

From: [REDACTED]
To: [Manston Airport](#)
Subject: Manston Airport (TR020002) Deadline 3 Responses, plus additional comments from 20014275
Date: 08 March 2019 15:04:45
Attachments: [Local Impact Reports CL v2.doc](#)
[POST-PN-0538.pdf](#)
[aircraft-noise-report London Assembly 2019.pdf](#)

Dear Examiners,

I am pleased to attach:

1 Deadline 4:

My responses to Local Impact reports and other matters.

I also attach References referred to in this:

POSTnote 538 Green Space and Health

London Assembly: Environment Committee: Aircraft noise.

2 Transboundary Screening

I have recently found your document TR020002-002603-MANS - Regulation 32 Transboundary Screening.pdf giving the First screening 18 July 2017, with an update on 30 January, 2019, saying that "the Inspectorate remains of the view that the Proposed Development is **not likely** to have a significant effect on the environment in another EEA State."

However this puzzles me because most of the aircraft using the airport would be travelling to and from as well as over other EEA states and therefore affecting them with pollution. In addition the pollution from the operations in East Kent would be likely to be blown over the sea, affecting those seas, as well as going over to the land.

I also note that the other East Kent NSIP, Cleve Hill Solar Farm, near Faversham, is looking at the Transboundary effects of the proposal on migrating birds. As Manston is so close to the various sites listed in the Screening, I would have expecting that migrating birds using these sites would be affected.

I do not know how exact the term 'significant effect' is defined, but in view of the generally declining numbers of all migrating species, I would consider the impacts to be 'significant'.

I have referred in my Deadline 3 response, above, to the bird control policy potentially killing protected birds, and indeed the risk of birds being killed by airstrike, so this adds to the likelihood of migrating birds being affected.

Your clarification of this would be appreciated.

I would be very pleased to respond to any queries or problems with my responses.

best wishes

Chris

Chris Lowe IP 20014275



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The London Assembly Environment Committee is a cross-party group of politicians elected by Londoners, representing their interests to the Mayor and other critical stakeholders. The committee has recently heard from residents and community groups about aircraft noise across widespread areas of London, particularly in south-east, north-east and south-west London. We have investigated the issues raised and taken evidence from London airports.

What we have learnt is deeply worrying. Disturbance to daily activities, including working, learning and relaxation, and to sleep, can have severe effects on people's health and wellbeing. Aircraft noise remains a serious issue and will inevitably be a greater problem if airports increase their traffic. We have identified the following key actions that London and its airports need to undertake to reduce the far too high levels of disturbance to daily lives:

We welcome your thoughts and comments on how aircraft noise over London and its impact on Londoners' wellbeing can be minimised.

You can get in touch with us at
EnvironmentCommittee@london.gov.uk

Calls for action:

- **The Independent Commission on Civil Aviation Noise should regulate noise disturbance more stringently, using lower thresholds for disturbance (taking into account WHO guidelines and the need for residents to keep windows open) and mapping the combined effect of all London's airports, especially Heathrow and City. The Mayor should support this work.**
- **Air traffic using Heathrow and City airports should not increase, and the proposed third runway at Heathrow should not go ahead.**
- **Flight paths should be rotated to give respite for those living under concentrated flight paths. Flight paths should be designed to minimise noise impacts: stacking, low-level overflying, and overlapping flight paths should be minimised.**
- **There should be no night flights, and limits on early morning flights should be retained, and preferably strengthened.**
- **The severe levels of noise disruption now being experienced by some of London's residents are not acceptable, and urgent, decisive action is needed across the board to alleviate it.**



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Concentrated flight paths

The air traffic control service, NATS, is continuing to review London's airspace management, and must urgently address a number of issues.

The recent adoption of more precise air traffic control (performance based navigation) has had the effect of concentrating flights arriving at City Airport into narrower corridors, by reducing the amount of variability from the flight path centre. **This has considerably reduced direct overflying for a number of people who were on the margins of the less precise flight paths, but it has greatly increased it for those who are under the current, narrower paths.**ⁱ

According to figures from the Civil Aviation Authority, there are still 331,000 people overflown by flights arriving at City, and 416,300 overflown by departures, all under the altitude of 4,000 feet (about 1,200m).¹ Unlike with Heathrow flight paths, there is no mechanism for predictable respite for the communities affected. City operates six monitors at fixed sites, mainly close to the airport, plus a further mobile monitor that can be moved in response to noise complaints. It therefore gets a clear picture of noise only across a small fraction of the people affected.

ⁱ The City Hall Greens find that the concentration of flight paths is clearly unfair.

London City Airport, and all airports, should provide predictable periods of respite for residents living under concentrated flight paths. City should also increase the number of noise monitors to cover its whole noise footprint.

Residents who spoke to the committee reported that the frequency of flights was much greater and the intervals between them much shorter. Residents from several areas across London, particularly in the north-east, south and west, have told committee members that they are woken up by one flight a minute, starting early in the morning.

Residents do not feel they have been consulted on these changes to flight path management. We are aware that there was a consultation exercise, but it did not succeed in involving these residents who now are affected by the change, and it does not seem to have succeeded in improving the changes to mitigate the impact on them. There was a sharp increase in noise complaints when the change was implemented.

The Mayor, among others, is concerned about the severe noise impacts of this concentration on residents affected, and has called for a fairer distribution of flight paths.

Another issue that particularly concerns residents is stacking. Aircraft arriving in London's airspace before they can be cleared to land circle around in designated paths. Where there are several aircraft flying the same circle, they do so at different altitudes to keep a safe distance

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apart, forming a stack of waiting aircraft. This circling near the destination airport can greatly increase the amount of overflying from a flight. The air traffic control service NATS told us that performance-based navigation should allow stacking to be reduced by better airspace management.

The review of flight paths should minimise stacking. It should also share the burden of overflying by establishing a range of flight paths which can be rotated between, including for City arrivals and departures. Better management of flights paths should not be taken to enable more flights.ⁱⁱ



ⁱⁱ The Brexit Alliance Group dissents from the last sentence of this recommendation, recommending instead that any increase in flights should not adversely affect Londoners.

Reducing noise emissions

Aircraft generate noise from their engines, from friction with the air and from mechanical sources such as lowering landing gear. There is some hope that as aircraft technology and efficiency improves, and noise regulation becomes more demanding, individual aircraft will become quieter. This should be encouraged, particularly through regulatory demand for ever-reducing noise impacts. However, airlines are unlikely ever to be noiseless.

The World Health Organisation (WHO) has issued guidance showing that aircraft noise above 45 decibels on average is associated with adverse health effects.² Government guidance is much less stringent, using a disturbance threshold of 54 decibels (and it is disappointing that the recent Green Paper on aviation strategy does not remedy this).³ Compensation measures such as sound insulation are offered by the airports at higher thresholds again (57dB for City and 63dB for Heathrow).⁴

The noise level thresholds used to map the area over which aircraft noise causes disturbance to residents should be reduced, taking into account the WHO guidance.

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As we have previously recommended,⁵ Heathrow should lower its compensation threshold to match that of City, and both airports should work towards lower thresholds over time.

People need to have windows open at times and to enjoy the outdoors. Open windows are especially important on summer nights, to let the day's heat escape from homes. This is assumed in the design of building regulations to avoid overheating, which can itself disturb sleep and directly threaten health, especially for vulnerable residents. It will only become more important as London's summers are expected to get warmer in coming decades. Opening windows is also required for ventilation.

Open windows should therefore be assumed in setting reduced noise thresholds.

Even with the current thresholds, the number of people disturbed by noise would increase with any new runways or flight paths, and the amount of disturbance would increase with any increase in the frequency of flights on existing paths. Aiming to expand in the leisure market, City Airport already expects to increase its number of flights per year from around 80,000 to over 100,000 by 2021, towards its authorised limit of 110,000. The focus of these extra flights at peak

hours means that flights on existing paths would rise to 45 an hour: a 45 per cent increase.

Heathrow Airport proposes to construct a new runway which would enable it to grow from around 475,000 to around 740,000 flights a year. As well as adding to the overall level of air traffic, this would create new flight paths and affect around 200,000 more people with noise than a two-runway equivalent. Heathrow has also recently published plans to increase its flights to around 500,000 per year and change flight paths, including overflying new areas, even before any third runway.

Increases in the quantity of air traffic using Heathrow and London City airports, and inevitably overflying London's populated areas, should be opposed. Most urgently, we oppose the creation of a third runway at Heathrow.ⁱⁱⁱ



ⁱⁱⁱ The Brexit Alliance Group does not consider that this recommendation should apply to City airport, recommending instead that any increase in flights should not adversely affect Londoners.

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Flight altitude

One critical aim of the flight path review should be to increase altitudes over London. Noise experienced on the ground is greater the lower the aircraft are overhead. We heard face to face testimony from residents, and have received documentary evidence, of how low aircraft fly on approach to London City Airport—which is far lower than necessary.

Flights approaching over south London routinely descend to around 610m (around 2,000 feet) altitude at least 22km (14 miles) from London City Airport, and keep that altitude until beginning final descent around 6km from the airport. The aircraft therefore overfly densely-populated areas of London (including, in the case presented to us, Catford, Forest Hill, Herne Hill, Stockwell, Kennington and Southwark, in the boroughs of Lewisham, Southwark and Lambeth, along a track of around 16km—other City flight paths go over north-east London and Heathrow flight paths especially affect west and south London) at that altitude. Noise meter readings of up to 70–75 decibels from individual flights have been reported from outside homes in these areas. A continuous descent approach could greatly relieve the low altitude over the majority of this approach.

Flight path management must also take account of ground elevation. There are areas under current low-altitude flight paths 50 to 100m above sea level, with correspondingly reduced overflight heights. Low-level flight paths should avoid high ground.

Minimum flight path altitudes should be set and rigorously observed: we heard of flights tracked at up to 120m (400ft) lower than the normal altitude, including before 7am.

The review of flight paths should therefore maximise the use of continuous descent and ascent, aim to keep the remaining low-level approaches away from high ground, and ensure that minimum altitudes are observed.



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Overlapping flight paths

Because of the way the airports select flight paths according to weather conditions, parts of London are overflowed by aircraft from at least one of Heathrow and City airports on nearly every day of the year—up to 300 flights per day.⁶ Combined with concentrated flight paths, this can leave affected residents without respite and generates some of the worst impacts.

We have long argued that noise from London's airports must be mapped, monitored, managed and regulated together.

The Independent Commission on Civil Aviation Noise (ICCAN) should take a comprehensive view of noise across London, and lead to changes in noise management. It should also act as a single point of contact for Londoners with issues about aircraft noise, to make it easier to register views and make complaints. The Mayor should work with ICCAN to encourage and facilitate this work, and relevant boroughs should engage, perhaps via London councils, to ensure a strategic view across London.

This London-wide view of noise impacts should also inform London-wide airspace management and flight routing. London City Airport has said that the reason for its extended low-altitude approach route is that Heathrow flight paths cross above it, and so it cannot be raised without a comprehensive review of flight paths from at least these two airports.

The review of flight paths should minimise and seek to eliminate the overlap between City and Heathrow flight paths, especially where either is at a low altitude, and where the flight path from one airport is used in westerly operations and that from the other airport is used in easterly operations.

London City Airport and Heathrow are jointly mapping and monitoring overlapping flight paths and their noise effects in Dulwich, with a view to doing so in further areas later. However, they were unable to provide a specific time frame even for this initial study.

Heathrow and City should provide a timetable for their joint work to map overlapping flight paths and their noise impacts. The Mayor should encourage and facilitate this work.



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Night flights

Flights at night create the greatest health and wellbeing impacts, because they come at a time when other noise is less and disturb sleep. We have long opposed night flights.⁷

There are currently restrictions on scheduled arrivals during designated night hours, with none at City and a limited number at Heathrow. However, scheduled arrivals begin early in the morning (6.30am for City and 6.00am for Heathrow, plus a limited number, on average around 16 a day, between 4.30 and 6.00am), and flights for these landing slots start reaching London airspace earlier. Some arrive so early they have to circle awaiting their permitted landing time.

There should be no night flights, and limits on early morning flights should be retained, and preferably strengthened, for example by extending the time of no or very limited flights to 7.00am.



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Contact

For media enquiries about this report, please contact:

Giles Broadbent, External Relations Officer

Giles.Broadbent@london.gov.uk

020 7983 4067

For general queries about the committee, please contact:

Ian Williamson, Scrutiny Manager

EnvironmentCommittee@london.gov.uk

020 7983 6541

For further information about the work of the Environment Committee, and to see our current investigations, visit [our website](#).

About the Environment Committee



The Environment Committee examines all aspects of the capital's environment by reviewing the Mayor's strategies on air quality, water, waste, climate change and energy.

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Endnotes

¹ 331,000 people are overflown by arriving flights under 4000 feet, and 416,300 by departing flights under 4000 feet. Some people are affected by both; the CAA has not said how many this is, and therefore we can say only that the total number overflown is between 416,300 and 747,300. Source: *Report of the CAA's Post Implementation Review of the London Airspace Management Programme (LAMP) Phase 1A Module C: Airspace Change Proposal – London City Network Changes*. Available online at [http://publicapps.caa.co.uk/docs/33/CAP1692C_ModuleC_FinalV3\(P_LINKS\).pdf](http://publicapps.caa.co.uk/docs/33/CAP1692C_ModuleC_FinalV3(P_LINKS).pdf) accessed 19 December 2018

² *Environmental noise guidelines for the European region*. World Health Organisation 2018. Available online at http://www.euro.who.int/_data/assets/pdf_file/0008/383921/noise-guidelines-eng.pdf?ua=1 accessed 21 December 2018. The measure of average noise used is the Lden measure, which averages noise across the Day, Evening and Night.

³ *Aviation 2050: the future of UK aviation*, UK Government Green Paper, December 2018. Available online at <https://www.gov.uk/government/consultations/aviation-2050-the-future-of-uk-aviation> accessed 21 December 2018.

⁴ Heathrow and City airports at the Environment Committee meeting of 8 November 2018. Transcript (see pages 8-10) available online at <https://www.london.gov.uk/moderngov/mgChooseMDocPack.aspx?ID=6432&SID=17630> accessed 21 December 2018

⁵ See 2013 response to Airports Commission consultation, available online at <https://www.london.gov.uk/about-us/london-assembly/london-assembly-publications/london-assembly-night-flights-consultation> accessed 21 December 2018

⁶ *South East London: no respite from aircraft noise*, Tim Walker, 2018. Available online at <http://hacan.org.uk/wp-content/uploads/2018/08/No-aircraft-noise-respite-for-London-SE23-August-2018.pdf> accessed 21 December 2018

⁷ See 2013 response to Airports Commission consultation, available online at <https://www.london.gov.uk/about-us/london-assembly/london-assembly-publications/london-assembly-night-flights-consultation> accessed 21 December 2018

1 LOCAL IMPACT REPORTS (LIR) from Thanet, Canterbury, Dover, Kent County Council

1. A Overall Comments

The Councils are meant to protect their residents and improve quality of life.

In relation to Air Pollution, Climate Change and Noise, all the Local Impact Reports (LIR) are too anodyne. Even the most affected, Thanet, says: “4.10.5 Given the potential adverse impacts relating to noise, sleep disturbances and air quality the proposed development is likely to lead to negative local impacts relating to health and well-being.”

So instead of the rather mild: 'negative impacts', they should say unacceptable, or even stronger such as the impacts would be a killer.

A common factor of these issues is that past decades have shown, and ongoing research continues to show, that all three are much more serious problems than previously appreciated and that we need to reduce them much more rapidly than expected.

This has led to a legislative backlog, and the evidence is still expanding, but the EU's four Environmental Principles: the Precautionary, Prevention, Rectification at source, and Polluter pays Principles (Environmental Principles in EU, Parliamentary Office of Science and Technology, POST Note: PN-0590), apply, and will continue to apply even after leaving the EU, so where there is uncertainty the worst case must be assumed, and then Prevention, Rectification at Source and Polluter pays must be applied in sequence.

As the Applicant cannot prevent these emissions, nor rectify, nor pay, for them, Manston cannot proceed.

Evidence of air transport's ever increasing impacts includes the second European Aviation Environmental Report (EAER from: easa.europa.eu/eaer/) which compares 2017 to the first report in 2014. Strikingly there have been some reductions in noise and fuel use due to slightly less noisy and less inefficient aircraft, but these are totally overwhelmed by the increases in flights.

Heathrow shows that runway restrictions have meant it has no more flights but now fills each flight, and uses larger aircraft, so it is clearly much better to use existing airports for any expansion of capacity, rather than allow a new airport at Manston, with all the associated inefficiencies of new buildings, which themselves have huge embodied carbon emissions, partially-filled aircraft and trucks, as well as all the associated impacts.

Additional details on these issues are in my TR020002-003255-Chris Lowe -Written Representation.

In terms of damage to humans, it is much more difficult to recover from ill health caused by pollution than to stop the pollution in the first place. Likewise with climate change, the Stern Report many years ago, showed it would be much better economically to reduce emissions as soon as possible rather than delay taking action, which would be much more expensive.

The Parliamentary Office of Science and Technology (POST) have issued POSTnote 538, Green Space and Health (attached) “Green Space and Health” which emphasises the huge importance of green spaces, and that low income areas are associated with a range of adverse circumstances, including lack of access to good quality green spaces, and so suffer great inequalities. Not only would proposed scheme greatly reduce green space, but also adversely effect existing green spaces outside the development area.

For wildlife, the loss of one species such as the Curlew, may seem like 'just one bird, so what?'

In reality the Curlew is part of a chain, and part of an ecosystem, and these ecosystems support our own life, so its loss affects other species, and so it goes on, until we have a desert.

If this proposal does not go ahead there will be no loss to the UK because the proposed services are already

being adequately provided elsewhere, but the country will gain from not increasing health and welfare damage and will retain all the benefits of the existing environment.

This is why the Examining Authority has to say that the massive effects of just this one project are unacceptable and cannot be mitigated.

Air Pollution

Air pollution is a killer, and even before it kills you it causes severe health problems so the LIR should say so, not just “negative local impacts”.

As long ago as 2016, the Royal College of Physicians said: “exposure to outdoor air pollution has been linked to cancer, asthma, stroke and heart disease, diabetes, obesity, and changes linked to dementia. The health problems resulting from exposure to air pollution have a high cost to people who suffer from illness and premature death, to our health services and to business. In the UK, these costs add up to more than £20 billion every year.” (www.rcplondon.ac.uk/projects/outputs/every-breath-we-take-lifelong-impact-pollution), More recently it has said: “The government must must tackle the modern sources of air pollution”.

Similarly the recent UNICEF report ‘*A Breath of Toxic Air*’(unicef.org.uk/publications/child-health-breath-of-toxic-air/) highlights the particular impacts of air pollution on children. Other recent reports (unicef.org.uk/clean-air-child-health-air-pollution/) show the action needed to address this harm.

So no increase in Air Pollution should be allowed.

Climate Change

Thanet District Council (TDC), in 4.11.5, identifies Manston year 20 emissions being 808.7 kt CO₂ but it is unclear if this includes aircraft emissions as well as buildings (and embodied emissions), truck and other emissions, nor whether this is actually worst case, because true worst case for aircraft should take the Corinair data for the most emitting aircraft that could be used and multiply this by half the ATMs (because emissions are counted for departing aircraft only) and the longest flight distance.

TDC also note, 4.11.6, that RSP say that emissions are 1.9% of the UK target 37.5 Mt CO₂ which is 712.5 kt, so there needs to be clarity of what is being counted, because it represents such a huge proportion of UK aviation emissions.

Thanet note that: “IEMA guidelines on Greenhouse Gas (GHG) emissions state that all GHG emission are significant”. For aviation the other emissions account for a doubling of the global warming effect of CO₂, so even using the figure 808.7 kt CO₂ means that total is actually 1617.4 kT CO₂ equivalent.

Pleasingly Thanet Council have adopted the Climate Local Kent commitment, and TDC's GHG emissions were 4.4 kt CO₂ (GHG-Emission-report-July-2018.pdf) in 2008/09, and have decreased to 3.1 kt for 2017/18. This shows that Manston's emissions vastly overshadow those of Thanet, and make Thanet's 30% reduction look good, especially as RSP expects ATMs to fly ever higher, with no obvious means of emission reductions.

Many Councils, including London, Scarborough, Bristol, etc., are now signing up to “Climate Emergency” to achieve net zero within 20-30 years, which the Government is also considering, but building Manston would create an increasing huge chimney of emissions peaking in 20 years, just when many councils will be achieving Zero emissions, and make those efforts a waste of time.

Noise

Noise, although not likely to kill, causes serious adverse effects with lower quality of life, and may, in the worst case, lead to premature death.

Despite the World Health Organisation's (WHO) “Environmental Noise Guidelines for the European Region 2018” being produced last year, none of the LIRs refer to it but it requires far lower levels and even that level is

too high to prevent impact on some people, who can be affected by 30 dB noise, as reported at Internoise 2018.

The evidence from WHO and others, such as the London Assembly (attached) shows that where changes take place, more people than might be expected are highly annoyed (with the associated health effects) and this is especially the case where there has been rapid change, as would be the case if Manston went ahead.

As an illustration of the impacts, Figure 9.5 “Designated heritage assets within 60 dB noise contour” (5.2-4 ES,), shows the 60 dB contour going well beyond St Nicholas at Wade, encompasses a major part of Ramsgate, as well as villages of Acol, Monkton, Minster etc.

However this figure only includes the 54 dB Leq contour. An approximate rule is that a 3 dB change in Leq doubles or halves the affected area, see, for example the CAA Noise Contours for the three main London Airports, so for 45 dB the area would be eight times larger ($2 \times 2 \times 2 = 8$), which means an unacceptable quality of life for everyone in the area, and totally contrary to the aim of noise policy to reduce noise.

The Councils do not appear to recognise that another major downside of noise from a new airport is that it would blight areas and prevent, for example, new housing because of the noise.

Although this particularly affects Thanet, it could also affect Canterbury and Dover districts. See for example, the refusal of housing near a quarry because of existing noise (bailii.org/ew/cases/EWHC/Admin/2018/3526.html).

Jobs

Very different views are taken on jobs.

Thanet plans for 5,000 new jobs by 2031 (4.2.2 Policy SP02), and notes that for Manston: “job numbers continue to be generated on the basis of a theoretical academic report, rather than on a studied financial appraisal of the project and expected growth (4.2.4)”.

My own calculation using actual job numbers from the ONS Annual Business Survey employment categories SIC 51 and SIC 52.23 (i.e. total direct aviation jobs) shows UK total is 124,000 in 2017. Dividing these by the total UK Air Transport Movements of 2,260,000 (CAA Table 04.2), means that 1 ATM would support 0.055 jobs, so 10,000 ATMs would provide all of 550 jobs.

Hence RSPs extraordinary overestimate quoted by Dover LIR (5.2), of 2,665 jobs and year 20, 30,000 jobs, cannot be right, as year 20 number would be 25% of UK air transport employment (124,000) and the latter has been steadily decreasing every year for decades. In addition it would, as Thanet recognises, cause major disruption locally and more widely.

Manston is predicated on freight traffic, but the cargo traffic is likely to be importing more than exporting, and this is damaging to jobs here, for example imported fresh salads would damage Thanet Earth.

If Councils want more jobs then they should be focussing on the Low Carbon and Renewables Economy (LCRE): ONS reported last month that LCRE economy in 2017 was £44.5 bn, up 6.8% on year, and employment is 209,000.

This means LCRE employment is approaching double that of Air transport, and turnover is increasing and already worth double that of air transport.

Tourism

Thanet recognises the large adverse impacts on tourism (4.2.8 and 4.2.9) which would also affect the other Districts and the County.

Visit Kent press release of 9 January, 2109, says:

“Canterbury had the highest number of trips (7.8 million) and the highest visitor spend (£392 million) in the county. Canterbury’s tourism employment now accounts for 16% of the district’s total employment.

Thanet saw the highest increase in day visitor numbers in the county, rising by 9.9% to 3.7 million. Over £319

million was spent in the area as a result of tourism, an increase of 9.2% on 2015. Thanet's tourism employment now accounts for an impressive 19% of the district's total employment", so these benefits are at risk from Manston's noisy cargo aircraft and more road traffic

One estimate says one job is supported by 33 incoming tourists, but UK airports send many more tourists abroad than come in, so for every 33 more tourists going abroad than coming in, means one job lost here. Although Manston is primarily for cargo, nevertheless the passenger part will lead to more people going away than coming in, and thus damaging local employment.

Housing

Thanet says, 4.2.6: "the job creation purported from this project would significantly affect the OAN for housing within the East Kent region. The impact is a likely significant increase in housing requirements in Thanet. This may result in indirect effects, such as additional loss of countryside through increased housing developments and significant new infrastructure demands."

Such impacts would affect the wider area, because many employees prefer to work away from their noisy employer.

1. B Thanet TR020002-003135-Thanet District Council - Local Impact Report Manston Airport.pdf Air Pollution

I consider that the development would certainly produce negative impacts, especially as the the latest Air Quality Map from Friends of the Earth (friendsoftheearth.uk/clean-air/nearly-two-thousand-locations-across-england-wales-and-northern-ireland-breaching-air) shows 44.9 ug/m³ Annual Mean NO₂, in High Street St Lawrence, and this 2016 figure is likely to be worse now.

With particular relevance to Thanet, the Royal College of Physicians (*ibid*) said: "people who are older, live in deprived areas, have pre-existing conditions or live near busy roads are at greater risk. Our most deprived communities are exposed to some of the worst outdoor and indoor air quality, contributing to the gap in life expectancy of nearly 10 years between the most and the least affluent communities."(cplondon.ac.uk/projects/outputs/what-rcp-thinks-about-air-pollution).

There is no method by which Manston could avoid increasing air pollution, so it would be illegal to allow it,

Apart from the quality of life impacts, the pollution is likely to persuade better-off people to move away from Thanet, and likewise discourage new people from buying houses, preventing Thanet from achieving the Government-imposed new housing targets.

The section, *Draft Thanet Local Plan to 2031 Policies*, - Economic Growth says that:

"Development is supported that enhances the rural economy subject to protecting the character, quality and function of Thanet's rural settlements and natural environments."

Clearly Manston is in a 'Rural location' but does nothing to protect the quality of the area. - so is unacceptable.

I disagree with: "4.2.11 The proposed DCO boundary includes part of Manston Green which is allocated in the draft Local Plan and has an extant planning permission for 785 dwellings. The permitted scheme makes allowance for the land required for Manston Airport landing lights and so does not appear to be adversely affected by the DCO".

Being so close to the runway would present unacceptable noise and air pollution levels – insulation and other measures would be inadequate to enable full enjoyment of the properties.

Indeed TDC note in 4.3.11 that no mitigation is proposed for "schools, noise sensitive receptors and gardens and the ability of the mitigation proposed to remove significant effects has not been demonstrated in the ES", so proposal is unacceptable.

Although 4.3.7 Policy SE06 – Noise Pollution will only allow development where "the impact of the noise can

be reduced to acceptable levels”, it does not define what is “acceptable”. Bearing in mind that noises below 40 dB affects people, allowing Manston would blight large areas of Thanet.

Thanet District Council (TDC) refer to 4.2.1 Planning situation, and the approved application OL/TH/15/0020 Jentex Oil Depot for 56no. extra care units, 56no. dwellings and community use building with retail unit, but the new airport would appear to conflict with this and mean that this provision would need to be elsewhere in Thanet.

Noise

No mention is made in Thanet's ILR of Training Flights which are particularly intrusive being repetitive, low level and potentially less safe, so their movements should be included in the ATM Cap, and the flight paths, noise impacts etc., included in the assessments.

1. C Canterbury City Council (CCC)

Air Pollution

Despite 4.9 saying: “it is considered unlikely that the proposed development would have any significant traffic impacts that would instigate the need for mitigation in the Canterbury district”, Canterbury does have several areas of illegal pollution with over 40 ug/m³ NO₂, so any traffic increases would make these even higher. So I find it extraordinary that the EH team identified no human receptors (4.12), and do not object on air quality grounds.

Hence CCC is certain to need mitigation measures for this because extra traffic will come not only for 'flying traffic' but also employment etc.

As levels are illegal and for some of the air pollutants there is no 'safe' level, CCC should not allow more traffic.

Noise

CCC notes the absence (paragraph 4.4) of the 60 LASmax contour, but LASmax is a Slow response which averages out the Peak noise level, and it is the peak noise level which will wake people up or disturb them. The maximum sound levels is the highest time-weighted sound level and the “Slow” means it is measured over a 1 second time period, whereas Fast is measured over a 125 millisecond time constant and is more representative of human response.

So both the 80 & 60 dB peak contours are needed.

As with air pollution, more traffic would mean more noise so 4.9 is wrong to say: “it is considered unlikely that the proposed development would have any significant traffic impacts”.

Biodiversity

Although CCC are leaving this to KCC & Natural England to cover, I do not think KCC has covered it, and NE's remit seems to be more local than Canterbury District.

Visual

CCC note that district is outside the 5 km boundary from Application site, and contrary to 4.23, I consider that the site would be 'signifiant' to CCC's District.

For example Reculver is a much visited destination, and even without going up the Towers, Manston is visible from there, and I have seen parked aircraft at the airport, as well as the aircraft taking off and landing.

Aircraft proposed may well be larger ones than hitherto, so would be even more visible and intrusive.

In addition training flights in the past would fly along the north coast, desecrating this wild open area.

The new buildings would also appear to be higher than former ones so would introduce further unwanted man-made intrusion to this natural area.

In addition, as I live very close in the Blean Woods and frequently walk through them, I know that they and the Sarre Penn Valley are tranquil areas, as identified by CPRE Tranquillity and Night Blight Mapping (See ExQ1 LV.1.15) and this is a very special resource which would be destroyed by the frequency of aircraft proposed.

1. D Dover District Council

Air Pollution

Both Marine Parade and High Street show illegal air pollution over 40 ug/m³ NO₂, which would increase due to Manston.

1. E Kent County Council (KCC) TR020002-003273-Kent County Council - Local Impact Report Noise

I welcome KCC's sections 2.2 to 2.4 with its emphasis on the experience of noise impacts, but very disappointed that 2.5 then merely says that: "it is still considered that some improvements could be made to reassure communities", because improvements must be made not only to 'reassure communities' but to reduce harm to them!

Similarly 2.10 merely 'encourages' RSP to go beyond minimum standards, especially as the levels quoted by KCC are much higher than the latest 'minimum standards' as shown in my Written Representation above.

For these reasons the ES does NOT take a 'robust assessment' (2.12) of the likely impacts, especially as Leq is no good for night noise because just one event with low Leq, but high SEL will wake someone up.

Air Transport Movements (ATMs)

KCC refers (4.6) to the 'helicopter facility' as part of the proposal, and I believe that helicopter ATMs count as 'General Aviation' but 'General Aviation ATMs are excluded from the proposed Cap on ATMs in the Noise Management Plan.

Helicopters are excessively noisy, so if they are to be allowed, then they must come within the Cap on ATMs, and this supports the need for all 'General Aviation' movements as well as all Training Flights, to be included in the cap.

Transport

In DHA's Highways and Transport report attached to KCC's LIR, the only reference to rail services is to the proposed Parkway Rail Station, with nothing about how additional passengers to Manston would increase over-crowding of rail services, requiring more carriages or trains to avoid over-crowding, although fitting extra trains onto existing infrastructure would be very difficult.

In addition, no mention is made of additional bus services required, so impact here would be over-crowded buses.

Biodiversity

I understand from Dover DC's LIR that KCC is covering biodiversity, with Natural England, so I am very concerned that KCC has not raised the issue of bird control around the airport.

Most airports have a Bird Control policy and the former airport had such a policy.

What is concerning is that such policies can allow detrimental actions against birds, and Natural England has now revealed (naturalengland.blog.gov.uk/2018/12/12/the-facts-about-licences-for-wild-birds/), that 170,000 birds have been shot in the past five years, and the following species are licensed to be shot or otherwise removed for supposed aviation reasons:

The species include:

Curlew (already nearly extinct here), Oystercatcher, Buzzard, Raven, Kestrel, Peregrine falcon, Grey heron, Red kite, Stock dove, House sparrow, Golden plover, Egyptian goose, Mallard, Pink-footed goose, Canada goose, Wigeon, Mute swan, Ringed plover, Fantail/white dove, Barnacle goose, Skylark.

As many, if not all, of these are declining or at risk, then this adds to the need to not add another UK airport with bird deterrent or killing powers.

As David Attenborough has said we are facing Armageddon so cannot continue killing birds just to allow RSP to try and make some profit.

2 Responses to ExA's Written Question WQ 1

Public Health England TR020002-003322-Public Health England : re: AQ1.11

I am astonished, to put it mildly, that PHE's response is so anodyne because they say:
"During the operational stage there may be opportunities for further mitigation such as the use of low emission fleet vehicles, encouragement of the use of sustainable transport modes for workers which could additionally be explored. Reducing public exposures to pollutants such as particulate matter and nitrogen dioxide, even when air quality standards are not exceeded, is expected to have public health benefits."

I would have expected them to say that increases in pollution would be unacceptable, or even stronger such as that level would be a killer.

As long ago as 2013 the NHS said: "Safe' levels of air pollution could still be harmful"
(www.nhs.uk/news/lifestyle-and-exercise/safe-levels-of-air-pollution-could-still-be-harmful/), so surely PHE should be saying the same thing?

Samara Jones-Hall (TR020002-003300-Samara Jones-Hall - Written Representation) also provides detailed evidence on such health impacts, as do many Thanet residents.

What PHE are, by implication, saying is that increasing pollution is fine, which it clearly is not.

3 Statements of Common Ground

A Civil Aviation Authority

The SOCG refers to various uncertainties, including 4.1.3 CAA scrutiny of operational process, and 4.1.6, satisfying the Aerodrome Certification requirements. As these cover airspace, operational procedures, and environmental management the outcomes will not be known until after the end of the Examination.

So although RSP has tried to provide indicative information, such as swathes for flightpaths, the ongoing airspace changes for Heathrow and other airports could radically change what is examined now, and thereby completely alter the assessments for the worse.

What is needed from the CAA or possibly the Independent Commissioner for Civil Aviation Noise, is some sort of 'framework' which can be guaranteed to enclose the worst case.

Otherwise I can see no other alternative than for the ExA itself to state the limits of an acceptable framework within which Manston and its operations would need to be constrained if it were to go ahead.

B Natural England

In the SOCG paragraph 3.1.7 reference is made to "higher noise levels are not necessarily disturbing in all cases, it is only below 55 dB LAMax that Natural England are satisfied there is no risk of disturbance", but in other documents RSP uses LASMax, the 'Slow' response measurement, so may be necessary to clarify what is intended.

3.1.10 is phrased misleadingly because "Natural England confirms that, in terms of air quality impacts from **the airport itself**...." so this means that the air quality impacts from aircraft and the associated road traffic still need to be assessed.

I am surprised that 3.1.16 on bird scaring only says that scaring methods need to comply with CAA CAP 772, which on, page 22 refers to "**Off-aerodrome wildlife surveys ('13 km bird circle')**", which requires assessment of wildlife activity within 13 km of the airport, so I query whether such assessment has been carried out?

Also 3.1.6 only refers to 'Bird scaring' not 'Control', so it is unclear if Natural England would allow killing of birds, rather than scaring.

In 4.1.1 it refers to species mitigation licences for bats, being necessary, but because bats are declining and at high risk from human activities, I thought legislation required bats to be protected from activities which would disturb them, in other words disturbance of active roosts, for example should be prohibited.

While 4.1.5 implies that RSP will make arrangements to carry works to ensure the quality of discharges, for avoidance of doubt and to ensure effective control of the discharges, the paragraph should be re-worded to: “However, the parties agree that the exact regulatory arrangement for the quality of the site discharges will be discussed with the Environment Agency and Natural England and determined prior to the commencement of works, and RSP commits to ensuring that required works will be carried out before drainage discharges become

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Green Space and Health



A range of bodies, including Government agencies, have promoted the possible physical and mental health benefits of access to green space. This POSTnote summarises the evidence for physical and mental health benefits from contact with nature, such as reducing rates of non-communicable diseases, and the challenges for urban green spaces.

Background

The 'green spaces' that are the subject of this note are natural or semi-natural areas partially or completely covered by vegetation that occur in or near urban areas. They include parks, woodlands and allotments, which provide habitat for wildlife and can be used for recreation.¹ Research suggests there may be health benefits associated with proximity and access to green space for the 82% of the UK's population now living in urban environments.^{2,3} Only half of people in England live within 300 metres of green space and the amount of green space available is expected to decrease as urban infrastructure expands.⁴ While this POSTnote focuses on green spaces, other research has suggested that 'blue' spaces such as coastal areas can also provide health benefits (Box 1).

More responsibility has been placed on local authorities to improve public health cost-effectively and reduce deprivations (Box 2), and there is growing evidence to suggest that physical and mental health can be improved with greater access to green space.² There is environmental legislation in the UK for the protection of biodiversity, but not for the provision of green spaces (POSTnote 429). A number of NGOs including the RSPB and The Wildlife Trusts, have proposed the adoption of a Nature and Wellbeing Act for the protection of green spaces as a public health strategy.⁵

Overview

- Physical and mental illnesses associated with sedentary urban lifestyles are an increasing economic and social cost.
- Areas with more accessible green space are associated with better mental and physical health.
- The risk of mortality caused by cardiovascular disease is lower in residential areas that have higher levels of 'greenness'.
- There is evidence that exposure to nature could be used as part of the treatment for some conditions.
- There are challenges to providing green spaces, such as how to make parks easily accessible and how to fund both their creation and maintenance.

The Quality of Green Space

The design and maintenance of green space is important for whether it is considered 'good quality'. Green spaces that are well designed and maintained attract more visitors, and neighbourhoods with attractive green areas or vegetation are viewed as safer, which makes them more 'walkable'.⁶ However, the appeal of green spaces can be reversed if they become derelict and littered, or the focus of anti-social behaviour.⁷

Green Space and Health Inequalities

Low-income areas are associated with lower quality housing and education, poor diet, and less access to good quality green space.^{8,9} Such deprivation is closely linked to poor health (POSTnote 491): life expectancy is on average 7 years shorter for people living in the lowest income areas (lowest quantile) and they will live more of their lives with disabilities. Health inequalities are halved in greener areas. For example, a recent study suggested that in the most deprived groups the number of mortalities are halved in areas with the greenest space.¹⁰ Improving green space use may promote social cohesion by allowing groups from different social backgrounds to interact, which in turn has health benefits, such as reducing stress and depression.¹¹ However, health inequalities are the result of complex interactions between physical, social and economic environments, not just income.¹²

Box 1. Blue Spaces

Blue spaces are areas near to or adjacent to water, including coastal areas, lakes, rivers and even artificial features such as fountains. Studies have shown that when people are asked about preferences they prefer images of urban environments containing blue features over areas with green spaces.¹³ The Blue Gym project investigated the potential benefits of activity outdoors in, on or near water,¹⁴ but further research is needed to provide robust evidence for evaluating health benefits; the EU BlueHealth project aims to do this.¹⁵ A recent review of the literature found that proximity to coastal areas is positively associated with better physical and mental health.¹⁶

Box 2. Current Policy and Legislation

- The Health and Social Care Act 2012 delegated duties to local authorities to improve public health and reduce health inequalities.
- There is a range of legislation that protects biodiversity and urban green spaces by regulating planning, contamination and conservation, including the Wildlife and Countryside Act 1981, Environmental Protection Act 1990 and the Planning Act 2008.
- The Natural Environment White Paper addresses the importance of accessible green space and links to human health. Informed by the national ecosystem assessment, it refers to the links between public health and green infrastructure and advises that green space be incorporated into urban developments.

Evidence for Health Benefits of Nature

Urban vegetation is known to improve the quality of the local environment; for instance reducing air pollution and noise (Box 3).¹⁷ Research into the direct public health benefits of urban green spaces has focused on three main areas; physical activity, mental health and the development of specific treatments. Different types of study have been used to examine the link between green space and health.

Study Design

- *Cross-sectional observation studies:* These studies use regional or national survey data to explore correlations between public health and the amount, or proximity to, nearby green space at a population level. However, green space often correlates with other socio-economic measures so causation cannot be identified.¹⁸ For example, wealthier areas have better housing and health care, and its inhabitants eat a healthier diet. The direction of causation is also unclear as areas with more green space may attract wealthier (and therefore healthier) people.¹⁹
- *Cohort studies:* These studies select groups from the wider population, which are followed over time to identify changes to physical and mental health as a result of their access to green spaces. These studies can be set up to look forward or can retrospectively look back at past behaviour. For example, one study selected participants from a national survey in England who had moved from areas with more green space to areas with less, or vice versa, and identified changes in their reported mental wellbeing.²⁰ Despite the possibility of confounding factors, these studies offer better causality evidence than observational ones. However, there are still very few pre- and post-change studies, with a subsequent lack of clarity about what long-term public health benefits could be achieved by increasing access to green space.²¹
- *Experimental studies:* These studies have looked at the direct effects of green space on indicators of health and wellbeing.^{22, 23} There are two main types: one looks at the effects of exposure to stimuli associated with natural environment, including sounds or images, and the other looks at direct effects of being outdoors in green space.

Physical Activity

Being physically active for 30 minutes a day can directly reduce the risk of strokes, cardiovascular disease, obesity, some cancers and type 2 diabetes.²⁴ It is estimated that 1 in 4 women and 1 in 5 men in the UK are less active than this and 1 in 4 children spend less than 30 minutes playing outside per week.^{5,25} Physical inactivity is the fourth largest

cause of disease and mortality in the UK, contributing to 37,000 premature deaths in England every year.

- *Is outdoor exercise better than indoor exercise?*
There are no clear physiological health benefits to outdoor activity compared to indoor activity. People participating in outdoor activity are no more likely to participate in activity more frequently or have increased physical health benefits compared to those who exercise indoors.^{26,27}
- *Does the amount of green space correlate with levels of physical activity?*
A link has been found between people's physical environment and their activity behaviour. However, there are only limited studies in the UK that explicitly assess the link between the amount of green space and levels of physical activity. National cross-sectional studies have linked levels of physical activity to the amount of green space, but evidence from regional studies show little or no association. At a national level, levels of physical activity are higher in areas with more green space with people living near the greenest areas achieving the recommended amount of physical activity.^{4,28,29,30} However, this was not always explained by increased use of green space and a causal relationship has not been found.
- *Does proximity to green space, quality and accessibility influence physical activity?*
Those living closer to green space are more likely to use it, and more frequently.³¹ Studies outside the UK suggest that people living closer to good-quality green space are more likely to have higher levels of physical activity.^{32,33} A national cross-sectional study in the UK found a similar correlation: people who live within 500 metres of accessible green space are 24% more likely to meet 30 minutes of exercise levels of physical activity.^{4,30,34} However, there has been no agreement in regional studies and some researchers suggest that it is 'perceived' access rather than measured proximity that influences activity levels.³⁰
- *Does the use of green space lower the risk of disease?*
Large-scale observational studies in the Netherlands have linked increased green space to increased perceived health and reduced prevalence rates of a number of diseases, such as diabetes.³⁵ In the UK, studies of disease, mortality and green space have generally been in the context of health inequalities. A correlation has been observed between those living closest to greener areas and reduced levels of mortality, obesity and obesity-related illnesses.^{10,36} This has been

Box 3. Indirect health effects

Urbanisation damages the environment and has a range of implications for human health (POSTnote 448). Increasing urban vegetation could help reduce:²

- Flooding – 10,000 trees can retain approximately 35m litres of water per year, reducing flood risk (POSTnote 529).
- Noise pollution – a border of trees and shrubs 30 metres wide can reduce noise levels by 5-10 decibels.
- Air pollution – doubling tree cover across the West Midlands could reduce the concentration of fine particulate matter by 25%, preventing 140 premature air pollution-related deaths in the region.
- The urban 'heat island' (UHI) effect – vegetation creates shade, which reduces the risk of heat stroke and exhaustion.^{17,37}

linked to higher levels of exercise, but causality has not been demonstrated.

Mental Health and Wellbeing

Psychosis and depression occur at higher rates in urbanised areas and in the UK 1 in 4 people now experience mental health issues.^{38,39} Local green spaces may provide important areas for social interaction and integration that can indirectly increase public wellbeing. Access to green spaces may also have more direct and immediate benefits for mental health and wellbeing.⁴⁰ However, there are known difficulties in defining and quantifying these benefits.

- *Do greener areas promote public wellbeing?*

Among cross-sectional studies at a regional or national level there is no agreement on whether greater wellbeing and lower levels of mental illness are associated with greener areas.⁴¹ Cohort studies show that adults who move to greener areas have better mental wellbeing and sustained improvement in self-reported happiness, compared to those moving to less green areas.²⁰ However, people in greener areas generally experience less deprivations, and the disadvantages of the urban settings may exaggerate the advantages of natural environments.⁴² Current studies cannot rule out confounding factors or definitively prove a causal relationship.

- *Does proximity to green space influence wellbeing?*

While the amount of green space may influence wellbeing, the research into how living closer to green space affects wellbeing and mental health is limited. Living closer to green space encourages use so any therapeutic benefits to mental wellbeing are more likely to be felt by those living closer and visiting more frequently,^{2,41,43} but there is no evidence to support this.

- *Does outdoor activity improve mental health and wellbeing?*

Although people who exercise outdoors may not do so more frequently than those who exercise indoors, control trials have found that people exercising outdoors report higher feelings of wellbeing, and lower feelings of stress or anxiety, than those doing the same activity indoors.²⁶ In experiments, it has been shown that self-reported feelings of happiness increase and diastolic blood pressure (linked to stress) is lower in groups walking through a nature reserve, or exercising with scenes of nature, compared to those walking along an urban street.^{44,45} However, there is debate about blood pressure as an indicator of stress (see below) and limited follow up suggests feelings of wellbeing are not sustained.

- *Do views of nature affect feelings of wellbeing?*

Views of nature, compared to views of the built environment, have been suggested to reduce feelings of anxiety and reduce anger. However, while participants report a preference, these preferences and their effects on wellbeing, particularly in the long-term, has not been properly studied.¹³

Therapeutic Use of Contact with Nature

Nature-based therapy has been suggested as a treatment to relieve mental and physical illness and improve recovery time from stressful situations or medical procedures. A study showed that views of trees reduced the amount of moderate to strong analgesics needed by patients' post-surgery and the number of days in hospital. However, the comparison group had views of a solid brick wall rather than comparable views of the built environment.⁴⁶ Patients and hospital staff report feeling happier and more relaxed after spending time in a garden or outdoor space, suggesting that hospitals could incorporate green spaces to improve the wellbeing of healthcare staff, and patients.⁴⁷ Some indicators of psychological stress, including blood pressure and heart rate, are reduced in participants exposed to visual and auditory stimuli associated with nature. Cortisol levels in saliva (also linked to stress) decrease upon entering a natural environment.^{48,49} However, the use of cortisol levels, blood pressure and heart rate as measures of stress is debated. Stress is not a well-defined term: it can present in a variety of ways and it is not clear whether such indicators are always indicative of a person's wellbeing.^{50,51}

The Faculty of Public Health suggests that interaction with nature might be effective in treating some forms of mental illnesses. For example, there is emerging evidence that engaging with nature benefits those living with conditions such as ADHD, depression and dementia, by improving cognitive functioning and reducing anxiety.^{52,53} However, mental illnesses, particularly dementia (POSTnote 535), are very complex making explicit studies difficult. Some projects, such as the ecotherapy projects funded by the charity 'Mind', have reported improvements in participants' mood, self-esteem and fitness.⁵⁴ It is unclear whether the same improvement would be seen if social and physical activities were conducted indoors. Mind recommend that the best treatments combine interventions and warn against moving away from medication.

Behaviour Change Interventions

Green or social prescribing is the referral of outdoor physical activity as well as, or instead of, clinical support and medication. Researchers have used terms such as 'dose of nature' to engage health practitioners and encourage use of exercise prescriptions.⁵⁵ NICE has recommended exercise referral schemes as an intervention only for sedentary or inactive patients that have existing health conditions or other factors that put them at increased risk of ill health.⁵⁶ GPs prescribe activity to improve physical health and wellbeing, but prescriptions should not replace medication. Randomised control trials in New Zealand found that green prescribing increased patient's physical activity, lowered blood pressure and encouraged weight loss.⁵⁷ However, some fulfilled activity requirements indoors at gyms or

swimming pools, and the study did not explicitly discuss the benefits of outdoor activity. 'Green gyms' are now available throughout the UK, where volunteer-led outdoor activities, such as maintaining allotments, are used to increase fitness and burn calories.⁵⁸ The 'Be Active' project in Birmingham has used voucher incentives, redeemable at high-street shops, to increase physical activity.⁵⁹

Challenges to Improving Health with Nature

Beyond evidence of effectiveness, there are a range of challenges to be addressed if green space is to be used to improve health outcomes.

Making Green Spaces Accessible

Factors such as proximity and connectivity influence the use of green space.⁶⁰ Insufficient footpaths or the presence of busy and dangerous roads prevent easy access and deter use, particularly for children.⁶¹

A number of psychological, cultural and informational barriers have been identified, many of which interlink. Few studies have looked at cultural perceptions of green spaces in the UK, but initial research suggests that preferences for types of green space may vary.⁶² Some studies suggest that women are less likely to use green space, particularly open or 'wild' spaces, because of feelings of vulnerability. Only a small proportion of old people regularly use green space, and while health issues may play a part so do a sense of vulnerability from busy roads, fears of crime or poorly maintained facilities.^{63,64} People can also be unaware of nearby green space or the facilities available.

Locally run programmes and interventions can help encourage awareness and visitation of green space. For example, the Chopwell Wood Health Project, near Gateshead, has combined GP referral schemes, educational programmes and woodland activities to promote visitation and physical activity. It reported that 91% of referrals complete their prescribed programme, a high attendance for activities (also linked to social cohesion) and an increase in children's understanding of nature.⁶⁵ Other studies suggest that 'wild' or 'informal' spaces can be more appealing by improving safety.⁶⁶

Possible Negative Health Effects

Without appropriate management, increased human contact with green spaces may increase exposure to environmental allergens such as plant pollen and fungal spores. The transmission of vector-borne diseases ([POSTbrief 16](#)), such as tick-borne 'Lyme disease' and encephalitis, are rising in the UK.⁶⁷ Incidences of mosquito-borne diseases, including West Nile Virus and Malaria, have increased in Europe with the invasion of non-native mosquito species bringing threats of European dengue and Chikungunya virus ([POSTnote 483](#)).^{68,69}

Financing Green Space

The majority of funding for green spaces in the UK comes from the public sector: 70% from local authorities and 15% from Central Government and the EU. Reduction in central government grants to local authorities has led to a 10.5% decrease in spending on green spaces between 2010/11

Box 4. Health Savings from Green Space

The direct health benefits of urban green spaces could save the UK health system money, but more accurate estimates are needed that can be applied at a national level. There have been numerous attempts to quantify the financial benefits of improved health resulting from urban green spaces, but these are purely based on assumptions or the results of small scale regional projects. However, Defra has estimated that if everyone had access to sufficient green space the benefits associated with increased physical activity could save the health system £2.1bn per year.⁷⁰ As well as direct health benefits, analysis from America has highlighted additional financial savings from green space benefits, including air pollution mitigation and social cohesion, at a total worth of \$16m (Box 3).

and 2012/13.⁷¹ As local parks are not a statutory service protected by law, commentators have cautioned that parks may be sold or cease to be maintained. For example, Lancashire Council has announced that it will cease to maintain 93 forest and recreation sites as early as April 2018. Lack of funding has been consistently highlighted as the main constraint for green space improvement, affecting both its creation and maintenance.

Local businesses and property developers benefit from additional green space through job creation, visitor spending and house prices.⁷² For example, it is estimated that living within 600m of a park in London adds 1.9 to 2.9% to property value, while a high quality park could add 3-5%.^{73,74} The Town and Country Planning Association reports that developers are paying more attention to green space provision, particularly for upmarket developments. For example, Leeds City Council secured £3.7m extra investment for public parks from both local businesses and developers.⁷⁵ Lottery grants and fundraising events have also been successful in raising capital. However, funding opportunities like these are often one-off or small short-term grants that will not secure the long-term cost of maintenance. The annual revenue budget for maintenance of all UK green spaces is approximately £2.7bn, a fraction of the estimated health savings that could be achieved by improving access to green space (Box 4).⁷⁶ As part of the 'Active Parks' initiative, Birmingham has looked at redirecting money from the NHS to invest in green spaces used by patients fulfilling 'exercise prescriptions'.⁵⁹ In order to provide long-term maintenance costs, park authorities are using income-generating opportunities like cafes and events, such as Bute Park in Cardiff.⁷⁷

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