

'It's good to walk' – travel planning in action

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Grass Routes

The Adastral Park Travel Plan

Workplace Travel Plans offer a practical means of contributing towards BT's corporate sustainability objectives, reducing the carbon resulting from our business activities and, ultimately, saving money.

Engaging employees on the issue of Climate Change and sustainable behaviours extends to encouraging them to consider opportunities for reducing emissions generated by their journey to work. UK Government figures released in April 2009 stated that: "35 per cent of our carbon emissions are caused by domestic transport. Of that, 58 per cent are caused by cars"[1].

This paper tells the story of Grass Routes, the Adastral Park travel plan strategy and marketing campaign, launched in June 2008. It explains the concept of workplace travel plans and the specific objectives for Adastral Park. A range of initiatives (including a rail station shuttle bus, dedicated car-share parking, electric vehicle charging points, in-house research applications and external engagement) have since been implemented to enhance both the sustainable travel infrastructure on-site and the range of options for people travelling to Adastral Park.

The evidence from data monitoring the impact of these interventions on people's travel behaviour, and the lessons learned through ongoing process evaluation, offers a compelling case for BT continuing to support employees trying to make smarter travel choices.



1. Introduction to workplace travel plans

A workplace travel plan is a strategy for managing the demand for travel which arises from the business activities of an organisation at a specific place of work. They can be implemented to influence both the travel generated by people commuting to their place of work, as well as the business trips that individuals make on behalf of their employer. Travel plans are increasingly being adopted by major employers in the UK and integrated within long term business strategies as companies plan for life in a carbon-constrained future.

1.1 What influence do businesses have on the way people choose to travel?

While travel is not a core business activity for most organisations, it is both a by-product (commuter travel) and enabler (business & fleet travel) of the majority of commercial activities conducted in the UK and across the rest of the world. Alongside the energy consumed by buildings, IT equipment and other business operations; the travel and transport associated with business activities are significant contributors to the UK's CO₂ emissions, as shown by Figure 1.

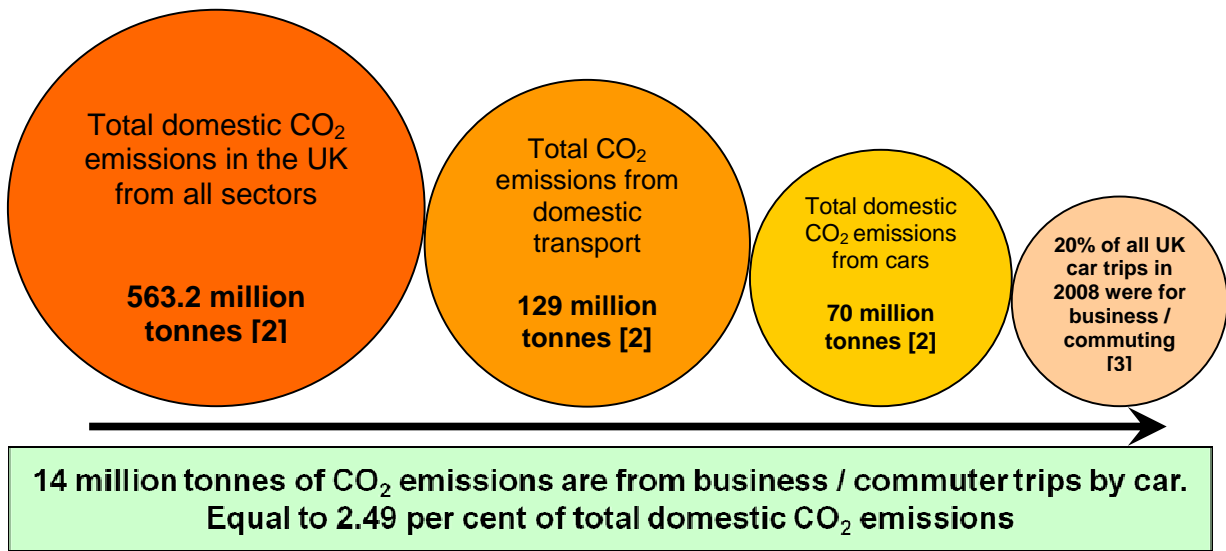


Figure 1 - Domestic UK CO₂ emissions for transport

While 2.49 per cent may appear to be a small headline figure, it is actually quite significant when considered as a proportion of total domestic CO₂ emission. Transport is also the only sector in which emissions continue to increase, while all of the others are stable or declining against 1990 baselines agreed in Kyoto [4].

The issue of global climate change resulting from human activity is now higher on the agenda for government and business than it ever has been. There is a clear mandate for businesses to act responsibly and achieve reductions in the CO₂ emissions arising from their own operations, thereby contributing to national and international targets.

1.2 *What does a workplace travel plan actually do?*

A travel plan is simply a mechanism by which an employer can encourage and support its employees' greater use of walking, cycling and public transport as well as encouraging people to share their car journeys to work and when making business trips. The adoption of flexible working practices, remote desktop access, teleconferencing and videoconferencing (now proven and reliable technologies) can support greater reductions in a company's total demand for travel, thereby attaining additional business and CO₂ efficiencies.

Using locally collected data ensures the specific measures implemented at a particular site directly meet the needs of its users (employees and visitors). Research evidence

compiled for the Department for Transport suggests that, in the UK, good workplace travel plans have typically reduced the number of people driving to work by 15 per cent over implementation periods ranging from two to five years[5].

Once adopted, the travel plan becomes 'live' and the process of improving the transport options for employees and visitors begins. This typically involves the implementation of a package of measures designed specifically for a workplace or business. Examples of travel plan measures include:

- Installing secure covered cycle parking, and high quality shower and changing facilities
- Providing priority parking spaces for car-sharers and online car-sharing databases to help people find a lift to work
- Negotiating with local operators and transport authorities to establish more frequent public transport services that connect home and work sites

The impact of the Travel Plan is then monitored over an appropriate timeframe, typically between three and five years. Ongoing monitoring of the Travel Plan against the original baseline of travel survey evidence is essential. This enables the company to observe whether its investment in measures such as those listed above has been effective, and whether it needs to consider different approaches to achieve its goals.

2. Developing a Travel Plan at Adastral Park

Adastral Park is located on the edge of Ipswich in Martlesham Heath, Suffolk, and is BT's main research & development site in the UK. As a workplace it provides a base for around 4,000 people with anywhere between 2,500 and 4,000 people travelling to work at the site each day. Approximately 80 per cent of the people who work at Adastral Park are BT Group employees, but this is changing as more companies choose to locate their offices alongside BT at this growing technology cluster.

Adastral Park only has one direct bus service from central Ipswich, but a number of local routes pass within a 10 minute walk. The nearest mainline railway station is 7 miles away in the centre of Ipswich. The site is located on the National Cycle Route network, but these routes are shared with vehicle traffic and are not practical for everyone working at the site. Adastral Park is adjacent to the A12 dual carriageway and close to an interchange with another major trunk road, the A14. Some of the junctions along this stretch of road occasionally become congested with traffic during morning (8:00am to 9:00am) and afternoon peak (5.00pm to 6.00pm) travel periods.

2.1 The motivation for developing the travel plan

A number of factors helped to shape the initial decision to develop a travel plan at Adastral Park, as shown in Figure 2.

Taken together, these potential benefits offered an opportunity to reduce BT's business costs, improve staff productivity, reduce absenteeism and help staff enjoy a better work/life balance through shorter, cheaper journeys to work. Above all, the implementation of the travel plan presented BT with the opportunity to mitigate the wider environmental impact of its activities, by reducing the CO₂ emissions and contribution to local traffic congestion which emanate from the Adastral Park site.

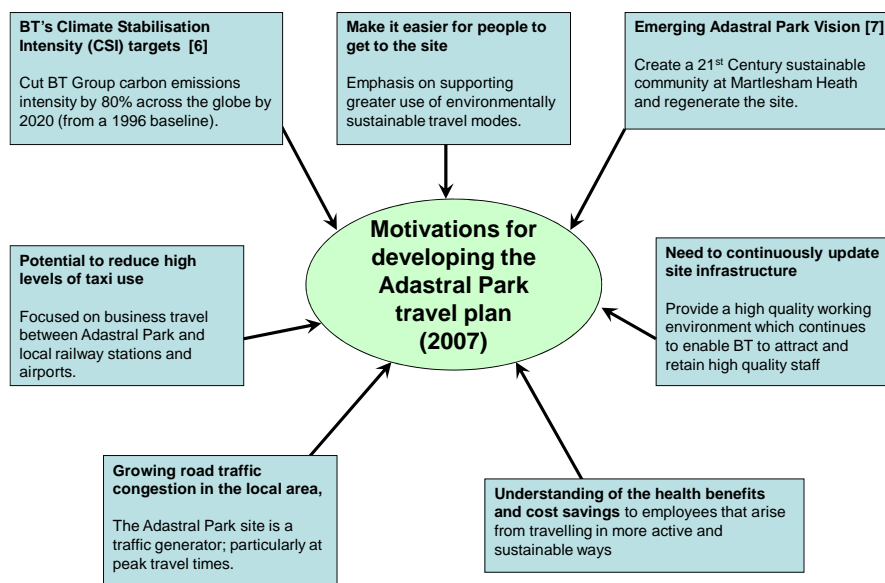


Figure 2 - Factors driving the Adastral Park travel plan

2.2 The baseline situation (2007)

The process of developing a travel plan for Adastral Park began in 2007. Stakeholder engagement with almost 2,000 people working at the site, drawn from both BT and other resident companies, took place in the form of focus group discussions and a site-wide travel survey in November 2007.

The sample from the quantitative survey represented 42 per cent of all employees based at Adastral Park. When cross-checked with the age and gender distribution of employees across the various businesses based at the site it was found to be highly representative. The large response to this survey provided statistically significant results (95 per cent certainty that the values lie within a 'confidence interval' range of plus or minus 2.5 per cent) which offered a valuable insight into the commuter and business travel patterns of employees based at Adastral Park.

Figure 3 shows the headline finding that the majority of people (63 per cent) who were based permanently at Adastral Park in 2007 usually drove to work in their car on their own. More sustainable modes of travel (bicycle, bus, walk, train, car share) accounted for just over 32 per cent of all commuter travel to Adastral Park, which is below the national average of 39 per cent [3].

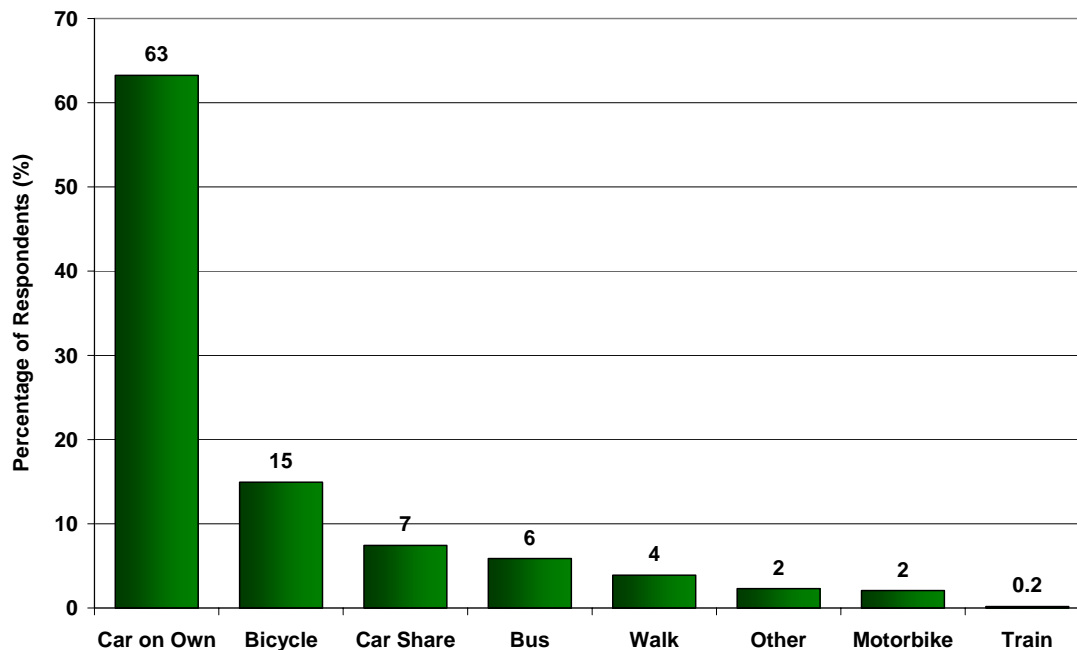


Figure 3 - How people usually chose to travel to work at Adastral Park (baseline)

Other findings highlighted by the survey included:

- 27 per cent of respondents to the web-based survey lived within four miles of Adastral Park, while 42 per cent travel between four and ten miles to get to the site
- A comparison between actual and estimated bus journey times for a random sample of 100 people who lived within 4 miles of the site and usually drive to work on their own revealed that, on average, they overestimated their bus journey time by 18 minutes
- 52 per cent of respondents who usually drove to work said they would consider using public transport to get to work if it was improved
- 36 per cent were prepared to consider sharing their car journey to work on a regular basis, provided they were incentivised to do so
- 29 per cent were prepared to cycle if facilities for cyclists were improved
- 77 per cent of respondents were aware of their organisation's flexible working practices
- 53 per cent already work from home from time to time

- 62 per cent of respondents made business trips at least once each month; 14 per cent travelled every fortnight; 10 per cent travelled every week and; 9 per cent made business trips away from Adastral Park more than once a week

2.3 *Travel plan objectives and targets*

Based on the gathered evidence, the key objectives for the Adastral Park travel plan were to:

- Reduce single car occupant trips to Adastral Park
- Improve conditions for walking, cycling and public transport, and increase the number of trips made by these modes
- Increase the proportion and efficiency of business trips made by sustainable modes
- Reduce the need for travel for both commuting and business trips
- Increase the proportion of visitors to Adastral Park travelling by sustainable modes
- Contribute towards the improved health and well being of staff through the promotion of healthy travel options
- Improve environmental standards at Adastral Park and assist with BT's wider corporate social responsibility targets
- Support the Adastral Park Site Development vision of being a truly 21st Century sustainable development.

In accordance with published best practice guidance for travel planning, the Adastral Park travel plan included targets and key performance indicators to evaluate the impact of short and long term strategies. The headline targets for these strategies was to achieve a 5 percentage point reduction in Single Occupancy Vehicle (SOV) use for commuting and business travel in the short term (June 2008 to June 2010) and a further 5 percentage point reduction in the long term (by June 2012).

3. 'Grass Routes': Sowing the seeds for sustainable travel

Grass Routes

The Adastral Park Travel Plan

The Adastral Park travel plan was voluntarily adopted by the site management team in February 2008 and formally launched on 18 June 2008.

In order to promote the travel plan and give it an identity, the Grass Routes brand was conceived through a competition open to everyone on site in the run up to the launch. The aim was to use this branding to generate interest and awareness in the sustainable travel objectives of the Adastral Park travel plan. Grass Routes is how most people who work at Adastral Park know of the site's travel plan and recognise the measures that have been implemented as a result of its delivery.

A delivery plan was also developed in an iterative, agile manner, to start implementing the key measures taking into account the cost, impact and benefits wanted to be achieved. Guidance was received from the travel plan steering group. The plan was delivered through a dedicated travel plan manager and then regularly monitored to assess the impact and changing needs of the plan.

A monthly communications plan was used to promote all modes of sustainable travel with a key theme for each edition, linked to relevant national or international travel events, such as Walk to Work day, Bike Week, In Town Without My Car day, Commute Smart week, etc. A number of site specific measures have also been implemented, which include a travel information stand in the restaurant, additional cycling and motor bike parking, dedicated car share parking bays, railway shuttle bus for business, new drying room and lockers, site specific travel maps, personal travel plans and establishing a regional Sustainable Travel Forum via the IP-City Network. Some of these major activities and events from the first year of the plan are shown in Figure 4.

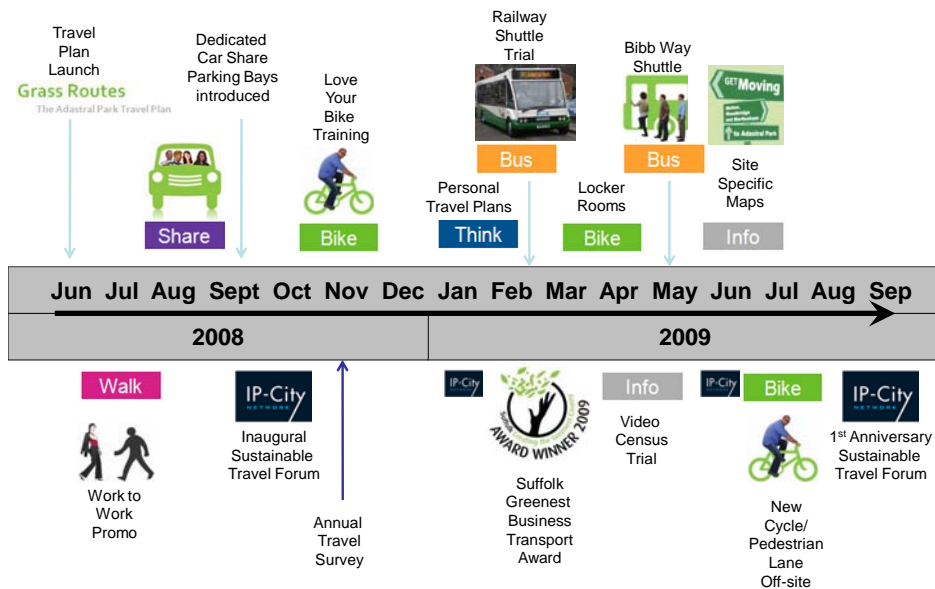


Figure 4 - Travel plan timeline for year 1

The impact of the marketing campaign was tested in the annual online travel survey in November 2008 to evaluate the influence of the change programme. The results were very encouraging, with 90 per cent of the 1342 respondents stating they were aware of Grass Routes prior to the survey. This alone indicates that the campaign has generated a high level of interest in sustainable travel, which is reflected in good general awareness of the brand. The top three initiatives being the www.GrassRoutes.info website, the launch event and travel information stand.

4. Evidence of impact

Based on the second annual travel survey, just five months after the launch of the travel plan, it is possible to consider the travel patterns of the staff based at Adastral Park on which the main travel plan targets have been set.

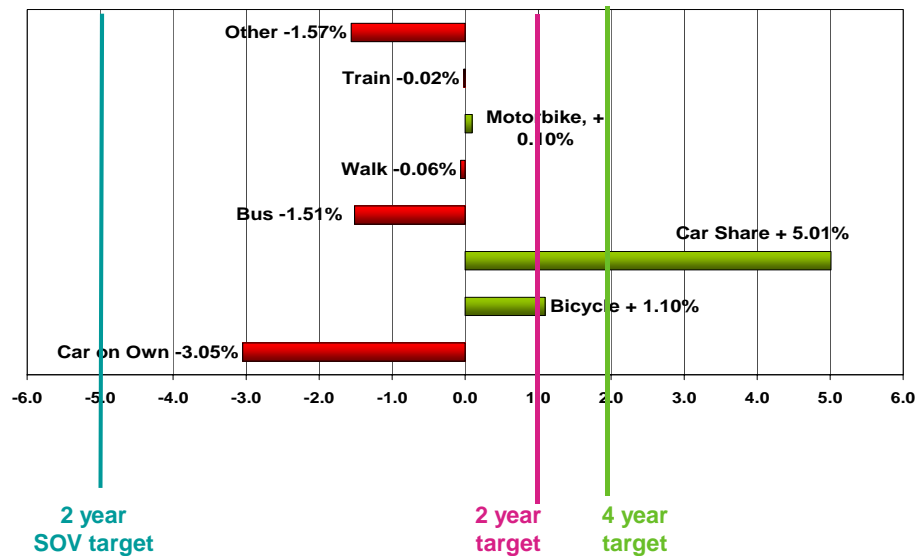


Figure 5 shows modal shift results for the BT staff replies out of the 1,342 responses received.

These results reveal a 3 percentage point reduction in staff travelling to work on their own, which is more than halfway towards the 2 year SOV target. By far the biggest change has been seen in the take up of car sharing, up 5.1 percentage points. Another significant shift has been the increase in those who regularly cycle to work, up 1.1 percentage points from an already high starting point (which is more than twice the national average).

The biggest surprise was seen in the reduction in those BT staff who regularly use public transport to get to work, with bus use down 1.5 percentage points. The reduction in bus commuters is partly thought to be due to a switch to cycling and car sharing, as well as there being no specific, incentivised campaign aimed at increasing bus use. It will be interesting to see whether the next annual travel survey reveals that the shuttle bus has encouraged more people to use the train as part of their commute to work.

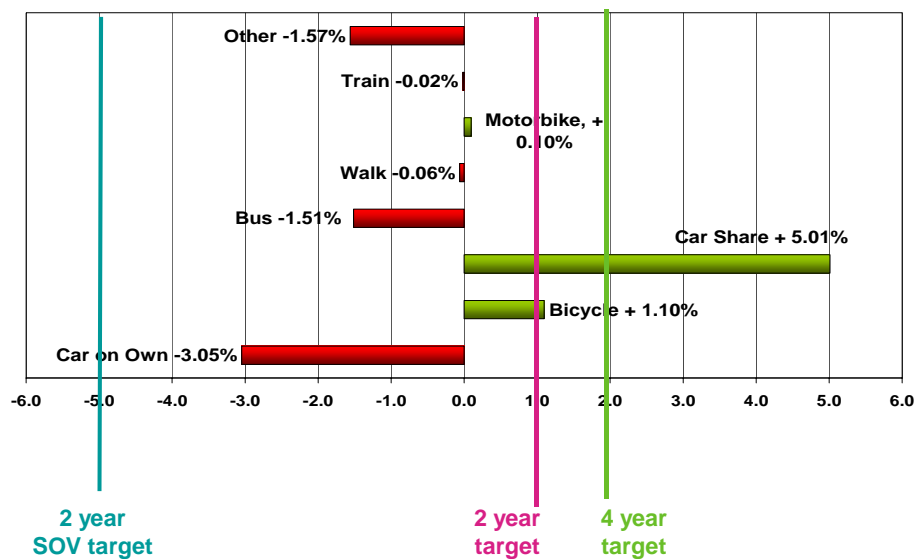


Figure 5 - Modal Shift after 5 months among BT staff

A total of 11 per cent of respondents to the survey indicated they had changed their travel behaviour since the launch of Grass Routes. Figure 6 shows a deeper analysis of these changes to more, and less, sustainable modes of travel. The vast majority (93 per cent) of the stated behavioural changes can be considered positive in terms of their impact against the stated objectives of Grass Routes. The remaining 7 per cent of respondents indicated that they had switched to less sustainable travel modes for their journeys to work.

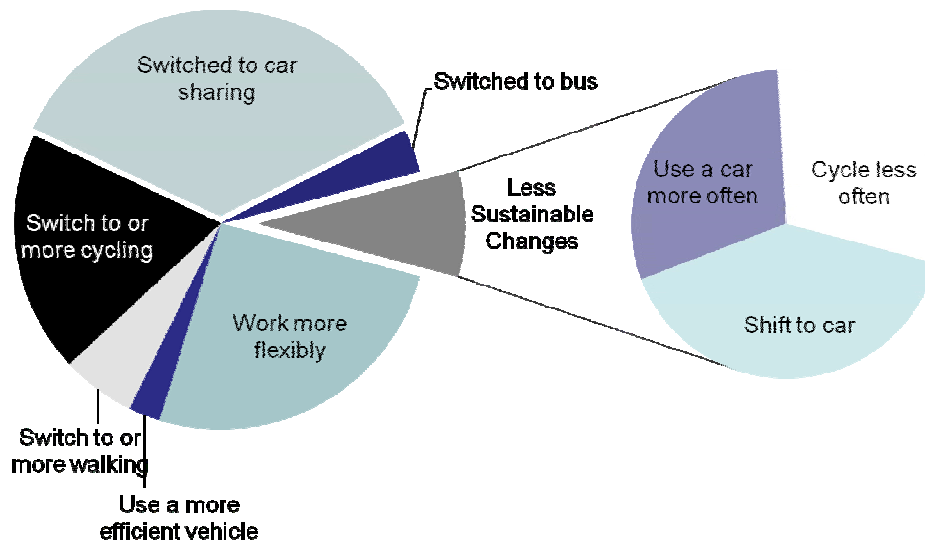


Figure 6 - Analysis of stated changes in travel behaviour

So what has influenced these changes in travel behaviour? There is a clear link between the various promotional campaigns (see Figure 4) and the modal shift (

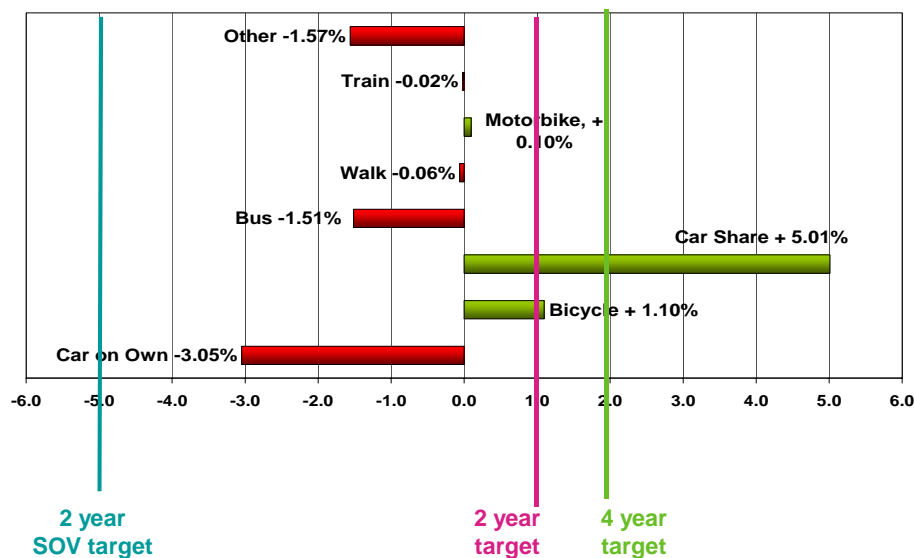


Figure 5).

There has been greater general awareness of all sustainable travel options and more readily available information to help people make better-informed travel choices. Where we have really observed the largest changes are where new infrastructure (e.g. priority car share parking spaces or the improved cycle facilities) has been combined with targeted marketing campaigns under the Grass Routes brand.

Share

There is considerable potential for greater levels of car sharing due to the high number of people arriving on site in a car, on their own, each day - the equivalent of 16 empty Jumbo jet plane seats arriving at Aadastral Park each day, or 1.5 million empty seats a year.

When we reviewed the 5 percentage point increase in car sharing recorded in the 2008 monitoring survey, it was evident that it followed a sustained campaign over the autumn of 2008 which publicised the provision of 144 dedicated, priority parking spaces for car sharers. In doing this, we assigned a proportion of the most convenient car parking spaces in every car park across the site to be dedicated for those who share their car journey to work – converting blocks of four normal spaces into three wider bays to allow passengers getting in and out more space to do so. We decided to keep the use of these spaces as simple as possible, so implemented a self policing policy with no need to formally register or carry a car share pass (as a pass in itself does not prove the individual has car shared on a particular day).

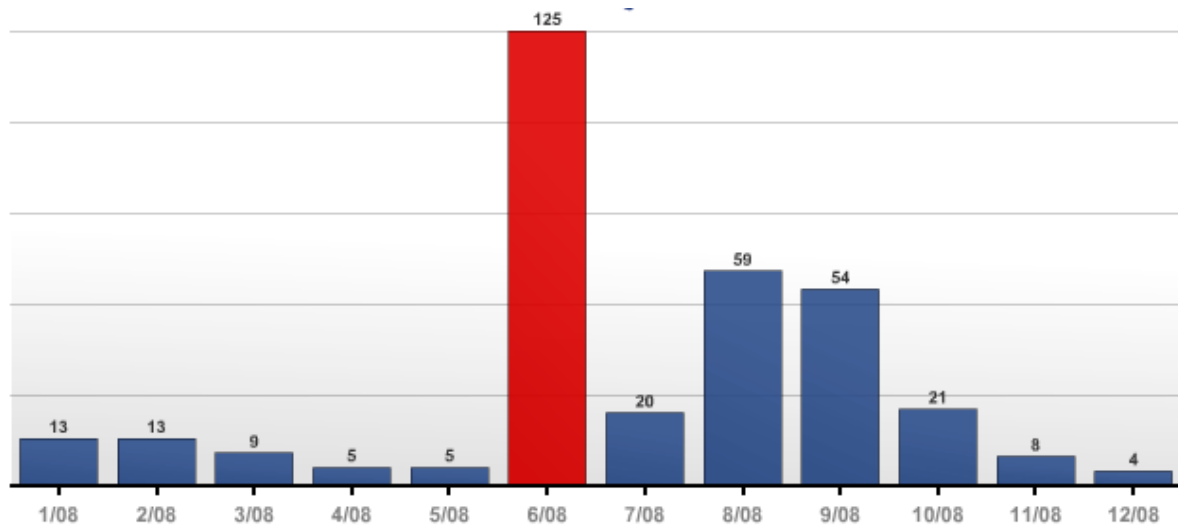


Figure 7 - Monthly registrations on BT CarShare website

Interest in the car share scheme can be clearly seen in the increase in number of people registering on the BTCarShare.com website in the months of our specific promotions (Figure 7). Feedback from users of the priority parking spaces is that the self policing works well most of the time, while many people appreciate having extra width to open the car doors more widely.

Bike

Doubling of motorbike parking has helped to see a modest increase in this mode of travel to Adastral Park. Greater capacity and better quality cycle shelters, supported by other related events, such as 'Love Your Bike' maintenance classes and safer cycling campaigns, have helped to increase bike usage by 1.1 percentage points from an already high starting point. We look forward to learning whether the new locker and drying room facilities provided on site have resulted in any further impact on the cycling figures in the November 2009 annual monitoring survey.

Info

Information underpins all of the initiatives associated with Grass Routes and is a key factor in encouraging people to make smarter travel choices for their commuter and business trips. A range of initiatives have been implemented to enhance the quality and availability of travel information for people working at Adastral Park.

- WEBSITE

A branded website, www.grassroutes.info, was established for the launch to act as a central point of reference - for visitors as well as for those people working on site. The structure of this website provides online information and is organised to reflect the main travel modes around which the various promotions are focused: WALK – BUS – BIKE – SHARE – THINK.

- INFORMATION STAND

A travel information stand has been provided in the restaurant hub through which many people pass or visit for lunch, informal meetings and coffee. The stand provides paper-based bus and train timetables, local travel leaflets and route maps which are freely available and people can take as required.

- PERSONAL TRAVEL PLANS

Drawing on employee feedback from the annual travel survey in 2008, we identified an opportunity to present and deliver travel information in a more personalised way. From 120 initial volunteers, a total of 31 decided to go through the process of receiving some personalised travel planning advice and feeding back their views on the process.

While it was difficult to engage people in the process, a number of those people who did get involved were motivated to change their travel behaviour. A total of six participants (19 per cent of those who participated) indicated that they planned to either switch to a more sustainable mode of travel, or use sustainable modes of travel on a more regular basis, as a result of the pilot of personalised travel information.

Interestingly the process revealed that, although modest, the incentives offered to people at Adastral Park to encourage them to try new ways to work were effective. In most cases simply providing better information alone would not have encouraged the participants to try cycling to work or using the bus to get to work. It also revealed that there was strong support for bespoke travel maps which were researched and produced through the personal travel planning process (Figure 8).

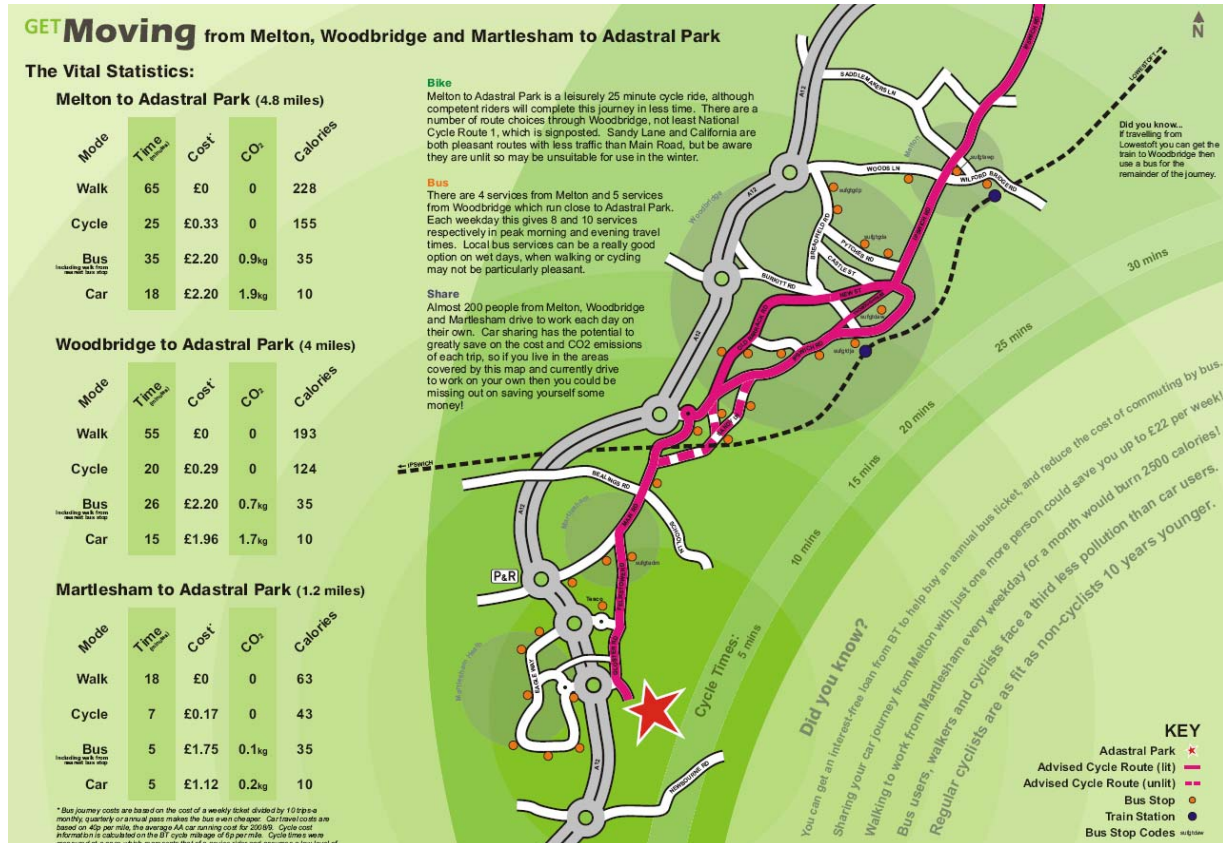


Figure 8 – Sample travel map produced for people working at Adastral Park

As a result these maps were subsequently rolled out more widely so that all staff across Adastral Park can access them via the Grass Routes website [8] and the travel information stand in the hub. What was particularly popular was the fact that we had researched all of the different travel options and included qualitative information on the user-experience alongside quantitative data on key factors such as: journey costs, calories burned, CO₂ emissions and trip times.

- **TRAFFIC CENSUS**

Regular traffic census counts have also been used since the start of the programme to help inform the travel plan activities, indicate traffic trends and seasonal impacts. A monthly census has been undertaken throughout the year using volunteers with manual clickers to count the different modes of travel on those particular days during the peak commute window for the site: 07:30 - 10:00

hours.

The onsite video research team were also engaged from an early stage as a parallel activity to see what could be done to automate this activity and provide near real-time data – see Section 5 for further details.

Bus

The initial bus campaign during the first year of the travel plan has focused on the business traveller. As a result of feedback from visitors there has been demand for a direct, courtesy shuttle bus from the station to site. With no other viable alternative most of these business travellers would take a taxi to complete the last 7 miles of their journey - this alone can cost more than the off-peak rail fare from London. Surveys of the taxi usage demonstrated that there was sufficient demand for such a service.

An hourly service was trialled in the midst of travel restrictions placed across BT Group. Despite these uncertain circumstances, the shuttle bus service quickly established itself as a success, meeting the minimum breakeven figures needed to make the service financially viable within 1 month (Figure 9). Once proven, the bus funding was committed and the service extended to incorporate a stop at the central Ipswich BT office at Bibb Way, which is near to the railway station. Since then the service has gone from strength to strength, exceeding the carbon breakeven for displaced taxi journeys and providing a valuable service for all business travellers to the site.

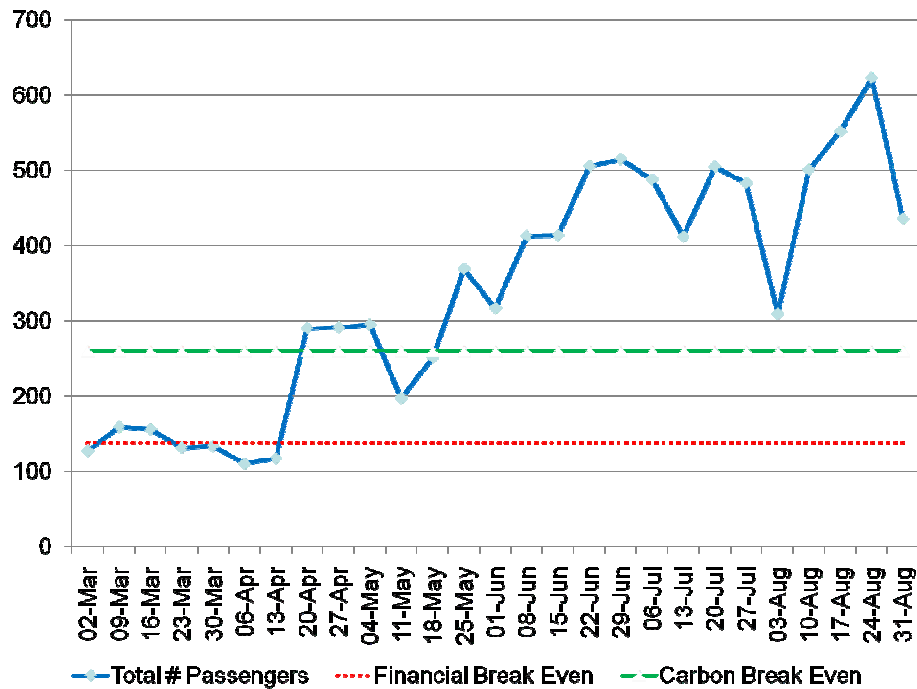


Figure 9 - Railway Shuttle Bus Usage: Showing the number of passengers each week together with the cost and carbon break-even thresholds

Think

The impact of the Adastral Park travel plan has also been felt at a regional level too. One such initiative has seen BT taking the lead in the creation of a Sustainable Travel Forum. This open forum was established via the IP-City Network [9], and brings together local businesses, organisations, councils and passenger transport operators to consider shared transport issues and needs.

The Sustainable Travel Forum meets quarterly to review issues and share ideas on the broader sustainable travel agenda relevant to our local area. One of the biggest outputs has been to inform and guide Suffolk County Council on a bid to develop a 'Business Smiles' programme of incentives to improve public transport for the Ipswich area with an innovative and creative suite of new products and services for all passengers.

Local support and leadership from the Adastral Park travel plan was recognised by the Suffolk Greenest County Awards in February 2009. The Grass Routes campaign won the award for its outstanding commitment to transport in the region.

5. Automating traffic census counts

5.1 *The traffic census requirement*

One of the issues facing all travel plan managers is assessing the impacts of a travel plan through the ongoing monitoring of the local traffic patterns. A simple but labour intensive manual clicker-count method was the initial solution at Adastral Park.

Due to the labour intensive method, this was only able to be completed once a month, and it wasn't a pleasant task on a cold winter morning to stand outside for two and half hours paying constant attention to passing traffic. Not surprisingly, a non-intrusive automated solution such as exploiting video-based technology would be highly desirable.

This led the travel plan manager to seek an automated and accurate method which can count the different modes of travel to the site and throughout day and night. Such near real-time data will facilitate strategic planning and effective analysis of the trends and success of implemented solutions and campaigns.

5.2 *The video analytics solution*

A research team at Adastral Park has special interest in developing advanced technologies for dynamic visual scene analysis. This team have created a portfolio of technical capabilities/building blocks performing various object-based intelligent video analysis tasks, which previously was applied successfully to other domain problems such as crowd congestion estimation in London underground platforms. So, the video analytics solution was conceived and a system developed with a three-camera set-up. One camera monitoring the site's North gate is an existing analogue Pan-tilt-zoom (PTZ) security camera¹, which can be targeted to have a vantage viewpoint of the single-lane incoming and single-lane outgoing traffic (Figure 10). The analogue video feed was captured by an encoder box and a compressed IP video stream generated.

¹ The use of this existing camera is to leverage the legacy infrastructure already in place to reduce unnecessary hardware and networking cost.



Figure 10: The site's Northgate security camera view and the illustration of classification and counting results: cars in red, pedestrians in blue, cyclists/motorists in yellow blob, respectively; the dashed red ellipsis recording the real-time counts so far.

The other two are purposely installed IP cameras targeting the two lane outgoing and two lane incoming traffic at the site's main entrance (Figure 11a,b). Due to the main entrance's physical constraint and structural obstructions, it wasn't possible to mount the two cameras in preferable overlooking positions closer to the monitored regions. So, we have to make do with the slightly distant and skewed camera viewing setup, which proved to introduce more challenges technically.



Figure 11: The two cameras' view of the site's Main entrance for (a) outgoing traffic and (b) incoming traffic: cars / cyclists counting are in progress. The green polygon region indicates the area of interest for this counting task.

By taking the highly compressed live video streams originated from these cameras as input, advanced video analytics algorithms in the designed solution are able to detect and classify moving vehicles, pedestrians and bicycles entering the site and provide a real-time count of multiple flows of cars and stream of pedestrian within pre-defined regions of interest (Figure 12). Several unique approaches have been developed (such

as 3D-based human detection, aggregated area analysis, multi-tripwire based lost tracks handling and semi-appearance-based object modelling) to enable accurate segmentation of streams of loose pedestrian clusters; parallel travelling and overlapping vehicles; slow moving and waiting vehicle queues, as well as performing traffic counting from the distant sub-optimal camera mounting positions.

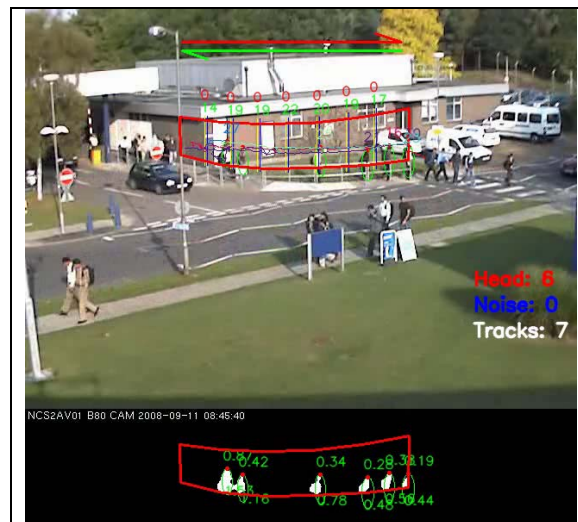


Figure 12: Counting pedestrian crowd in loose clusters in the Main entrance: (top) Setting the region of interest (ROI) in red polygon and multiple vertical tripwires in blue lines; (bottom) Illustration of the detected foreground activities within the ROI, the detected heads (red dots) and computed area measurements verifying the presence of a pedestrian.

5.3 Promising Results

The new system running directly on IP-video streams is efficient and only requires a standard PC for real-time counting of three incoming and three outgoing traffic flows with a very low error rate. The results were consistent when compared to manual click counts on many selected days in different months throughout four seasons. On one occasion it even detected a human click count error, verified by replaying the recorded video. Figure 13 shows, in (a), the census results of incoming vehicles for every single minute for both the two entrances in morning peak hours on a typical working day, and in (b) the corresponding half-hour accumulated result. It is interesting to see that there is a constant stream of cars entering the site during morning peak hours, and sometimes as many as up to 25 cars per minute. Due to space limitations, similar figures for cyclists and pedestrians are not given.

The system also proved its robustness to an external environment, including changes in lighting levels, cast shadows, reflections from wet ground, static structure occlusion such as lamp poles and traffic sign board, and cluttered and moving background objects such as waving trees under strong winds. The more frequent or daily traffic census results

proved to be a great tool in helping the site's travel plan manager to track the impact of alternative green travel modes awareness campaigns and identify the longer-term travel pattern changes.

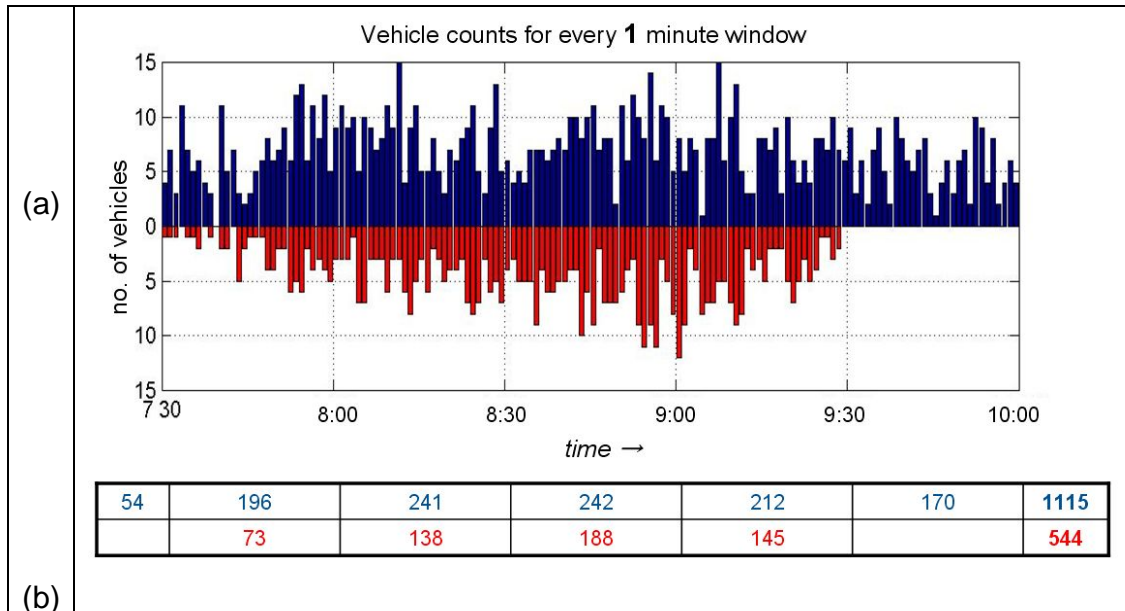


Figure 13: Vehicle counts plot of the site for each minute interval: from 7:15 am to 10:00 am on Tue 12th May 2009, a sunny morning. The blue bar shows the Main entrance's counts and the red bar that of North gate's which closes at 9:30 am.

6. Learning points

Within just five months of the launch of Grass Routes, we have measured significant positive changes in travel behaviour against the travel plan objectives as a result of range of initiatives deployed at Adastral Park. We have also identified a number of valuable learning points for other BT sites seeking to implement similar travel plan initiatives.

6.1 Draw on local champions as 'social proof' that sustainable travel is possible

The main reasons stated by people who have switched to more sustainable modes of travel are: convenience, weather, health; economics and the environment. Those people who already travel by sustainable modes of transport (particularly those who travel by train, walking and cycling) demonstrated a higher awareness of the Grass Routes campaign than bus users and car drivers.

This taught us that it is really important to capture the enthusiasm from members of existing communities. At Adastral Park the bike user group, which was already active, has been fundamental in the successful delivery of travel plan objectives associated with cycling.

6.1 Clear communication can dispel popular myths around the travel plan

A common misunderstanding is that the travel plan is trying to get people to stop driving altogether and change their travel behaviour permanently. To overcome this we based our communication with staff around the clear message that small changes on a regular basis were enough to help us achieve our targets.

For example, if everyone on the site makes one less car journey to work each month, in favour of either working from home or choosing a more sustainable travel mode, then we have achieved our short-term 5 percentage point SOV reduction target.

6.2 Use marketing campaigns to promote tangible measures

The different marketing campaigns implemented under the Grass Routes banner have attracted a mixed response. Notable successes were the huge increase in BT car share registrations following the promotion of priority parking spaces, and continued demand for the free reflective straps, travel maps and timetables produced through the travel plan. On the other hand, we have had more prizes than participants in response to some promotions, including those to promote walking and green travel pledges

This has taught us that focused marketing is really important. The most effective campaigns have been those which have underpinned tangible infrastructure improvements at the site, such as the shuttle bus service, car parking bays and improved cycle facilities. As well as promoting new transport services, or better facilities, the use of focused marketing to support these initiatives also acts as a visible indication of BT's commitment to the travel plan objectives.

6.3 External dependencies can hamper your good intentions

Giving away free fuel for electric powered vehicles via two onsite recharging points has resulted in a total of two private vehicles regularly using this facility; although the onsite services team do now have two small electric vans for use when performing maintenance tasks around the site.

This highlights the nature of regional (and in some cases national) level infrastructure and external dependencies which influence how viable some alternatives to the private car can be considered. In the case of electric vehicles, for example, the lack of availability of charging points and local service centres means that, for most people, the benefits are outweighed by the inconvenience of only being able to drive from home to work, and having to return the vehicle to London every six months for a service.

A lack of decisive action from the local passenger transport operators to provide creative improvements in service has also been an issue for Adastral Park. Whilst happy to promote existing services and engage in discussions, such changes are mired in policy and commercial constraints which drastically slow down progress. Ultimately the lack of

a good, direct commercial passenger transport service from the railway station (e.g. 'a negative') was one of the key factors which drove forward the reintroduction of a courtesy shuttle bus between the mainline railway station and the Adastral Park site (a strong success story of the travel plan).

Recognising what you can change (e.g. Quick Wins) and what is beyond the scope of BT as an organisation, and therefore needs a partnership approach through collaborations such as the Sustainable Travel Forum, is an important part of delivering the travel plan.

6.4 Site-specific incentives and travel information are a powerful combination

The Personal Travel Planning pilot may only have attracted modest interest from staff at Adastral Park, but it was successful in demonstrating the importance of incentives, and high quality information, as effective tools for influencing people's travel behaviour. Many site users need strong incentives combined with high quality travel information that not only tells them about alternatives to driving to work on their own, but also highlights some of the benefits, before they will consider alternatives to driving to work.

6.5 Regular stakeholder consultation is important

Keeping in touch with the needs and views of site users is really important in terms of 'knowing your market' for sustainable travel initiatives. A good example of how Grass Routes has relied on regular engagement with site users is the deliver of the priority car share spaces.

By engaging with staff before, and after, rolling out the priority car share parking at the site (through discussion groups and informal canvassing), we were able to learn that the self policing policy of the car share scheme worked well, but this is probably because the site has more parking spaces than cars so there is no particular pressure on parking spaces.

However, green paint was not best seen from the driver's seat and high visibility back marker lines were added because drivers can see them more easily when reversing into a space. We also learned that the car share spaces do not need to be any wider than disabled spaces (i.e. a five normal spaces converted to four car share spaces would be ample).

6.6 Prepare a strong business case for all of your interventions

A key strength of the Adastral Park travel plan has been the use of a baseline of independently collected travel survey data against which we have monitored the impact and effectiveness of different measures. This approach has enabled the Adastral Park Board to make clear decisions about the prioritisation and funding support offered to different travel plan measures.

The use of robust data to guide decision-making has been particularly important in the light of the current economic climate and the need to think carefully about our spending on travel plan measures. As a result we are able to underline the effectiveness of measures such as the Adastral Park railway shuttle bus service since February 2009 in terms of both the financial and carbon reductions it has delivered:

- A 48 per cent reduction in business travel taxi fare costs as proportion of rail journeys to Ipswich
- A net saving to the company of at least £38,000 after the bus running costs have been taken into account
- 28 fewer tonnes of CO₂ emissions than if taxis had been used instead
- 106,000 journey miles taken off the local roads (equivalent to driving four times round the world)

Comparing the results from the 2007 baseline survey and the 2008 annual monitoring survey, we can also demonstrate the following changes arising from the reduction in single occupancy car drivers travelling to the site:

- A 1.2 mile reduction in the average distance driven to site, which is down to 9.9 miles
- 1,112,000 fewer journey miles per year taken off the local roads, which is the equivalent of driving to the moon and back, twice!
- A 10 percent reduction in green house gas emissions, or 371 tonnes of CO₂

7. Conclusions

The main conclusions we can draw after the first twelve months or so of the travel plan are as follows:

- This activity has been beneficial on a number of levels for
 - the Adastral Park workers and visitors: having improved travel related facilities and information with which to make informed decisions for their journeys
 - the Adastral Park site: through reduced single occupancy vehicles being driven to site as well as an enhanced facility for the Park with the railway shuttle
 - the local community: having fewer vehicles on the roads, emitting less emissions and stimulating the travel agenda for the region, and
 - Corporate BT: through the shuttle bus business travel cost savings
- The most significant changes in behaviour can be clearly linked to specific travel plan campaigns over the first year – i.e. car share and cycling, which we had identified as being the 'Quick Wins' for Grass Routes
- It will still be challenging to meet our medium and long term goals, and we therefore need another round of innovative step-change initiatives to make a

positive difference

- Engaging with the BT video research team has been valuable in furthering their technical understanding through a real-world application whilst providing value to the travel plan manager by supplying near real-time traffic census data
- Working in partnership with the local authorities, passenger transport operators and other large and small organisations demonstrates leadership from the company and support for the local community in which we live and work

7.1 *Future challenges: keeping the Grass Routes green*

Most of the initiatives implemented in the first year have been relatively quick wins and mostly under the direct control of the travel plan manager along with the support from the site management. Many of the remaining measures require the co-operation of the corporate organisation (human resources and business travel team), local councils and passenger transport operators in order to make further changes. This was recognised in the initial plan, hence the use of two year and four year targets.

Some of the recognised areas still to be addressed include:

- Enhancing the local bus routes for more direct and frequent commuter service, not just from central Ipswich but other less populated areas working in conjunction with other large organisations to make these routes viable
- Corporate initiatives to encourage more employees to consider sustainable travel options, such as bus season ticket salary sacrifice schemes
- Keeping the campaign and brand fresh whilst not discouraging those who already travel sustainability
- Adapting the plan to take into account the changing demographics of the employees on the site and their working patterns
- Externally imposed measures by the local council or central government, such as the work place parking levy scheme or Section 106 conditions for any planning application changes
- Secure funding for further initiatives within the current economic climate will need to demonstrate even stronger business benefits

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