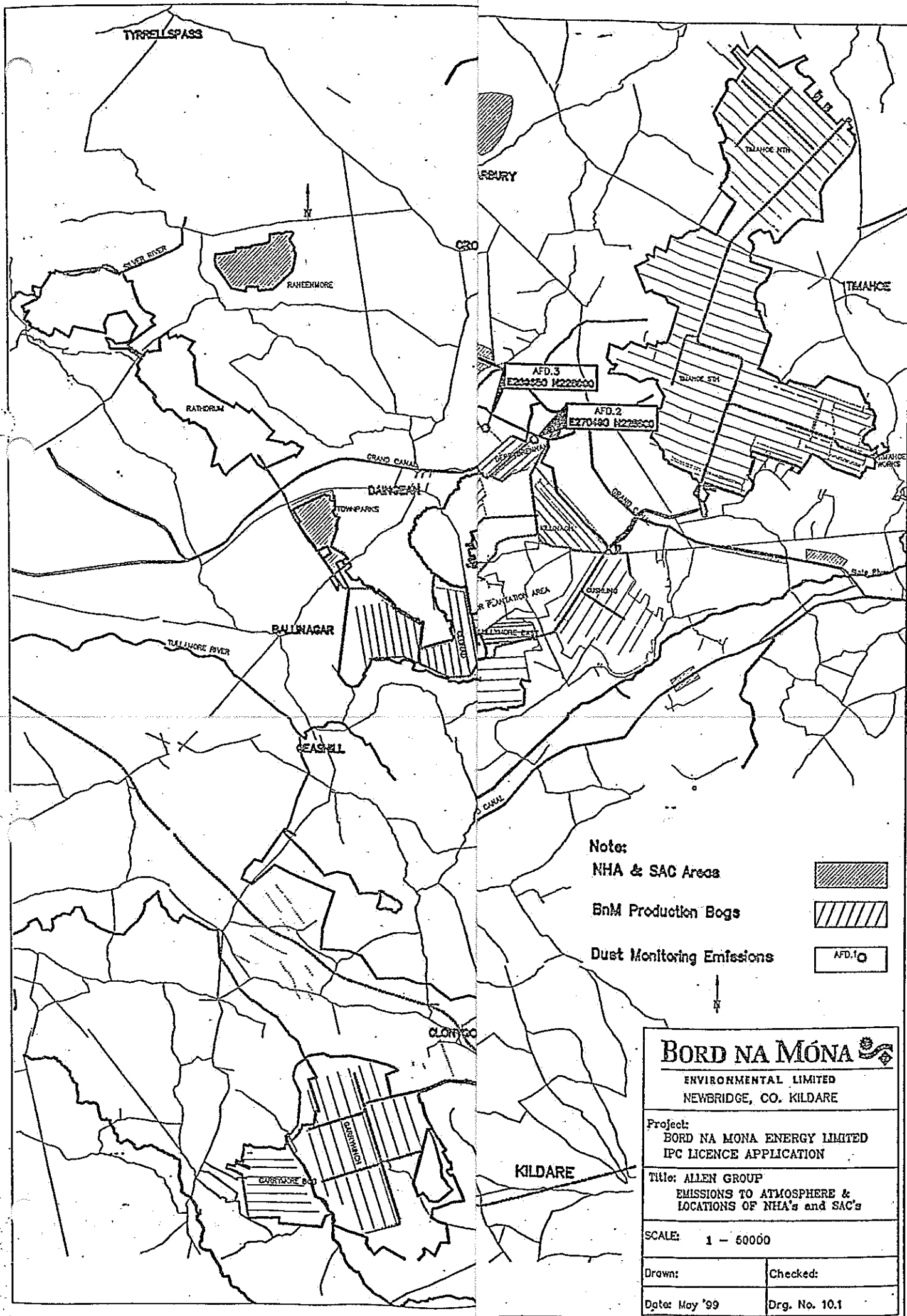
The dust collected at gauge AFD-1 within each group is indicative of the background levels during the sampling period for that particular area. Dust deposition levels for the other gauges reflect the levels of dust emission resulting from various activities associated with the harvesting and transportation of peat.

In general, the levels of dust collected at the perimeter of each bog (Derrybrennan and Derryclure) and at the railway tracks (Croghan Briquette Factory and Ferbane Station) have increased significantly since the previous monitoring period (April-May 1999). This may be attributable to the overall increase in harvesting activities together with the change in climatic conditions. As a result at some of the perimeter locations the elevated levels recorded exceed the recommended TA Luft guideline of $350\text{mg/m}^2/\text{day}$. However, given the fact that the nearest sensitive locations are set back at a minimum of 200m away from the dust monitoring locations it is unlikely that the dust immission levels would have a negative impact at those locations. With regard to dust deposition levels recorded at the four locations adjacent to the railway tracks none of the levels exceed this $350\text{mg/m}^2/\text{day}$ guideline.

Similar to the first dust monitoring event elevated levels were recorded in the immediate vicinity of the tippler both at the Derrinlough and the Croghan plants. The tippler is where the peat is off loaded from the railway wagon onto a conveyor belt for transportation to the briquette factory. Although the levels recorded are in exceedence of the recommended guideline figure it is envisaged that the levels downstream would be significantly lower and unlikely to cause a nuisance at nearby sensitive locations. The results of the levels recorded downstream at Derrinlough factory support this point and are within the guideline value of $350\text{mg/m}^2/\text{day}$.

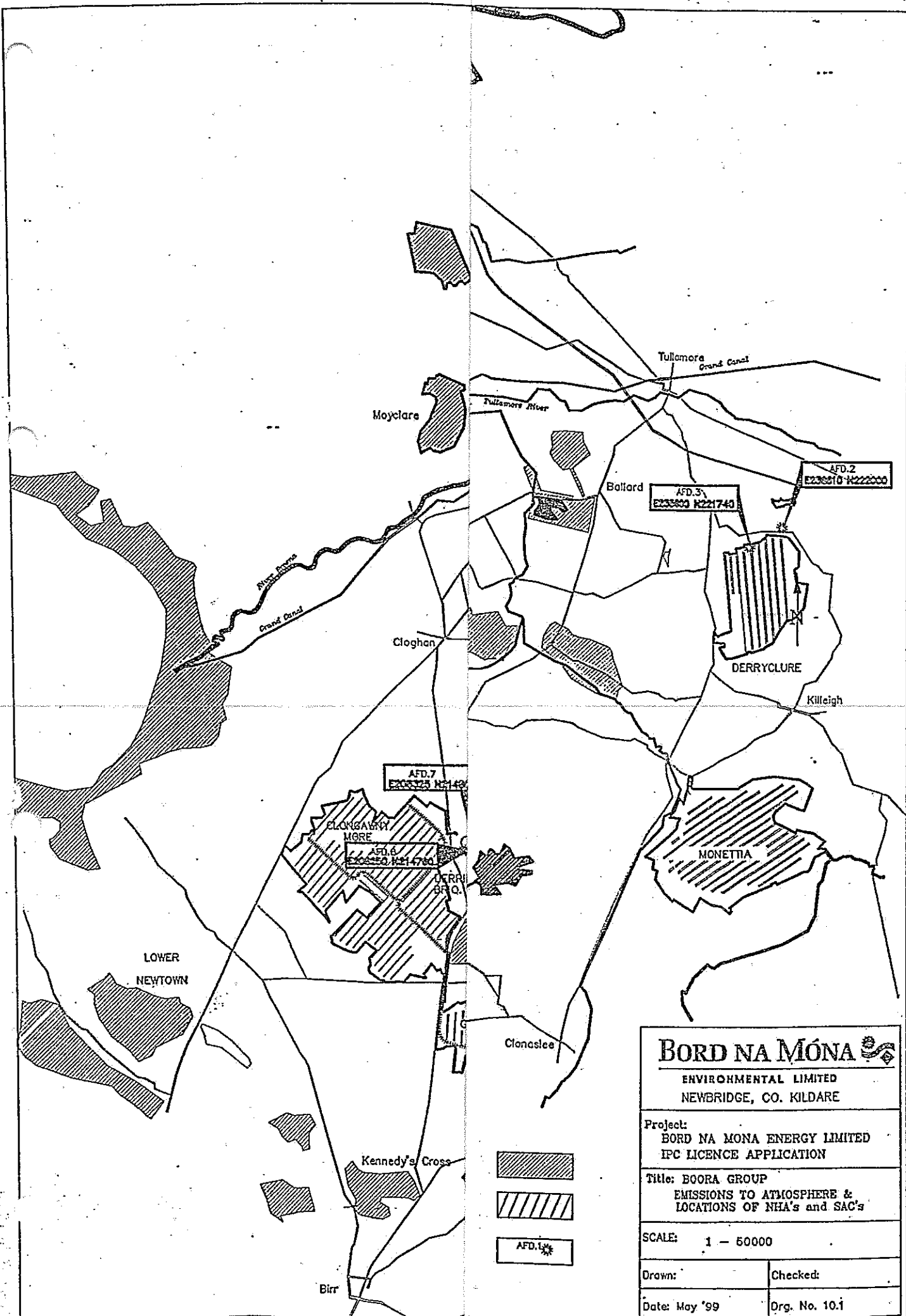
Appendix 1

Location of Dust Gauges - Allen Group



Appendix 2

Location of Dust Gauges - Boora Group



BORD NA MÓNA

ENVIRONMENTAL LIMITED
NEWBRIDGE, CO. KILDARE

Project:
BORD NA MÓNA ENERGY LIMITED
IPC LICENCE APPLICATION

Title: BOORA GROUP
EMISSIONS TO ATMOSPHERE &
LOCATIONS OF NHA's and SAC's

SCALE: 1 - 50000

Drawn:

Checked:

Date: May '99

Org. No. 10.1