

Current Position: Director with Air Quality Consultants Ltd.
Year of Birth: 1974
Nationality: British
Qualifications: BSc (Hons) Geography (1995)
MSc Land & Water Management (1998)

Positions Held:

- Ø Member of the Institution of Environmental Sciences (MIES)
- Ø Member of the Institute of Air Quality Management (MIAQM)
- Ø Chartered Environmentalist (CEnv)

Key Experience:

Chris Whall is a Director and a Chartered Environmentalist with 18 years' experience in consulting with multi-sector EIA experience and detailed technical expertise in air quality impact assessment. He has a background in air quality and emissions management, emissions quantification and impact assessment, particularly in the relation to major infrastructure sector. Chris has contributed to the air quality components of major Environmental Statements and was involved in the environmental assessment work supporting the development of Heathrow T5 and the Generation 1 and 2 proposals for increasing capacity and providing a new runway at London Stansted Airport. Chris led the air quality assessment for the Heathrow East Terminal and managed the delivery of the Gatwick North West Zone and North Terminal Extension Air Quality ES chapters. Following on from Chris's role in the preliminary options appraisals for a third runway at Heathrow and providing 2-Runway masterplanning support, Chris led the air quality assessment to support the ending of the Cranford Agreement at Heathrow, appearing as an Expert Witness on behalf of Heathrow at Public Inquiry in 2015. From October 2012 Chris has been supporting Heathrow's 3-runway masterplanning programme and led Heathrow's air quality submission to the Airports Commission.

Main areas of expertise:

- Ø Project management of large and complex assessments for major infrastructure including those requiring DCO;
- Ø Expertise in the development of atmospheric emission inventories, including for the European Commission, Defra, and DfT;
- Ø Dispersion modelling for the assessment of air quality impacts related to existing and proposed infrastructure developments;
- Ø Preparation of expert evidence;
- Ø Ambient air quality monitoring methods for both particulate and gaseous species;
- Ø Specialist experience in evaluation of the environmental effects of airport operations.

Employment Record:

2016-date Director, Air Quality Consultants Ltd.
2013-2016 Director, Amec Environment & Infrastructure UK Ltd
2012-2013 Technical Director, Amec Environment & Infrastructure UK Ltd
2011-2013 Associate Director, Amec Environment & Infrastructure UK Ltd
2008-2011 Associate Director, Entec UK Ltd (now Amec Environment & Infrastructure UK Ltd)
2005-2008 Principal Consultant, Entec UK Ltd (now Amec Environment & Infrastructure UK Ltd)
2002-2005 Senior Consultant – Air Quality, Entec UK Ltd (now Amec Environment & Infrastructure UK Ltd)
2001-2002 Consultant – Air Quality, Entec UK Ltd (now Amec Environment & Infrastructure UK Ltd)
2000-2001 Consultant – Air Quality, Stanger Science & Environment (now Bureau Veritas)
1999-2000 Assistant Consultant – Air Quality, Stanger Science & Environment (now Bureau Veritas)
1998-1999 Assistant Consultant, GeoHydro Technologies (South Africa)

Air Quality Management and Policy

Local Air Quality Management – Various (1998-ongoing)

Chris has been involved in Review and Assessment of local air quality since the inception of the LAQM regime. He has completed USAs, Progress Reports and Detailed Assessment as well as having been involved in the development of Action Plans for a wide-range of local authorities across the UK.

Mapping Air Quality Action Plan Guidance available to Local Authorities – Defra (2011)

Defra had identified some potential issues with the preparation and execution of Air Quality Action Plans (AQAP) and the identification of suitable measures which would assist local authorities with improving air quality within their areas. Chris led a study which aimed to map the guidance available to local authorities in England, with regards to Air Quality Action Planning. The study objectives were: to identify the tools and guidance currently available to local authorities to help them with developing and implementing measures to improve air quality and assessing the effectiveness of these measures; to identify any gaps or shortcomings in available guidance, tools or other resources; and to make recommendations on how best to improve the current guidance.

2009-2016 - Review of Planning Applications - Greater London Authority (GLA)

Chris provided air quality consultancy services to support the GLA in the determination of planning applications. Chris undertook both a technical role and a coordination role in the appraisal of air quality assessments for all planning cases referred to the Mayor that are deemed to have the potential for significant air quality impacts. The reviews include an analysis of information gaps and/or areas where clarification is required from the applicant, thus ensuring that the GLA has all the relevant information regarding the likely significant effects of proposed development.

Air Quality Monitoring

Fugitive Dust Monitoring - BAA Heathrow T5 (2001-2007)

Chris managed a contract with BAA for baseline and construction phase dust monitoring in connection with Terminal 5. This involved the coordination of the baseline nuisance dust survey over an extended area across three west London Boroughs affected by the construction of Heathrow Terminal 5. The baseline nuisance dust monitoring was commissioned for one year and was then extended to cover the pre-construction phase and to then continue throughout the construction of the new terminal.

Transport Projects – Aviation

Planning Advice in relation to London City Airport - London Borough of Newham (2014-2015)

Chris provided specialist air quality advice to London Borough of Newham to help them in the determination of planning consent in relation to the expansion of London City Airport. This involved a detailed technical review of the Environmental Statement, preparation of a Regulation 22 request for further environmental information, and liaison with City Airport and its environmental consultants.

Masterplanning Support - Heathrow Airport Limited (2011-date)

Chris was involved in providing technical air quality advice to Heathrow Airport in relation to the preparation of air quality assessments for options appraisal and masterplanning.

Environmental Impact Assessment - Heathrow Airport Limited (2012-2015)

Chris led the air quality component of an Environmental Impact Assessment at Heathrow that evaluated the likely effects on air quality of atmospheric pollutants relating to the enabling works to allow implementation of full runway alternation during easterly operations (the Project) during both construction and operational stages (ending the Cranford Agreement).

UK Hub Airport Study - BAA (2012)

Chris provided specialist environmental input to BAA's study that evaluated the options that exist for the development of increased hub airport capacity in the UK. Chris worked alongside other leading specialist aviation consultants to identify the most suitable option from a list that considered increased capacity at existing airports including Heathrow, Gatwick and Stansted, and the development of new airports including in the Thames Estuary. Chris provided specific technical advice in relation to air quality and climate impacts of each airport option.

TRACECA II programme – European Commission, EuropeAid (2011 – 2015)

TRACECA is an internationally recognised programme aimed at the strengthening of economic relations, trade and transport communication in the regions of the Black Sea basin, South Caucasus and Central Asia. Environmental input provided to the EuropeAid sponsored project, the aim of which was to provide technical assistance to raise the standards of aviation practices in 10 countries located in Eastern Europe and Central Asia. Guidance provided around air quality and climate change implications of aviation. Supported the environmental team in liaison with government officials, airport authorities and civil aviation authorities in these countries.

Nairobi Airport Expansion - European Investment Bank (2011-2015)

Air Quality Technical Advisor involved working in Nairobi to provide air quality advice to Kenyan Airports Authority (KAA) in terms of its requirements to undertake baseline air quality monitoring and detailed dispersion modelling assessments that would feed into a full Environmental Impact Assessment associated with the expansion of the airport. Worked with KAA to develop a specification for long-term ambient air quality monitoring and provided training to the client's environment team in the ambient monitoring of NO_x/NO₂, SO₂ and PM₁₀, and established QA/QC procedures for the monitoring programme.

Heathrow Airport Three Runway Masterplanning – Heathrow Airport Ltd (2009-2011)

Provided air quality support as part of the team working with BAA undertaking and reporting on comparative air quality assessments of 19 alternative third runway layout Options. Also involved in developing techniques for and carrying out a comparative carbon emissions assessment for each Option, dealing with aircraft, airport airside and landside vehicle and surface access emissions.

DTR St Athan - Metrix, Land Securities, Trilium (2009-2010)

This was the largest single MoD contract ever awarded and the largest single contract in Wales. Proposals were to create a new Defence Training Academy on a super-site at St Athan. The project involves the rationalisation of training on about 42 existing MoD sites around the UK, involving some 2,500 training courses. Undertook role as the air quality lead and responsible for the delivery of the air quality chapter of the Environmental Statement.

Gatwick North Terminal Extension & NW Zone Environmental Statements - BAA (2009)

Project manager and lead author of air quality chapters for Environmental Statements for the proposed North-West Zone at Gatwick Airport and the North Terminal Extension Projects. Worked with BAA, its stakeholders and consultants to develop a robust yet cost effective methodology for both Environmental Statements. Presented the approach to the air quality assessments at scoping workshops and liaised with BAA throughout the assessment to ensure the availability of appropriate input data for the assessments. In both cases, detailed dispersion modelling of atmospheric emissions was undertaken to inform the assessments.

Air Quality Impact Assessment for Stansted Airport (Generation 2) - BAA (2006-2009)

Provided technical support to the EIA for the proposed second runway at Stansted Airport to increase capacity to 68 mppa by 2030. Project involved the compilation of a detailed emissions inventory and complex dispersion modelling to assess the air quality effects arising from all sources as a result of the proposed development. Developed an in-house air quality assessment methodology adapted from the T5 Public Inquiry. This involved the consideration of USEPA AP42 emission factors for dust generated by off-road vehicles, the modelling of these releases for various scenarios, and providing an assessment of the impact of these emissions and exhaust gases at sensitive receptors, for inclusion in the Environmental Statement.

Surface Access Assessment for Stansted Airport (Generation 1) - BAA (2005)

The overall project was connected with maximising the use of the existing airport by increasing passenger numbers through the existing terminal and maximising the number of flights using a single runway. Developed detailed air quality constraints mapping in relation to the options appraisal for surface access to Stansted Airport. This involved the population of Plan Level Appraisal Summary Tables, following the WebTag methodology in relation to emissions of air pollutants and carbon dioxide.

Emission Inventory and Dispersion Modelling - BAA Southampton Airport (2004-2005)

Project Manager for a detailed dispersion modelling and emission inventory assessment for the airport operator. The project involved modelling road traffic on the local road network, airside vehicle movements and aircraft movements, both ground-based and in-flight (LTO Cycle). Consultation with the local authority was undertaken in order to produce an assessment to complement its own local air quality management work.

Air Quality and Dust Modelling at Heathrow T5 - BAA (2001-2003)

Involved in fugitive dust and vehicle exhaust emission modelling on behalf of BAA in relation to developments, such as gravel extraction schemes, required to support the construction of Heathrow Terminal 5. Undertook dispersion modelling and fugitive dust modelling to cover the effects of the main T5 construction works in order to provide a full assessment of cumulative effects. Wrote the air quality chapters for the associated Environmental Statements. Managed the contract with BAA for baseline and construction phase dust monitoring in connection with Terminal 5.

Transport Projects – Rail

Thameslink Programme Air Quality Monitoring - Network Rail (2007-2013)

Provided air quality consultancy services to support the Thameslink Programme. At the time, the Thameslink Programme was one of the biggest rail projects ever in the UK and aimed to significantly remove bottlenecks and increase the capacity of the central London section of the Thameslink route. Project director for the air quality contract with Network Rail that involved undertaking air quality monitoring to provide comprehensive air quality data at sensitive locations within the vicinity of the key work areas. The assessment included the monitoring and reporting of ambient concentrations of dust, fine particles, gaseous pollutants and meteorological conditions using a combination of passive and continuous monitoring techniques.

Air Quality Monitoring – Crossrail (2010–2014)

Led long-term dust monitoring assessments in relation to Crossrail contracts at Farringdon East and Farringdon West on behalf of Costain Laing O'Rourke and Laing O'Rourke Strabag respectively.

Transport Projects – Shipping

Impact Assessment of Maritime CO₂ Emissions - European Commission DG Clima (2011-2013)

Project director for this high profile project that, with other project partners, involved the provision of support to the European Commission for the impact assessment of a proposal to address maritime transport greenhouse gas emissions. As part of this study, a detailed Impact Assessment was carried out on a short-list of policy proposals, comprising both quantitative and qualitative analysis across a wide range of areas. The key output from this study was to be a draft version of a formal Impact Assessment report which the Commission was to use to accompany any legislative proposal for including GHG emissions from the maritime transport sector that the Commission may present to the European Parliament and the Council.

UK Ship Emissions Inventory – Defra (2008-10)

Project director for the development of the first detailed bottom-up inventory of air pollutant emissions from ships in waters surrounding the UK. Outputs of this study were used to update the National Atmospheric Emissions Inventory (NAEI) with regards to UK international and domestic shipping and to support impact assessment modelling.

Greenhouse Gas Emissions from Shipping - Committee on Climate Change (2008)

Contributed to an evaluation of global business-as-usual greenhouse gas emissions for the current baseline and future baselines as far as 2050. The report was used by the CCC in the consideration of the ways in which the international shipping sector could be included in its future work, including the possibility of incorporating the sector into a prospective UK carbon budget.

Ship Emission Projections - International Maritime Organization (2008)

Appointed by the IMO's Informal Cross Government/Industry Scientific Group of Experts to develop estimates of emissions from ships for a number of global options to reduce emissions from the sector to inform the revision of MARPOL Annex VI

Ship Emission Projections - Norwegian Ministry of the Environment (2008)

Managed the delivery of a contract to support the Norwegian government in the evaluation of a number of proposed policy measures to reduce emissions from ship emissions.

Ship Emissions Inventory of the Mediterranean Sea - CONCAWE (2007)

Led a study commissioned by CONCAWE, the oil companies' European association for environment, health and safety in refining and distribution, to develop a detailed database tool in order to create a ship emission inventory for the Mediterranean Sea.

Ship Emissions: Assignment, Abatement & MBIs - European Commission (2005)

Involved in the further development of the 2002 study on ship emissions, to include the assignment of emissions to member states and the assessment of abatement measures and market-based instruments.

Quantification of ship emissions in the European Union - European Commission (2002)

Managed the development of an emissions inventory based on ship movements within European waters. The project involved the use of Lloyd's databases of some 3 million annual ship movements and vessel characteristics to build engine and fuel profiles for each vessel type from which emission factors were determined. This led into the development of a detailed GIS network analysis and the mapping of emissions. The wider project objectives were to guide the formulation of future EC ship emission reduction strategy and legislation.

Industry, Power Generation, Waste Management and Incineration

Hinkley C Nuclear Power Station - EDF Energy (2010-2015)

Provided overall technical direction to the wider air quality team tasked with delivery of the main site Environmental Statement and parallel ESs for multiple associated development sites, including park and ride schemes, freight consolidation sites, contractor campuses and wharf facilities. The air quality assessment work involved undertaking a 6-month baseline air quality monitoring programme; assessment of construction and operational emissions (including vehicular emissions) screened and modelled by application of the EPR H1 screening methodology and ADMS (ADMS 4 and ADMS Roads) dispersion models; preparation of Air Quality Management Plans (AQMP); assessment of multiple options for a proposed new bypass using the Department for Transport's Transport Analysis Guidance (TAG) methodology accompanied by detailed assessment of the preferred option completed using ADMS Roads dispersion modelling software; dispersion modelling (ADMS 4) and air quality impact assessment of marine vessel emissions to support a separate planning application for a temporary jetty development associated with the importation of aggregates to be used during construction of the new nuclear build site.

Waste Core Strategy Expert Witness - Suffolk County Council (2010)

Appointed by Suffolk County Council as an Expert Witness to support the examination of the soundness of Suffolk County Council's Waste Core Strategy Development Plan document. It was the role of the Waste Core Strategy to establish the overarching principles and policy direction for determining waste planning applications within Suffolk and also to identify strategic waste management sites across the County. Appointment followed on from role in managing the evaluation, from an air quality perspective, of 14 sites identified by the Council which could potentially be suitable for residual waste treatment facilities that could include Energy from Waste (EfW) and Mechanical and Biological Treatment (MBT) facilities. Dispersion modelling was undertaken to assess the incremental change in ambient pollutant concentrations at human and ecological receptors, in addition to assessing deposition to sensitive ecological sites via dry deposition and rainfall. The ecological assessment was used by the Council to identify whether the sites under consideration were compatible with its obligations under the Habitats Regulations.

Air Quality and Plume Visibility Assessment - Knauf Insulation (2002-2011)

Involved in a number of dispersion modelling assessments for Knauf Insulation Ltd. Involved using ADMS to derive a height for a new stack that would not be affected by any downwash effects from nearby structures and which would not cause significant air quality impacts. Using data on the plume saturation and emission temperature, water vapour mass mixing ratios were derived and a plume visibility assessment undertaken to ensure visual impacts from the new stack would not be significant.

Nuclear Power Station Decommissioning EIA - Magnox Electric Ltd (2007-2008)

Provided air quality support to Magnox in relation to the environmental assessment of the Magnox fleet decommissioning. This included undertaking a number of technical assessments as part of the EIA process for the Magnox decommissioning programme included undertaking work at Calder Hall (Cumbria), Chapelcross (Dumfriesshire), Bradwell (Essex), Hinkley Point A (Somerset), Sizewell A (Suffolk) and Oldbury (Gloucestershire). Involved in the delivery of the Air Quality chapters for the Environmental Statements.

Project SEED - Kuwait Oil Company (2012)

Oversaw air quality baseline monitoring, dispersion modelling (ADMS) and the assessment undertaken for the EIA to support proposed remediation and rehabilitation of a number of features associated with oil and gas exploration and associated production activities. Development of air quality impacts mitigation strategy and advice also provided with regards to environmental compliance requirements.

Mineral Extraction and Dust

Broken Cross OCCS - Scottish Coal (2004-2011)

Scottish Coal was seeking to extend coal excavation works at the Broken Cross opencast coal site in South Lanarkshire. Involved in undertaking detailed dust risk assessments and assessing the impacts of diesel particulate emissions from the non-road mobile machinery (NRMM) operational at the site, as part of Environmental Statements accompanying the planning application to South Lanarkshire Council for the Broken Cross North, Broken Cross South and Broken Cross North-East Extension. Emission inventories for PM₁₀ and PM_{2.5} were established based upon the number and type of plant, their engine power rating and the relevant Euro emission limit standard for the proposed plant. The emissions inventory was then used as input data in a detailed dispersion modelling impact assessment to predict likely increases in PM₁₀ and PM_{2.5} concentrations at local receptors. Responsible for compiling the emissions inventory and undertaking the modelling assessment.

Polkemmet Reclamation Project - Ecosse Regeneration (2002-2005)

The former Polkemmet Colliery site, located close to the corridor of the M8 Motorway approximately half way between Edinburgh and Glasgow, represented one of the largest sites of industrial dereliction in Scotland. Commissioned to manage the reclamation phase of the project, with the specific requirement to undertake a detailed EIA of the proposed works. Managed the air quality assessment that included a nuisance dust risk assessment and analysis of both OSIRIS dust and meteorological data. Developed a detailed Air Quality Management Plan for the works which included the design of a comprehensive and innovative continuous dust and odour monitoring strategy that was adopted during the reclamation works, as well as identifying measures to mitigate emissions of dust and exhaust gases.

Other Air Quality Assessments

Environmental Statement & Management Plan - VSD Avenue (2008-2015)

Led the delivery of the air quality services to The Avenue project, a joint venture between Volker Stevin Ltd, DEME Environmental Contractors (DEC NV) and Sita Remediation on behalf of East Midlands Development Agency for the remediation of the site of a former coking works, involving a range of soil treatment options including thermal desorption. The Avenue Coking Works closed in 1992 and is now owned by the East Midlands Development Agency (emda) which is responsible for managing its reclamation with funding through the National Coalfields Programme. Key role in delivering the air quality chapter for the Environmental Statement for the remediation works and following the granting of planning permission, developed a detailed Air Quality Management Plan (AQMP) to ensure the effective management of environmental issues during the remediation of The Avenue site that involved a combination of physical, chemical and biological treatment.

London Kings Cross Remediation – BAM Nuttall (2012-2015)

The King's Cross project was the largest area of urban redevelopment in Europe. Led a long-term dust and odour monitoring programme associated with the remediation of a former gas works at Kings Cross, which was to form part of the wider regeneration of the area that would include c.50 new building, 20 new streets, 10 new major public spaces, the restoration and refurbishment of 20 historic buildings and structures and up to 2,000 homes.

Exhaust Emissions from Non-Road Mobile Machinery - Olympic Delivery Authority (2010)

Project Manager for a study to undertake a detailed cost benefit analysis of different options to reduce emissions from NRMM operating on the Olympic Site in London. The assessment included an operator survey in order to develop a NRMM inventory; this included details of the type and capacity of machinery as well as operational profiles. From this information a detailed atmospheric emissions inventory was developed and atmospheric dispersion modelling was undertaken to assess exposure of the local population. Quantification and monetisation of health impacts associated with emissions from NRMM and impacts of different technologies and fuels was undertaken, along with a cost assessment that included a survey of fuel suppliers and abatement equipment manufacturers. The work enabled the ODA to conclude that the retrofitting of diesel particulate filters to NRMM was not cost effective in the context of the potential benefits to public health.

Air Quality Assessment & Appeal - Standard Property Investments (2007-2008)

The proposed scheme sought to redevelop a site near to the Blackwall Tunnel in the London Borough of Greenwich to include a 4/5 storey building with commercial/retail space on the ground floor and office space on the first floor, with residential accommodation above. The proposed development site was located in an Air Quality Management Area (AQMA), which was declared across the whole of the London Borough of Greenwich for Nitrogen Dioxide (NO₂) and Particulate Matter (PM₁₀) in July 2000. A detailed dispersion modelling assessment was undertaken to assess potential exposure to future residents of the proposed development, followed-up by a programme of air quality monitoring. Retained by Standard Property Investments to provide representation for the planning appeal, following refusal of planning permission on the grounds of air quality. Successfully demonstrated that the mitigation measures put forward were appropriate to address any residual air quality issues and that air quality should not be considered as a constraint to this proposed development. The appeal was successful and planning permission was granted.