

Transport and Environment Committee

10.00am, Tuesday 4 June 2013

Heavy Goods Vehicle (HGV) Bans and Monitoring of Air Quality in Great Stuart Street

Item number	7.2
Report number	
Wards	11

Links

Coalition pledges	n/a
Council outcomes	CO18
Single Outcome Agreement	SO4

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Executive summary

Heavy Goods Vehicle (HGV) bans and Monitoring of Air Quality in Great Stuart Street

Summary

Following the re-routing of traffic throughout the city centre, residents represented by Moray Feu Residents Association are concerned that the increase in traffic will have a detrimental impact on the amenity of the area and will cause both a reduction in air quality due to increase in pollutants and increase in noise. The Residents Association are also concerned that increased air pollution and noise will have an effect on the health of residents.

The Transport and Environment Committee at its meeting on 19 March 2013 in relation to Item 7.2 (Charlotte Square – Public Realm Traffic Regulation Order and Redetermination Orders) agreed:

- 1) To note that a further report would be submitted to the Committee on enforcement of Heavy Goods Vehicle (HGV) bans, and to ask the Director of Services for Communities to also report at that time on the following points raised by the Moray Feu Residents Association:
 - (i) that the monitoring and use of air pollution and noise pollution data in Edinburgh is independently reviewed;
 - (ii) that air quality and noise data is used to assess the health impacts of moving traffic from commercial streets to residential areas, where any health impacts are necessarily exacerbated by the greater time that residents are exposed to street pollution in their home.
- 2) That the above report also considers the concerns raised by the Moray Feu Traffic Sub-Committee on passive diffusion tube monitoring.

Recommendations

- 1 The Transport and Environment Committee is requested to:
 - a) note the content of this report;
 - b) note that nitrogen dioxide levels in Great Stuart Street are below the Annual Air Quality Objective;

- c) agree that air monitoring is carried out in accordance with Defra technical guidance;
- d) note that the Council's air monitoring procedures were considered acceptable following independent review in 2011, and are independently assessed annually by Scottish Environment Protection Agency (SEPA) and Transport and Travel Research (TTR) on behalf of UK/Scottish Government; in consequence, further independent assessment of monitoring procedures is unnecessary;
- e) note that monitoring directly at building façades in Great Stuart Street has replaced kerbside monitoring, providing a more accurate measure of nitrogen dioxide concentrations;
- f) note that the project to monitor nitrogen dioxide in basement areas in Great Stuart Street has demonstrated that no accumulation occurs; that nitrogen dioxide levels are substantially below the Annual Air Quality Objective; and that the project has now concluded;
- g) note that noise levels have been assessed in accordance with Central Government guidance and noise measurements in Great Stuart Street are not required;
- h) note the advice from NHS Lothian that there is no evidence of adverse impacts on health from current levels of noise and air quality and no long term adverse effects are likely;
- i) note that air monitoring in Great Stuart Street is continuing as part of the city-wide air monitoring programme;
- j) note the position with regard to Heavy Goods Vehicle (HGV) bans and agree that temporary signs be erected on the approaches to the Randolph Crescent route to advise drivers that the route is not suitable for HGV traffic. The situation to be reviewed in twelve months time.

Measures of success

Air quality meets/below Air Quality Objectives along the Queensferry Street - Great Stuart Street – Queen Street route.

Financial impact

There are no financial impacts in relation to this report.

Equalities impact

This report does not in itself impact on equalities.

Sustainability impact

This report does not in itself produce any direct environmental impact.

Consultation and engagement

Consultation with:

NHS Lothian Department of Public Health and Health Policy

Background reading / external references

CEC's measurement of traffic pollution in Great Stuart Street and its correction – response to Prof. Duncan Laxen, Dr A Lloyd, 12 April 2011.

Response to Ashley Lloyd Document of 12 April 2011, Professor D Laxen, May 2011.

City of Edinburgh Council Response to Questions and Statements on Air Quality.

[Item 7.2 Charlotte Square - Public Realm Traffic Regulation and Redetermination Orders - Transport and Environment Committee 19 March 2013.](#)

Heavy Goods Vehicle (HGV) bans and Monitoring of Air Quality in Great Stuart Street

1. Background

- 1.1 A number of Traffic Regulation Orders have been introduced affecting the city centre as a consequence of the Tram Project and other traffic management arrangements; these have resulted in re-routing of traffic in the city centre. The outcome of changes has caused drivers to use a variety of alternative routes. One of the areas affected by the changes is the Queensferry Street – Randolph Crescent – Great Stuart Street – St Colme Street – Queen Street route. The increase in traffic along this route since traffic displacement resulting from tram works is approximately 30 %, and the total number of vehicles using the route is approximately 17,500 per day.
- 1.2 The Queensferry Street – Great Stuart Street – Queen Street route passes through a residential area of the city centre with traditional built properties and cobbled streets. Moray Feu Residents Association are concerned that the increase in traffic will have a detrimental impact on the amenity of the area and will cause both a reduction in air quality due to increase in pollutants and increase in noise levels. The Residents Association believes that increased air pollution and noise will have an adverse effect on the health of residents.

2. Main report

Air Quality Issues

- 2.1 The concerns and questions raised by Moray Feu have been treated seriously by Council officers and all issues have been fully examined. This has included independent verification of our air quality monitoring process and response from NHS Lothian on health concerns.
- 2.2 The Transport and Environment Committee 19 March 2013 agreed in relation to Item 7.2 to ask for a further report on the following points raised by Moray Feu Residents Association.
 - (i) that the monitoring and use of air pollution and noise pollution data in Edinburgh is independently reviewed;

- (ii) that air quality and noise data is used to assess the health impacts of moving traffic from commercial streets to residential areas, where any health impacts are necessarily exacerbated by the greater time that residents are exposed to street pollution in their home.
 - (iii) That the above report also considers the concerns on passive diffusion tube monitoring.
- 2.3 Attached at Appendix 1 is a detailed response to the concerns raised by Moray Feu Residents Association in relation to air quality and noise issues.

Heavy Goods Vehicle (HGV) bans

- 2.4 The issue of HGV bans was reported most recently to Members in the *Edinburgh Tram – West End Traffic Management* report, which was considered by the Transport, Infrastructure and Environment Committee on 5 May 2009.
- 2.5 That report concluded that a ban could not be introduced on the Randolph Crescent route on the grounds that the police would not support a restriction managed with traffic signs only, as it placed unrealistic expectations on their resources for enforcement.
- 2.6 To address this, officers have investigated the possible use of self-regulating mechanisms but have established that the necessary legislation needed to support such a system is not in place, as the Transport (Scotland) Act 2001 currently only covers the imposition of charges in respect of bus lane contraventions. Bus lane enforcement is an approved system which is used by a number of authorities, but as the City of Edinburgh Council is currently the only authority pursuing the HGV ban matter, it is very doubtful that Scottish Ministers would support such an initiative.
- 2.7 The development of a self-regulatory system is therefore not a realistic prospect and as the issues with conventional traffic-sign-only systems remain, the introduction of HGV bans, across-the-board, cannot be recommended, at this time.
- 2.8 Notwithstanding the above issues, it is proposed that temporary signs be erected on the approaches to the Randolph Crescent route to advise drivers that the route is not suitable for HGV traffic. The situation should then be reviewed in a year's time.

3. Recommendations

- 3.1 The Transport and Environment Committee is requested to:
- a) note the content of this report;
 - b) note that nitrogen dioxide levels in Great Stuart Street are below the Annual Air Quality Objective;

- c) agree that air monitoring is carried out in accordance with Defra technical guidance;
- d) note that the Council's air monitoring procedures were considered acceptable following independent review in 2011, and are independently assessed annually by SEPA and TTR on behalf of UK/Scottish Government; in consequence, further independent assessment of monitoring procedures is unnecessary;
- e) note that monitoring directly at building façades in Great Stuart Street has replaced kerbside monitoring, providing a more accurate measure of nitrogen dioxide concentrations;
- f) note that the project to monitor nitrogen dioxide in basement areas in Great Stuart Street has demonstrated that no accumulation occurs; that nitrogen dioxide levels are substantially below the Annual Air Quality Objective; and that the project has been concluded;
- g) note that noise levels have been assessed in accordance with Central Government guidance and noise measurements in Great Stuart Street are not required;
- h) note the advice from NHS Lothian that there is no evidence of adverse impacts on health from current levels of noise and air quality and no long term adverse effects are likely;
- i) note that air monitoring in Great Stuart Street is continuing as part of the Citywide air monitoring programme;
- j) note the position with regard to Heavy Goods Vehicle (HGV) bans and agree that temporary signs be erected on the approaches to the Randolph Crescent route to advise drivers that the route is not suitable for HGV traffic. The situation to be reviewed in twelve months time.

Mark Turley

Director of Services for Communities

Links

Coalition pledges

Council outcomes

CO18 Green – We reduce the local environmental impact of our consumption and production

Single Outcome Agreement

SO4 Edinburgh's Communities are safer and have improved physical and social fabric

Appendices

1 Detailed response to Moray Feu Residents Association

2 Minute of Tram Sub-Committee 28 March 2011

Detailed Response to Moray Feu Residents Association

Air Quality and Noise Concerns

1.1 The Residents Association has made repeated representations to the Council, particularly relating to air quality. The Association believes that the Council is not monitoring air quality correctly and is reporting pollutant concentrations lower than the actual levels present. This matter was addressed by the Tram Sub-Committee at its meeting on 28 March 2011. The Sub-Committee heard presentations from the Moray Feu Residents Association and Council officers engaged in air quality monitoring activities. Presentations were also given by Professor Duncan Laxen, previous adviser on air quality to the Department of Environment, Food and Rural Affairs (Defra); Dr Matthew Heal, air quality expert, University of Edinburgh; and Dr Richard Othieno, Consultant in Public Health Medicine, NHS Lothian. The minutes of the Sub-Committee are presented in Appendix 2. The decision of the Sub-Committee was as follows:

- (a) Council officers and Professor Laxen testified that concentrations of nitrogen dioxide were being properly monitored;
- b) the City of Edinburgh Council would continue to monitor nitrogen dioxide in Great Stuart Street and that this would include monitoring at basement levels and on the façade of buildings, with progress made on identifying appropriate façade locations being reported to the next meeting of the Transport, Infrastructure and Environment Committee;
- (c) there was no statistically significant evidence of increasing hospitalisation for respiratory ailments in the Moray Feu since the closure of Shandwick Place to general traffic; and
- (d) the evidence presented by Professor Laxen and Dr Heal refutes the proposition that there had been accumulation of nitrogen dioxide, PM2.5 or PM10 in basement areas at the levels being recorded.

Following the Sub-Committee meeting, a paper was submitted to the Council by The Moray Feu Residents Association challenging many of the statements made at the meeting and raising further questions. These were responded to in papers by Professor Laxen and Council officers (see background papers).

1.2 Air monitoring is carried out by the Council in accordance with the UK and Scottish Government Air Quality Management Framework to assist the UK Government to meet its responsibilities under the EC Air Quality Directives. The Air Quality Standards that must be achieved are stated in the Air Quality (Scotland) Regulations 2000, as amended 2002. The Regulations specify Air Quality Objectives as maximum concentrations (limit values) for a number of pollutants. The Air Quality Objectives for nitrogen dioxide are shown below:

Nitrogen dioxide: Annual mean concentration:	40 µg/m ³
Max. hourly concentration:	200 µg/m ³
Max. number of exceedences of hourly mean:	18 per year

- 1.3 In order to ensure consistency throughout the UK, Defra has published technical guidance on air monitoring and measurement procedures (Local Air Quality Management Technical Guidance LAQM.TG(09)). The guidance is supported by a Helpdesk. The Council's air monitoring procedures adhere strictly to the Defra technical guidance. Council staff consult with the Helpdesk for advice and assistance whenever necessary.
- 1.4 Air monitoring has been carried out in Great Stuart Street and St Colme Street since 2009. Following the decision of the Tram Sub-Committee, a project to monitor air quality in basement areas commenced in June 2011.

Monitoring is carried out using passive diffusion tube (PDT) samplers which are simple devices approved by Defra for air quality monitoring. The results of monitoring are presented in Table 1.

Great Stuart Street Location	2009¹	2010	2011²	2012⁴
7 kerbside ³	36 (41)	36 (41)	33 (37)	31 (34)
9 façade railing main door	-	-	28	25
9 façade basement	-	-	27	24
9 façade basement side	-	-	27	22
12 façade railing main door	-	-	30	27
12 façade basement	-	-	27	24
12 façade basement side	-	-	28	24
14 façade railing main door	-	-	29	27
14 façade basement	-	-	28	25
14 façade basement side	-	-	29	24
14/12 kerbside ³	-	-	35 (38)	30 (33)
15 façade railing main door	-	-	31	26
15 façade basement	-	-	26	23

15 façade basement side	-	-	26	24
15 kerbside ³	-	-	31 (34)	29 (32)
18 kerbside ³	-	-	32 (36)	32 (36)
Annual Air Quality Objective = 40µg/m³				

Table 1: Annual mean nitrogen dioxide concentrations (µg/m³) at building façades in Great Stuart Street monitored using passive diffusion tubes.

Notes 1: Annualised mean values, calculated in accordance with Defra methodology

2: Annualised mean values, except for 7 and 18 kerbside

3: Values in brackets represent the concentration at point of measurement (kerbside)

4: Calculated using provisional 2012 bias correction factor of 0.76

1.5 Air monitoring has also been undertaken in Queen Street since 2005. Monitoring is carried out by an Automatic Monitoring Station and is intended to provide long-term trend data for air quality assessment purposes. The results of monitoring in Queen Street are presented in Table 2.

Year	Queen Street
2009	33
2010	37
2011	29
2012	28

Table 2: Nitrogen dioxide concentrations (µg/m³) from the Air Monitoring Station at Queen Street

In accordance with the Government Air Quality Framework, the Council submits a report annually on its monitoring activities. The report includes full details of monitoring at all locations in the city. The report is independently assessed and approved by the Scottish Environment Protection Agency (SEPA) and Transport and Travel Research (TTR) on behalf of Defra and the Scottish Government.

1.6 The Moray Feu Residents Association has expressed concerns regarding monitoring carried out by the Council, which can be summarised as follows:

a) The distance factor applied to kerbside air monitoring data is incorrect and in consequence pollutant concentrations are underestimated.

- b) Pollutants accumulate in basement areas, exposing residents of basement accommodation to higher levels of pollutant than are apparent from street level monitoring.
- c) Air quality measurements do not take account of the measurement uncertainty inherent in the passive diffusion tube procedure.
- d) The Council has not agreed to re-locate an Automatic Monitoring Station to Great Stuart Street.
- e) The failure to acknowledge pollutant levels in Great Stuart Street may expose the Council to financial penalty for failure to comply with EC Air Quality Objectives.
- f) Current levels of air pollutants will have adverse effects on health of residents.
- g) The Council has not undertaken noise measurements in Great Stuart Street and does not accept that current noise levels are of such magnitude to cause adverse effects on health of residents.

Distance correction

- 1.7 Air Quality Objectives apply and must be assessed at the location of relevant exposure. In residential areas such as Great Stuart Street, this is deemed the road-facing façade of buildings. It is also assumed that exposure is normally assessed at about two metres above street level.

Ideally, samplers should be located on the building façade, as this provides direct measurement at the location of relevant exposure. However, at many locations siting a sampler on the façade is not feasible from access and ownership considerations. Therefore, samplers are frequently sited on street furniture (lamp posts, signposts etc) near to the kerbside.

Pollutants emitted from point sources, such as vehicles, disperse and dilute with distance from the pollution source. This requires the application of a distance correction, when data is obtained from kerbside monitoring and the relevant exposure is the building façade set back from the kerb. Calculation of the distance correction factor is complicated as dilution of pollutants with distance from the source is not linear and the background concentrations of the pollutant must also be taken into account. Defra technical guidance provides a spreadsheet containing formulae to derive the distance correction, which requires input of the distances from the nominal pollution source to the sampler and to the building façade. Due to the inherent uncertainty in the formula and variability of dispersion due to local conditions, kerbside monitoring provides an **estimate** of the pollutant concentration at the façade. Monitoring directly at the building façade does not require application of a distance correction factor, so is considered to provide a true measurement of pollutant concentration.

1.8 When the sampler is located on street furniture near to the kerb, the location of the pollutant source is deemed to be the kerb edge and the distance from the kerb edge to the sampler is included in the distance correction factor calculation. The kerb edge is designated as the pollutant source even though vehicles are actually travelling along a road at a distance away from the kerb.

1.9 In residential streets, such as Great Stuart Street, residents parking bays cause through traffic to travel further away from the kerb. This has the effect of extending the **nominal** kerb to the outer edge of parking bays.

This issue was raised by Moray Feu residents in 2011, suggesting that as the pollutant source was vehicle exhausts, the distance from the vehicle tailpipe, some two meters further out into the road from the parking bays, should be used to compute the distance correction factor. Officers consulted the Defra Air Quality Helpdesk, who advised that local circumstances would dictate whether the nominal pollution source should be deemed the kerb edge or the outer edge of parking bays. Defra subsequently published supplementary advice on this matter.

1.10 In accordance, with the advice from the Helpdesk, the outer edge of parking bays has been deemed the nominal pollution source in Great Stuart Street and the distance from the parking bay to the kerbside sampler is used in the calculation of the distance correction factor.

It is acknowledged that the actual pollution source may be further out into the road, but it is considered that the outer edge of the parking bay is appropriate for the following reasons:

- i. It provides a fixed point of measurement, whereas the location of vehicle tailpipes will vary depending on how the vehicle travels along the carriageway and the location of the tailpipe on the vehicle;
- ii. It is consistent with the pollution source being the kerb edge in the absence of parked vehicles, when vehicles will also be travelling further out in the carriageway;
- iii. It recognises that vehicles manoeuvring into and out of parking bays will be nearer to the kerbside sampler and will provide a significantly greater contribution to pollutant concentration at the sampling point than vehicles travelling along the road.

1.11 The decision to designate the outer edge of parking bays as the nominal pollutant source for calculation of the distance correction factor was supported by Professor Laxen and the Defra Helpdesk. Furthermore, it has not been challenged either by SEPA or TTR when reviewing the Council's annual Air Quality Progress reports.

- 1.12 The decision to designate the outer edge of parking bays is disputed by the Moray Feu Residents Association, who suggest that this underestimates the actual level of pollutant at the building façade.

Reference to Table 1 will show that comparison of the estimated nitrogen dioxide concentration at the façade, calculated from kerbside monitoring, is greater than the actual measurement made directly at the façade. This provides confirmation that taking the outer edge of parking bays as the nominal pollutant source is appropriate.

- 1.13 The Moray Feu residents also suggest that if the distance was extended further into the carriageway, levels of nitrogen dioxide at the façade would exceed Air Quality Standards.

Reference to Table 1 will show that levels of nitrogen dioxide are substantially less than the Annual Air Quality Objective. Owing to the non-linear nature of pollutant dilution and dispersal, if the distance proposed by Moray Feu residents was used in the calculation of the distance correction factor applied to kerbside monitoring data, the concentration of nitrogen dioxide at the façade would be approximately $1\mu\text{g}/\text{m}^3$ greater, and still would not exceed the Air Quality Objective.

- 1.14 Building façade monitoring locations have now been established in Great Stuart Street. As these provide a more accurate measure of pollutant concentration, use of kerbside monitoring locations ceased in February 2013. The use of façade locations also avoids the need for further debate on the distance correction factor.

Accumulation of pollutants in basement areas

- 1.15 In accordance with the decision of the Tram Sub-Committee in March 2011, monitoring of nitrogen dioxide in basement areas in Great Stuart Street commenced in June 2011.

Reference to Table 1 will show that at all locations in 2011 and 2012 concentrations of nitrogen dioxide were lower in basements than the concentration at the corresponding street level façade.

This clearly demonstrates that nitrogen dioxide does not accumulate in basement areas, thus resolving one of the concerns expressed by Moray Feu residents. It should also be noted from Table 1 that concentrations of nitrogen dioxide in basements were substantially lower than the Annual Air Quality Objective. This information was provided to the Moray Feu Residents Association in February 2013.

- 1.16 The basements monitoring project has fulfilled its purpose by demonstrating that there is no accumulation of pollutants in basements, consequently the project was terminated in February 2013. This was also communicated to the Residents Association in February 2013.
- 1.17 The basis for the Moray Feu residents' suggestion that nitrogen dioxide accumulates in basement areas was that nitrogen dioxide was heavier than air and research had demonstrated that levels decreased with height.

Nitrogen dioxide is present at very low concentrations in urban air, where it is mixed and dispersed by currents in the air mass. The density of the gas is not relevant at low concentrations in a dynamic environment, and there is no basis scientifically for accumulation in basements.

It is acknowledged that nitrogen dioxide concentration decreases with height. The converse with respect to basements is not necessarily correct. Nitrogen dioxide concentration decreases with height due to the greater distance from the pollutant source with increasing height, allowing progressive dilution and dispersion of the pollutant.

Uncertainty of Measurement

- 1.18 The passive diffusion tube procedure has an uncertainty of +/- 20%, which the Moray Feu residents suggest should be applied to pollutant concentrations obtained using PDT samplers. However, Defra technical guidance specifically states that no account should be taken of test method uncertainty when assessing pollutant concentrations against Air Quality Objectives. In accordance with the Defra guidance, monitoring data produced by the Council's programmes state the nitrogen dioxide concentration without taking account of the uncertainty of measurement.

Re-location of Automatic Air Monitoring Station

- 1.19 The Moray Feu Residents Association has requested that an Automatic Monitoring Station (AMS) should be re-located to Great Stuart Street. The basis for the request is that the AMS would provide real-time air monitoring data, whereas PDT monitoring is only able to provide data retrospectively averaged over a calendar year. It is further claimed that nitrogen dioxide levels are close to the Air Quality Objective and the large measurement uncertainty inherent in the PDT method means that the Objective may be exceeded.

Officers have declined this request for a number of reasons:

- i. The PDT procedure is a recognised and accepted air monitoring procedure. It is recommended by Defra and used by many UK local authorities. Results from PDT monitoring are acceptable for air quality assessment purposes.

- ii. The Council operates eight air monitoring stations at specific locations in the city to obtain long-term trend data. Re-location of a monitoring station would negate data accumulated over several years. There would also be an interruption of several months in data production, due to the organisational and planning approvals required to re-locate to Great Stuart Street.
- iii. Comparison of the data from the Queen Street AMS (see Table 2) with the Great Stuart Street PDT monitoring data in Table 1 shows good agreement. Therefore, data provided by the Queen Street station may be used to assess short-term real-time conditions in Great Stuart Street.
- iv. Nitrogen dioxide levels in Great Stuart Street are substantially below the Annual Air Quality Objective and there is no justification on this account to site an air monitoring station in Great Stuart Street.

Financial Penalties

- 1.20 If air quality objectives are not achieved in the UK, there is a possibility that the European Commission will apply financial penalties. Any penalties levied by the EC will be against the UK Government and not local authorities. Under the Air Quality Framework, local authorities are required to assist Central Government by introducing measures which work towards achieving Air Quality Objectives. The Council has been working to achieve this purpose and its actions have consistently been endorsed by Scottish Government. Therefore, it is considered unlikely that the Council will face a financial penalty, provided that it continues to progress air quality improvement measures across the city.

It should be further noted that air quality in the Moray Feu area currently meets Air Quality Objectives, so will not have an adverse impact on any assessment of the Council's actions to achieve Air Quality Objectives across the City.

Impact of traffic noise

- 1.21 The Moray Feu residents suggest that noise levels in Great Stuart Street are excessive as a result of the increased volume of traffic using the Queensferry Street – Great Stuart Street – Queen Street route. The residents also consider that noise measurements should be undertaken in Great Stuart Street. The residents cite Central Government guidance to local authorities contained in the Design Manual for Roads and Bridges' (DMRB) in support of their requests for noise monitoring.
- 1.22 The introduction to the DMRB notes that the manual was prepared "specifically for Trunk Roads throughout the UK", but it also advises that "it is for the [local roads authority] to decide on the extent to which the documents in the manual are appropriate in any particular situation". The manual reflects general good practice and road traffic designers seek guidance from it when developing traffic management projects. The likely degree of any environmental impacts will be

assessed as part of that process and where it is anticipated that an impact requires more detailed assessment, then that will be undertaken.

With regard to traffic-related noise, as a general rule-of-thumb it takes a two-fold increase in traffic levels to effect an increase of about 3dB(A) in noise levels, that being the lowest change in noise level which is discernible to the average human ear, under normal conditions.

Traffic volumes in Great Stuart Street have not increased by this amount since traffic displacement resulting from tram works. Therefore, it is not considered that noise levels will have increased significantly and noise measurements are not required.

- 1.23 The status of noise mapping has also been queried by Moray Feu residents. The Residents Association has been advised that noise maps are produced by the Scottish Government and that work is ongoing by the Scottish Environmental Noise Steering Group to consider Noise Management Areas. The outcome of this review will be considered by the Council once it has been published.

Health impacts of air quality and noise

- 1.24 The Council relies upon the advice of NHS Lothian regarding possible impacts on health from air pollution and noise. Dr Richard Othieno informed the Tram Sub-Committee in March 2011 that there was no evidence of adverse effects on health of residents in the Moray Feu from current levels of air pollution. Air quality has not deteriorated since 2011.

Note the advice from NHS Lothian given to the Tram Sub-committee that there was no evidence of adverse impacts on health from air quality in the Moray Feu area and with nitrogen dioxide levels currently below the Annual Air Quality Objective in Great Stuart Street NHS Lothian have stated there is no reason to believe that position has changed.

Conclusions

- 1.25 The Council's air quality monitoring procedures are designed and carried out in accordance with Defra technical guidance; procedures have not changed since 2011 and were independently assessed at that time; independent assessment of the Council's air monitoring data, interpretation and conclusions is carried out annually by SEPA and TTR.
- 1.26 Designation of the outer edge of parking bays in Great Stuart Street as the nominal pollution source is in accordance with Defra guidance; this location provides an estimate of nitrogen dioxide concentration at the building façade, which is slightly greater than concentrations measured directly at the building façade.

- 1.27 Monitoring during 2011 and 2012 has demonstrated that nitrogen dioxide does not accumulate in basement areas in Great Stuart Street; levels of nitrogen dioxide in basement areas are substantially lower than the Annual Air Quality Objective.
- 1.28 Defra technical guidance states that the measurement uncertainty inherent in the diffusion tube procedure should not be taken into account for air quality assessment purposes; Council monitoring and assessments follow this guidance.
- 1.29 Monitoring using passive diffusion tube samplers is an acceptable procedure for measuring nitrogen dioxide levels in Great Stuart Street and there is no valid reason or justification for re-locating an automatic air monitoring station to Great Stuart Street.
- 1.30 Provided that the Council continues to work towards achieving air quality objectives, there is no indication that it will face financial penalties from any failure by the UK to achieve Air Quality Objectives.
- 1.31 Noise assessments established that monitoring was not required, as the anticipated (and established) changes in traffic levels fall well below the two-fold increase (noted in 2.21) necessary to induce a discernable increase in noise levels. The Council will consider the Scottish Environmental Noise Steering Group's review of Noise Management Areas when it is published.
- 1.32 Note the advice from NHS Lothian given to the Tram Sub-committee that there was no evidence of adverse impacts on health from air quality in the Moray Feu area and with nitrogen dioxide levels currently below the Annual Air Quality Objective in Great Stuart Street NHS Lothian have stated there is no reason to believe that position has changed.

Committee Minutes

Tram Sub-Committee of the Transport, Infrastructure and Environment Committee

Edinburgh, 28 March 2011

Present:- Councillors Gordon Mackenzie (Convener), Buchanan, Burgess, Jackson, Mowat (substitute for Councillor Jackson for item 2) and Peacock (substitute for Councillor Hawkins).

Also Present:- Councillors Beckett and Dundas.

1 Presentations on Airport Air Quality Considerations in Shandwick Place and West End Junction

Presentations were provided outlining the views of the Moray Feu Residents' Association, the Department of Services for Communities, Professor Duncan Laxen and Dr Richard Othieno. After each presentation, a question and answer session was held.

Moray Feu Residents' Association

Ashley Lloyd representing the Moray Feu Residents' Association gave a presentation on the impact of closing public highways and the displacement of traffic in the West End.

Mr Lloyd explained that increased traffic, noise and air pollution had led to the residents in the West End experiencing decreasing health. The traffic displacement from the Tram TRO had significantly increased pollution and the structure and design of the streets also meant that the effects were multiplied. The listed building status in the area meant double glazing was not permitted, so pollution could seep into residents' homes and the design of the streets forming urban canyons meant that noise and air pollution was concentrated within the streets. The impacts of this pollution were long-term and the problems arising were not only restricted to respiratory but included heart disease and strokes.

Tram Sub-Committee of the
Transport, Infrastructure and Environment Committee
28 March 2011

Mr Lloyd stated that the Councils' measuring of air pollution was flawed and significantly underreported the pollution in their area. Due to these inaccurate figures, NHS Lothian had not investigated properly and thus the health problems had been overlooked. The Moray Feu Residents' Association requested that the Council must acknowledge that its measurements underestimated the problem, re-visit the data and as a precaution re-open Shandwick Place and Princes Street to general traffic.

Following questions on the presentation the Moray Feu Residents' Association indicated:-

- They had monitored noise levels continuously and had Nitrogen Dioxide detectors that were part of the latest trials that Cambridge University were involved in. Although they were not calibrated daily the calibration would not change each minute and thus the trends identified in the testing were correct.
- There had been a massive increase in traffic from 2005 with up to 12,000 vehicles going in one direction per day.
- India Street had previously been one of the cleanest streets in Edinburgh but now experiences levels of pollution that warrant investigation.

Presentation by the Department of Services for Communities

Stephen Walker, Services for Communities, outlined that the Council had the responsibility for the monitoring, assessment and management of local air quality. In doing this it was required to fully adhere to the policy and technical guidance and direction issued by the Department for Environment, Food and Rural Affairs (DEFRA). The City of Edinburgh Council submitted their air quality monitoring data and findings to the Scottish Government and the Scottish Environmental Protection Agency annually and to date all associated findings had been accepted and formally recognised by both bodies.

Presentation by Professor Laxen

Professor Laxen outlined that he had been asked by the City of Edinburgh Council to review the points raised by the Residents' Association and the subsequent responses from the Council. His qualifications included the development of the Scottish Government's Guidance for Local Authorities on how to carry out the review and assessment work and thus he stated that he was well placed to judge whether the City of Edinburgh Council had been following this guidance correctly.

Tram Sub-Committee of the
Transport, Infrastructure and Environment Committee
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Professor Laxen explained that in using the results available for the whole of 2010 he had calculated the annual mean nitrogen dioxide concentration at the building façade. This figure was 36.5 which was below the EU limit of 40 meaning that the nitrogen dioxide levels were not exceeding air quality standards.

Professor Laxen also outlined where the Moray Feu Residents' Association data was misleading. Moray Feu Residents' Association had used short-term concentrations when comparing data to the annual means standard when long-term monitoring should have been used. The Moray Feu Residents' Association had expressed concern that heavier than air pollutants like nitrogen dioxide would accumulate leading to higher concentration in the basement areas of the New Town. Professor Laxen explained that nitrogen dioxide did not behave like a dense gas and would disperse with general air movements and not accumulate.

Professor Laxen concluded that the City of Edinburgh Council had followed the government's guidance, a correct assessment had been made and there was no evidence that nitrogen dioxide concentrations along Great Stuart Street were exceeding air quality standards.

Following questions, Professor Laxen indicated the following:

- Professor Laxen fully agreed with the view by Dr Matthew Heal that the distribution of nitrogen dioxide would be controlled by general air movements.
- The short-term limit for nitrogen dioxide concentration was 200 rather than 40.
- Professor Laxen indicated that he was confident that the City of Edinburgh Council would be more comfortable if the figure was lower than 36.5 but that they were looking at air quality management areas across the city where the limit had been exceeded. Emissions from new motor vehicles should have been getting cleaner but these standards had not been met and vehicles were as 'dirty' as they were in the past. If those standards had been met then it was likely that the nitrogen dioxide concentration in the City would be significantly less.
- Professor Laxen indicated that he was confident that the Sub-Committee could trust the judgement of officers on this subject.

Presentation by Dr Richard Othieno

Dr Richard Othieno was a consultant in public medicine with NHS Lothian. He gave a presentation on the health impact of the traffic diversions on Randolph Crescent. Dr Othieno outlined the steps taken in researching and judging

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identification of the hazard, the exposure of the residents to the hazard, the amount of that exposure, the risks that would entail and the impact on residents' health.

Dr Othieno indicated that the episodes of respiratory illnesses in this area were much lower compared to the rest of the City of Edinburgh Council area and the whole of NHS Lothian. The data had been collected over the period 2004 to 2010 and had shown no statistically significant increase. He concluded that there was no indication that the traffic displacement had caused an increase in ill-health in the area examined.

Following questions, Dr Othieno indicated the following:

- There was an increase in 2009/10 but this occurred at the same time as swine flu was prevalent in the country and was a natural variation. The increase was not viewed as statistically significant.
- Respiratory illnesses were the subject for this research as although other illnesses could arise from increased traffic, respiratory were the most common, would affect residents faster and would identify health problems in the area quickly.
- There has been a lower consistent level of respiratory illness in this area than the City of Edinburgh Council area and the NHS Lothian area throughout the period of the study.
- The effects of respiratory illness can accumulate and worsen over a long period of time. However, peoples' health can suffer from respiratory illness as quickly as within 24 hours and in the first few days of increased pollutants elderly people and children would be significantly affected and this would show up in the statistics.
- Standard procedures would identify if there was an increase of illness in the area and NHS Lothian would be able to monitor and act on it.

Decision

To note the presentations.

Declaration of Interest

Councillors Gordon Mackenzie and Jackson declared non-financial interests in the above item as Directors of tie and TEL.

Councillor Buchanan declared a non-financial interest in the above item as Director of TEL.

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2 Edinburgh Tram – Shandwick Place and West End Junction Review – Air Quality Considerations

Details were provided of the duties and procedure that the City of Edinburgh Council had in monitoring, accessing and managing local air quality. In particular the methodology used in monitoring the levels of nitrogen dioxide in the vicinity of Great Stuart Street was outlined.

Decision

- 1) To note the presentations to the Tram Sub-Committee and agree that:
 - (a) Council officers and Professor Laxen testified that concentrations of nitrogen dioxide were being properly monitored;
 - (b) the City of Edinburgh Council would continue to monitor nitrogen dioxide in Great Stuart Street and that this would include monitoring at basement levels and on the façade of buildings, with progress made on identifying appropriate façade locations being reported to the next meeting of the Transport, Infrastructure and Environment Committee;
 - (c) there was no statistically significant evidence of increasing hospitalisation for respiratory ailments in the Moray Feu since the closure of Shandwick Place to general traffic; and
 - (d) the evidence presented by Professor Laxen and Dr Heal refutes the proposition that there had been accumulation of nitrogen dioxide, PM2.5 or PM10 in basement areas at the levels being recorded.
- 2) To note that the workshops previously agreed by the Transport, Infrastructure and Environment Committee on the mitigation of traffic as a result of the TRO 1 were ongoing and the outcome of these would be reported back to Committee in due course.

(References – Transport, Infrastructure and Environment Committee 23 November 2010 (item 5) and 8 February 2011 (item 3); report by the Director of Services for Communities, submitted.)

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Declaration of Interest

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