Sandwell Metropolitan Borough Council

Defra Air Quality Grant Fund 2020/21

End of Project Review July 2024

Department
for Environment
Food & Rural Affairs

Sandwell
Metropolitan Borough Council

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Sandwell Metropolitan Borough Council

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Executive Summary

The Faith Communities for Clean Air project was designed to encourage local faith-based organisations to use their shared values and beliefs around environmental stewardship, to support and influence community-driven, community-designed initiatives to improve local air quality.

Sandwell has a long history of poor air quality, having been declared an Air Quality Management Area in 2005. The borough has the highest percentage of deaths attributed to fine particulate matter ($PM_{2.5}$) in the West Midlands. General health inequalities are stark, and these are only being increased by the susceptibility of our residents to the harmful impacts of air pollution.

In 2020 Sandwell Council already had positive and trusted relationships with many faith communities and their leaders across the borough. These relationships were further strengthened by the Covid-19 pandemic response, and enabled the early identification of centres that would be keen to participate in the project.

To help promote behaviour changes that would mitigate local air pollution Sandwell MBC wanted to make poor air quality visible. By displaying real-time air quality data within faith centres, we would increase awareness and foster a sense of urgency to address the issue. To achieve this funding was provided for the following resources:

- 8 Zephyr air quality sensors with the capability of measuring Nitrogen Dioxide (NO_2), Fine Particulate Matter ($PM_{2.5}$), Particulate Matter (PM_{10}) and Ozone (O_3)
- A bespoke web-based Sandwell Air Quality Dashboard
- 8, 43-inch Smart TVs to display the web-based air quality dashboard
- An 'Air Quality Toolkit' – in paper and digital form
- Support from Sandwell's Air Quality Officers and Public Health Development Officers
- Questionnaires in 8 languages, distributed at the start and end of the project.

The project was split into two phases over two years. 16 centres participated in total, 8 in each phase. The faith centres agreed to the following:

- A Zephyr outdoor air quality sensor being located within 1km of the centre, at a location approved by both the faith centre leader/s and air quality officers
- Receiving a Smart TV, located in an area within the building with high footfall
- Providing Wi-Fi connection to enable the air quality dashboard to be viewed on the TV
- Providing feedback on their participation in the project
- Attending an air quality conference to pass on their learnings and experience to other.
- Encouraging their faith communities to complete the pre and post project questionnaires.

As a result of the project, we saw faith leaders and their communities engage in a wide range of initiatives and activities over the 2 years. Some of highlights included:

- The Balaji Temple creating and hosting a 'Sandwell Breathes' air quality conference
- Planting of over 400 trees
- Installation of bicycle stands at 5 centres
- Introduction of Car free 'Fridays' at the Yemini Community Association and The Smethwick Jamia Mosque
- Creation of a 'Bike Bus' to highlight Clean Air Day – involving a cycle ride between 5 of the participating faith centres
- All centres hosting air quality talks, presentations, and workshops
- Litter picking sessions held at several centres to raise awareness of air quality and importance of protecting and improving the local environment
- Written pledges to:
    - walk and cycle more instead of using the car
    - not idle car engines when stationary
    - plant more trees
    - use more energy efficient heating and lighting
    - reduce or not use their wood burning stove

Quantitative analysis of the project was undertaken using data from the before and after questionnaires. The results demonstrated increased knowledge of air pollution and positive behaviour change, with more action being taken to reduce air pollution.

- **87%** of respondents confirmed that the project had increased their knowledge of air pollution to some extent or a great deal.
- **81%** agreed that the project had increased awareness of air pollution in their wider faith community.
- At the end of the project **43%** more respondents said they now try to reduce the amount of air pollution they produce.

Qualitative analysis of feedback received during and at the end of the project was also overwhelmingly positive from both participants and faith leaders – referring to both air quality and general environmental behaviour change created.

The project came with many challenges, such as the ongoing Covid-19 pandemic restrictions, centres dropping out and struggles to get communities to complete the questionnaires. Overall, the biggest

challenge was our reliance on the support and goodwill of the faith centre leaders, whose position within their faith community was key to driving the uptake of initiatives when they already had extensive demands on their time. In hindsight we severely underestimated staffing time required by our own team to adequately support the centres, and if we were to implement a similar initiative in future, would consider employing a full-time project officer for the duration.

Knowledge sharing began with the TV screen showing the air quality dashboard and the air quality toolkit, but quickly evolved as the project continued in response to the needs and demands of the centres. This included the provision of leaflets, posters, monthly newsletters, talks and workshops, webinars, attendance at community events and festivals, the provision of noticeboards as well as the provision of air quality conferences. In doing so we ensured that there were a wide range of opportunities for engagement and knowledge transfer to encourage behaviour change. The most impactful were in person events, but these also required the most staff time and resources to plan and attend.

In addition to a diverse range of initiatives implemented over the past two years, we are now witnessing sustained commitments towards enhancing local air quality through the establishment of cycling hubs, anti-idling measures, increased promotion of walking and cycling, car sharing schemes, and the fostering of a 'green' mindset. The most significant outcome has been the cultivation of strong relationships between the Air Quality Team, faith centre leaders, and their respective communities. These relationships, built on time and trust, have now provided us with a unique opportunity to collaborate and support these communities into the future.

We are thankful for Defra's investment in this project, as it has resulted in an inspiring legacy that we will continue to build on.

Background

In March 2021 Sandwell Metropolitan Borough Council were informed by the Department for Environment, Food and Rural Affairs (Defra) that they had made a successful bid for an Air Quality Grant of £75,760 to support a project entitled "Working with faith centres in Sandwell to improve air quality via behavioural change". The project was also matched funded by Sandwell Metropolitan Borough Council's Public Health Department.

Sandwell

Located in the Black Country, Sandwell is one of the seven local authorities within the West Midlands. The borough is comprised of six main towns: Oldbury, Smethwick, Rowley Regis, Tipton, Wednesbury, and West Bromwich (Fig 1[1]). Sandwell is a superdiverse, multi-cultural and multi-faith borough, with total population numbers estimated at 341,900 in 2021. Approximately 42% of residents are from either Asian, Black, Black British, Caribbean, African or other minority ethnic backgrounds[2].

Figure 1- Map of Sandwell in the context of the West Midlands.

Air pollution continues to pose a significant risk to our population's health, as it is associated with numerous adverse health conditions and is a contributing factor in the onset of heart disease, cancer, and dementia. Poor air quality affects the most vulnerable in society: children, the elderly, and those with pre-existing heart and lung conditions. Furthermore, there is generally a strong correlation between inequalities and air quality, with poorer air quality being found in the less affluent areas.

Ranking as the 12th most deprived local authority in England, out of 317[3], Sandwell is at the centre of a deprived urban corridor stretching from Birmingham into Wolverhampton, and into parts of Walsall and Dudley. Without the benefit of any rural fringes, one in five of Sandwell's Lower Super Output Areas (LSOAs) fall into the most deprived 10% nationally. Furthermore, in 2021, almost 30% of residents aged 16 or older reported having no formal qualifications, compared with the national average of 18.2%.

Project Summary

Sandwell Council recognised that faith groups and communities within their borough had the potential to be a rich resource when it came to tackling local air pollution. This was because these communities all have shared values and beliefs that extend into environmental stewardship. The aim

[1] https://sandwell.activemap.co.uk/
[2] https://www.sandwelltrends.info/population/
[3] https://www.sandwelltrends.info/deprivation_west_midlands_context/

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of this project, therefore, was to tap into this resource, and to work alongside our local faith leaders and communities to help raise awareness of air pollution and reduce local emissions. In addition, we had further aspirations of creating a wider ripple effect within these communities that would help inspire others to adopt new air quality friendly habits.

The project was to be supported through the provision of

1. Data from low-cost air quality sensors,
2. Behavioural science input,
3. Access to experts including our academic partners,
4. Educational support,
5. Local town-based Public Health Development Officers.

Sandwell has a long history of poor air quality; it was declared as an Air Quality Management Area in 2005 due to exceedances across the borough of the national objectives for nitrogen dioxide (NO2). Although levels of nitrogen dioxide (NO_2) have reduced since then, levels are still relatively high, and we continue to experience some of the highest particulate matter ($PM_{2.5}$) levels outside of London[4]. Health inequalities are already stark and are being increased by the susceptibility of our residents to the impacts of air pollution, with Sandwell having the highest percentage of deaths attributed to $PM_{2.5}$ in the West Midlands[5]. Alongside infrastructure changes, we must find innovative ways to create sustainable positive behavioural change amongst our residents, businesses, and visitors.

Being a multi-cultural and multi-faith borough, Sandwell has a significant proportion of residents that regularly attend religious centres, with the five main faith groups being Christians, Sikhs, Muslims, Hindus, and Buddhists. Consequently, Sandwell has some of the largest and well-attended faith centres in the country.

Project Aims

Our aim was to support our faith-based organisations in leading the way towards community-driven, community-designed improvements in air quality by building upon our existing relationships with centres which had been strengthened by the Covid-19 pandemic response, as well as forging new relationships. The aims were to:

1. Increase awareness of air pollution and its sources amongst faith communities in Sandwell.
2. Increase understanding of how to reduce personal air pollution emissions and reduce exposure where possible.

[4] https://www.lgcplus.com
[5] https://fingertips.phe.org.uk/search/air%20pollution

3. Encourage positive behavioural change to create long term air quality friendly habits.

Project Approach

The project was split into two phases.

Phase 1 (Feb 2021 to March 2022) Sandwell Council identified eight religious centres/groups with at least one centre in each of the six towns. All the centres initially contacted had well established, positive relationships with the local authority and were keen to participate in the project.

The participating religious centres all received an air quality information toolkit (Appendix 2) with additional information and support delivered by council officers. Each faith centre was also allocated a *Zephyr* air quality sensor to measure NO_2, $PM_{2.5}$, PM_{10} and O_3. *Zephyr* sensors measure air quality in real time using an active sampling, which means air is drawn into a cartridge every 10 seconds to analyse it, the data is then displayed on a website in a 'dashboard' format and is updated every 15 minutes.

Each *Zephyr* was located at or near a religious centre with the location as agreed with the centre leader/s. In addition, each centre also received a 43inch smart TV on a moveable stand, that could connect to the internet to display the web-based Air Quality Dashboard. Centres were asked to design their own specific ambient air quality interventions, with advice about the type of measures that they could choose from the Council's air quality team as well as a range of other ideas provided in the air quality toolkit. Checks on the progress of these measures was to be undertaken at least once every 3 months by the council's Air Pollution Officers to ensure continued engagement and to help or support as required.

A baseline air quality questionnaire (Appendix 3) was shared with the faith centres to assess existing behaviours and understanding of air quality. An evaluation questionnaire was then distributed to all faith centres at the end of the project (Appendix 4).

At the end of 12 months, each religious centre was asked to provide a written report on their interventions and attend an air quality conference to pass on their learning to the other seven centres as well as future participating centres.

Phase 2 (Feb 2022 – March 2023) During this phase officers continued to support and maintain air quality interventions at the original eight faith centres, as well as repeating Phase 1 with an additional eight religious centres. If popular and the faith centres were keen, then there was the potential for the number of *Zephyr* sensors to be increased sixteen and faith centres to retain a *Zephyr* sensor at their chosen site. A 6-month extension to the project was agreed with Defra following delays with procuring and installing the *Zephyr* air quality sensors.

Project Timeline

TIME	ACTIVITY
PHASE 1	
June – September 2021	Each religious centre that is included in the project will agree to the following: • That they will provide a written report/summary at the end of 12 months confirming the actions and interventions taken by their community to reduce air pollution. They will provide their own feedback on their experiences, including their perceived successes and failures of interventions and ideas for further research or projects. • Attend a conference at the end of the 12-month period with other centres to share ideas and best practice. The opportunity to extend the period that the sensor remains if they have further ideas/proposals that they wish to test, and funding has not been achieved to otherwise enable the sensor to remain at their centre.
September 2021	A link to a web base questionnaire on air pollution (perception, knowledge, and personal behaviours) – will be sent to faith leaders of the participating centres which they will be asked to encourage their members to complete before installation of the air quality sensor.
October 2021	The bespoke public facing 'Air Quality Dashboard' will be set up on Sandwell Council's Website to enable 'real time' air quality information to be accessed remotely by any member of the public. The dashboard will initially be tested with the Council's existing Zephyr to ensure that any IT issues are resolved before the 8 Zephyrs (low-cost AQ sensors) are installed by the faith centres.
October - December 2021	Each centre will be supported with the necessary information toolkit to inform, educate, and raise awareness amongst their members. This information toolkit will be delivered both by Council Officers, but materials will also be given to religious leaders to disseminate to their members. Information will cover the following: • The main air pollutants and their sources • The consequences of air pollutants to health • The environmental consequences of air pollution • Details will cover action that members can take either individually or as a collective to reduce air pollution in Sandwell – e.g. alternatives to driving such as cycling, walking, car sharing and converting to electric vehicles. Information will also be included on energy efficiency including home insulation, and the pollution associated with wood burning stoves and use of unauthorised fuels. The centres will also be provided with a local authority officer as a first point of contact who will be available to answer any further questions/queries as the project progresses or should there be any problems with the air monitoring equipment or IT support be required.
July - October 2021	The provision of an air quality sensor to each of the eight enthusiastic and environmentally engaged religious centres. Each centre will be involved with determining the final location of the sensor either on or near their premises.
July – October 2021	Participating centres will be provided with a display screen/sensor where Sandwell's bespoke public facing 'real time' air quality dashboard will be displayed. The display screen is important to generate and sustain interest and awareness of air quality amongst their members.
October 2021	The website will also be actively promoted on Sandwell Council's home page and through social media including Facebook.
January – December 2022	The six towns Public Health Development Officers and nominated Air Pollution Officers will engage with the faith centres to sensor progress after 3, 6 and 9 months. They will review the

TIME	ACTIVITY
	data collected and establish progress made with any interventions. This will be an opportunity to identify if they require further support, information, or guidance.
September 2022	Identify the next potential 8 religious centres for relocation of the Zephyrs in January 2023 as Phase 2 of the project. These would be identified by size of congregation, location and level of enthusiasm and engagement with the project. This will be ascertained through the Covid-19 faith group and local knowledge from the six town-based Public Health Development Officers. We will invite these groups to attend the conference in January 2023 to listen to feedback from the existing project group to increase awareness and understanding of the issues and to collectively share in their experiences. These groups will be given the information toolkits which will be delivered by Council Officers and resources to be disseminated by their religious leader.
November 2022	A link to the web-based post-intervention questionnaire on air pollution (perception, knowledge, and personal behaviours) – will be sent to faith leaders of the participating centres which they will be asked to encourage their members to complete this to assess knowledge and behaviour towards air pollution following the project intervention.
November 2022	The religious centres will provide the information as agreed at the start of the project: · A written report/summary confirming the actions and interventions taken by their community to reduce air pollution. · Details of positive/negatives from the project interventions (including real and perceived successes and failures) · Attend a conference with other participating centres to share their findings and suggestions to the next centres who will be participating in the project. The main evaluation will occur at the end of the two years, but we will work with local universities, registrars in public health, graduate placements, and foundation doctor placements to provide the capacity to undertake eight mini-evaluations over Autumn 2022 for the different sites.
PHASE 2	
January 2023	Repeat the process with 8 new religious centres: · Complete the web-based questionnaire on air pollution. · Confirm in writing their own intervention strategies for improving air quality in their locality or even within the borough. · Provide a written report/summary at the end of 12 months confirming the actions and interventions taken by their community to reduce air pollution. · Provide their own feedback on their experiences, including successes and failures of the interventions and ideas for further research or projects. · Attend a conference at the end of the 12-month period with other centres to share ideas and best practice. · The opportunity to extend the period that the sensor remains if they have further ideas/proposals that they wish to test.
April 2023 **July 2023** **October 2023**	The six towns Public Health Development Officers and nominated Air Pollution Officer will engage with the faith centres to sensor progress after 3, 6 and 9 months. They will review the data collected and establish progress made with any interventions. This will be an opportunity to identify if they require further support, information, or guidance. In October 2023 there would also be the opportunity to consider requests from centres that wish to retain the sensor on their site for a longer time. This would be considered if there is a

TIME	ACTIVITY
	demonstrable benefit to air quality or longer-term behavioural change and economic viability to continue operating the sensors.
December 2023	The religious centres will provide the information as agreed in December 2023: · A written report/summary confirming the actions and interventions taken by their community to reduce air pollution. · Details of positive/negatives from the project interventions (including real and perceived successes and failures)
July 2024	It is acknowledged that this is officially the end of the DEFRA grant period and a report to DEFRA will be provided by the end of July 2024 including outcomes and evaluation of the project.
January to June 2024	Full evaluation of the project will be undertaken in January 2024 when centres have had the sensors in place for at least one year, with the final report to be completed by the end of July 2024. This evaluation will be completed by the Air Pollution Team to examine the results and impact of the project including any measurable data reductions in air pollutants, changes in knowledge levels, and details of behavioural changes made by participants to reduce air pollution. Lessons learned will be summarised and decisions will be made about any plans for continuing the project and its future sustainability. The data collected will be made available for further projects and research with other stakeholders. The long-term plan will be to maintain an air quality sensor at each of the faith centres so that we can continue to engage with these communities and sustain longer term active participation in the council's air quality monitoring programme.

Work Undertaken

Recruitment of Faith Centres

A total of 16 faith centres, 8 in the first half of the project and 8 in the second half, were recruited by Sandwell's Air Quality team to take part in the project. The centres were in each of Sandwell's six towns and represented the main faiths in Sandwell.

Year 1 Centres	Year 2 Centres
Shri Venkateswara (Balaji Temple), Oldbury	The Centre for Oneness, Wednesbury
Yemeni Community Association, West Bromwich	Oldbury Jamia Mosque, Oldbury
Guru Nanak Gurdwara, Smethwick	The Salvation Army, Rowley Regis
Smethwick Jamia Mosque, Smethwick	Holy Trinity Church, Smethwick
Shri Pashupatinath Mandir of UK, Rowley Regis	Cradley Heath Community Link, Rowley Regis
St Francis of Assisi Church, Wednesbury	Sri Guru Har Rai Sahib Gurdwara, West Bromwich

Year 1 Centres	Year 2 Centres
Wesley Centre for All, Wednesbury	Shah Jalal Mosque/ Tipton Muslim Community Centre, Tipton
St Matthews Church, Tipton	Wednesbury Baptist Church, Wednesbury

Project Logo

Given that the project was to run for 2 years we wanted to create a sense of cohesion and belonging amongst the 16 participating centres. We also wanted to establish a logo that would give the project a sense of identity to communicate clearly with our faith centres, reach wider audiences and inspire greater support.

The bespoke logo was designed to represent the five main religions in Sandwell: Christianity, Islamism, Hinduism, Sikhism and Buddhism. To make it Sandwell focussed, we took inspiration from some of the buildings belonging to those faith centres participating in the first year; this included the Guru Nanak Gurdwara in Smethwick, St Francis of Assisi Church in Wednesbury, the Balaji Temple in Oldbury, and Jamia Mosque in Smethwick. We shared drafts of the logo with the faith leaders before agreeing the final design.

Air Quality Questionnaires

Air quality questionnaires were distributed pre-intervention and post-intervention (Appendices 3 and 4), these covered a variety of topic areas including:

- air quality awareness
- air quality index
- information sources
- transport choices
- home heating choices
- demographic data.

A decision was made to offer both digital and paper versions of the questionnaire to prevent digital exclusion, they were also translated into eight languages: English, Arabic, Bengali, Gujarati, Kurdish, Nepali, Punjabi, and Urdu.

A comparison of the results from the baseline questionnaire and the follow up questionnaire showed that:

- **87%** of respondents felt that the project had increased their knowledge of air pollution to some extent or a great deal, and
- **81%** said that they felt that the project had increased awareness of air pollution in their wider faith community.

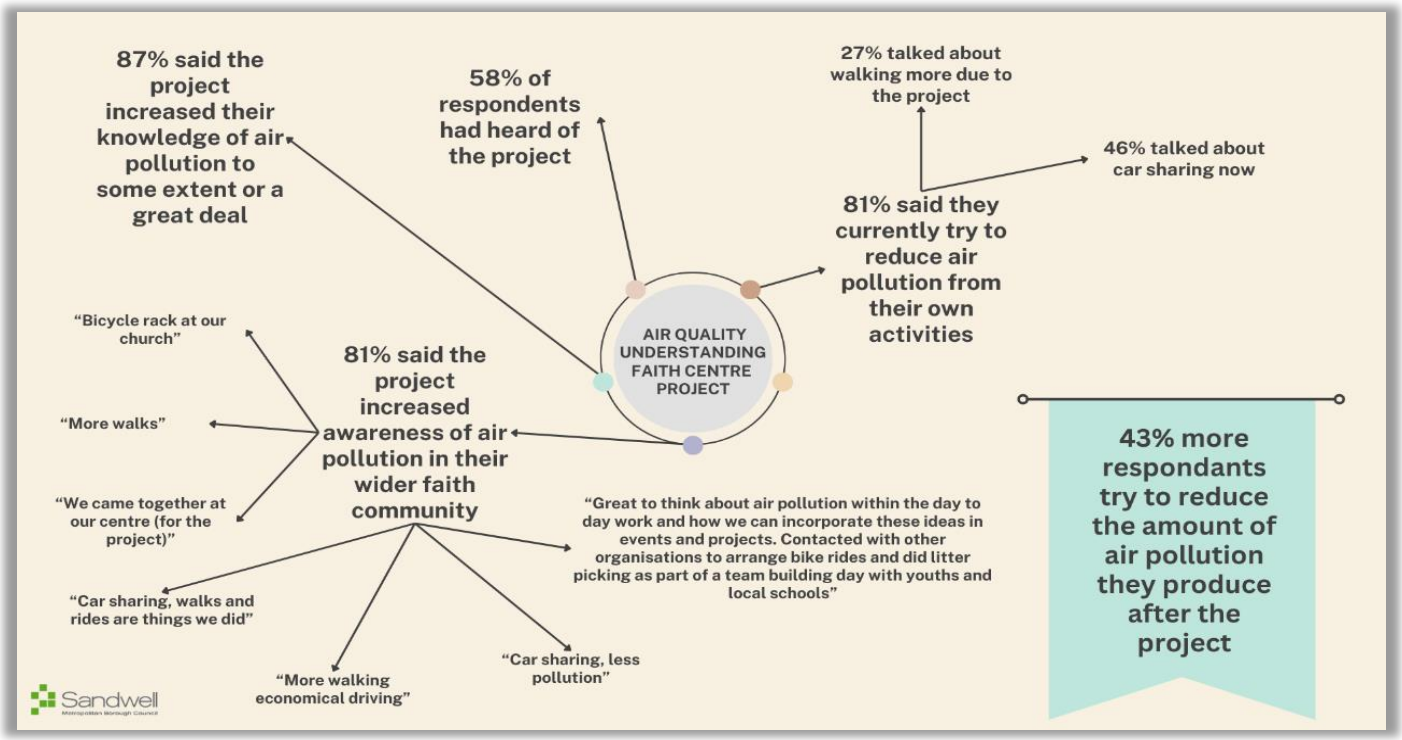

Figure2- A summary of the results comparing pre and post intervention questionnaire responses.

A free text response option was also included to try and capture other impacts of the project on the wider community, positive comments were received regarding the installation of bicycle stands, the creation of new group walks and litter picks, "Car Free Fridays", increased car sharing, walking more to do their everyday activities, more fuel-efficient driving and reducing car idling.

Encouragingly, after the project **81%** of respondents confirmed that they now try to reduce air pollution emissions from their own activities, compared to the initial questionnaire finding where **62%** of respondents stated that they did not do anything to try to reduce their own air quality emissions.

A full breakdown of the results from the pre and post questionnaires is provided in Appendix 5.

Air Quality Toolkit

Faith leaders were not expected to be experts in air quality, but by taking part in the project, were asked to promote positive behaviour change within their communities. To assist them each centre leader was provided with a printed and digital copy of our own 'Sandwell Air Quality Toolkit' (Appendix 2). The contents of Sandwell's Air Quality Toolkit are summarised below:

1) **What is air pollution?**
    a) Introduction to air pollution
    b) Sources of indoor and outdoor air pollution
    c) UK's National Daily Air Quality Index
    d) Tips to protect yourself from poor air quality
2) **Smoke Control Areas and woodburning stoves**
    a) What are smoke control areas?
    b) Garden bonfires
    c) Wood burning stoves
3) **Alternatives to travelling by car**
    a) Walking and cycling including E-Cargo bikes
    b) Public transport
    c) Car clubs
4) **Electric vehicles**
    a) Funding opportunities
5) **Community engagement ideas for raising awareness of air pollution**
    a) Anti-idling campaigns
    b) Eco bus workshop
    c) Adopt-a-Street
    d) Subsidised eco-driving training
    e) Switching your search engine
    f) Heating the faith centre and homes
    g) No driving days
    h) Planting trees and greenery
6) **Communicating air pollution to children and young people**
    a) Working with schools
7) **Advice for business owners**
    a) Funding opportunities
    b) Carbon calculator for SMEs

Low-Cost Air Quality Sensor Installation and Air Quality Dashboard

By the start of 2022, the *Zephyr* air quality sensors were installed outside eight faith centres. They were then relocated in 2023 to the next eight centres for the second phase of the project (Fig 3).

Each *Zephyr,* along with an accompanying solar panel, was erected by Sandwell Council's Highways department, by securing them to street furniture close to each faith centre.

The data from the *Zephyrs* was then displayed on a web-based dashboard map providing faith centre visitors with information on nitrogen dioxide and particulate matter concentrations (Fig 4).

Figure 2- Zephyr air quality sensor outside the Jamia Mosque in Smethwick

The faith centres were also provided with a 43-inch smart TV that was either attached to the centre's wall or on a mobile stand, so those visiting the centre could easily see the dashboard air quality map.

The *Zephyrs* are represented on the air quality dashboard map as coloured circles, alongside the name of the faith centre. The circles show as either red, amber, or green, depending on the concentration of a particular pollutant species when compared against EarthSense's air pollution severity scale. Modelled background data was also made available as an additional layer on the dashboard map.

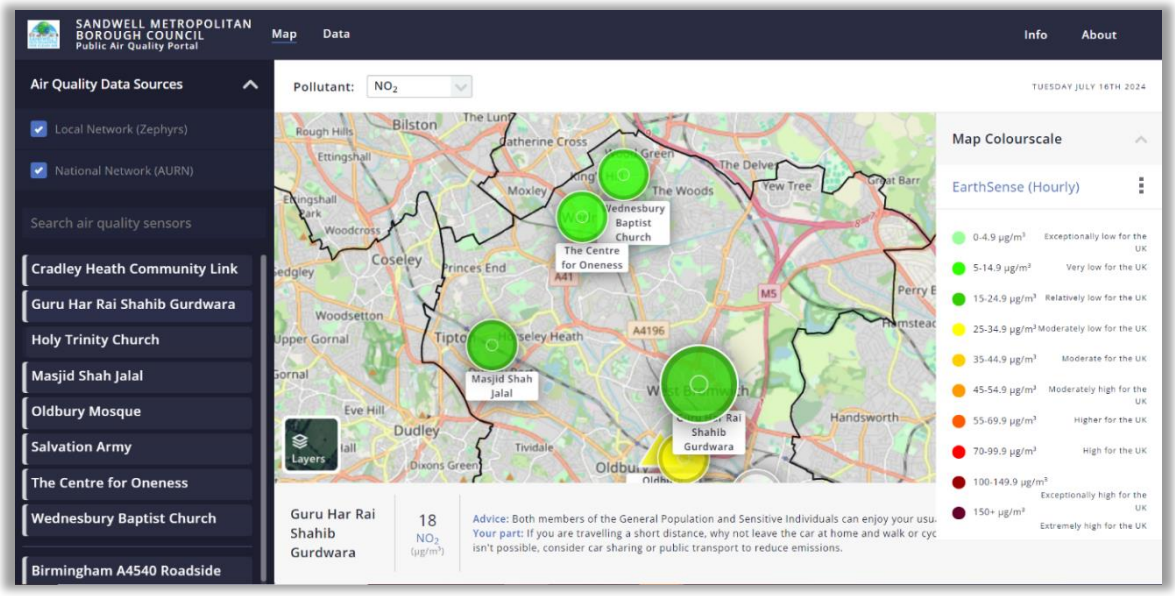

Figure 3- Dashboard showing air pollution levels at the faith centre sites with Zephyrs across Sandwell.

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Figure 5- The Air Quality Dashboard in use at the Sri Guru Har Rai Sahib Gurdwara in West Bromwich

Data updates were shown on the air quality dashboard every 15 minutes, so faith centre visitors were able to see any changes in air pollution outside their centre in almost real-time time, (Fig 5).

By displaying the TV in each centre, invisible pollution became visible which it was hoped, would create interest and urgency to take action to reduce it.

A 'Faith Communities for Clean Air' website page was also created on Sandwell Council's website for the project. This explained more about the project, the centres taking part, a link to the dashboard and access to both the baseline and eventually the post-intervention questionnaires. Each centre leader also received an end of year summary report of air pollution trends established from the *Zephyr* data gathered outside their centre.

Air Quality Project Leaflet

During the two years of the project over 1500 leaflets explaining the project were distributed to the 16 participating faith centres, with the aim of providing a simple overview of the air quality project (see Appendices 7 and 8).

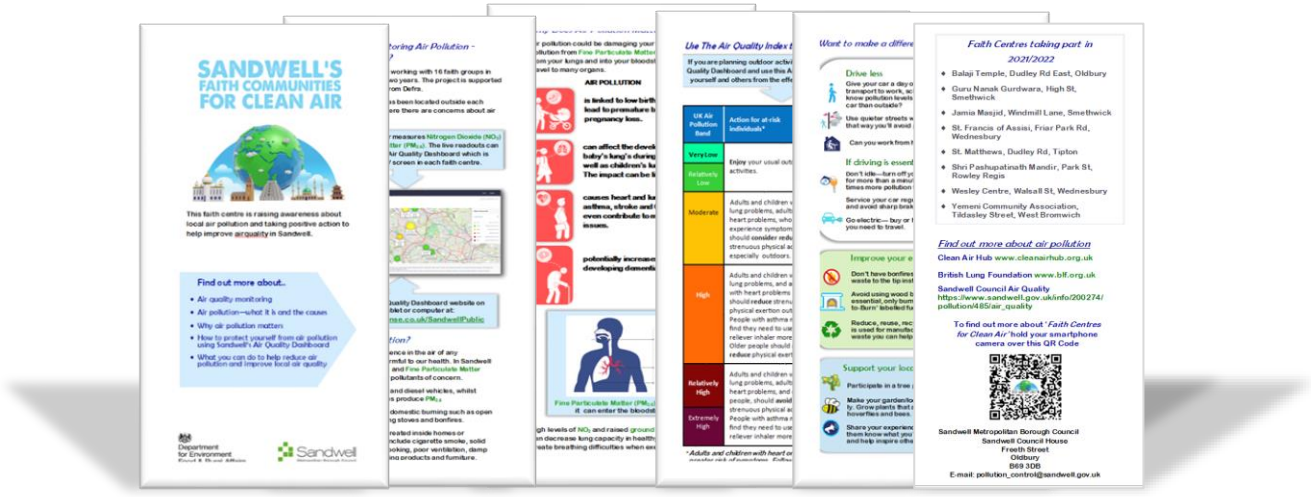

Figure 6- Sandwell's Faith Communities for Clean Air Leaflet

The Faith Communities for Clean Air leaflet provided a brief introduction to air quality including causes, monitoring, why it matters, how to protect against it and how to reduce personal impacts. As well as listing the centres participating in the project and how to find out more.

Visiting the Centres

Regular visits from the Air Quality team as well as other members of Sandwell Council Public Health staff were undertaken throughout the duration of the project. Visits included meetings with faith leaders as well as members of the congregation, event planning, supporting centre initiatives and delivering talks and presentations about air quality. The team also attended English language lessons, 'Mums and Tots' groups, a Sunshine Club' for over-65s, a Wives' group, youth groups, numerous coffee mornings and lunch clubs, to spread awareness about air pollution and nudge people into action. The visits were an integral part of the project as they served to create and strengthen connections in these faith communities. The photographs below capture a just a few of the visits that took place over the course of the project.

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Sandwell Breathes

Empowering faith centres and their leaders to drive their own initiatives, that were tailored to their communities, was one of the guiding principles behind this project. An outstanding example of this approach was displayed by Deepak Naik from the Balaji Temple in Oldbury, who envisioned and bought about the "Sandwell Breathes" event that coincided with Interfaith Week. Held in November 2021, the event hosted at the Balaji Temple provided a unique opportunity to showcase the faith communities for clean air quality project. It allowed for the sharing of insights from faith and council leaders on air pollution, as well as promoting future community grant opportunities and the planting of commemorative trees (Figs. 7 & 8)

Figure 7- Tree planting at Sandwell Breathes with Cllr Hartwell and chairman of the Balaji Temple, Dr Kanagaratnam

Figure 8- Tree planting at Sandwell Breathes with Deputy Director of Public Health Paul Fisher, temple manager Deepak Naik, Public Health Development Officer Nicky Taylor, and the Air Quality team.

A panel discussion on air quality was held (Fig.9), followed by a dedicated Q&A session that stimulated positive engagement from the audience. Project leaflets were also handed out to attendees explaining the reason for the Faith Communities for Clean Air Project, along with details on how to access the dashboard and the centres participating.

The highlight of the event was the creation of a vehicle anti-idling installation created by the Air Quality team, Public Health Development Officer Nicky Taylor, and members of the Balaji Temple congregation

Figure 9- Panel at Sandwell Breathes, with the Lord Lieutenant of the West Midlands, John Crabtree, representing Her Majesty, the Queen

Figure 10 -Anti idling installation at the Balaji Temple in Oldbury

(Fig.10). The anti-idling installation was comprised of 150 biodegradable balloons tethered to a car displaying anti-idling posters, visibly demonstrated the harmful gaseous emissions produced by a car during one minute of idling. The eye-catching display received significant attention and praise, prompting its reproduction outside Sandwell Council House in Oldbury for Clean Air Day 2022.

Figure 11 - One of the anti-idling posters used at the Sandwell Breathes event at the Balaji Temple in Oldbury

The success of this initiative not only resonated with attendees at the event but demonstrated the importance of making air pollution and particularly tailpipe emissions more visual in future campaign work.

Tree Planting

Following on from the success of their "Sandwell Breathes" event, the Balaji centre were keen to use an opportunity highlighted in the air quality toolkit to receive free bareroot tree whips from the Woodland Trust. The Air Quality team supported the temple in applying to the Woodland Trust for over 400 trees to plant in poor quality land (previously a landfill site) belonging to the Balaji Temple Trust. Members of Sandwell Council's Public Health team volunteered to help with the planting.

Figure 12 -Tree planting at the Balaji Temple in Oldbury – March 2022

Installation of Bicycle Stands

During the first year (2022), we were keen to understand the barriers to active travel, including why more people didn't cycle to their centre. A recurring theme was the was the absence of suitable and secure bike storage facilities at the centres. In response to this the Air Quality team took proactive steps by securing funding for interested centres to purchase and fit bike stands at their premises (Fig 13). Four faith centres benefited from this initiative, whilst the Jamia Mosque in Smethwick also installed covered bicycle stands at the edge of their car park using their own funds (Fig.14)

Figure 13- Bike stands installed at the Wednesbury Baptist Church, Wednesbury

Figure 14- Bike stands installed at the Jamia Mosque, Smethwick

The leader at The Jamia Mosque in Smethwick wanted more people to cycle rather than drive to the Mosque, particularly for Friday prayers, but was aware that many people at the Mosque were not using their bicycles because they required repair. In response to this, Maz arranged for free bicycle maintenance sessions to be held in the mosque car park over several Sundays (Figs. 15 and 16). The sessions were well attended and demonstrated a real need within the local community for cheap and easily accessible bicycle repair services to ensure bicycles remain in use and are not left in a shed or garage.

Figure 15- Cycle repair hub at the Jamia Mosque

Figure 16- Residents queue to get their bicycles repaired at the free bicycle repair hub at the Jamia Mosque, Smethwick

Energy Saving Workshops

During the project, we witnessed the cost-of-living crisis caused by a steep rise in energy costs, but we could also see obvious synergies between saving money through energy efficiency and helping to reduce air pollution. As another offer to faith centres and to link back in with the consequences of our energy use on local air quality, energy saving workshops were held in person (at the Guru Nanak Gurdwara in Smethwick) and online (Fig.17). The workshops provided lots of practical tips for saving energy throughout their home and was also used to highlight the savings to be made by walking and cycling rather than driving.

Figure 17- Energy saving workshop advert

Monthly Newsletters

To sustain engagement with our centres and achieve greater levels of knowledge transfer, a monthly newsletter was distributed to all centres and other key stakeholders. Each newsletter focused on a distinct air quality theme and covered a range of topics including:

- Anti-idling
- Wood burning stoves
- Sandwell Breathes
- The role of trees and tree planting
- Mental health and air pollution
- Energy efficiency
- Smoke Control Areas
- Clean Air Day
- Sandwell's TravelWise and Shared Transport
- Heat waves and air pollution
- Cycling
- Bonfires
- Active Travel

Figure 18- Front cover of one of the Air Quality Newsletters

In addition to insightful content, the newsletters offered regular updates on the project's progress and featured valuable resources like questionnaire links, information on free bicycle training sessions, and opportunities for securing grant funding.

Active Travel Case Studies

Figure 19 - Active Travel Case Study

During a visit to Wednesbury Baptist Church in 2023 Carol, a regular attendee at the centre's luncheon club, explained to Air Quality officers that even at the age of 82, her bicycle was her main form of transport and shared how she cycled most days, just carrying out her day-to-day activities. Carol's enthusiasm for cycling was inspirational and was the catalyst for the creation of a series of active travel case studies. These case studies were used to create our own Sandwell cycling champions who either live or work in the borough. These case studies have been used by the wider Public Health team to promote active travel in the borough and demonstrates that age does not have to be a barrier to cycling.

Air Quality Noticeboards

During the first Faith Centre Air Quality Conference held in November 2022, we received feedback from the Wesley Methodist Centre, that they believed a noticeboard displaying air quality information would help promote the project further and improve knowledge sharing. 14 of the 16 centres requested installation of a noticeboard at their centre. The information was updated monthly and covered three main themes, which were 'Did you know?', 'In the News' and 'Play your Part'. We also displayed a copy of the monthly newsletter, updates on other centre's activities and local events that supported better air quality, such as Clean Air Day activities.

Figure 20- Air quality noticeboard

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Several centres also fed back that people were struggling to understand the colour coding of the dots on the dashboard, so we attached a laminated poster to the base of the TV screen in each centre to help clarify the information being displayed (Fig 21).

UK Air Pollution Band	Action for at-risk individuals*	Action for general population
Very Low Relatively Low	**Enjoy** your usual outdoor activities.	**Enjoy** your usual outdoor activities.
Moderate	Adults and children with lung problems, and adults with heart problems, **who experience symptoms**, should **consider reducing** strenuous physical activity, particularly outdoors.	**Enjoy** your usual outdoor activities.
High	Adults and children with lung problems, and adults with heart problems, should **reduce** strenuous physical exertion, particularly outdoors, and particularly if they experience symptoms. People with asthma may find they need to use their reliever inhaler more often. Older people should also **reduce** physical exertion.	Anyone experiencing discomfort such as sore eyes, cough or sore throat should **consider reducing** activity, particularly outdoors.
Relatively High Extremely High	Adults and children with lung problems, adults with heart problems, and older people, should **avoid** strenuous physical activity. People with asthma may find they need to use their reliever inhaler more often.	**Reduce** physical exertion, particularly outdoors, especially if you experience symptoms such as cough or sore throat.

Figure 21 - Air quality dashboard rating sheet

Clean Air Day 2022 and 2023

Clean Air Day (CAD) is an annual national awareness day created by Global Action Plan, to highlight the impact of air pollution on health and encourage everyone to do their bit to reduce emissions. Following on from the success at the 'Sandwell Breathes' event, the Air Quality team repeated the car anti-idling installation for CAD 2022. The installation was placed outside the Council House in Oldbury, where officers spoke to passers -by and shared leaflets covering a range of air quality issues including anti-idling, wood burning stoves, energy efficiency and the faith centre project.

Figure 22- Clean Air Day 2022 anti-idling installation

For Clean Air Day 2023, the team arranged for a series of talks to be given at the faith centres during the week of Clean Air Day and encouraged people to fill in air pollution pledges. Air Quality Team officers also recorded an awareness raising TV advert with the Sri Guru Har Rai Sahib Gurdwara, and the GNG in Smethwick arranged a litter picking sesssion.

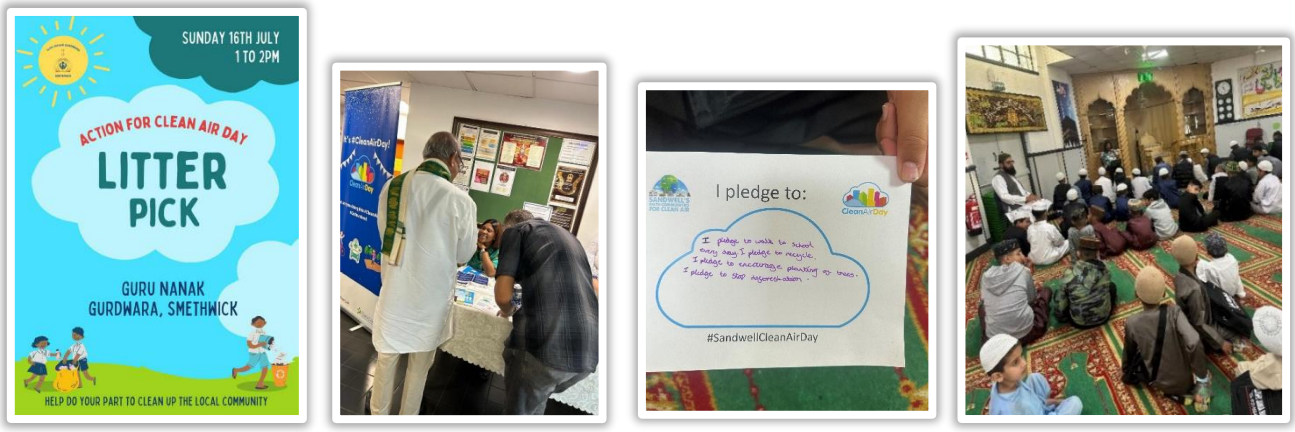

Figure 23 - Clean Air Day 2023 Engagement Activities

In addition to the talks and other activities taking place at faith centres, Sandwell's Active Travel Officer, along with British Cycling and the Sikh Helpline (based at the Sri Guru Har Rai Sahib Gurdwara in West Bromwich) organised a Clean Air Day Bike Bus. Five faith centres worked with our Active Travel Officer to create a route with stop offs at each centre starting at the Guru Har Rai Sahib Gurdwara in West Bromwich, calling at the Yemini Community Centre, St Francis of Assisi, Wednesbury Baptist Church, and the Centre for Oneness. The route was designed to incorporate both on road and off-road cycling and highlight quieter routes away from traffic. Feedback from the event was very positive and the event featured in a British Cycling Case Study.

Figure 24 - Clean Air Day 2023 Faith Centre Bike Bus

Air Quality Conference 2022

In November 2022, an Air Quality Forum was held at the Balaji Temple. This bought together faith leaders whose centres had participated in 2022, providing a unique opportunity to meet and feed back on their experiences of the project to the next 8 faith centre leaders. During the forum, faith leaders shared the various activities implemented by their centres, highlighted successful initiatives, suggested areas for improvement, and offered guidance to the forthcoming centres. This collaborative setting provided a unique opportunity for the sharing of experiences, best practices, and valuable advice (Fig. 25).

Sandwell Metropolitan Borough Council

Figure 25 Air Quality Forum in 2022 at the Balaji Temple, Oldbury

Final Faith Centre Air Quality Forum

In December 2023, the final Air Quality Forum was held at Sandwell Council House, where we welcomed all faith centre leaders who had participated in the project. We asked the leaders to share a five-minute presentation on lessons learned and complete a feedback form. Each leader was also presented with a certificate of appreciation for their engagement with the project (Figs 25 & 26). The feedback from this event was overwhelmingly positive, with religious leaders not only giving insight into their project experiences but also demonstrating a shared passion for making tangible improvements in air quality in their local communities.

Figure 26- Final forum poster

Figure 27- Four faith leaders receiving certificates to recognise the participation of their centres

Sandwell Metropolitan Borough Council

Project Effectiveness

Pre- and Post-Intervention Questionnaires

The pre- and post-intervention questionnaires were designed to help quantitatively assess the impact of the project on the understanding of air quality and the wider behavioural change that resulted from the intervention. Results from the pre-intervention questionnaire showed that only **38%** of respondents did something to try and reduce the amount of air pollution that they produced, with 62% not doing anything (Fig. 28).

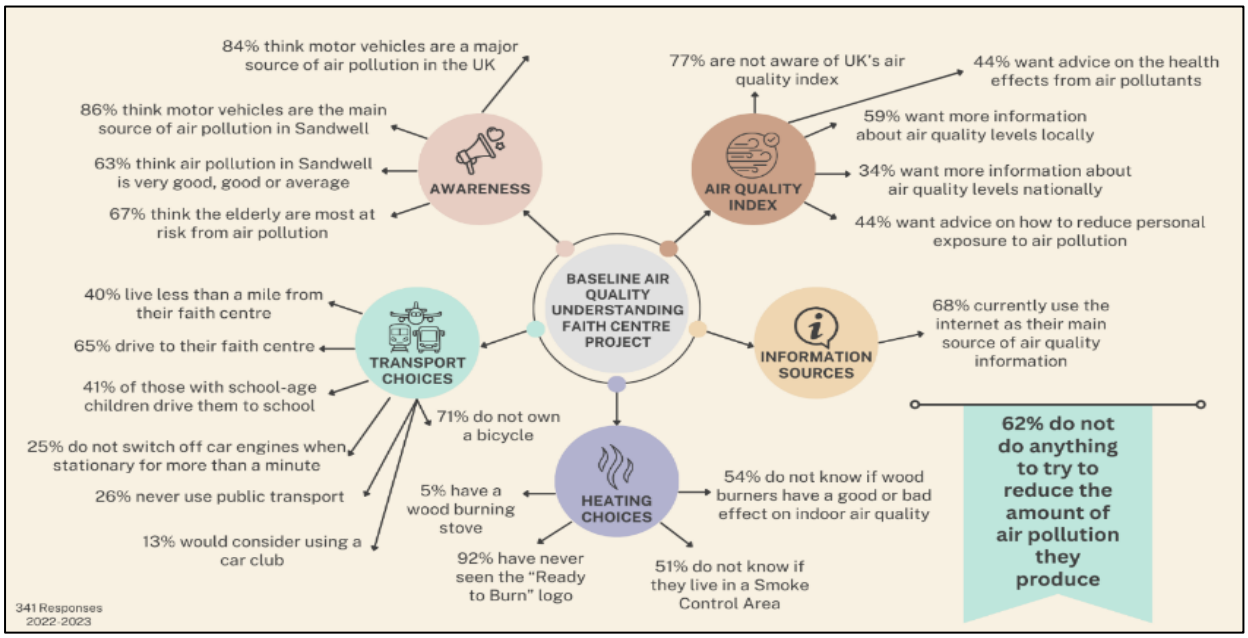

Figure 28- Initial questionnaire summary

In the post-intervention questionnaire **81%** of respondents said that they were now trying to reduce the amount of air pollution they produce (Fig. 29). This is a positive result for the project as it

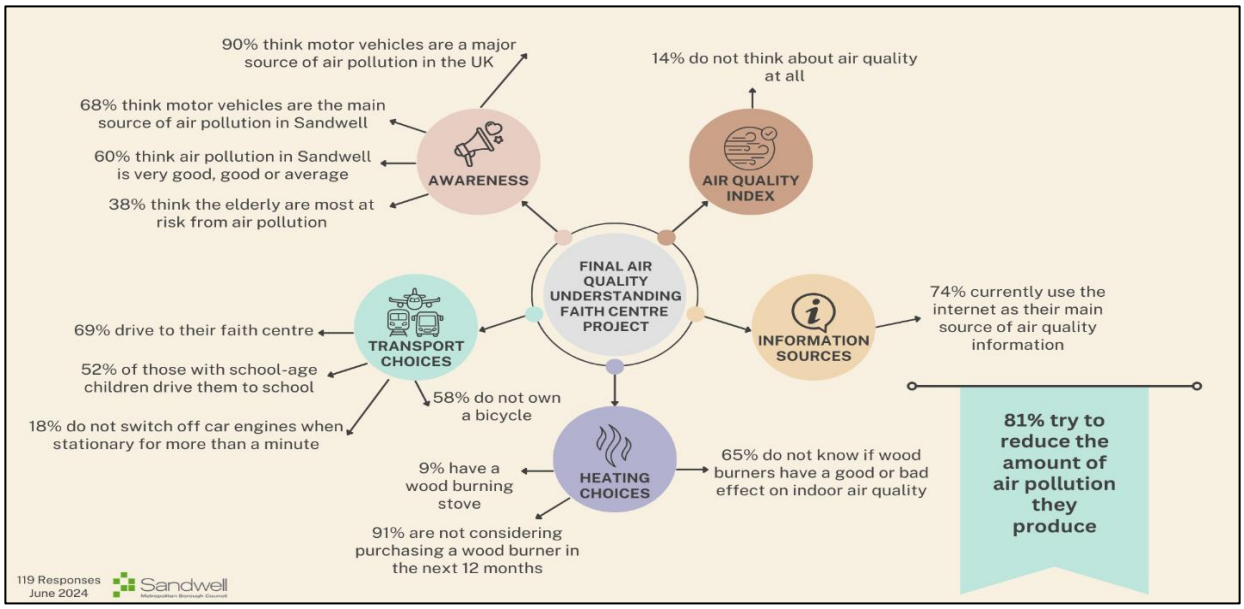

Figure 29 - Post-intervention summary questionnaire results

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demonstrates that the awareness raising, and actions being taken at the various faith centres had been impactful.

As there were significant demographic differences between the pre- and post-intervention cohorts, attempting to compare the responses to some of the behaviour change questions was problematic, as it was considered that they did not provide a true reflection of the impact of the project. This is explained further in the 'Challenges' section of this report under 'Questionnaire uptake and analysis'. However, the questionnaire responses both pre- and post-intervention are still a rich source of information, providing a valuable insight into community awareness, and are helpful in identifying areas for further work. A detailed breakdown of the results from the pre- and post-intervention questionnaires are provided in Appendix 5.

Qualitative analysis of the completed questionnaires demonstrates how the project assisted in creating an organisational and community behavioural shift. Open text responses included comments that members were driving their cars less, walking more, cycling more, reduced the amount they were using their wood burning stoves, reduced the amount of garden fires they were having and reduced engine idling. From the wider environmental perspective, responders also stated how the project had encouraged them to engage in litter picking and planting trees.

The Yemini Community Centre and Jamia Mosque both implemented "Car Free Fridays" for Friday prayers, reporting an uptake in car sharing and use of alternative methods of transport, including cycling. The leaders fed back that this initiative was popular and helped to get more people walking and cycling and alleviated some of the traffic congestion around their centres.

The centres who installed bicycle stands, either funded by Sandwell Council or through their own funding, reported that attendees had started to cycle more in response to having somewhere to secure their bicycles. It was also reported by one attendee that just seeing the racks reminded them that they had a bicycle in their shed that they should use. The other main benefit noted was that with a fewer people driving there were fewer parking issues and reduced parking pressures. Some respondents also reported that the project helped them to think about air pollution within their day to day lives and how they were now making some small changes to reduce their impact.

Faith Leader Feedback

Each leader of the 16 centres was asked to complete an anonymous feedback form at the end of the project (Appendix 6). The feedback form aimed to assess the leader's perspective on the project's impact on air pollution awareness at their centre, to describe any actions taken, note any positive parts of the project, state any requests for further support from Sandwell Council going forward, and

identify any recommendations for other faith centres and community groups participating in a similar project in the future.

Faith Leaders' Views on Awareness Raising

Feedback showed that all the leaders felt their respective community's awareness of air pollution increased by being part of the project. In fact, one respondent wrote that this was '*a silly question, as yes, it had massively improved awareness*!' The leader felt that the combination of the noticeboard, leaflets and website dashboard helped to increase air quality awareness and wrote that *'the dashboard on the TV screen has resulted in some "eye-opening" conversations about air quality, sources of air pollution, environmental impacts, and effects on personal health'*.

Most of the leaders stated that they enjoyed the inclusiveness of talks and discussions that they had with the Air Quality team, one leader citing that because users of their centre struggle with reading or writing English having talks was very helpful. They also discussed the energy saving workshops as being a benefit to their attendees.

'*A huge strategic success*', was the feedback from one centre's leader, citing the project as resulting in '*increased awareness of air pollution amongst their congregation and increased insight by their Leadership Team on how environmental issues intersect with the cost of living and quality of educatio*n'. They also stated that '*the project aligned with their green agenda, enabling a renewal of the leaderships' green thinking'*.

One centre leader mentioned how they had witnessed one-to-one conversations about air quality between their community members, with members being taught about air quality in the simplest terms from other members who had developed a greater understanding through the project.

Another key positive for some centres was the local and more personal nature of the project, which they attributed to the project staff being informed and accessible to share information and answer questions and that the data and information was provided in a clear format.

Leaders also described the learnings of the community now being embedded into the culture of their centre staff and wider faith group, so the project had not just been a short-term response to a specific event.

The faith centre leaders were very positive about the project overall, noting how it had increased their personal knowledge which allowed them to be more confident talking to their own members on the topic. They were also enthusiastic about the public air quality dashboard and had learned about the harms of air pollution but were now also much more familiar with the types of small changes that could be made to reduce emissions. They also reported that most people in their centres had no idea about air quality beforehand, and that having the air quality dashboard made it

more real. A recurrent theme in leader feedback related to seeing the co-benefits between raising air quality awareness at a community level and improving their members' relationships with their local environment. Some leaders also discussed the project not only giving them space to tackle and discuss issues relating to air quality but also giving them a clearer focus on other wider environmental issues.

Faith Leaders' Views on Actions Taken at Their Centres

Actions taken by centre members and noted by faith leaders included: "retiring" wood burning stoves, increased rates of recycling, cycling, and walking, as well as community litter picks now occurring regularly in many centres. This was said to be supported by the installation of bike racks at some centres allowing people to cycle to the litter pick. Some leaders stated that the litter picks acted as catalyst for community members to volunteer for more environmental works including community gardening, tree planting and even hosting litter picks on their own streets.

Energy efficient behaviours were also stated to have increased, both in individual homes and improving efficiencies at their own centre, with investments being made to switch to low energy lighting and heating, as well as using other energy saving tips provided by the project.

Car free days were introduced by two of the centres, and these have continued, along with car sharing between attendees.

Air quality initiatives such as anti-idling campaigns were reported by one centre leader as being a simple but an incredibly effective measure to reduce air pollution from their members and visitors. Anti-idling has been incorporated into their long-term centre strategy.

One centre that had already planned to plant trees has altered the types of trees that will be planted in the future to include those that are the most beneficial for air quality.

Faith Leaders' Views on the Wider Impacts of the Project

The project's influences were also noted as extending into the wider community, for example one school associated with the centre increased their engagement with parents to encourage more walking and cycling to school whilst another carried out their own tree and wildflower planting after learning about the project.

"Learn to ride" cycling workshops held by one centre received greater attendance after the start of the project, whilst other centres started to engage local bike ride organisations to set up new cycle rides. Cradley Heath Community Link also applied for additional grant funding to set up a free cycle hire and repair hub as a spin off from this project.

Interestingly, one leader wrote that as a direct result of the project they had been re-engaging with local planning matters for air quality and the environmental agenda, where before the project they had felt that their input was irrelevant.

Some centres also said that the community cohesion of their own centre with the wider community was really felt, and that the variety of engagement methods from the project appealed to a wide range of audiences.

Describing the project as '*a great success'*, the leader shared how a girls' physical exercise group and a walking club had been set up as a direct result of the project.

Networking and meeting with likeminded people were benefits mentioned by many leaders, reiterating the importance of interfaith connections. Interestingly some of the participating faith leaders visited each other's centres after the final forum meeting and are now looking at applying for further grants working collaboratively together in the future. Several leaders have stated that they would be taking the learnings from this project to other centres they have connections with including London, Leicester, Coventry, Birmingham and even Nepal.

Faith Leaders' Requests to Sandwell Council Going Forward

Moving forward, leaders expressed their appreciation for Sandwell Council's proactive stance on air quality. They suggested that the council should provide easily accessible and translated information on various public transport options, including buses and trains, as well as resources such as maps for pedestrians and cyclists. They emphasised the need for more engaging events and competitions to sustain awareness of air pollution in the community.

The leaders urged the council to take a more proactive role in educating the public about clean air, suggesting age-specific campaigns should be created, and that we expand the project's reach to schools, as well as doing more to foster interfaith collaborations. The leaders commended the Council's Air Quality team for their brilliant work and encouraged the continuation of their initiatives, with some even offering to support these efforts. Many leaders extended invitations to the Air Quality team to participate in upcoming events as speakers, underscoring the importance of ongoing education and community engagement towards improving air quality.

All the leaders enthusiastically stated that they would endorse the project to other faith centres and community groups, with many citing its significant positive impact in their local community. They described it as '*an inspirational project that was enjoyable and fun to take part in'*. Again, it was stated as being a silly question to ask if they would recommend the project to other leaders, saying it had '*allowed them to be more connected with humans, animals and plants through environmental thinking*'. Furthermore, the leaders cited the value of faith centres for such projects, noting the

advantages provided given the diversity in ethnicities and age groups among the attendees as well as the benefits of having many proactive members. Leaders also praised the project for being *'so respectful of each centre's religious practices and traditions and well-informed about the matters that touch people's lives daily lives and how important it was that recognition and encouragement was given for the cumulative result from lots of individual actions.'*

Challenges

The project was not without challenges in both the delivery and evaluation phases. The qualitative data analysis suggests that many of those who took part in the project did change their behaviours with regards to air quality emissions, but there were challenges along the way and important learning outcomes for future engagement work.

Procurement

Initially, the project was timetabled to start in February/March 2021. This timetable was unrealistic as it did not include the time required to undertake tendering to procure the *Zephyr* air quality sensors and to commission the bespoke web-based dashboard. The Council's own procurement processes, and teething issues with the *Zephyrs* lead to a delay in the initial start of the project by approximately 6 months.

Recruitment of Participants

Not all faith centres identified in the original project proposal were able to take part; reasons included changes in leadership and personal circumstances as well as general ongoing uncertainties in their organisations, often created by the Covid-19 pandemic. Several centres stated a lack of funding as a major issue as incomes had dropped by approximately 80%, limiting staff and time to dedicate to the project. In addition, two faith leaders who had initially committed to their centres participating in phase two of the project (2023) announced their departures from their respective roles. Subsequently one centre chose to withdraw completely, whilst the other opted to continue with volunteers, despite the absence of a minister.

We were fortunate in being able to recruit other enthusiastic faith centres to replace those who could not commit to the project, but this did require additional staff time to explain the project from scratch and what it would require from the leader and centre.

Additional Questionnaire Translations

Requests were made by a few faith centres for the pre-intervention questionnaire to be published in languages other than the most common community languages used in Sandwell (based on census data). Translation into these additional languages had not been factored into the original budget but it was important and necessary to ensure inclusivity of those centres where a significant population

required the translation, so a portion of the contingency fund was used for this purpose. However, we were very grateful to the Shri Pashupatinath Mandir of UK where a member of the congregation generously translated the questionnaire into Nepalese for free.

Smart TV Display Screens

Originally the plan had been to install the TV screens on wall-mounted brackets, however several centres did not want this because of concerns about damage to their walls. It was therefore agreed that mobile screen stands could be purchased, giving centres a choice between wall mounted brackets or mobile stands. In the end 15 of the 16 centres opted for mobile stands and although some concerns were raised about potential theft or vandalism, this was never an issue.

When collecting the screens at the end of the first year (December 2022), to move them to the second group of faith centres for phase two, we found one of the TV screens to be irreparably damaged. This created a delay for the next centre whilst procuring a replacement. The cost of a new screen was met from our contingency funds.

Numerous centres required help setting up the TV, connecting to Wi-Fi and finding the dashboard portal website, which required additional staff time. There was also an issue with the TVs being set on a default time out setting, which meant that they switched off after an hour which required staff time to resolve.

Low-Cost Air Quality Sensors

The installation of the *Zephyr* low-cost air quality sensors was originally planned to be undertaken by Sandwell's Air Quality Technician, but due to concerns about vandalism it was agreed that that the sensors would need to be placed at a height of approximately 3 metres. This required the employment of the Council's Highways team and their mobile elevating working platform (MEWP), creating further delay and additional, unplanned expense. However, this meant that none of the *Zephyr* sensors were vandalised throughout the course of the project, avoiding repair or replacement costs.

The air quality dashboard was ready for launch in mid-September 2021, but issues with the sensors not uploading overnight created a setback. The manufacturer EarthSense resolved this issue but consequently we couldn't officially launch the dashboard until mid-October 2021. Problems were again identified with the *Zephyrs* in November 2021, with several units failing completely whilst other sites had inconsistent data delivery. All these delays resulted in us being approximately 5 months off our original schedule, so the Air Quality team requested a 6-month extension from Defra which was granted. Following an update in the firmware and repositioning of some of the solar panels by the EarthSense team to maximise energy supply to the sensors, data collection levels were generally good by the end of January 2022.

Covid-19 Pandemic

The project was conceived during the height of the Covid-19 pandemic during the summer of 2020 and a risk register was completed as part of the application that considered the feasibility of undertaking the project if lockdowns continued. Although not ideal, there were contingency plans in place to deliver more of the project to faith centres via on-line mechanisms. As it happened there was an easing of lockdown measures in the summer of 2021 which encouraged us to continue with the project by installing the TVs in the centres in the hope that footfall in the centres would gradually increase. The emergence of the Covid Omicron variant in the autumn/winter of 2021 meant that footfall at the faith centres was greatly reduced. Furthermore, some of the centres generously offered their buildings to be used as vaccination centres which meant that they were not being accessed by their members in the usual way, so in-person visits and talks were impossible.

When Covid restrictions were finally lifted in the spring of 2022 we were hopeful that this would make things easier, but then discovered that it was much harder to contact many of the faith centre leaders as they were out and about undertaking postponed visits and work that had been severely restricted in 2020 and 2021. This was completely understandable, but it did slow down progress and communications with many of our centres.

Staffing

It was evident that the project demanded a lot more staff time than had been originally envisaged so to support the project, and future ongoing community engagement work, we employed an Air Quality and Climate Change Engagement Officer at the end of 2022. The Engagement Officer was away during the second half of 2023 so contact time with the centres reduced. We were, however, fortunate to have a new Active Travel Officer in our team, who also gave their time to support the project work, including giving talks and supporting us at numerous air quality events.

Wireless Internet Connection

The Shah Jalal Mosque and Wednesbury Baptist Church were both keen take part in phase two but neither centre had Wi-Fi connectivity, which was necessary for viewing the web-based air quality dashboard in their centres. As they were keen to participate, we considered using some contingency funding to purchase 4G Wi-Fi routers and asking the centres to purchase their own data. Following further discussions Tipton Mosque decided to locate the TV in their adjacent community centre as they had Wi-Fi, more space and higher footfall. Meanwhile a 4G Wi-Fi router was loaned to Wednesbury Baptist from a member of the Air Quality team. The two centres were happy with this arrangement as it gave them the opportunity to trial having internet access in their centres, as well as being able to experience Wi-Fi connectivity and participate fully in the project.

Questionnaire Uptake and Analysis

The pre- and post-questionnaires were a fundamental part of the project to capture learning and behaviour change, but achieving uptake and establishing meaningful results from an inconsistent cohort created some additional challenges. These are summarised below.

- Engaging people to respond to a questionnaire is always a challenge and was no different for this project. The pre-intervention questionnaire had a higher response rate of 341, whilst the follow up questionnaire had 118 respondents. The questionnaire tried to capture a lot of data, and in retrospect was too long, and if repeated would be made more concise.
- A greater number of responses to the questionnaires could have been achieved had we incorporated an incentive such as a prize draw. This was considered at the start of the project but was discounted based on research suggesting that this is likely to result in poorer quality data, as some responses are motivated by a financial prize but with no consideration to their responses, resulting in misleading responses. If the questionnaire had been completed entirely on-line then methods are available to cleanse data to identify these responses, but as we had participants also completing paper copies, this was not an option.
- The respondents who completed the baseline (pre-intervention) questionnaire were not necessarily the same respondents who completed the follow up (post-intervention) questionnaire. This limited comparison for the behaviour change questions, as individuals' learning journeys were not followed from pre-intervention to post-intervention. Furthermore, demographics of the two cohorts differed greatly between the first and second questionnaire; the centres that had provided a good response rate for the first questionnaire were not the same centres who had high response rates for the second one. The first questionnaire had a relatively even split of ages, genders, and ethnicities, whereas the follow up questionnaire had a skew towards white elderly respondents. This is reflected in the questions about topics such as active travel where the age-bias is particularly stark, for example reported bicycle use decreased between the initial questionnaire and the follow up questionnaire, despite anecdotal and qualitative evidence suggesting otherwise (see Appendix 5).
- The amount of staff time required to facilitate questionnaire responses in person was an unexpected challenge in the project. Paper questionnaire response rates were the highest when a member of the Air Quality team were at the centres and were able to hand the questionnaires to people directly.

Knowledge Sharing

The sharing of knowledge both during and after this project has been significant and is summarised below.

Staff time required to maximise knowledge sharing opportunities

- Keeping the project delivery in house was a conscious decision designed to strengthen relationships between the Council and the communities it would be working with, however the amount of support required by the centres was underestimated. In hindsight employing a project officer at the start of the project to increase knowledge sharing would have been very beneficial, had they sat in the team and worked alongside existing air quality officers. There are, however, disadvantages to this approach, in that it would have significantly increased the grant application costs and might even have prevented us from receiving any grant funding in the first place. Also, recruiting to a short-term post can be difficult, as can retaining staff for the full length of a project.
- The original project plan relied on the support of Public Health Development Officers for engagement and project delivery. The PHDOs were introduced to the project in April 2021 and the support we required. However, these officers already had an extremely busy workload, particularly during the recovery from the pandemic so although they were keen to assist, they did not have the capacity to support the project at the level needed. We were however very grateful for the support that they did provide, and the employment of our Air Quality Education and Engagement Officer and Active Travel Officer addressed some of these staffing resource gaps.

Achieving and maintaining understanding and interest

- Initially we were keen to work with larger faith centres, as they appeared more attractive for knowledge sharing with their potential to reach a greater number of people. We found, in fact, that achieving more meaningful engagement and discussion was easier through the smaller centres.
- Our methods for engaging with the faith communities improved as the project progressed. We realised quite early on that just having a TV screen showing the dashboard and giving faith leaders an air quality toolkit, would not be enough to create behaviour change. By widening the variety of information sources through the provision of noticeboards, leaflets, workshops, talks, attending events and festivals, as well as the monthly newsletters we were able to achieve more knowledge transfer.

- Talks or workshops were generally felt to be the most effective method of raising awareness with the faith groups, as attendees were able to converse with us and understand more about the subject.
- For most people the air quality dashboard map required more explanation to understand what the colours meant and what people should be doing to help reduce air pollution and how to protect themselves. In response to this feedback, we attached a laminated card to the bottom of each TV to provide some further clarification and installed noticeboards at 14 of the centres, which also provided further information about the project.
- Several community members fed back that there was initial excitement over the dashboard on the screen, but this waned over time. Displaying scrolling information that changed frequently would have helped maintained interest and would be used in any future project.
- An unexpected issue with the screens was a factory setting which meant that the screens went into sleep mode after an hour. A reset was found to prevent this and shared with the centres.
- Over time some of the centres did not turn the TV screens on, partly due to being busy with other things and forgetting, but other leaders said that they had lost that initial interest in the dashboard.
- Timetabling in visits with each centre for the year would have been beneficial for increasing knowledge transfer. Due to the different schedules and commitments of each centre, there were longer gaps than originally planned between visits. A set of regular, pre-agreed sessions would have helped to keep up momentum. During the second phase we had comprehensive details of opening times, as online information was often missing or out-of-date in many cases. Ascertaining this information from the very start would have helped make project delivery more efficient, especially in the first few weeks.
- Requesting the details of several contacts at a centre was important where possible to maximise knowledge sharing opportunities. At those centres with only one main contact, it was felt that there was a lot of pressure on that person (often a volunteer) to deliver on the project, when they were already juggling many other commitments and responsibilities. The project was not meant to create a lot of work for any one individual, and at some centres had to respect that we could not push for engagement with someone already experiencing a several other demands on their time. During phase two we were particularly shocked and saddened when two lovely volunteers, our main contacts at St Matthews in Tipton, passed away within a few months of each other. Whilst the minister at the Salvation Army Centre in Cradley Heath, left just as we started the project at their centre. These were just some of the

unforeseen events which left some significant gaps in project activity at some of the centres but does just reflect the real-life challenges within all communities.

Analysing and sharing data with faith centres

- Funding the analysis of the *Zephyr* data was not considered when applying for funding. The Air Quality team did not have the capacity to analyse the data in-house, so a consultant was employed. We then created individua air quality data reports for each centre in a form that was simple to understand, (an example is shown in Appendix 9) although feedback from the centres, suggested limited interest in the air pollution data itself.

Quantifying behaviour change

- During the planning stage of the project, we considered the feasibility of undertaking a longitudinal cohort study that would follow individuals completing the questionnaires over the two years of the project. Although this was the preferred method, it was determined that this would be too difficult and impractical for us to implement for the following reasons:
    - To ensure inclusivity we could not make the questionnaire on-line only - we had to give participants the opportunity to complete a paper version.
    - To track those completing paper copies we would have required everyone to provide us with some personal details for the follow up questionnaire and established a system of linking them to the first one. This presented potential issues relating to the management and storage of personal data, e.g. names, addresses, or e-mail addresses.
    - There were also concerns about re-engaging with the same individuals after two years and if we would achieve a good level of follow-up response after 2 years. This could result in extremely low levels of data.

  The main disadvantage of not tracking individual respondents was that the information provided in the follow-up questionnaires would not be completed by the same cohort who completed the pre-intervention questionnaire, therefore preventing direct comparison between the pre- and post-intervention responses.

- It is also recognised that in our enthusiasm to gain information from the faith centre attendees about their current behaviours and understanding of air quality, the questionnaire became too lengthy, and this may well have reduced the number that were completed.

Removing barriers to participation

- Financial incentives for faith centres to participate in the project might have eased initial recruitment and facilitated better engagement from leaders. Again, this was considered

during the project planning process, and it was decided that the team needed to work with faith centres who were keen to take part because they were genuinely interested in working with us to improve air quality, not for financial gain. However, it is appreciated, that this may have excluded some centres that would have been more enthusiastic to take part, if there had been financial compensation for their time.

- We were surprised by the lack of Wi-Fi connectivity at many of the faith centres when we initially invited them to be part of the project. In hindsight we should have offered those centres who really wanted to participate but had no Wi-Fi with a 4G booster (as we did in the second phase), as the lack of Wi-Fi connectivity hindered recruitment.

EarthSense User Day Conference

First phase findings were shared at the EarthSense User Day conference in June 2022, attended by individuals from private industry, academia, other Local Authorities, as well as the charity sector (Fig. 35). The approach taken by the Air Quality team and the use of the *Zephyrs* sparked further project work with external partners, including research work undertaken by Enjoy the Air.

Figure 35- Faith centre project presentation at EarthSense conference in June 2022.

WMCA Case Study and Air Quality Literacy Training

The project has already been cited as a case study for 'community engagement' in the West Midlands Combined Authority Air Quality Reference Document[6] and we have discussed the pros and cons of the project with other local authorities in the region and provided advice to those creating the new West Midlands Regional Air Quality Dashboard which is being completed by the WMCA and is being funded by a Defra Air Quality grant.

The project has also been used as a case study of best practice in the WMCA's recent Air Quality Literacy training[7] that is being rolled out to Local Authority officers and elected officials.

Sandwell Council Public Health Lunch and Learn

Sandwell Council's Public Health team host regular "Lunch and Learn" sessions for staff in Public Health and other internal colleagues. The project has been featured in several sessions, as we have

[6] https://www.wmca.org.uk/media/ruchg02c/wmca-air-quality-framework-reference-document-awaiting-approval-from-wmca-board.pdf
[7] https://www.wmca.org.uk/what-we-do/environment-energy/air-quality/air-quality-literacy-training/

shared our approach and lessons learned. This has informed the approach of other council departments.

Public Health Research Symposium 2024

The findings from the project will be shared at Sandwell's Public Health Research Symposium 2024 in October 2024. This research is shared with Sandwell colleagues but also other partners across the region and UK.

University of Birmingham's WM-Air

Whilst in progress we shared the ongoing work of the project at several WM-Air events in Birmingham. WM-Air invite academics, private sector, charity groups and other Local Authority officers from the West Midlands to their events to share knowledge and best practice.

West Midlands Environmental Protection Group (WMEPG)

WMEPG is a long-established group of West Midlands Local Authority enforcement officers currently working in the fields of air quality, contaminated land, noise and permitting. The group holds quarterly meetings, that provides local authorities with the opportunity to share their knowledge and best practice. Updates on the progress of the faith communities project were shared with this group on a quarterly basis, inspiring other local authorities to take a similar approach to working more closely with their communities.

Sandwell's Future Engagement Work and Learnings for the 2025-2030 Air Quality Action Plan

The knowledge, understanding, and connections established through this faith centre project and related organisations has been highly beneficial to all involved. The insights gained from this initiative will play a crucial role in shaping the Air Quality team's strategy for community engagement initiatives moving forward. Furthermore, the input received from faith leaders and their communities will be instrumental in guiding the selection of measures to be included in Sandwell's upcoming 2025-2030 Air Quality Action Plan.

Long Term Impacts

Net Zero Innovation Programme

Through the communication and newsletters with the faith centres, other funding opportunity for community groups was shared regularly. One such opportunity was the Net Zero Innovation Programme (NZIP) from Sandwell Council and the University of Birmingham, which as part of the programme offered grants from Sandwell Council Public Health for small-scale climate change related community-based projects. One

Sandwell Metropolitan Borough Council

of the centres taking part in the project was the Guru Nanak Gurdwara in Smethwick who successfully applied for the grant and received funding for their climate change initiative. The grant enabled the centre to purchase sewing machines and trained seamstresses to providing sewing workshops and sewing lessons at their Gurdwara. The temple were keen to use the project to highlight the huge carbon footprint created by the fast-fashion industry and to encourage more sustainable living by enabling attendees to learn how to repurpose clothes and reduce textile waste. The project also upskilled the local community by teaching them sewing machinery skills.

NHS Integrated Care Board (ICB) Collaboration

The connections established with the faith centres by the Air Quality team have already been used to extend the reach of our existing NHS Black Country ICB's Children and Young People's Asthma Air Quality Working Group. Working with the NHS's community based CYP asthma team we co-designed an air quality engagement session to help teach children and parents about the links between respiratory health and air pollution. The engagement session, held at the Guru Nanak Gurdwara in Smethwick included paediatricians, respiratory nurses, Sandwell's Air Quality team and the George Coller Memorial Fund's team (Figs. 30 and 31) This community engagement work is planned to be replicated in other faith and community centres in Sandwell.

Figure 30 – Poster advertising asthma and air quality event at the GNG Smethwick

Figure 31 -Children at the Kids Lung Health Day at the Guru Nanak Gurdwara in Smethwick create air pollution catchers and meet the asthma mascot George-O-Saurus in February 2024

Bike Hub Cradley Heath Community Link

Cradley Heath Community Link (CHCL) joined the faith centre project in 2023. Although a relatively small centre they have a huge community reach, with a Christian worship session once a week, a food bank, free school uniforms, a café, craft sessions and several mental health and well-being groups. On joining the project centre leader, Paul Latham (Fig. 32) shared with the Air Quality team his long-held vision of establishing a cycling project at CHCL, with a focus on upskilling young people. He wanted to create a hub where children and adults could learn to ride, as well as offering young people the opportunity to acquire practical bicycle maintenance and repair skills and to inspire young people to train as engineers. Paul clearly understood the social, practical, financial, and environmental advantages that cycling offers and wanted to see others benefitting.

Figure 32 – Paul Latham, faith leader at Cradley Heath Community Link

Sandwell's air quality team supported the centre in its successful application for a Vision 2030 Community Grant, which they were awarded in December 2023, allowing them to purchase two second-hand shipping containers. One container is now being used as a bicycle store allowing anyone without access to a bicycle the opportunity to learn to ride and led riding sessions also being offered to help ride confidently. The other container is being converted into a cycling repair hub.

The centre also received support from British Triathlon who helped purchase bicycles and safety equipment for the centre and ran free community activator courses to upskill local people to be able to lead local walks and rides. Since May 2024 regular cycling sessions have been held at the centre (Fig. 33) and further partnership working is planned with the centre to create walking and cycling maps to highlight quiet low-traffic routes, and viable car free travel options.

Figure 33 – Cyclists outside Cradley Heath Community Link and cycling along the local canal network in May 2024 during their first led bicycle ride (Photos credited to Alex Ballinger MP)

Bike Stands

Figs 13 and 14 show some of the bike stands installed as a part of the project. The perceived benefit of these installations has already been reported by various faith leaders, but these are long-term infrastructure additions to the centres so it is hoped that interest in cycling will continue. Although this is a small step in the modal shift to sustainable active transport, they afford the centre members another option when considering their various travel choices to their centres.

Establishing Long-Term Relationships with Community Groups

One of the most valuable long-term impacts that has stemmed out of the project has been the strengthened relationships with the various community groups around the borough. The partnerships and connections established between the Air Quality team and the faith communities that took part are invaluable. Centres that already had good relationships with the Public Health department have seen those connections strengthened further, whilst brand new relationships have been built with other centres that had had previously very little or no engagement with our team or the Council prior to this project. Feedback from faith leaders has confirmed that they have a better perception of the Council since being part of the project and this has made them more likely to engage with other Council initiatives.

We already have plans to continue with and build on our relationships with these community groups through our Auntie Duck air quality education programme, which was launched on Clean Air Day 2024. The plan is to introduce Auntie Duck (Fig. 34) to youth groups connected with the faith centres, suggestions have already been made to share Auntie Duck with the Boys Brigade at the Wesley Centre in Wednesbury and to attend a summer youth camp run by the Sikh Helpline at the Sri Guru Har Rai Sahib Gurdwara in West Bromwich.

Figure 34 – Auntie Duck is Sandwell's new air quality champion

Conclusion

Despite a 6-month delay at the start of phase one, all key actions outlined in the two-year project plan were undertaken and successfully completed. Whist the 6-month delay was initially frustrating it did provide us with time to create additional resources, such as leaflets, and newsletters to support the project. The project proved overall to be an extremely positive intervention, effectively raising awareness about air pollution and fostering positive behaviour change amongst those who participated and would never have been possible without the financial backing of the Defra air quality grant.

The long-term benefits of this project are evidenced through the wealth of connections and positive relationships that have been established with these faith communities, that offer exciting and unique opportunities for future air quality engagement work. In addition to the diverse range of initiatives implemented over the past two years, we have witnessed centres focusing on sustained long-term actions to improve local air quality, and a fostering of a 'greener' mindsets in their everyday decision making.

Finally, Sandwell Council's Air Quality team would like to say a heartfelt thank you to all those involved with the project, with particular thanks to all the faith leaders and enthusiastic volunteers on whose participation we relied on to support this project.

Thank You!

APPENDICES

Appendix 1- Budget Summary

INCOME		
£75,760.00	Defra Air Quality Grant	
£27,219.50	Sandwell Match Funding	
	TOTAL Income	**£102,979.50**
EXPENDITURE		
£30,000.00	Staffing costs	
£31,320.00	8 Zephyrs and solar panels (Capital expenditure)	
£15,232.00	8 Zephyrs (Operational expenditure)	
£14,950.00	Bespoke Web Based Dashboard	
£6,238.00	Display screens, stands, wall mounting bracket and installation	
£1,080.55	Translation of Questionnaires - Pre and Post Intervention	
£40.94	Bankers' boxes for collecting paper questionnaires in centres	
£941.28	Printing of questionnaires, leaflets, posters, newsletters	
£1617.80	Installation of zephyrs and solar panels	
£568.37	Noticeboards (14 centres)	
£1100.00	Replacement TV, stand and bracket	
£128.56	Room hires cost for air quality forum (December 2023)	
£2000.00	Analysis of Zephyr Data	
	TOTAL SPEND	**£105,217.50**
	Overspend (met from Council funds)	**£1,642.50**

Appendix 2- Air Quality Information Toolkit

Air Pollution Toolkit-Faith Centres.pdf

Appendix 3- Air Quality Baseline Questionnaire

Faith Project AQ Paper version v2.pdf

Appendix 4- Air Quality Follow Up Questionnaire

Evaluation Questionnaire Faith C

Appendix 5 – Summary of Results of Pre and Post Intervention Questionnaires

Faith Centre Project Questionnaires Summ

Appendix 6- Faith Leader Feedback Form

Faith Communities for Clean Air.pdf

Appendix 7 – Faith Communities for Clean Air Project Leaflet (2022)

Faith Centre AQ Project Leaflet 2022.p

Appendix 8 – Faith Communities for Clean Air Project Leaflet (2023)

Faith Centre AQ Project Leaflet 2023.p

Appendix 9 – Example Air Quality Report – Zephyr Data Shared with Faith Centres

Shri Venkateswara (Balaji Temple) - Air Q