States of Jersey
States Assembly

États de Jersey
Assemblée des États

Environment Scrutiny Panel

Air Quality Review

Presented to the States on 10th June 2008

S.R.8 /2008

Contents

1. Executive Summary

This report is the culmination of a review into the progress made in the development of an Air Quality Strategy which forms a clear commitment in the Strategic Plan 2006-2011 (item 4.4.5). It states: “Debate and implement in 2007 an Air Quality Strategy for Jersey, including proposals for monitoring and publishing levels of local air pollution, and targets, policies and timescales for reduction on air pollution that reflect best practice globally. (P&E)”

Main Recommendation

The Panel has identified that this work has not yet been undertaken and that there is a clear and urgent need for responsibility of this to be clarified and the matter progressed.

2. Recommendations

1. There is an urgent need to take forward the Air Quality Strategy that forms a clear commitment (item 4.4.5) of the Strategic Plan 2006-2011.
   The Air Quality Strategy should:
   - identify the key pollutants and their sources;
   - clearly identify the responsibilities of the various departments to implement elements of the Strategy;
   - and set out the framework for determining measures to improve air quality and how they are to be introduced

2. The Panel recommends that responsibility for Air Quality policy matters would best lie with Planning and Environment. To enable the Air Quality Strategy to be taken forward there needs to be clear ownership of the process and sufficient resources made available, both of which are currently lacking.

3. Health Protection Services within the Health and Social Services Department should provide technical support to Planning and Environment. This should include identifying appropriate health protection standards, developing an appropriate monitoring programme, and carrying out the necessary enforcement activities.

4. Both the Transport and Technical Services Department and Economic Development Department have an important role to play in implementing measures identified by the Planning and Environment Department to improve air quality. Planning and Environment must therefore be supported by Transport and Technical Services and Economic Development, as well as by Health and Social Services, when developing the Air Quality Strategy and other air quality policy initiatives and legislation by way of an Inter-Departmental Panel on Air Quality.

5. Planning and Environment should be given the necessary financial and technical resources to take forward the Air Quality Strategy. In the interim it would be appropriate to buy-in the necessary technical resources until such time as they are developed locally.

6. A clear timetable should be set for the introduction of the Air Quality Strategy and associated legislation. The aim should be to have the Strategy finalised within 6 months of P&E being given the responsibilities for taking forward air quality policy, with the Enabling Legislation finalised within 12 months.

7. The Panel recommends that consideration be given to international agreements when the Air Quality Strategy is being developed. The Air Quality Strategy should be supported by enabling legislation, which will subsequently allow Orders to be made as and when necessary. Such Orders could include requirements for burning

smokeless fuels within St Helier and a requirement for emissions testing of all commercial vehicles over 5 years old.

8. Considerable development of the Waterfront in St Helier is taking place or planned, yet the air quality impacts are being assessed in a piece-meal way. A Strategic Environmental Assessment should be carried out for this area to address the cumulative impacts of the various developments.

9. Monitoring of air quality forms an integral part of the Air Quality Strategy. There needs to be a long-term commitment to a programme of air quality monitoring. This should include use of equipment that meets EU standards, supported by other indicative methods where appropriate.

10. Although the Panel has not formed a strong view on the type of monitoring site to select, this should be subject to further consideration, by the relevant departments.

11. The Panel also recommends that consideration be given to acquiring a second automatic monitoring station that could be used to monitor nitrogen dioxide concentrations at hotspot locations.

12. Finally, the Panel recommends that the automatic monitoring programme should be supplemented by the continued use of nitrogen dioxide diffusion tubes and the Osiris PM monitors. It would be appropriate to carry out a review of all the monitoring locations, changing them and adding to them as necessary, and of Quality Assurance / Quality Control procedures. The Panel sees no value in continuing the monitoring programme for benzene, toluene and xylene, as the results have been shown to be well below the standards.

3. Panel Membership

Deputy R. C. Duhamel, Chairman
Connétable K. A. Le Brun, Vice Chairman
Connétable A. S. Crowcroft
Deputy P.V.F. Le Claire
Deputy C. J. Scott Warren

The Panel made well publicised calls for evidence during October and November 2007. A bibliography of documents considered by the Panel can be found in Appendix 1. The Panel held hearings on 3 days at the end of November. Those attending are listed in Appendix 2 whilst those submitting written evidence are listed in Appendix 3. The Panel appointed an independent air quality expert to advise it during its deliberations. Prof. Duncan Laxen undertook this task. His credentials are set out in Appendix 4.

4. Terms of Reference

- To investigate the range of substances that may be emitted in Jersey and assess if they are likely to pose a risk to health or the environment. Both gases and airborne particles will be assessed (both of which may be of chemical or biological origin).

- To investigate the potential of hazardous emissions from:

    - Transport (Air, land and sea)
    - Industry (e.g. JEC, Jersey Steel, General Hospital, dry cleaners, construction industry, etc.)
    - Waste management (Incinerator, crematoriums, composting facilities, fly ash and landfill)
    - Domestic burning (e.g. garden fires, solid fuel fires.)

- To assess if sufficient funds are available to provide an appropriate level of air quality monitoring of the substances most likely to pose environmental and health problems and that the appropriate legislation is in place.

- To assess if the current air quality monitoring is in line with accepted best practice and encompasses a sufficient range of substances.

- To investigate what actions have been taken in response to levels recorded above internationally agreed exposure limits.

- To investigate what progress has been made in reducing transport pollution levels following the recommendations in the Air Quality Strategy Report for the States of Jersey produced in April 2003 and other relevant strategies adopted by the States.

- To respond to any other issues that may arise as a result of this review.

The Panel decided at the beginning of the review that it would not include any assessment of radioactive emissions e.g. radon from ground sources. The focus of the review would be on the local environmental impact. The Panel considered global warming gas emissions would require consideration as a separate review and that aspect would form part of the energy policy review.

5. Air Quality Strategy

The Air Quality Strategy forms a clear commitment (item 4.4.5) of the Strategic Plan 2006-2011.

Panel recommendation 1

There is an urgent need to take forward the Air Quality Strategy that forms a clear commitment (item 4.4.5) of the Strategic Plan 2006-2011.
It should

- **identify the key pollutants and their sources;**
- **clearly identify the responsibilities of the various departments to implement elements of the Strategy; and**
- **set out the framework for determining measures to improve air quality and how they are to be introduced.**

6. Responsibilities for Air Quality in Jersey

Responsibilities

In 2003, the States of Jersey published a report setting out a draft ***'Air Quality Strategy'***. This covered all the issues relevant to the development of a Strategy:

- it identified the key sources and air pollution issues relevant to Jersey;
- it defined the need for improved monitoring; and
- it set out measures to improve air quality.

The Strategy itself was not, however, developed further, although some of the issues identified have since been acted upon, including the replacement of the crematorium furnace. Further discussion on improving air quality in Jersey is provided later in this report.

The ***'States Strategy for 2006 to 2011'***, published in July 2006, put an Air Quality Strategy firmly back on the agenda, with a commitment to:

> *"Debate and implement in 2007 an Air Quality Strategy for Jersey, including proposals for monitoring and publishing levels of local air pollution, and targets, policies and timescales for reductions in air pollution levels that reflect best practice globally (P&E)"*
> (Paragraph 4.4.5)

The ***'Strategic Plan initiatives – progress report as at June 2006'*** reported that the item was *"On track"*, with *"no change since the last reporting period."*

The ***'Strategic Plan initiatives – progress report as at December 2006'*** reported that the item was *"Slightly behind schedule/off track - not critical - progress/improvement on last reporting period*". Adding that *"Health re-starting project for report in Q1 2007 - N.B. P&E are not the lead department."*

The ***'Strategic Plan initiatives – progress report as at June 2007'*** reported that the item had been "*Transferred to Health & Social Services"* and no other progress was reported.

The Scrutiny Panel focussed its attention during its hearings with Ministers on the lack of progress with the Air Quality Strategy and in particular the confusion as to which Department was responsible for taking it forward.

Senator Cohen, the Minister for Planning and Environment was unaware that the Air Quality Strategy had been initially identified as his Department's responsibility or that it had been transferred to Health and Social Services, as the following quotes show:

> *"… I find it a little curious that the Strategic Plan places responsibility for this area (is) with my department."…..*

> *"I do not think that the responsibilities have shifted. I think they were always, as I understand it, with the Health Protection Department and the Strategic Plan should have been more precise."….*
>
> *"… I find it very curious that we are in a position where the Planning and Environment Department effectively seems to be charged with responsibility for delivering something that is carried out by another department being the Health Protection Unit"….*
>
> *"… clearly something has got to be done because the present situation is not satisfactory."….*
>
> *"… the current arrangements from what I have seen appear to be unclear and unsatisfactory. A recommendation from the Scrutiny Panel would be most useful."*
> (Senator Cohen, The Minister for Planning and Environment, Scrutiny Panel Hearings, 23 November 2007)

Mr Newton, Director of Environment also recognised the lack of clarity as to current responsibilities for air quality:

> *"… in my opinion, there is also not clear responsibility and accountability for managing air quality in the Island."*
> (Mr Newton, Director of Environment, Scrutiny Panel Hearings, 23 November 2007).

Deputy de Faye, the Minister for Transport and Technical Services, was also unaware of where responsibility for air quality lay:

> *"I would assume the role of regulator lies with Planning and Environment. I am interested to hear you say that your latest information is that they are not aware of their control or dispute their control in this manner."*
> (Deputy de Faye, The Minister for Transport and Technical Services, Scrutiny Panel Hearings, 23 November 2007).

Senator Ozouf, the Minister for Economic Development was likewise under the impression that the Air Quality Strategy was the responsibility of Planning and Environment:

> *"… I am clear that the extent to which there is an air quality strategy for Jersey, the lead department is Planning and the Environment."*
> (Senator Ozouf, Minister for Economic Development, Scrutiny Panel Hearings, 27 November 2007).

Senator Shenton, Minister for Health and Social Services and Mr Smith, Head of Health Protection Services were, on the other hand, aware that responsibility for the Air Quality Strategy had been transferred to the Health and Social Services Department:

> *"… in terms of air quality strategy and writing the strategy, that is down to me and a team leader, …*
> (Mr Smith, Head of Health Protection Services, Scrutiny Panel Hearings, 23 November 2007).

They were though aware that there is confusion about responsibilities:

> *"Part of the difficulty has been that with the appearance of the then new Director of Environment in 2002 there was a perception that all environmental matters would fall within his remit, and clearly what we have seen here reflected in the States' Strategic Plan is a continued expectation that he would have overall responsibility. Practically, that has never happened."….*and

> *"This issue has been chopping back and forwards between ourselves and Planning and Environment for some time."*
> (Mr Smith, Head of Health Protection Services, Scrutiny Panel Hearings, 23 November 2007).

It also became clear during the Panel Hearings that the Air Quality Strategy would not be prepared according to the timetable set:

> *"… we do not have a strategy as set out in the Strategic Plan. … we are not going to have one by the end of 2007 either."*
> (Mr Smith, Head of Health Protection Services, Scrutiny Panel Hearings, 23 November 2007).

7. Way Forward: who should have responsibility for Air Quality?

Given the confusing position over which Department was responsible for taking forward the Air Quality Strategy and the lack of progress, both matters of considerable concern to the Panel, the Panel turned its attention to the best way to ensure that an Air Quality Strategy was taken forward. Three options were considered:

1. Whether responsibility for all Air Quality matters should be transferred to Planning and Environment;
2. Whether responsibility for Air Quality policy matters should be transferred to Planning and Environment, with Health and Social Services providing expert input on health matters and on compliance monitoring (which would be independent of the policy setting, i.e. the control would be at arms length from the policy setting)
3. Whether responsibility for all Air Quality matters should be transferred to Health and Social Services.

These areas were explored with the Ministers.

Senator Cohen, Minister for Planning and Environment, believed that the responsibility should be within his department:

> *"It would seem perfectly logical to me that air quality should be within the Planning and Environment Department."*
>
> *"… I still find it surprising that air generally appears now not to be within the remit of Planning and Environment."*
> (Senator Cohen, the Minister for Planning and Environment, Scrutiny Panel Hearings, 23 November 2007).

Mr Newton, Director of Environment felt the same:

> *"The logical approach to me … is that the monitoring of any factor that is part of the state of the environment should fall to the Environment Department. Dealing with any problems that occur as a result of that monitoring is probably a job for the Environment Department … The role of Health would logically be to advise us on the significance to human health of what we discover about he state of the environment."*
> *"(This) would be a sensible way forward to put some clarity into the roles around air quality for the future."*
> (Mr Newton, Director of Environment, Scrutiny Panel Hearings, 23 November 2007).

Mr Smith, Head of Health Protection Services, however believed that it should rest with them stating:

> *"I think we are happy to deal with it, and we are happy to get on with it. We have the expertise for it. The difficulty we do have is some of the resources that we need to put into that…"*
> (Mr Smith, Head of Health Protection Services, Scrutiny Panel Hearings, 23 November 2007).

Panel recommendation 2

The Panel recommends that responsibility for Air Quality policy matters should lie with Planning and Environment. To enable the Air Quality Strategy to be taken forward there needs to be clear ownership of the process and sufficient resources made available, both of which are currently lacking.

Panel recommendation 3

Health Protection Services within the Health and Social Services Department should provide technical support to Planning and Environment. This should include identifying appropriate health protection standards, developing an appropriate monitoring programme, and carrying out the necessary. enforcement activities.

Panel recommendation 4

Both the Transport and Technical Services Department and Economic Development Department have an important role to play in implementing measures identified by the Planning and Environment Department to improve air quality. Planning and Environment must therefore be supported by Transport and Technical Services and Economic Development, as well as by Health and Social Services, when developing the Air Quality Strategy and other air quality policy initiatives and legislation by way of an Inter-Departmental Panel on Air Quality.

Under recommendation 2 and 3 above, Health and Social Services would provide expert advice on health matters associated with exposure to air pollution. It would also provide an independent role in compliance monitoring and enforcement activities. Health and Social Services, Transport and Technical Services and Economic Development would be responsible for implementation of appropriate parts of the air quality strategy

developed by Planning and Environment. Planning and Environment would be expected to liaise closely with Health and Social Services, Transport and Technical Services and Economic Development during the preparation of the Air Quality Strategy, in particular over the measures to improve air quality, as well as in the preparation of the enabling legislation and, as appropriate, the subsequent Orders.

This is not without its difficulties, one being the concern expressed by Senator Cohen that the Environment Department was not properly integrated with the Planning Department:

> *"… what is more important to the Planning Department is that we increase the relevance of the Environment Department within Planning."….*
>
> *"… however much we talk about Planning and Environment we have two departments , a planning department and an environmental department. The first start would be to get them in one place."*
> (Senator Cohen, the Minister for Planning and Environment, Scrutiny Panel Hearings, 23 November 2007).

Panel recommendation 5

Planning and Environment should be given the necessary financial and technical resources to take forward the Air Quality Strategy. In the interim it would be appropriate to buy-in the necessary technical resources until such time as they are developed locally.

It will also be necessary to provide the necessary resources. This will include providing the Environment Department with the resources to ensure that the necessary expertise is available to take forward the Air Quality Strategy and the enabling legislation. Whilst this expertise is being developed in-house, it would clearly be appropriate to buy-in outside support, to ensure that the Air Quality Strategy and enabling legislation are taken forward as a matter of some urgency, as the deadline within the Strategic Plan has not been met.

Panel recommendation 6

A clear timetable should be set for the introduction of the Air Quality Strategy and associated legislation. The aim should be to have the Strategy finalised within 6 months of P&E being given the responsibilities for taking forward air quality policy, with the Enabling Legislation finalised within 12 months.

8. Improving Air Quality in Jersey

Legal Background

The submission by the Planning and Environment Department set out a number of international agreements that the States of Jersey has signed up to. It is not clear how these agreements were selected or whether or not they are being adhered to. As part of the Panels work, consideration has been given to other international agreements that the States of Jersey has not signed up to. The agreements signed up to and those not signed up to are set out in Table 1.

Table 1 International Agreements that the States of Jersey has and has not signed-up-to.

Agreements Signed-up-to	**Agreements not Signed-up-to**
1979 Convention on Long Range Transboundary Air Pollution and • Protocol 3 (Sofia) Control of Emissions of Nitrogen Oxides on their Transboundary Fluxes (NOx Protocol) • Protocol 4 (Geneva) Control of Emissions of Volatiles Organic Compounds of their Transboundary Fluxes (VOCs Protocol)	Protocols under the Convention on Long Range Transboundary Air Pollution • The 1999 Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone • The 1998 Aarhus Protocol on Persistent Organic Pollutants (POPs) • The 1994 Oslo Protocol on Further Reduction of Sulphur Emissions • The 1998 Aarhus Protocol on Heavy Metals
United Nations Framework Convention on Climate Change	International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78) Annex VI: Prevention of Air Pollution from Ships, 1997
Kyoto Protocol to the United Nations Framework on Climate Change	Stockholm Convention on Persistent Organic Pollutants, 2001.
Vienna Convention for the Protection of the Ozone Layer and Subsequent Montreal Protocol	

It is not the contention of the Panel that the States of Jersey should necessarily sign up to these agreements. The Panel does though hold the view that any agreements signed up to should be relevant to the Island and that measures should be put in place to ensure that any agreements signed-up-to are met.

It considers that it may well be more appropriate to develop a Strategy that commits the States of Jersey to meeting certain (not necessarily all) air quality standards and other obligations established by the UK Government and/or by the European Union.

Evidence gathered shows that the States of Jersey has very limited legislation in place to ensure that air quality is adequately controlled:

> *"… quite simply … the only legislation we have at present that covers air quality is the Statutory Nuisance Law, which is really around point sources."*
> (Mr Smith, Head of Health Protection Services, Scrutiny Panel Hearings, 23 November 2007).

> *"I would also say there is no regulatory regime whatsoever for anybody to intervene in that process (Bellozanne), other than the slightly tenuous route that health protection have through the nuisance law …"*
> (Mr Newton, Director of Environment, Scrutiny Panel Hearings, 23 November 2007).

The Panel received evidence that basic legislation should be put in place as a matter of some priority to underpin measures to deal with air quality:

> *"The Control of Pollution Law … is the law we were looking to introduce which would bring in many of the other controls that you would expect to see in the jurisdiction around providing for compliance with E.U. directives or Daughter directives around particular pollutants."*
> (Mr Smith, Head of Health Protection Services, Scrutiny Panel Hearings, 23 November 2007).

The Panel is strongly of the view that enabling legislation should be put in place setting out the approach to dealing with air quality in Jersey. It is suggested that the Environment Act 1995 in the UK could provide a model for the legislation required. Once in place, the legislation can be supplemented by Orders dealing with specific matters. Examples of areas in which Orders could be made include:

- Annual vehicle emission tests on commercial vehicles over 5 years old.
- The setting of air quality standards not to be exceeded.
- The requirement to review air quality annually.
- Restriction of coal burning to smokeless fuels, within St Helier.

Panel recommendation 7

The Panel recommends that consideration be given to these international agreements when the Air Quality Strategy is being developed. The Air Quality Strategy should be supported by enabling legislation, which will subsequently allow Orders to be made as and when necessary. Such Orders could include requirements for burning smokeless fuels within St Helier and a requirement for emissions testing of all commercial vehicles over 5 years old.

9. Measures Implemented to Improve Air Quality

In this section, the improvements in air quality in Jersey are examined. The pollutant sources identified in the 2003 report setting out the basis of an Air Quality Strategy for Jersey provide the starting point. This report identified nitrogen oxides, coming mainly from motor vehicles, as the principal pollutant of concern. These emissions give rise to high concentrations of nitrogen dioxide found near to busy roads, especially in the narrow congested streets in St Helier. Other sources identified were the power station at La Collette, the municipal waste incinerator at Bellozanne, the crematorium, small industrial sources, aviation, shipping and agriculture.

Road Traffic

Monitoring is carried out for nitrogen dioxide at a number of sites around the Island using diffusion tubes. These are indicative samplers that do not meet the strict standard required for checking compliance with the EU Directive limit values. The results over the period 2000-2006 are summarised in Table 2.

Table 2 Annual Mean Nitrogen Dioxide Concentrations 2000-2006. Units microgrammes per cubic metre ($\mu g/m^3$)

	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
Beaumont (kerbside)	35	36	35	42	34	37	30
All Kerbside & Roadside	34	34	36	38	33	33	28
All Urban Background	21	21	23	26	22	22	20
All Residential Background	13	12	14	17	13	14	12

The values are taken from the report Air Quality Monitoring in Jersey; Diffusion Tube Surveys, 2006. They have been adjusted for diffusion tube bias using the national database of bias adjustment factors (v09/07) available at www.uwe.ac.uk/aqm/review/. (This differs from the adjustment applied in the 2006 Report but is considered to be the most appropriate basis for adjusting diffusion tubes in Jersey.)

These results show that background air quality is good, but concentrations are much higher close to roads. Concentrations were highest in 2003, which was a common feature across the UK, due to the weather conditions in that year. There is no apparent trend at the background sites, but some evidence of a downward trend at the roadside sites over the full period. Concentrations at kerbside and roadside sites are close to the

standard of 40 μg/m^3, with the evidence from these indicative monitors being that it was exceeded at the Beaumont site in 2003.

The 2003 report recommended that continuous monitoring be carried out for nitrogen dioxide and PM_{10} using instrumentation complying with EU standards. The Minister for Health and Social Security reported to the Panel that no progress had been made on obtaining funding for such monitoring equipment:

> *"… there was a proposal for monies from the environment vote back in 2002 towards providing an air quality monitoring station. That never materialised. We have tried to address resources through growth bids within Health and Social Services but clearly because of the nature of the organisation (we) work within, care and repair of individuals have to take priority over some of the stuff that we do. So there is a conflict of interest for the organisation in trying to assist us."*
> (Mr Smith, Head of Health Protection Services, Scrutiny Panel Hearings, 23 November 2007).

The Panel notes that the Transport and Technical Services Minister does not see it as the rôle of his Department to propose any measures specifically to deal with air quality. The Panel is of the view that air quality policy, including the Air Quality Strategy, should be the responsibility of the Planning and Environment Department. This would include the development of measures to improve air quality within the transport sector.

The Panel received evidence from Mr. P. Chapman from 'Soltron', a company who produced a product brand named 'X-Mile':

> *"The enzyme seems to help the fuel to ignite properly, giving a better fuel economy and lower emissions."*
>
> *"…. we had one pump with X-Mile in and we did a back-to-back before and after emission testing and in every single vehicle we were reducing hydro carbons on the metre, averaging 50%."*
>
> *"… most of our test drivers were taxi drivers. They were reporting back between 7% and 10% fuel economy and, now that they have used it longer, they are coming in and saying it is over 10%."*

The Panel notes that the stocking and provision of this product would assist the Island in reducing emissions from private and public motor vehicles. Consideration would also be worthwhile for its use in all States vehicles.

Waterfront

Considerable development is planned for the Waterfront. This has proved a challenge for the system to ensure that environmental issues, including air quality, are addressed properly. The Panel has been concerned that the system is only designed to deal with

developments in a piecemeal way, as and when they arise. Mr Smith, Head of Health Protection considered that one way to achieve the necessary holistic approach would be to carry out a Strategic Environmental Assessment:

.

> *"… there does need to be a strategic environmental assessment for the whole of the waterfront."*
> (Mr Smith, Head of Health Protection Services, Scrutiny Panel Hearings, 23 November 2007).

Senator Shenton noted that:

> *"… this has been brought to the attention of the Planning Minister."*
> (Senator Shenton, the Minister for Health and Social Services, Scrutiny Panel Hearings, 23 November 2007).

Strategic Environmental Assessments of plans and policies are now a requirement of Member States within the European Union. The Panel supports the need for a Strategic Environmental Assessment for the development of the Waterfront.

Panel recommendation 8

Considerable development of the Waterfront in St Helier is taking place or planned, yet the air quality impacts are being assessed in a piece-meal way. A Strategic Environmental Assessment should be carried out for this area to address the cumulative impacts of the various developments.

Power Station

The power station at La Collette is now a minor source of pollution. The Jersey Electricity Company (JEC) reported that the station is only run for around 1000 hours a year, i.e. less than 20% of the year. This is because electricity is now supplied mainly by cable from France. This capacity is soon to be extended with the addition of a third cable. The power station, when operational, burns heavy fuel oil, but with a sulphur content restricted to less than 1.5%. There is no evidence that concentrations of sulphur dioxide exceed the short-term standards – 15-minutes in the UK and 1-hour in the EU.

Bellozanne Incinerator

The Municipal Waste Incinerator at Bellozanne has long been known to be operating outside EU standards. This incinerator would not be allowed to operate in the UK. This was clearly identified in the 2003 Strategy report and is recognised by Mr Newton, Head of the Environment Department:

> *"… the outputs from the Bellozanne plant are unacceptable in this modern time."*

(Mr Newton, Director of Environment, Scrutiny Panel Hearings, 23 November 2007).

Investigations have taken place to replace the incinerator, with a proposal under consideration for a plant to be built at La Collette, with the emissions being discharged via spare flues within the JEC chimney. This would not be in place until 2010 at the earliest. No consideration appears to have been given to cleaning up the feed to the existing plant to minimise emissions meanwhile.

Crematorium

The 2003 report identified that the crematorium on the Island was not operating to standards that would be expected elsewhere in the UK in terms of its emissions. Since then new plant has been installed such that the crematorium now meets current standards.

Shipping

The Economic Development Department is responsible for the harbour. It reported to the Panel that nothing direct has been done to reduce emissions from the shipping using Jersey Harbour. However, it was reported to the Panel that the ferries using the harbour burn gas-oil, which has a low sulphur content and not heavy fuel oil that has a very high sulphur content. It was also reported to the Panel that the EU standard for the sulphur content of gas-oil was being tightened and thus emissions should reduce further. No exceedences of UK and EU air quality standards have been identified as being associated with shipping activities.

The Panel noted an article in the New Scientist magazine on 17 November 2007 headed "Death on the Ocean Waves" discussing emissions from the shipping industry in an article by James Corbett of the University of Delaware. The article makes a connection between deaths from heart or lung failure to fuel quality used in the shipping industry. The Panel noted that 'Soltron' had been involved with tests with Stena Line, a company which is running Dutch deep sea fishing boats, on a six month trial, where the company were interested in achieving a 1% fuel economy and, in view of the possibility of prosecutions for excessive emissions in Holland, they were also interested in a 1% cut in emissions.

After six months, fuel economies of 8% to12% had been achieved, with a proportionate cut in emissions.

Aviation

The Economic Development Department is also responsible for the airport. The Panel was supplied with a report setting out measures that have been introduced at the airport to help reduce emissions.

Other Sources

The Panel gave some consideration to the use of domestic coal. It was reported to the panel that imports had steadily declined. Currently around 2,500 tonnes of coal are imported each year. It is not known what proportion, if any, is smokeless fuel. The evidence from the UK is that except at a few locations where domestic coal burning is widespread, there are no exceedences of air quality standards. This includes the UK's 15-minute objective for sulphur dioxide, which is more stringent than EU limit values. Coal burning on the Island is thus not considered to give rise to air quality problems in relation to health protection standards, although it could give rise to local concerns about nuisance.

Since the 2003 report, composting of green waste has been introduced into the Island at La Collette. This is open windrow composting that gives rise to emissions of odours and bioaerosols when the material is turned. The UK Government recommends a 250 m standoff distance in order to protect against potential health effects of bioaerosols. Odours can extend further than this, and complaints have been received from residents within 1 km of the facility. Open composting is being replaced in the UK with in-vessel composting, which allows the gasses to be treated before they are emitted. Deputy de Faye reported to the Panel that:

> *"It is the intention of the Transport and Technical Services Department to discontinue the open windrow facility and replace it with an enclosed composting facility as soon as possible."*
>
> Although he also reported that:
> *"… due to unfortunate set of political circumstances the department is being prevented from pursuing that particular course of action"*
> and that:
>
> *"… all I can do is only so much and within all I can do I have to do things within the level of priorities. … but I have to make it clear that it is highly likely that other things will receive a higher priority."*
> (Deputy de Faye, The Minister for Transport and Technical Services, Scrutiny Panel Hearings, 23 November 2007).

The issue of bonfire smoke was raised in several of the submissions to the Panel. Bonfires are principally an issue of nuisance, although the smoke from bonfires should not be considered as benign. Measures should be included in the Air Quality Strategy to minimise the use of bonfires. This should include banning the use of burning on construction sites.

The issue of odours from the sewage treatment plant was also raised in one of the submissions to the Panel. This is considered to be an issue of nuisance, which is

covered under the Statutory Nuisances (Jersey) Law 1999. Deputy de Faye informed the Panel that:

> *"… I have fast tracked the work on Bellozanne sewerage works so that it will commence next year in terms of attenuation of the aroma problem."*
> (Deputy de Faye, The Minister for Transport and Technical Services, Scrutiny Panel Hearings, 23 November 2007).

10. UK and EU Approach to Delivery of Good Air Quality

This section summarises the key aspects of the approaches adopted by the UK and the EU to assess, manage and improve air quality. Its aim is to provide a context within which the States of Jersey can develop and implement its own approach to air quality management. It is not designed to provide a comprehensive review. For further details it is recommended that the following three documents are consulted:

- The Pollution Control Handbook, published annually by Environmental Protection UK (formerly the National Society for Clean Air) - see www.environmental-protection.org.uk.
- The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, published by Defra in July 2007 – see www.defra.gov.uk/environment/airquality/strategy.
- The Thematic Strategy on Air Pollution, published by the European Commission in 2005 as part of its Clean Air for Europe programme – see ec.europa.eu/environment/air/cafe/index.htm.
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In addition, reference can be made to the following guidance documents and websites, which provide support to the air quality management duties of local authorities in the UK.

- Policy Guidance LAQM.PG(03), Technical Guidance LAQM.TG(03) and Local air quality management progress report guidance, Defra - see www.defra.gov.uk/environment/airquality/local/guidance/index.htm
- Development Control: Planning for Air Quality, November 2006, Environmental Protection UK (formerly the National Society for Clean Air) - see www.environmental-protection.org.uk.
- Review and Assessment Helpdesk – see www.uwe.ac.uk/aqm/review
- Action Planning Helpdesk – see www.airquality.co.uk/archive/actionplan.php
- Local Authority Support Helpdesk (monitoring, modelling and emissions) – see www.laqmsupport.org.uk

Key elements of the approaches in both the UK and the EU are:

- the formal adoption of air quality standards. These define the adequacy of the air quality and the need for actions to improve air quality;
- the monitoring of air quality against these standards using appropriately quality assured methods;
- the preparation and implementation of plans to improve air quality where standards are exceeded;
- the use of legislation to regulate emissions from new and existing sources, including industrial plant and motor vehicles; and
- the development of an Air Quality Strategy establishing the overall approach to air quality management.

11. UK Approach

The legislative base to air quality is provided essentially by means of four Acts of Parliament:

- The Environmental Protection Act 1990.
- The Clean Air Act 1993.
- The Environment Act 1995.
- The Pollution Prevention and Control Act 1999.

The Department for Environment, Food and Rural Affairs (Defra) has overall responsibility for air quality management at the national level. Responsibility for control of major industrial processes is devolved to the Environment Agency in England and Wales. Local Authorities have responsibility for local controls, including those for smaller industrial sources.

The Environmental Protection Act 1990

This Act set out the responsibilities and procedures for the control of major industrial sources of pollution. Her Majesty's Inspectorate of Pollution (subsequently the Environment Agency) was responsible for implementation of the industrial controls under Part 1 of the Act, with local authorities implementing the controls for smaller industrial sources. Part 3 of the Act set out the framework for dealing with nuisance.

The Clean Air Act 1993

This Act sets out the responsibilities and measures for the control of smoke emissions for sources, including domestic sources, not covered under the Environmental Protection Act 1990.

The Environment Act 1995

This Act sets the framework for air quality assessment and management in the UK. There are three key elements to this:

- the national approach, which is strongly related to EU legislation. This includes the implementation of EU requirements to monitor air quality and to limit emissions, in particular from industrial and motor vehicles;
- the establishment of a set of air quality objectives for key air pollutants. These take account of EU limit values and World Health Organisation Guidelines; and
- the system of local air quality management designed to supplement national measures within local hotspots.

The Pollution Prevention and Control Act 1999

This Act deals with the emissions from industrial processes and will eventually supersede Part 1 of the Environmental Protection Act 1990. It introduces procedures requiring permits to be issued for the operation of these processes. In England and Wales it is being implemented by the Environment Agency, with local authorities being

responsible for issuing permits for smaller industrial processes. The Act covers the requirements of the EU Directive on Integrated Pollution Prevention and Control.

12. EU Approach

The EU established the Clean Air for Europe (CAFÉ) programme in 2001. In 2005 it published a Thematic Strategy for Air Pollution setting out in broad terms the approach to be adopted to improve air quality across the EU. The approach includes:

- the adoption of air quality limit values and targets for key pollutants and dates by which they are to be met;
- the requirement to monitor and assess against these limit values and targets; and
- the requirement to develop plans and programmes to improve air quality where the limit values and targets are not expected to be met by the requisite date.

A number of other measures have been adopted by the European Commission to help ensure that the limit values and targets will be met throughout the EU. These include:

- the setting of national ceilings for emissions of a number of pollutants – the Member State is free to choose what controls to implement to meet these ceilings;
- the implementation of Integrated Pollution Prevention and Control to regulate emissions from major industrial sources; and
- the setting of emissions standards for new vehicles.

13. Examples of Good Practice

The air quality issues faced by the more rural local authorities within the UK provide a useful parallel to those faced by the States of Jersey. It is therefore appropriate to examine aspects of good practice within such authorities.

The Action Planning Helpdesk website (www.airquality.co.uk/archive/actionplan.php) contains examples of good practice by local authorities in the UK in developing air quality action plans. The South Lakeland District Council's Air Quality Action Plan is a relevant example, as this covered measures to deal with a traffic related hotspot in the town centre of Kendal in the Lake District. Monitoring had identified many occasions when the nitrogen dioxide objective in a narrow canyon like street had been exceeded. This was supplemented by modelling, which helped identify the sources that needed to be focussed upon. To help prepare the Action Plan the Council established a Steering Group, which included different Council departments and outside organisations. The Council considered a wide range of options, which did not just focus on the street where the objective was being exceeded, but extended to the whole of the town. A package of measures was adopted as part of the Kendal Transport Plan, including work travel plans; adjustment of the traffic flow system in the town centre; increased cycle network provision; revision of off-street parking charges; bus activated signals; and computer controlled (SCOOT) junction signals.

Key messages from this example are the need for departments to work together, in this case via a steering group, and that there is no one solution, but a package of measures is required.

14. Monitoring Requirements for Jersey

The Panel has been made aware that the current air quality monitoring programme in Jersey is inadequate. The key pollutants identified by the Panel are nitrogen dioxide and particulate matter (PM), with the local sources being emissions from motor vehicles. Particulate matter is currently represented by standards for PM_{10}, particulate matter less than 10 micrometres in diameter. There is a growing recognition that smaller particles are more significant in terms of their health effects, and both the UK and the EU are adopting standards for $PM_{2.5}$, particulate matter less than 10 micrometres in diameter. These will supplement the standards for PM_{10}, which are to be retained.

It is therefore appropriate to consider suitable measurement methods for both nitrogen dioxide and PM and a programme for monitoring both pollutants.

Methods for Nitrogen Dioxide

The reference method for measuring nitrogen dioxide in the EU is the automatic chemiluminescence analyser. This draws air into the instrument continuously, with the results usually logged as 15-minute average concentrations. This instrument needs to be located in an air conditioned housing.

In addition to the automatic monitors, the UK also makes widespread use of diffusion tubes. These are small plastic tubes 7 cm long and 1 cm in diameter, with a cap over one end holding a stainless steel grid that is coated in a chemical that absorbs nitrogen dioxide. The tubes are placed with the open end facing down and the nitrogen dioxide diffuses up the tube. After exposing the tube for a period of one month the open end is capped and the tube returned to the laboratory for analysis. The result reflects the average concentration over the month. These tubes are less accurate than automatic monitors, although they provide reasonable results for an annual mean. Their advantage is that they are relatively cheap and they are easy to locate. It is thus possible to have a relatively large network of monitors, which can be useful in identifying hotspots. They are not suitable for demonstrating compliance with EU limit values.

Methods for Particulate Matter

The reference method for particulate matter, either PM_{10} or $PM_{2.5}$ is a gravimetric method, which involves drawing air through a pre-weighed filter for 24-hours then returning the filter to the laboratory for re-weighing. The difference in weight before and after sampling representing the amount of PM collected over the 24-hours. This method is not widely used as it has two disadvantages. It is relatively labour intensive and it only provides results several days or weeks after the monitoring. Also by only giving 24-hour concentrations, rather than 1-hour concentrations, it provides less information to help determine the local sources contributing to the PM.

A number of automatic methods for measuring PM have been developed that overcome the limitations of the reference method:

- the tapered element oscillating microbalance (TEOM);
- the beta attenuation monitor (BAM); and
- optical methods, e.g. the Osiris.
-

There is a problem with these methods in that detailed comparison studies have shown that they generally do not give results that equate to the reference method. Work in the UK has shown that a modified version of the TEOM (called the FDMS-TEOM) and certain BAM monitors with adjustment factors are equivalent to the reference method. The optical methods, such as the Osiris, are not equivalent, and are thus only suitable for screening purposes.

Monitoring Programme

Jersey has an ongoing monitoring programme for

- nitrogen dioxide using diffusion tubes at 21 locations and a chemiluminescence automatic monitor at 1 location;
- PM using Osiris optical monitors at 2 locations; and
- benzene, toluene, and xylene using diffusion tubes at 6 locations.
-

As noted above, the results from this monitoring can only be considered to be indicative, and cannot strictly be used for comparison with the standards. Periods of monitoring have been carried out in Jersey using automatic monitors for nitrogen dioxide and PM_{10}. The PM_{10} monitoring was however carried out using a TEOM analyser, which is now not accepted as giving reliable results.

The Panel recommends that air quality monitoring in Jersey should be improved by establishing a long-term monitoring site within St Helier to measure nitrogen dioxide using a chemiluminescence monitor and PM concentrations using a method equivalent to the reference method. The PM could be measured either as PM_{10} or $PM_{2.5}$, but the view of the Panel is that it is probably more appropriate to monitor $PM_{2.5}$. The results from the automatic monitors should then be made directly available to the public via the web.

The reason for proposing a long-term monitoring site is that the key standards for both pollutants are aimed at limiting long-term exposure, rather than short-term peaks. Annual mean concentrations can only be reliably established by monitoring over a full year. A period of 6 months is the minimum duration for monitoring recommended in the UK to give a reasonable indication of an annual mean.

Identification of long-term monitoring sites can be challenging. While a roadside site is useful for identifying the highest concentrations and the risk of exceeding the standards, there is the possibility that local decisions on traffic management can suddenly alter the characteristics of the site. In many respects a more suitable site would be an urban background site, at a location where the highest background concentrations are expected. Such a site would be more suitable for identifying long-term trends in concentrations, and identifying successes in improving air quality.

Panel recommendation 9

Monitoring of air quality forms an integral part of the Air Quality Strategy. There needs to be a long-term commitment to a programme of air quality monitoring. This should include use of equipment that meets EU standards, supported by other indicative methods where appropriate.

Panel recommendation 10

The Panel has not formed a strong view on the type of monitoring site to select, and this should be subject to further consideration, by the relevant departments.

Panel recommendation 11

The Panel also recommends that consideration be given to acquiring a second automatic monitoring station that could be used to monitor nitrogen dioxide concentrations at hotspot locations.

Panel recommendation 12

Finally, the Panel recommends that the automatic monitoring programme should be supplemented by the continued use of nitrogen dioxide diffusion tubes and the Osiris PM monitors. It would be appropriate to carry out a review of all the monitoring locations, changing them and adding to them as necessary, and of Quality Assurance / Quality Control procedures. The Panel sees no value in continuing the monitoring programme for benzene, toluene and xylene, as the results have been shown to be well below the standards.

Appendix 1

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Energy from Waste Facility - Landscape Philosophy
Baseline Eco Assessment - Land at La Collette (Feb 2006)
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Noise Readings for TA Caretakers Flat
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Energy from Waste & Bulky Waste Facilities - Environmental Impact Statement - Vol 1 - Non Technical Summary (Jan 2007)

Appendix 2: Public Hearings

23rd November 2007

Senator F. Cohen, Minister for Planning and Environment
Deputy G. De Faye, Minister for Transport and Technical Services
Senator B. Shenton, Minister for Health and Social Services
Mr. M. Liston, Managing Director Jersey Electricity Company

26th November 2007

Mr. P. Chapman, X-Mile
Mr. Trevor Du Feu and Mr. Mark Le Brocq of Huelin Renouf

27th November 2007

Senator P. Ozouf, Minister for Economic Development and Deputy A. MacLean, Assistant Minister.

Appendix 3

Written submissions were received from: -

Letter from Mrs V Aygun, Up & Above
Jersey Airport Environmental Policy 2006
Letter from Mrs A Clark
Planning and Environment Submission
Health Protection submission
Letter from Keith Shaw
M Liston JEC
X-mile Folder
Ferryspeed
Mr R Le Seelleur
Chris Washington
Mr J Gillard
Minister EDC
Health Protection submission
Jersey Gas
Huelin-Renouf Shipping Limited

Appendix 4

Professor Duncan Laxen

Current Position:	Managing Director of Air Quality Consultants Ltd.
Year of Birth:	1949
Nationality:	British
Qualifications:	BSc Environmental Sciences (1971) MSc Environmental Sciences (1975) PhD Air Pollution Chemistry (1978)

Positions Held:

- Member of National Society for Clean Air (NSCA) Technical Committee (1988-97), Air Quality Committee (1995-current) and Council (1993-2003). Co-ordinator of National Society for Clean Air Local Air Quality Management Initiative (1993-95)
- Member of Environmental Issues Committee for PTRC Transport and Planning Summer Annual Meetings (1990-96)
- Member then Deputy Chair of Confederation of British Industry Wessex Environmental Committee (1991-93)
- Member of UK Government's Photochemical Oxidants Review Group (1985-94)
- Member of UK Government's Quality of Urban Air Review Group (1992-97)
- Member of EC Working Group on Airborne Particles (1995-2004)
- Member of EC Working Group on Ozone (1997-99)
- Member of EC Working Group on Guidance (1999-2000)
- Member of EC Working Group on Implementation (2002-2004)
- Member of EC Clean Air for Europe Steering Group (1995-current)
- Member of Air Quality Management Resource Centre Steering Committee, University of West of England (1998-2003)
- Chair of DfT's Monitoring Panel supporting work on Model Development for Heathrow Airport (2004-2006)
- Visiting Professor in Air Quality Management and Assessment, University of the West of England (2002-current)
- Member of UK Government's Air Quality Expert Group (2002-current)
- Member of UK Government's Committee on the Medical Effects of Air Pollutants (2003-current)

Key Experience:

Over thirty years experience in environmental sciences. Involved in major studies of air quality, including nitrogen dioxide, lead, dust, acid rain, PM_{10} and ozone. Responsible for setting up UK enhanced urban air quality monitoring network. Responsible for appraisals of all local authorities' air quality Review & Assessment reports. Carried out air quality assessments for power stations; road schemes; ports; airports; railways; mineral and landfill sites; and residential/commercial developments. Involved in numerous investigations into industrial emissions; ambient air quality; nuisance dust and transport emissions. Prepared specialist reviews on air quality topics. Contributed to development of air quality management in the UK. Expert witness at numerous Public Inquiries. Published over 70 scientific papers and given numerous presentations at conferences.

Employment Record:

1993- date	**Managing Director, Air Quality Consultants Ltd.** Established new company
1983-1993	**TBV Science** (now Casella Stanger), Assistant Director with responsibility for environmental consultancy. Previously Manager of Air Quality Department
1983-1989	**Research Consultant, Edinburgh University** Adviser to Edinburgh Lead Study.
1980-1983	**Research Fellow, Edinburgh University** Principal Investigator for study of trace metal behaviour in freshwaters
1978-1980	**Research Associate, Lancaster University** Responsible for study of heavy metal chemistry in polluted waters.
1973-1974	**Research Assistant, Lancaster University** Field work for study of hydrology of upland catchments.

Head Office: 23 Coldharbour Road, Bristol, BS6 7JT, Tel 0117 974 1086, Fax 0117 973 9523
London Office: 12 Airedale Road, London SW12 8SF, Tel/Fax 020 8675 6512
www.aqconsultants.co.uk