Design in the Public Sector: Using Design Principles to address Air Quality

Air quality in Portsmouth

Public health in Portsmouth is threatened by poor air quality. Across the UK, it is estimated that air pollution contributes to between 28,000 and 36,000 deaths per year[1]. We know that exposure to air pollution can lead to a reduction in life expectancy, and range of poor health outcomes such as low birth weights, and increased risk of developing cardiovascular diseases and some cancers. Whilst it is difficult to casually link high exposure to air pollution to health outcomes, it is established that Portsmouth's residents experience higher rates of premature death from cardiovascular diseases and cancers than the England average. Air pollution also has a disproportionate impact on the city's most deprived areas, where residents are already vulnerable to poor health.

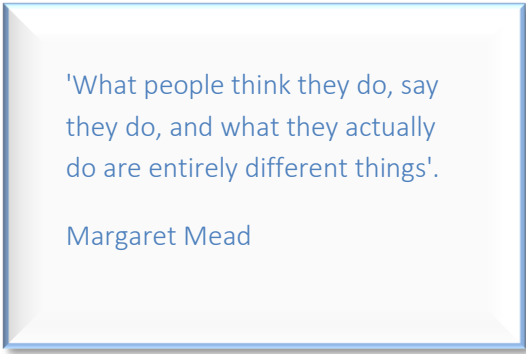## Using design thinking: fresh eyes on an old problem

Portsmouth was been awarded a place on the Design Council's 2018 'Design in the Public Sector' Programme. The Design Council, working with the Local Government Association are providing training on using design-led approaches to addressing public health problems in Local Authorities.

The project team, comprising PCC representatives from Transport, Public Health, Planning and Sustrans, are heavily committed to improve air quality in the city. However, to date, our best efforts have not made the dramatic improvements in air quality that the Department for Food and Rural Affairs (DEFRA) require in order for us to meet legal requirements for clean air, and to protect our population from harm.

'Design thinking' encourages deep consideration of the problem, not simply solutions, in order to address the root causes of an issue.

It will help us to build on existing knowledge, co-ordinate approaches and to challenge the way we think about and deliver measures to address air pollution.

This programme encourages us to find out more about how air pollution is considered by residents and visitors to our city, and to find out how people act in the really world, not just how they respond to surveys. It will give fresh eyes to the issue, and encourage us to think in ways we had not before to come up with new and dramatic approaches to addressing air quality.

> 'What people think they do, say they do, and what they actually do are entirely different things'.
>
> Margaret Mead

Taking account of the whole system (transport, planning and public health), that listens to perspectives of local people, will help us to embed healthy place making principles in development of the built environment, improving air quality and the wellbeing of residents.

Where are we now?

Current legal limits on ambient air quality are now being met across the majority of the city, although NO2 levels are high at 'hotspot' areas within the city, particularly in two Air Quality Management Areas. In March 2018, PCC were successfully awarded £450,000 through the DEFRA Air Quality Grant. Programme elements include a communications and marketing package, personal journey planning, Electric Vehicle promotion, cycle training, family bike grant scheme, Bike Dr sessions, Pompey Monsters Walk to School Challenge, school travel planning, workplace travel planning, workplace green fleet driving, workplace sustainable travel fund and improvements to walking and cycling.
However, DEFRA have determined that we need more dramatic reductions than these can achieve, and in a shorter time frame.

Good urban design and high quality places can promote healthy lifestyles and prevent illness as well as keep older people independent and in their own communities for longer. Consideration of the built form of development has been shown (Edussuriya et al., 2014) to reduce exposure to air pollutants. Evidence also shows (Woodcock et al., 2009) that encouraging active travel provides more health benefits per million population than increased use of lower emission vehicles.

Links to corporate aims

Reducing pollution and illness provides long-term savings to health and social care, and boosts the local economy. Whilst it is difficult to quantify the causal relationship between poor air quality and health outcomes, Public Health England estimates that the health and social care costs of air pollution in England could reach £5.3 billion by 2035 if action is not taken. In Portsmouth it is currently estimated that air pollution has an impact on mortality in the city equivalent to 95 deaths per annum.

The aims of this project align with a number of other Portsmouth City Council and partner organisation strategies.

- The Local Plan the Council identifies a number of deprived communities in the city as areas for development.
- The 2018 Health and Wellbeing Strategy aims improving health life expectancy in the city; and reduce inequality by improving the areas with the lowest expectancy the fastest.
- The Health and Wellbeing Board have developed a 'place' focus to reflect the importance of those drivers for health.
- Portsmouth CCG's "Vision 2020" includes an aim to 'tackle the biggest causes of ill health and early death and promote wellbeing and positive mental health".
- PCC's Air Quality Strategy seeks to improve air quality in the city and achieve all statutory local air quality standards in the shortest possible timeframe.
- It also aligns with Portsmouth Cycle Forum's vision "A City to Share".

The Double Diamond

The Design Council use the 'Double Diamond' method to identify the root causes of a problem before developing solutions. The process starts with uncovering insights into the problem in the 'Discover' phase. This is followed by defining the area to focus on and the specific problem at hand. Potential solutions are then developed through a prototyping phase, before delivering solutions.
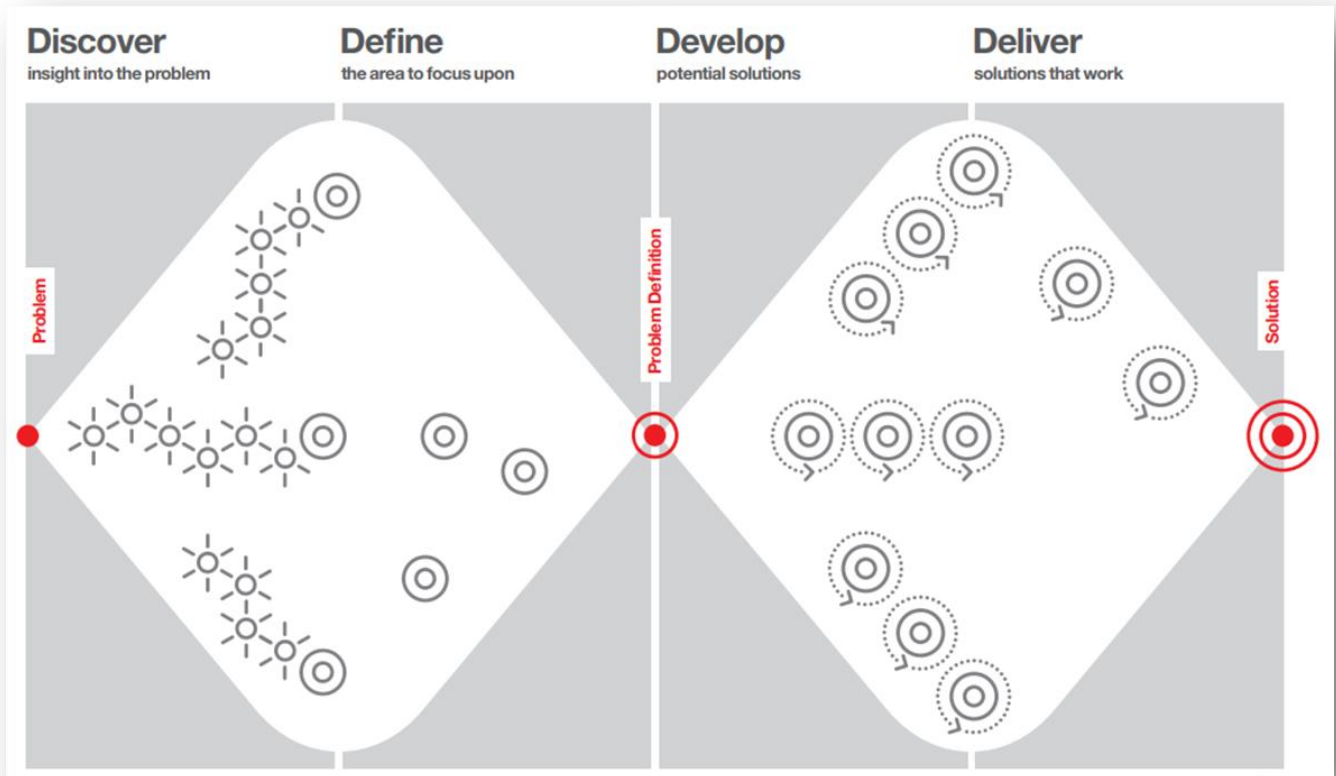
Discovery phase

From desk research we established that around 65% of car journeys in Portsmouth are short journeys of 5km or less[2]. Those most likely to use their cars for short journeys are people with disabilities, parents with young children and those who use their car for work. We wanted to know what proportion of car journeys could be switched to other modes.
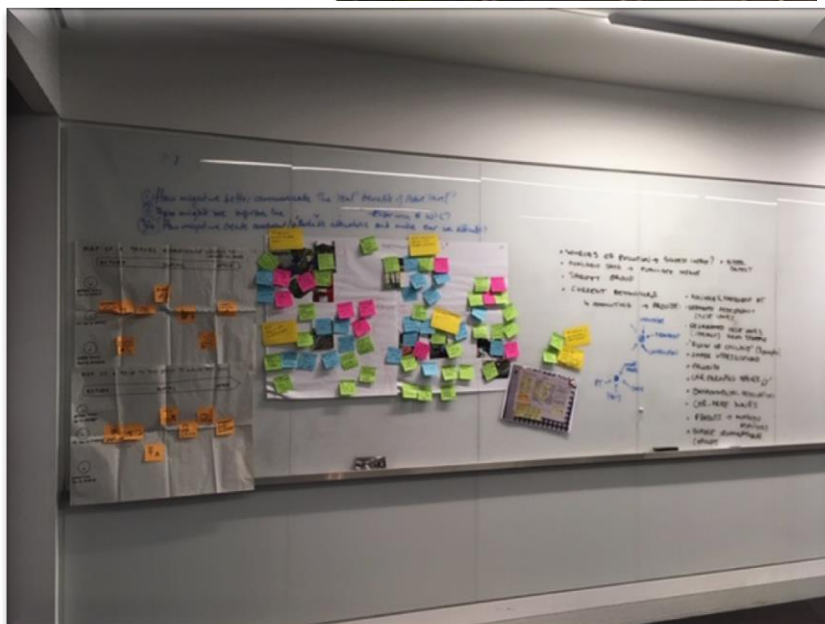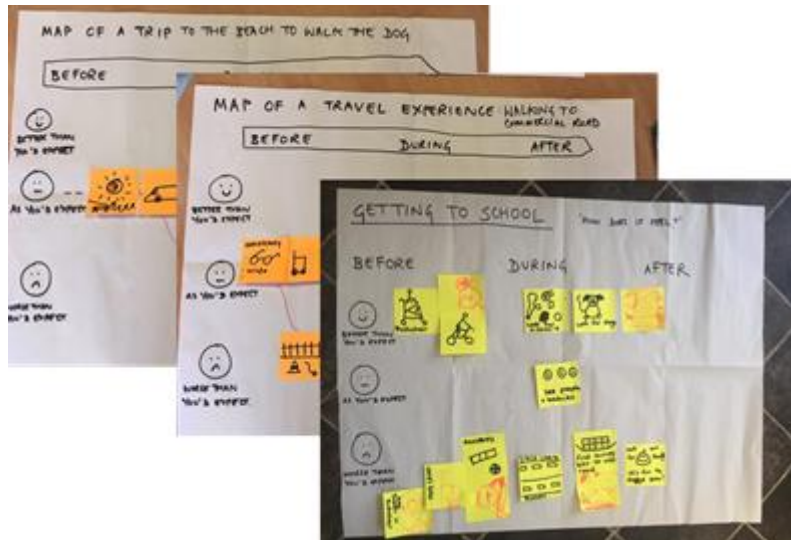
We identified participants from each of the groups above and used design methods to ask short journey car users:

- How do you feel about your streets?
- How do you feel about getting around the city?
- Are you able to walk and cycle easily around the city?

Journaling	Participants made a written or photographic record of their experiences, over time. It is a way of gaining insight in a way that is easy to do, available to all, and enabled us to gather insights from hard to reach areas.
Journey mapping	Similar to journaling we asked participants to draw a specific journey (e.g. walk to school) and assess all the barriers and facilitating factors that they experienced along the way.

Interviews	We used one to one interviewing with a small number of participants to dig deeper into the questions above.

Qualitative research findings:

WHY DO PEOPLE TAKE THE CAR FOR SHORT JOURNEYS?

'If I'm in a hurry I jump in the car'

'When my kids were little, we walked everywhere. We didn't take buses because we couldn't afford it, and there were no spaces for prams on the bus'.

'The bus I would catch regularly finishes at 17.45'

'Driving is such a pain; it's easier to get a taxi'.

'I would catch a bus if it were a more regular service that went exactly where I wanted to go'.

Key themes from research:

- Parents and children like walking to school together, it gives them quality time to chat and play

- But getting ready in the morning is stressful, sometimes meaning parents drive to save time.

- Parents often 'trip-chain' - link journeys together—for example dropping children at school, before driving to work themselves. The 'parents with young children group' and 'use car for work' group can be the same.

- Buses and other public transport are not deemed a viable alternative to driving (in a personal car or a taxi). Services are considered limited and expensive.

Definition phase

Our findings led us to focus on those who make short journeys by car and feel they must drive. We defined this further to 'reluctant drivers', who are interested in alternative travel modes, but feel there are none, rather than 'extreme users' who use their cars all the time.

Developing solutions:

We identified opportunities with a Benefits Matrix—that measures importance and difficulty. It identifies top priorities that have high return on investment and 'quick wins' that are lower importance, but easy to implement. Priority actions included visible infrastructure that makes walking fun. Quick wins included gamification to increase walking and cycling. A longer term strategic goal was garnering support for plans from decision makers.
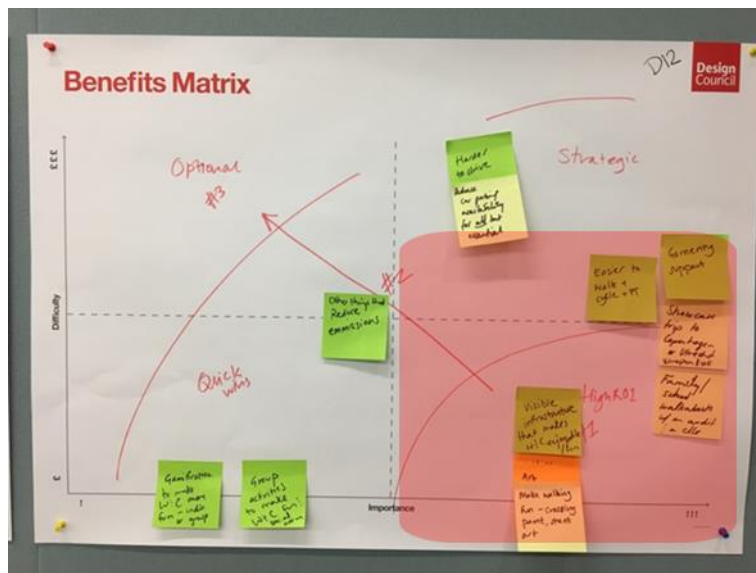
We undertook prototyping to test the validity of our ideas. Based on our work, and research from elsewhere[3], we tested a sticker chart to encourage children to be ready to leave the house on time to walk to school. We used the existing Pompey Monster branding - an Portsmouth initiative from the Active Travel team designed to promote walking to school.

We also looked at Sustrans' work elsewhere that had involved local communities in redesigning streets, with

the aim of improving active travel around schools and reducing air pollution.

Recommendations

- Expand the existing Pompey Monster walk to school initiative to include way finding around schools and the rest of the city, that will promote walking as a viable alternative to driving.
- Ask children how they would design the area around their school to make it more fun and appealing to walk, cycle and play. Use this research and children's insights to incorporate Child Friendly Design in our city, using the Urban 95 Toolkit[4].
- Investigate the possibility of School Streets, to temporarily close streets around schools to promote active travel and improve air quality. Recognising that this may require substantial staffing resource and infrastructure, as outside London, local authorities are not able to use camera enforcement.

For more information contact:

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[1] Public Health England (2018) 'Health Matters: air pollution'
[2] Portsmouth Air Quality Survey (2018) 'What barriers would prevent you from considering alternative transport?' ('Other' 38% – after convenience, too time consuming, cost and lack of available routes')
[3] http://gyorgyigalik.com
[4] www.bernardvanleer.org/urban95