

# The Route to Sustainable Commuting

*An Employer's Guide to Mobility Management Plans*





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This guide has been produced as part of the Way to Go research project, which was co-funded through the European Commission's SAVE II programme.



### Way to Go Project Partners

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# Acknowledgements

## The Route to Sustainable Commuting An Employer's Guide to Mobility Management Plans

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# 1. Introduction

Welcome to *The Route to Sustainable Commuting – An Employer's Guide to Mobility Management Plans*.

This guide is for organisations that are considering, or already implementing, measures to reduce dependency on the car for staff commuting and other work related journeys.

## What is a Mobility Management Plan?

A mobility management plan consists of a package of measures put in place by an organisation to encourage and support more sustainable travel patterns among staff, clients and other visitors. Such a plan usually concentrates on staff commuting patterns, but may also include business travel and indeed fleet management and freight issues. It can be developed for an individual work site or group of work sites within, for example, an office park or industrial estate.

The plan may take the form of a formally published document that outlines an organisation's measures and targets. Alternatively, it may simply evolve over time as different initiatives are piloted. Depending on the circumstances of the organisation, either approach is appropriate.

The objectives of mobility management for staff commuting are:

- to inform staff of alternative modes of travel available to them for the journey to work;
- to identify opportunities to improve the features/services provided by alternative modes;
- to identify opportunities within buildings and other infrastructure to facilitate the use of alternative modes;
- to promote the use of these alternative modes;
- to support staff in changing their travel behaviour; and
- to provide information on the scale and broader impacts of change.



Mobility management plans are also known by a number of other names, including:

- *Sustainable Mobility Plans*
- *Green Travel Plans*
- *Staff Travel Plans*
- *Sustainable Commuter Plans*

In this guide, the term mobility management plan is used.

## Why Implement a Mobility Management Plan?

The context for the development of mobility management plans is developing rapidly in terms of planning legislation, planning policy guidance and local authority planning policies. Site-specific or area-wide mobility management plans are increasingly being viewed by planning authorities as an essential component of land use planning and transport demand management.

Equally, an increasing number of organisations are viewing mobility management as a means of improving accessibility to their site, improving organisation image and making it easier to recruit and retain staff.

Although many of the benefits to both the employer and employee are direct and measurable, the additional external benefits of mobility management plans should not be ignored. Benefits to the wider community include reduced congestion and overspill parking into adjacent residential areas, and also environmental improvements such as enhanced air quality and reduced noise.

## Benefits to the Employer

### Improved accessibility

Reduced congestion in accessing the workplace and increased travel options benefit both employees and visitors alike, whatever mode of transport they use. This can lead to improved customer service and an improved public profile.

### Cost savings

A reduction in car parking requirements or office space requirements (due to teleworking or “shared workstations”) can enable the release of land or buildings for more productive uses. A reduction in off-site car parking needs can also represent a substantial reduction in overheads.

This is of particular relevance where an organisation is seeking to increase staff numbers without the need for extension or relocation of premises. Where planning permission is required, local planning authorities may require that a mobility management plan be submitted with the planning application.

### Recruitment and retention of staff

Easing the commute to work will enhance an organisation’s reputation as being employee friendly. Mobility management measures can be promoted as part of an employment package for staff. Reduced stress levels mean more content staff, reducing turnover and the associated costs of recruiting and re-training new people.

### Increased staff productivity

Productivity benefits arise from:

- reduction in sickness/absenteeism
- reduction in stress
- increased flexibility in the working environment

### Enhanced environmental performance

The environmental benefits of a mobility management plan can contribute to a ‘good neighbour’ policy towards other employers or residents in the area. Such a plan can also form an integral part of an organisation’s environmental management programme including formal standards such as the Environmental Management and Audit Scheme (EMAS) and ISO 14001.



## Benefits for the Employee

### More choice, flexibility and time

Mobility management measures such as flexible working hours and teleworking can be tailored to meet a range of individual staff circumstances and requirements, offering staff greater flexibility in their working day, while still meeting organisation performance targets.

### Reduced commuting costs

The costs of commuting can be considerable, and facilitating alternatives can bring direct savings to employees. Measures that include incentives, for example, discounted public transport tickets, also bring financial rewards to employees.

### Reduced stress

Making it easier, cheaper, quicker and safer for staff to commute to work can assist in reducing stress. Walking and cycling also bring other health benefits.

### Improved working environment

Developing a mobility management plan involves communication, consultation and facilitation of flexibility and choice. Both the communication processes and the facilitation of choice, can enhance the overall working environment.



# Using this Guide

Although mobility management plans can address all of an organisation's travel requirements, this guide focuses on staff travel needs. It offers practical advice on how to develop a mobility management plan and provides information on the financial and operational implications.

The guide works through all of the key steps in designing, implementing and evaluating a mobility management plan:

<b>Preparing</b>	Putting structures in place and assigning responsibilities
<b>Researching</b>	Understanding the existing situation in order to evaluate the potential for change and the ways to effect it
<b>Design &amp; Implementation</b>	Choosing the right measures and putting them into practice
<b>Evaluating</b>	Estimating the broader effects of travel patterns in terms of energy, environmental and social impacts
<b>Measuring</b>	Monitoring the success of mobility management plan measures

In recent years a number of other guides and manuals have been produced on this topic, some of which detail complete "step by step" approaches to mobility management plans. This guide seeks to complement such publications by supplementing information that is already available with specific insights gained from practical experiences of mobility management planning.

To assist in the monitoring and evaluation of mobility management plan measures, the guide also features a CD-ROM that enables the calculation of energy, environmental and economic impacts of staff car travel. The software puts an economic value on car use in terms of costs associated with climate change and several other external costs such as health, accidents and congestion. Quantification of these hidden costs (using widely accepted calculation methods) strengthens the hand of the mobility manager in securing sufficient resources and in tying mobility management in with a sense of corporate, social and environmental responsibility.

## The Way to Go Project

The advice in this guide is largely drawn from experience gained through the piloting of mobility management plans by seven organisations in the Republic of Ireland and the United Kingdom, mostly in the services sector. These "pilot projects" were initiated through the Way to Go project.

Way to Go is a research project co-funded through the European Commission's SAVE II programme.

Most of the participating organisations followed a very similar process and timetable in the development of their mobility management plans. This has allowed a direct comparison to be made between different organisations in assessing advantages, constraints and time frames associated with particular measures.

Appendix 1 contains a description of the objectives and approach adopted by the Way to Go project partners.



# 2. Preparing for Mobility Management Planning

The continuing growth in car use for commuting has led to increasing levels of congestion on the roads, with increasing journey times for all. Organisations have an opportunity to influence the demand for transport and the modes of transport used by staff. Mobility management plans are about facilitating choice and promoting sustainable travel, enabling organisations to assist in mitigating the negative environmental effects of car-based commuting by their staff.

This chapter considers how an organisation can prepare for implementation of a mobility management plan. It focuses on the organisational and resources requirements of such a planning process, and then discusses the data collection and background research needed to design an effective plan.



## Organising for Mobility Management

Like any process of change, success hinges on commitment at all levels and on good project management. Sustained commitment from senior management in an organisation is the essential prerequisite to a successful mobility management plan.

Once the decision has been made to manage mobility in the workplace, it is important that one person in the organisation is assigned the task of co-ordination, development and implementation of a Plan. This person is often referred to as the Mobility Manager.

Additional support structures, such as a steering group or working groups, can contribute to a successful plan. It is important that appropriate structures are put in place to deliver the plan and to ensure that the momentum is sustained. Assigning key responsibilities should be an early priority in the project.

## Mobility Manager

The role of the mobility manager is the day-to-day management and co-ordination of the plan. Organisations with large staff numbers and financial resources may create a dedicated full-time post of mobility manager. In smaller organisations, this function may rest with a person from a site services or human resources department. It is important in this latter situation that sufficient time resources are allocated to the task.

Where area-wide mobility management plans are being developed (for example, among several employers in the same building, or within a business park or industrial estate), the post of a full-time mobility manager may be funded by the business park management company or directly co-funded by individual organisations within it. However, even where an area-wide plan is being externally co-ordinated, each employer will still require their own internal co-ordinator.

The mobility manager will be the person who champions the project at all levels, which means maintaining senior management support, and maintaining communication and promotion right across the organisation. They will also be responsible for external communications perhaps with local authorities, public transport companies or other organisations engaged in mobility management. An important role for the mobility manager is to act as a contact point for the project, both for management and staff in general.



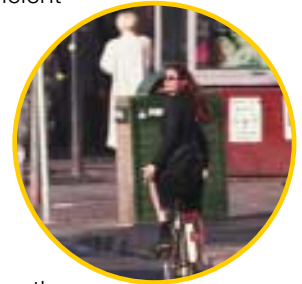
## Steering Group

A steering group operating in support of the mobility manager can spread the workload, improve information quality and foster a sense of wider ownership and involvement. The steering group should ideally consist of 5 to 10 people who represent the key divisions and interest groups within an organisation. The group should also include senior management and the mobility manager, who will act as facilitator.

## Working Groups

Working groups organised around particular interests or themes can be another level of co-ordination or value. These might include a bicycle user group or a public transport user group. These groups will involve those most interested in particular measures, thus acquiring valuable knowledge from experienced users, sharing ownership and allowing efficient dissemination of information to target audiences.

All organisations will have varying degrees of cultural, financial, taxation and logistical constraints, which may affect the development of a mobility management plan. A group approach will help ensure a clear understanding of these issues as well as offering solutions to tackle particular constraints or concerns.



## Resource Implications

The appointment of the mobility manager may form the main expense during the development phase. Other costs of development may include undertaking a staff travel survey and analysis, focus groups, promotion and publicity, and staff time.

The resource implications of implementing a mobility management plan obviously depend on the nature of the measures, and can be very difficult to quantify at the start of plan development. Mobility management measures can range from staff incentives such as prize draws, to the purchase of computer equipment for teleworking, to major site works. The cost implications can therefore range from a few hundred to tens of thousands of Euros.

The plan development process should generate a range of options for implementation, outline time-scales and resource requirements for each option. Any initial guidance from senior management on resources can assist in determining the scope of the plan, but should not constrain the process from exploring new and innovative solutions to the issue.

## Development and Implementation Costs

In a mobility management plan concentrating on 'soft' measures, the principal elements that will entail costs are:

- the mobility manager
- staff travel surveys
- staff involvement
- publicity, marketing, promotional events
- monitoring of the plan's effectiveness
- specific measures which form part of the plan\*

\*Indicative costs for some typical measures are included in Chapter 3.

## Understanding Commuting Patterns

The mobility manager must have a good understanding of the current travel patterns within the organisation from the outset of the project. An appreciation of how and why these patterns have developed is also required, and an effective mobility management plan is possible only on the basis of such understanding.

## Organisation Policies

It is important to understand how current policies and practices (both formal and informal) within the organisation impact on travel and work patterns, and an initial organisational review can provide these insights.

An organisational review would need to examine the following aspects of policy:

- organisation policies and work patterns affecting travel to and from the work site
  - core working hours, shift patterns, flexible working
  - business travel allowance for car/cycle use
  - parking policy (allocated spaces, car share spaces, visitor parking, cycle parking, etc.)
  - other issues affecting commuting
- fleet vehicle policy
- any current transport related initiatives

## Site Assessment

The location, characteristics and facilities of a work site will have a major influence on how staff travel to, from and at work. The site assessment should look at how the following factors enable or impede staff travel:



- location assessment
  - public transport accessibility – service frequency, service quality and distance to stations & bus stops
  - pedestrian and cycling environment in the vicinity of the work site
  - congestion in the vicinity of the work site during the rush hour periods
  - proximity to services (banks, shops, etc.)
  - parking availability in the vicinity of the worksite
- on-site facilities
- site access arrangements (getting in and out of the site)
- car parking
  - volume and usage, supply in relation to demand
  - management issues, such as parking charges and allocation of spaces for visitors, mobility impaired, car sharers, etc.
- cycle parking and facilities for cyclists
  - location, quality and volume of cycle parking
  - changing, shower facilities, lockers for cyclists
- other on-site facilities
  - crèche facilities, services reducing the need for travel during the day

Once the realities of policy and site issues have been established, it is necessary to examine their influence on staff travel behaviour. Staff travel surveys and focus groups can deliver this information.

## Staff Travel Survey

A reliable baseline survey of current staff travel habits and attitudes is invaluable in identifying the key transport issues and will inform the development of the mobility management plan.

The primary purpose of the survey is to quantify current travel patterns, including modal split and typical journey lengths and times. These benchmark figures are vital for measuring changes in

staff travel patterns. Positive changes identified through future repeat surveys are likely to be an important element in judging the success of a mobility management plan.

The survey results should inform the development of specific measures in the mobility management plan. They allow the mobility manager to identify target groups ('market segments') that may be more receptive to changing their travel habits than others. The survey may also reveal barriers to change that cannot be overcome within the scope of the plan. All of this will also inform the targets set for the plan.

The first survey should target as many members of staff as possible. In organisations of less than 1000 staff, questionnaires can probably be distributed to all staff. In organisations with over 1000 employees, a representative sample can be used. Response rates above 50% represent a good penetration of the organisation.

All of the organisations involved in the Way to Go project worked together to design and implement staff travel surveys, using the same external company for processing and analysis in every case. This allowed pooling of resources and avoided duplication of effort in design and development. It also allowed direct comparisons to be made between the various organisations on commuting patterns, attitudes and key issues. The questionnaire was not exactly the same in each case, as some organisations added particular questions of interest or deleted those considered too sensitive.

In each case, the questionnaire distributed was branded for the single organisation itself. All of the organisations sent questionnaires to all of their employees, except for one organisation, which targeted a sample of 1000 of its 4500 staff. Response rates ranged from 55% to 65%.

### Process and timing

The overall procedure for the survey will be along the following lines:

- design the basic questionnaire
- consult on content with management and others as necessary
- pilot the questionnaire with colleagues and refine content
- circulate publicity materials
- distribute the questionnaires, with a clear return-by date
- analyse the returned questionnaires
- publicise the results



The time of year at which the survey is carried out can have a significant impact on both the rate of response and the relevance and utility of the data collected.

Surveys should be conducted at the "most representative" times of year, in terms of commuting patterns and work attendance by staff. Factors to take into account include:

- the timing of holiday periods (including school holidays)
- seasonal weather and daylight variations
- other factors specific to the organisation that affect work patterns (site shutdowns for example)

Generally, spring and autumn tend to be the most suitable times.

### For the Way to Go pilot surveys, a timeframe of 8 weeks was applied:

- Weeks 1 - 2: poster campaign and distribution of information leaflets through internal mail and distribution/collection points
- Weeks 3 - 4: distribution of questionnaires through internal mail or collection points; completion and return by end of week 4
- Weeks 4 - 8: returned questionnaires sent to market research company for collation and analysis; production of detailed data analysis and summary data reports



## Questionnaire Design

The questionnaire should be easy to complete and the number of questions should be kept to a minimum. As a guide, a questionnaire that takes more than 10 minutes to complete will probably suffer from poor response rates.

Questions should broadly cover:

- current modal choice, journey details, times, etc.
- reasons for these habits
- openness to consider alternatives
- factors that would influence possible change
- demographic questions (age, gender, marital status, etc.)

The staff travel survey also allows the collection of data about car journeys that can be used to calculate the environmental and economic impacts of these journeys. Chapter 4 discusses this aspect of the analysis.

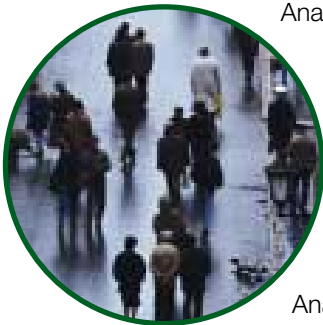
Questions relating to people's motivations or attitudes can lead to varied interpretations. These kinds of questions are often misunderstood by respondents, or at least understood differently by different respondents. Therefore, clarity in design is vital; piloting draft questionnaires will help to ensure such clarity. Consultation is also vital, especially regarding sensitive issues.

Appendix 2 provides more information on how to design a staff travel survey.

## Survey Analysis

Analysis of returned questionnaires is aimed at gathering knowledge on:

- baseline travel habits
- factors that influence these habits
- influence of site and organisational factors
- stated reasons for current travel behaviour
- professed willingness to consider alternatives
- barriers to change and potential incentives and interventions



Analysis can mean counting - say the number of people who take the bus, the typical car journey distance and so forth - and also categorising and looking for patterns. It can also help define target audiences for different measures and indicate how these audiences should be approached.

A large survey may require outside assistance for collation and analysis. Commercial market research companies offer good services but can prove expensive. If cost is a concern, alternatives include utilising in-house marketing departments or using the services of a local university.

### Some key results from the Way to Go surveys:

- patterns tended to be grouped between city centre sites and out of town sites
- car use ranged from 25% to 36% of staff in the city centre sites, and from 62% to 87% in the out of town sites
- typical journey lengths were about 13 kilometres
- making drop-offs (at school for example) tended to increase the likelihood of car use for commuting
- factors most influencing choice of transport mode were convenience, speed, flexibility and reliability.
- in more than one organisation, over 40% said they travel the way they do because they have no alternative
- flexibility was seen as a major barrier to car sharing
- in most organisations, over 40% expressed a willingness to consider car sharing and over 60% expressed an interest in teleworking

Surveys provide quantitative overview data, but they are limited in the depth of understanding they can provide. Also, there is a danger that too much certainty will be ascribed to numerical patterns. For these reasons, focus group research can add considerable value to the project.



## Focus Group Research

Focus groups provide insight into the factors that determine employee commuting patterns. They help the mobility manager to understand employee attitudes and the motivations for their behaviour. They also indicate the type of action that is required to encourage change.

A staff travel survey at one Way to Go organisation indicated that 44% of respondents were willing to consider car sharing. One year later, a repeat survey in the same organisation found that only 31% expressed a willingness to consider car sharing.

Possible reasons for this might include the fact that, once a car sharing scheme was in place, people could make a more informed judgement, or perhaps people were less able to express a vague willingness that couldn't be tested. A focus group, even with a small number of people involved, may give insights into what is going on here; people can be asked to explain in more detail what they think about car sharing, and even the language used might reveal the underlying attitudes towards the idea.

Other issues that came up in Way to Go focus groups that substantially enhanced the understanding of current travel behaviour included:

- the specific difficulties of some journeys by public transport
- perceptions of public transport and the experiences that they are based on
- the realities of facilities for cycling
- past experiences with car sharing
- the organisational 'culture' towards various transport choices
- the role of 'habit' versus 'rational choice' in determining current behaviour
- the range of factors people brought into their decision-making

Focus groups, like surveys, also stimulate awareness and change in themselves; participants hear about others' experiences, possibly learn about options available to them, and are generally stimulated to think and talk about their transport habits.

### Organising Focus Groups

The first decision is how many focus groups to hold. There is no hard and fast rule, more focus groups will generate more data, but they are difficult to organise and time consuming. A guide is to aim for at least one group for about every 300 people in an organisation.

The focus group can come before or after the survey, and indeed each would be enhanced by having the other done previously to inform its design. However, experience suggests that it is probably better to carry out the survey first and have the results ready to discuss at focus groups.

### Recruiting people to take part in focus groups

Focus groups don't have to represent a cross section of staff in terms of age, gender, or any other factors, but it is good to aim for a diverse mix of people in terms of backgrounds and current travel habits. About ten is a good guide for the number in a group; much more than that and it is too large to get good interaction, much less and there is not enough diversity of views.

There are different ways to recruit people to participate, but the best way is probably to look for people with some interest in the topic (see Appendix 1). Also, if the mobility manager intends to establish steering or working groups as part of the mobility management plan project, focus groups based on people with an interest in the issue can be a connecting step. The focus group can essentially act as a kick off meeting for a steering group or for future working groups. However, it is important not to confuse the two tasks – focus groups are data collection exercises, working and steering groups are about design and implementation of measures.

Several organisations in the Way to Go project used the same external facilitator for their focus group research. This enabled the same structure and approach to be used in each organisation, allowing for comparison and a broader analysis. However, most organisations are much more interested in their own situation rather than in detailed comparisons with others.

## Key Lessons

- A staff travel survey is essential to understanding the baseline situation in an organisation.
- Baseline quantitative data can strengthen the case for a mobility management plan and also strongly inform the targets and content of the plan.
- While a staff survey is valuable for quantitative information about current behaviour, focus groups provide much greater insight into employee attitudes and motivations.
- Focus groups add depth and give the mobility management plan co-ordinator some extra insights and ideas – they are not meant to be statistically representative or quantitative.
- Data collection raises awareness in itself and should be linked to promotion and implementation. The mobility management plan project has effectively started once the staff survey is publicised and undertaken, and it is important that the momentum be maintained from this point. This requires the prompt reporting of results back to all staff and then ongoing distribution of information about the development and implementation of the plan itself.



# 3. Designing and Implementing a Mobility Management Plan

## Identifying a suitable package of measures

A package of suitable measures for the mobility management plan can now be identified on the basis of the understanding developed through research. When selecting particular measures, the mobility manager should take into account time scales, costs, and the promotional, marketing and implementation requirements.

### Short and Long-Term Goals

The mobility management plan should include both short-term and long-term measures and goals. In order to generate confidence and gain support from both staff and management, it is recommended that the initial measures should be selected based on their ability to produce tangible results in the short term. Support from staff and management will enable the mobility manager to proceed with the introduction of further measures and thus maintain a momentum in the plan's development.

### “Hard” and “Soft” Measures

The focus of this guide is on the development of “soft” mobility management measures. These measures do not include major investment commitments such as the funding (or part funding) of road or rail infrastructural improvements. However, some “hard” measures, such as on-site facilities, will be discussed.

### Complementary Measures

The mobility management plan is a package of measures, and the measures should be cohesive and should complement each other. Incentive-led measures should precede measures that are based on disincentives. Also, any disincentives (such as car parking charges or restrictions) should be based on the alternatives being fully in place.

The plan should ensure that the measures proposed remove all the key barriers to change. For example, if a bicycle-leasing scheme were introduced, it would be appropriate to correspondingly examine the need for better cycle parking and changing facilities.



## The range of mobility management plan measures

Mobility management plans have a wide range of possible measures to choose from. These can be broadly grouped by mode of transport and work-style as follows:

- car use
- public transport
- cycling and walking
- working arrangements

The following sections deal with a selection of possible measures under these headings. The range discussed here is by no means exhaustive, but is indicative of the kinds of measures available and the processes and resources required to implement them.

# Car Use

## Car Sharing

Car sharing can have a significant impact on vehicle numbers travelling to a site and can offer a practical alternative to staff members who feel that public transport is not a viable option. Car sharing is flexible and staff can use the option occasionally or regularly as suits.



### Formal or Informal Car Sharing?

Many people already share journeys or give each other lifts to work. Experience in the Way to Go project would suggest that informal car sharing very often amounts to 10% or more of car commuting journeys. This can be supported through encouragement and promotion. The mobility manager can facilitate by acting as a central contact point for potential sharers. This type of system is limited to a small number of people; a scheme that uses computer software to match employees who register would be required for a larger, longer-term initiative.

### Setting up a Car Sharing Scheme

Encouragement of car sharing can entail marketing and promotion, provision of a registration and matching service, and possibly provision of specific incentives.

The process of promotion, registration and matching can be undertaken in the following steps:

- Promotion of the car sharing service through posters, information leaflets etc. Intranet pages or computer network announcements can also be used.
- Distribution of registration forms. Again, this can be done either through internal mailing, from collection points within the work site or through an Intranet page. The completed forms can then be returned in either hard copy or electronically to a dedicated car share service e-mail address.
- The registration forms should be accompanied by a “step by step guide” on how to car share, as well as explaining how the registration and matching system works.
- Some financial incentive, such as a voucher or a free gift, may be offered to those who register, and this can greatly improve participation rates.
- Once the match has been made through the database, the mobility manager (or a dedicated car share administrator) forwards the contact workplace telephone numbers or e-mail addresses to those who have been matched.
- For those who have been matched, the car share administrator will request that the details of the actual car sharing arrangement be forwarded to them. This information is essential for the purposes of monitoring the success of the car sharing service. Again, a financial incentive may be offered for responses.
- Equally, where a car sharing arrangement has been discontinued, the process should provide for the relaying of this information to the car share administrator. A form can be devised for this purpose, which allows the respondent to specify whether or not they wish to be re-registered in the system. Again, a financial incentive may be offered to prompt this important feedback.

As part of the Way to Go project, one organisation developed an in-house car share service using commercially available car sharing software.

Several other organisations involved in the project participated in a combined car-sharing scheme, which was centrally administered. Details of this car-sharing scheme are provided in Appendix 3.

Although the combined registration process provided a greater critical mass of potential car sharers, the level of interest and therefore the take-up on the service was ultimately determined by the degree to which the service was being promoted within each organisation. It was the experience of the Way to Go project that registrations and therefore car sharing matches were higher in the organisation which co-ordinated the entire car share service in-house.

Where the car sharing registration and matching service is being provided externally, close co-ordination between each organisation's mobility manager and the service provider is necessary.

### Incentives for car sharing

As well as the small financial incentives referred to above for initial registration, an organisation could allocate special parking spaces to registered car sharers. These should be located closest to the building, possibly with covered walkways, to show the benefits of participation. Their use should be conditional on a specified level of car sharing, say 3 days per week.

### The Cost of a Car Share Scheme

The implementation of a formal car sharing scheme using computer based matching and the design of promotional materials and forms will require about a week of staff time, and then a few hours per week for maintenance, especially during the early stages of registration.

The costs of providing incentives for registration will probably be just a few Euros per participant. Commercial car share matching software typically costs of the order of 1500 - 5000 Euros and then a few hours per week for maintenance. Additional staff time will be required during the early stages of the scheme.

### Barriers to car sharing

Experience suggests that a number of concerns often stop potential car sharers from participation in a formal scheme. These include confidentiality, reliability and concerns about insurance.

- Confidentiality – the registration process should be promoted as confidential, where the only shared details at the initial stage will be workplace telephone or e-mail addresses. Data protection concerns necessitate the user's permission to use their address in generating matches, but this information is not circulated.
- To address reliability worries, the organisation can offer a guaranteed ride home system in situations where a person is let down by their car share partner. Many organisations include such a provision, offering to reimburse taxi fares to a maximum of say six uses per annum, and generally find that uptake is lower than that. This can provide a sense of security for participants and can significantly encourage registration.
- The perception of problems associated with car insurance can often act as a disincentive for car owners to get involved in a car sharing arrangement. The following information provides a general guideline within which the car sharer should operate:

#### Insurance Issues

Standard private motor insurance policies include cover for normal commuting and do not place any restrictions on carrying passengers, within the designed passenger carrying capacity of the vehicle.

Carriage of passengers "for hire or reward" would be excluded from such private policies, but insurance companies do not consider payments as part of a car sharing arrangement as "hire or reward" provided:

- the vehicle is not constructed or adapted to carry more than eight passengers in addition to the driver
- the policyholder is not giving lifts as a business of carrying passengers
- total contributions received do not involve an element of profit

Any policyholder that is in doubt as to whether particular car sharing arrangements are covered by the terms of their insurance policy should contact their insurance company or broker for clarification.

## Car Parking Management

### Car Parking as a Constraint

Parking provision is very often a contentious issue that is in the realm of industrial relations more than facilities management. It is not uncommon for organisations to shy away from mobility management plan projects due to sensitivity over parking at the site, while other organisations undertake mobility management plans specifically to tackle parking problems. Either way the issue must be handled carefully. The political issues around parking will vary according to whether the site is existing, new or expanding. Also, an organisation which has historically had limited parking space (often the case in city centres), might have less problems with people assuming that free parking is an absolute right.



Organisations are often attracted to mobility management plans on the promise of reduced parking requirements in the future. However, employees are likely to resist a project if this is its main driving factor. Also, experience of mobility management plans suggests that the returns from other measures in terms of reduced car use are unlikely to significantly affect parking requirements in the short to medium term. A mobility management plan that is simply a cover for parking space reduction is unlikely to succeed. On the other hand, a successful mobility management plan will need to be based on a carrot and stick approach, completely free access to parking represents an imbalance in favour of car use.

### Data Requirements

Baseline information on car park usage, allocation policy and the effects of existing car parking policy on car usage is essential. However, given the sensitivity that often surrounds the issue of parking, overly direct questions may produce unreliable data or provoke a negative reaction to the mobility management plan as a whole. The organisation's intentions regarding parking must be clear before co-operation (including information) is sought.

### Managing the Resource

The management of car parking as a resource can play a pivotal role in the development of incentives for public transport use or car sharing. Parking provision represents a major financial overhead to organisations in terms of the additional land required. This cost can be particularly high in densely developed areas of high commercial value such as city centre business districts.

Where mobility management plans are being developed at established work sites, the examination of parking use and allocation policy should form a central element of site assessment. At sites where on-site parking is restricted or absent, such as city centre locations, off-site parking use by employees and visitors should also be taken into consideration.

The objectives of car park management should be to prioritise usage on the basis of specific functions or requirements, such as parking for mobility-impaired employees, visitor parking for clients, pool cars, car sharing spaces and other essential users. The introduction of charging for non-essential users should be considered, but only in combination with compensatory measures such as a car sharing service, public transport, and cycle and pedestrian accessibility improvements.



## Eco-driving and awareness

As part of the general promotion of efficient and environmentally friendly commuting, other car related measures that can be tried include energy efficient driver training, which is becoming more common right across Europe. Schemes to provide easy mobility during the day, such as pool cars or bicycles for meetings, can also help by removing barriers to leaving the car at home.

Several organisations involved in the Way to Go project became involved in some form of measure aimed at improving the efficiency of car commuting to the work site.

One organisation offered subsidised driver training to staff on safer and more energy efficient ways of driving.

# Public Transport

## Public Transport Information

At the workplace, encouraging staff to use public transport starts with awareness and promotion. Staff perceptions of public transport may be based on outdated experiences, or even on hearsay. Assuming attractive public transport options exist, information can be effective in selling them.

As well as providing information, part of the aim is to positively brand public transport, pointing out its advantages and attempting to reduce people's negative associations. The corollary of this is the importance of not encouraging people onto poor public transport, where negative experiences may further reinforce car preferences.

The use of information points within the work site is an effective method of increasing awareness among staff about public transport options. These 'points' are usually information stands containing the latest bus and rail timetables, route maps and other promotional material. The organisation's web site or Intranet system can also be a conduit for this information, and can incorporate links to the bus/rail operators' web sites.



Provision of public transport information was approached in various ways by several organisations involved in the Way to Go project. One large organisation established a Free Public Transport Information Mailing Service.

This service offered all staff the opportunity to register to receive free public transport timetables for their routes by post. Staff members were sent new timetables as they became available. Several smaller organisations installed travel information points or leaflet dispensers in their offices, and some established website links between their own sites and those of public transport providers.

As part of one organisation's initial staff travel survey prize draw promotion (for those who returned their completed questionnaires), a staff member won a bus/rail season ticket. This staff member subsequently wrote an article for the organisation's Green Commuter Newsletter describing how he was initially unimpressed with the prize, but decided to try travelling by bus. He found the experience pleasant and convenient and now frequently travels by bus.

## Employer-provided public transport tickets

Financial incentives can be an effective tool in the promotion of public transport use. This can be done through the provision of low interest or interest-free loans for the purchase of public transport season tickets. The tax implications of employer provided benefits are discussed in Appendix 4.



One Way to Go pilot organisation has instigated a scheme which offered travel passes to staff in lieu of annual pay increments, a measure that is not subject to benefit in kind taxation (in certain countries), and thus represents a significant tax saving for employees.

The scheme is administered on an annual basis and the administration costs are low. Over 220 of the 1000 employees of the organisation have taken up the benefit. Anecdotal evidence suggests that some staff who, hitherto, brought their cars into the city on a daily basis, have in some cases substituted car-based commuting with use of their public transport travel pass.

## Developing Public Transport Services

The staff travel surveys undertaken as part of the Way to Go project would suggest that reliability, directness and frequency are the most important factors for commuters who are considering the use of public transport as an alternative.

In some cases, especially for larger employers, it may be possible to negotiate directly with public transport operators to improve services for commuting staff. Items for discussion could include the improvement of station or bus stop facilities, or the alteration of routes and timetables to improve attractiveness to staff.

Another approach might be for an employer to provide or subsidise a service specifically for their employees. For example, the provision of a dedicated bus link could be provided between a large work site and adjacent towns from which a direct bus or rail service is not available. Alternatively, it could provide a link with a local rail station which is not within reasonable walking distance.

The operation of this type of service could be tailored to staff arrival and departure times and the scheduling of rail services. Staff travel survey data can be used to identify the number of people likely to make use of such a service.

Two large manufacturing facilities located adjacent to each other outside a major city share the costs and management of a free shuttle bus service for commuting staff. The scheduling and routing of the service is based on the working patterns and home addresses of staff at both sites. As these change, the service can be reviewed accordingly.

Three coaches are currently used to provide the service, at a cost of about 190,000 Euros per year, providing links from a nearby rail station and from the nearest large towns. This service addresses the deficit in the public bus service in the area and is currently used by about 130 staff.

The service is promoted through open days, notice board announcements, a dedicated web page and is also mentioned at induction sessions for new staff. When any changes in routing are made in the service, the above media are also used to publicise these.

## Cycling and Walking

The feasibility of measures that promote cycling and walking will be influenced by factors such as the safety and ease of cycling to and from the site (perceptions counting for a lot) and the age profile of staff. Generally speaking a distance of up to 4 km is considered reasonable for walking, and up to 10 km for cycling. These distances are only indicative, but can help to define target groups.



In one organisation involved in the Way to Go project, a high proportion of staff live nearby. Although most staff said that it was not too far to walk or cycle, the lack of lockers and shower facilities was seen as a barrier for these modes.

The staff at this site had ample free parking and relatively short, un-congested travel times when commuting to work by car. Therefore car commuting was seen to have few disadvantages and in focus group sessions some staff indicated that they had the expense of buying, maintaining and running a car and felt they would to some extent be double paying if they chose an alternative mode.

As with many measures relating to public transport, the aim is a mixture of support, through incentives and facilities, and encouragement, through information and marketing.

Incentives and facilities can include:

- the provision of interest free loans for the purchase of cycles
- the provision of “pool” bicycles for short distance business travel
- the provision of well located cycle parking facilities
- storage, changing and shower facilities for cyclists
- the provision of a business mileage rate for cycle use



User groups can raise the profile and allow information exchange and peer education about options. It can be useful to identify champions for different measures, typically an individual who already cycles or walks and is interested in encouraging others to do so, as the idea of being part of a group can attract staff to change.

Encouraging walking or cycling to meetings during the day can bring direct benefits and also reduce car commuting if people drive in because they need to travel during the day.



## Working Arrangements

Measures that incorporate an alteration of working arrangements or hours require a lot of thought and planning, and will not be feasible for all types of employees or organisations. However, they can bring significant benefits to both staff and the employer by providing a more flexible working environment reducing the need to commute, or at least move commuting to less congested periods. Such measures can also potentially reduce some fixed cost overheads for the organisation such as office space or parking requirements.

Options on changing working arrangements open to an organisation include:

- flexible working hours (flexi-time)
- compressed working week
- teleworking

Flexi-time and compressed working week approaches centre on the time patterns of work. Flexi-time can promote a staggered pattern of staff arrivals and departures. Its impacts on transport include allowing staff to avoid congested periods, and reducing the contribution to this congestion, and also offering flexibility to staff which may remove the need for car travel. A good example of this is the school drop-off; a later starting time may allow an employee to do this locally and then travel to work by a non-car mode.

Information technology can enable many people to conduct much of their normal workload away from their place for work. Teleworking is typically conducted from the home or satellite offices (sometimes referred to as “tele-centres”).

To facilitate teleworking, employers may provide staff with the necessary computer equipment. The tax implications of this are discussed in Appendix 4.

The introduction of teleworking will involve negotiation, development and probably pilot exercises. However, surveys suggest that a majority of staff members in most service sector organisations are interested in teleworking, but preferably on a part-time rather than full-time basis.

## Key lessons

- Measures in a mobility management plan often concentrate on specific modes, with the aim of increasing the uptake of more sustainable modes.
- Potential measures should be considered in terms of the gaps they fill and the barriers they overcome. Measures should complement each other to form a coherent set that addresses real needs.
- It can be difficult to focus properly on a diverse range of interests. It may be more practicable to concentrate initially on a small number of initiatives that can be built up over time.
- Measures chosen at the start should be practical, show results in the short term, and have been indicated as potentially viable on the basis of the staff survey.
- Measures usually encompass elements of support and of promotion, making an option more attractive and then selling it.
- The process should be open and inclusive, so that staff are well disposed to the plan and, hopefully, to subsequently make changes in behaviour.
- Awareness raising and promotion is crucial to the success of any plan. Sufficient budget must be made available for this on an ongoing basis.

# 4. Marketing the Mobility Management Plan

The overall objective of a mobility management plan is to achieve behavioural change in travel habits of staff. A prerequisite to achieving this goal is to promote accurate perceptions among the workforce on the issues around commuting and transport use generally.

In some cases, this may imply that there is a need for attitudinal change, in others it may involve capitalising on attitudes that already exist among some staff and translating this into behavioural change.



Perceptions of travel choices will have been ingrained through years of personal experience and information received from friends, family, colleagues and the media. Attempting to change these perceptions can be a major task. It requires an appreciation of how attitudes and behaviour are shaped, as well as an understanding of the transport issues themselves.

It is important that staff do not feel threatened by proposed changes. Wide ownership of the process and the dissemination and exchange of information is key to maintaining the support and interest of staff.

## **Why people do things the way they do – lessons from the Way to Go focus groups**

Many have weighed up the pros and cons of different travel methods and made what they see as a rational choice. But people use different criteria for this.

For example, some people said they didn't mind if the car journey was longer than the bus journey because they valued the comfort and isolation of the car more highly than the time involved. When choosing between public transport options, many people chose train over bus when they had the choice, since reliability of arrival and frequency was more important than other factors, such as getting a seat or the distance to walk at the end of the journey.

Often, if a person's choice seems rational to them but not to others, the difference is information – they simply don't know about the options open to them and what advantages they have to offer. People judging bus travel as an out of date experience was a common occurrence. In some cases, bus services had changed considerably since the last experience and a person might re-consider their decision if they only tried it.

Therefore staff can be encouraged to change travel behaviour if options are presented in an attractive way, with information to back it up. Staff can also be opened to alternative ways of thinking about mobility through the development of new initiatives and schemes developed as part of a mobility management plan. Many staff may be willing to try an alternative mode of transport for a short period, before forming a new fixed view.

## Developing a marketing strategy

The selling of mobility management plan measures begins when staff members are first exposed to new ideas through travel surveys and focus groups. It is therefore important for the mobility manager to draw-up a marketing strategy as early as possible in the process.

Staff should feel (and be) fully engaged in shaping the mobility management plan that will directly affect their lives. An effective marketing strategy will have a key role in delivering this. It is important that all staff are included within the marketing approach.

Taking an 'anti-car' approach is likely to be seen as 'anti-driver' and may have negative results. Many car users feel they have no alternative to driving to work and many may be right until alternatives are developed and offered.

Marketing strategies will vary in detail depending on the size and nature of the organisation and the resources available. However, all strategies should contain some of the following five basic elements.

## Clear Aim

A marketing strategy needs to have a clear aim. This will closely follow the overall aim of the mobility management plan and can be very simply stated, for example:

*To promote measures to reduce single occupancy car-based commuting trips.*

If an organisation chooses to use a specialised marketing department or organisation, the aims of the mobility management plan will be used to define the scope and content of the marketing strategy.

## Target audience

At first glance the target audience will be seen as 'all staff'. However, analysis of the staff travel surveys will identify clear groups of individuals who form *specific market segments*. An example already mentioned is that promotion of walking is best targeted at staff living within two or three miles of the work site.

Using such market segmentation techniques will avoid a 'scattergun' approach and reduce the volume (and cost) of promotion material required. Also, people will not be getting irrelevant material that might leave them with a negative impression of the whole project.

## Branding

It is useful to brand the mobility management plan measures with an accessible and meaningful umbrella title. **'Way to Go!'** is one such example.

Establishing a consistent 'look' for promotional material will aid recognition of the initiative and reinforce the key messages.

A warning: using the word 'green' in the branding may serve to alienate those who feel the environment theme is overused or may foster an impression of blame towards car drivers. Be careful!

## A timetable for promotional activity

The lead-in times to a staff travel survey or the launch of a car share scheme are important phases in which to undertake promotional activity. Time should be set aside for such phases of intensive promotional work.

The advance planning of promotional activity also enables the mobility manager to capitalise on national or international promotional events, such as European Car Free Day, to launch and promote new initiatives.

Marketing of mobility management plan measures needs be sustained over years rather than months.

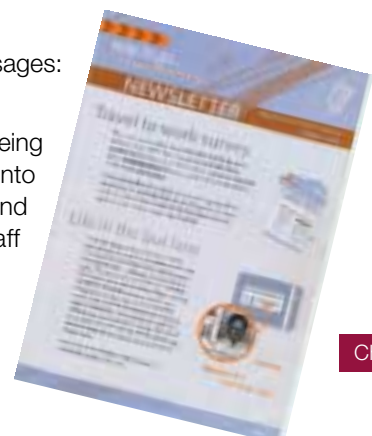
## Identifying communication tools and networks

An organisation will have a number of existing methods of communicating with its staff. The mobility manager should use all of these, but should also look at developing new methods of promoting the mobility management plan. This will reduce the likelihood of the message being lost in the weight of other information circulating in the workplace.

A range of media and methods are available for communicating messages:

### Newsletters, posters and leaflets

Paper-based promotional material has the great advantage of being accessible by those without e-mail/Intranet access. Overprinting onto colourful newsletter/poster/leaflet templates can reduce costs and shorten production times. Regular features within existing staff publications can be established at no cost.



## E-newsletters

Most designers will be able to produce an electronic version of a newsletter as well as a print version; most commonly in Acrobat PDF format. These can be circulated instantly to staff. Navigation through the e-newsletter allows some interaction. Images can be included. The mobility manager will need to ensure that the e-mail system can cope with such documents when sent to large numbers of staff.

## Group e-mails

Setting up of e-mail groups is straightforward. E-mail enables the mobility manager to communicate almost instantly with staff in a targeted way. Mini-newsletters can be circulated, as can any urgent items.

## Intranet

Promotional material on an organisation's Intranet can be created and posted quickly. Graphical material can be included. Internet pages are more permanent than e-mails or e-newsletters. Group e-mails can be used to promote the Intranet site. For those with Internet access, links can be made to public transport information websites.

## External media (press/TV/radio)

Involving outside media can be of great use in promoting the mobility management plan both to staff and to senior management. Press articles, radio and TV coverage often carry far more weight than material produced in-house. Of course it is important to get authority for any such publicity from the appropriate people in the organisation.

## Presentations to colleagues

Selling the concept and detail of the mobility management plan to colleagues, senior managers, partner organisations, local politicians, transport operators and bicycle user groups will probably be the responsibility of the mobility manager. It may be useful to prepare a presentation pack, featuring overhead slides and guidance notes, for colleagues to use when addressing team meetings or staff induction courses.



## Examples of dissemination networks in Way to Go

### 1. Public transport leaflet racks

Several organisations installed leaflet racks with timetables and route maps. One organisation installed 70 such leaflet racks throughout its offices. The racks, together with bus and train timetables, were supplied free by the regional passenger transport executive organisation. Leaflets promoting other aspects of the mobility management plan, such as car sharing and walking were also disseminated using this network of racks.

### 2. The ECO network

To establish and maintain a high profile for its mobility management plan measures, one organisation has utilised its network of Environmental Cascade Officers (ECOs) who support its ongoing EMAS process. Each of the organisation's 33 departments has one or more staff members who, in addition to their normal duties, help raise colleagues' awareness of environmental issues. They receive background information/training on the issue to be highlighted through attending quarterly EMAS forums. They are then equipped to circulate paper-based promotional material in the workplace and address team meetings. ECOs also provide an invaluable link back to the organisation's corporate centre to help inform the continuing development of environmental initiatives.





### Promotional events

Informal events for staff such as a free buffet lunch with information stalls can be an effective promotional tool. Events such as commuter races or 'cycle breakfasts' (free breakfast events for cycling commuters) can generate both staff and media interest.

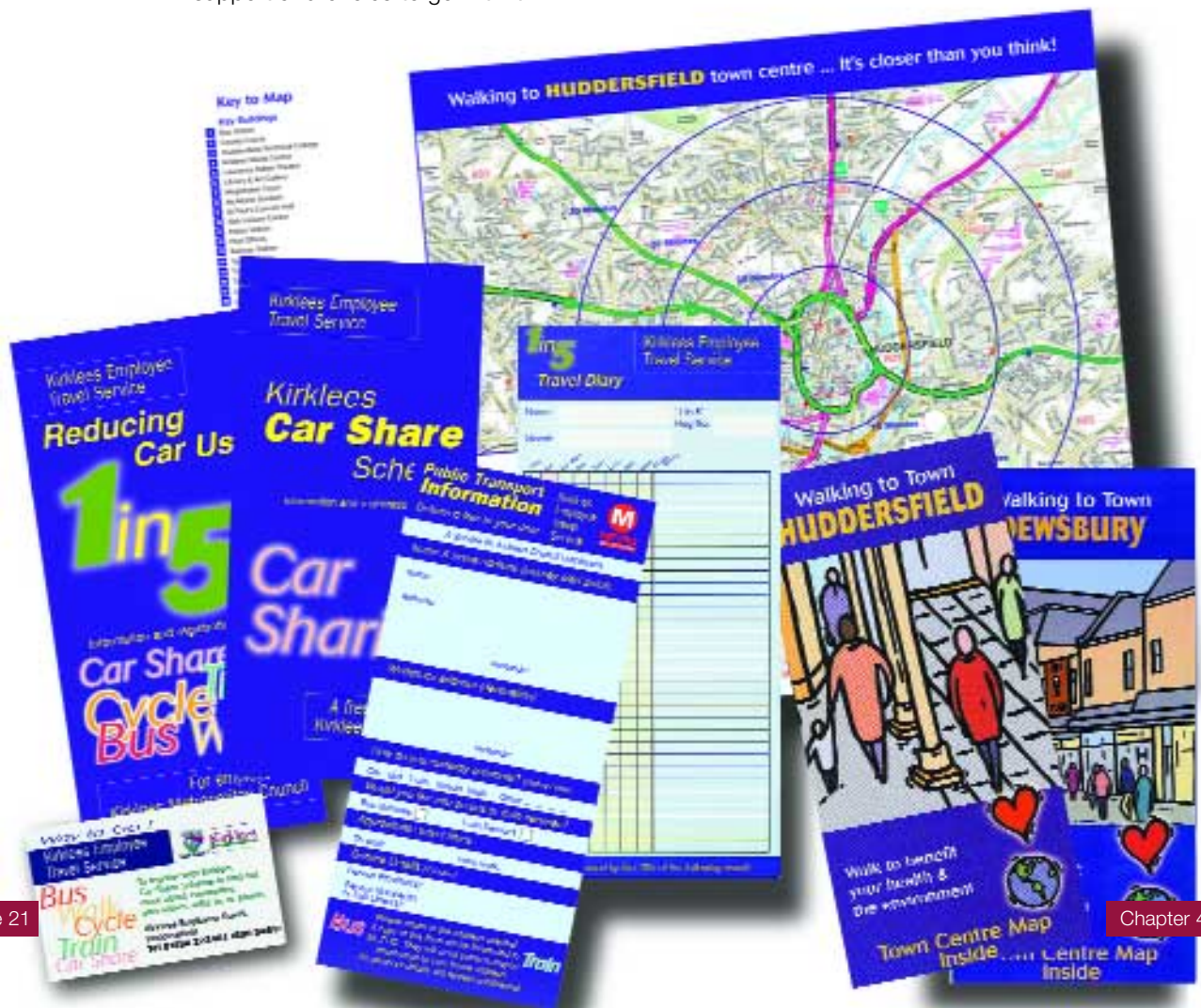
### Promotional gifts and competition prizes

Free gifts are always popular. Small items such as pens, key rings and mouse mats featuring advertising can be produced at low unit cost. Competitions can generate interest and coverage that greatly exceeds the outlay of time and money. Larger promotional items may be considered a taxable benefit under national tax law. The mobility manager must ensure that tax issues have been effectively addressed (see Appendix 4).



## Key Lessons

- Sustained marketing is vital to the success of a mobility management plan.
- An 'anti-car' approach should be avoided.
- Where possible the benefits of the plan should be personalised, for example by reporting the annual savings a driver can achieve through car sharing.
- Highlighting individual 'champions' who have reduced their car use can carry a strong message. Featuring senior managers raises the profile of the campaign and demonstrates management commitment to the mobility management plan.
- Many who use public transport do so because they have 'no alternative'. Promoting a positive image of public transport helps to retain the commitment of these existing users.
- Promotional material, whatever the quality, is only as good as the distribution network.
- Free gifts and prizes in competitions assist greatly in increasing the reach of a marketing campaign.
- Promotional activity alone will not achieve significant modal shift. There must be support and choice to go with it.





# 5. Energy and Externalities

One of the major reasons for undertaking a mobility management plan project is to address the environmental impacts of current transport patterns. This guide has already covered some of the environmental benefits of encouraging reduced car-dependency amongst staff. These include reduced air pollution, noise, accidents and congestion, as well as direct financial benefits for staff and employers.

An important part of the process of motivating change is to be able to quantify some of these benefits. This requires an understanding of the impacts of current travel patterns in environmental and economic terms, which will then help the mobility manager and the organisation to predict the potential benefits of a move towards more sustainable transport habits.

An understanding of the full costs of current transport patterns helps make the case for a mobility management plan.

Estimates of environmental and other costs of commuting provide a basis for setting the appropriate scale of a mobility management plan project.

Providing commuters with information about the full costs of their travel patterns can be a strong motivator for change.

## The Impacts of Transport

### Environmental impacts

The most obvious environmental impact of transport is air pollution. Many exhaust gases from cars, buses and trains have negative health effects at a local level, particularly respiratory effects. Another major impact from air emissions occurs on a global scale and that is climate change. The principal gas that causes climate change is carbon dioxide (CO<sub>2</sub>), which is produced by the burning of fossil fuels. This is why energy consumption is so important for the climate change issue. Concern about climate change is growing rapidly, and most developed nations are investing considerable resources and effort into limiting their emissions of CO<sub>2</sub> and other greenhouse gases.

### Economic impacts

Economic cost is certainly not the only reason to worry about environmental impacts, but it does offer a useful way to quantify and compare impacts. When talking of the economic costs of transport, we can separate internal costs and external costs. Internal costs are those paid by the user, for example the costs of petrol used to run a car or the price of a train ticket. External costs are those borne by society generally and not by individual users. For example, if pollution from cars causes health problems among the general population, or damage to historic buildings, these costs are external.

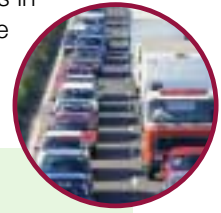
There are obviously costs associated with the health impacts, climate change and other effects of these pollutants. Of course there are many reasons why health damage from pollution is to be avoided and it is important that this isn't just thought of in simple economic terms. However, for the purposes of evaluation, if we look at health impacts in economic terms, obviously sickness costs money - through treatment, lost earning and of course the "value" of lives shortened or lost. With climate change, one may think of costs either in terms of the costs of prevention or the probable costs of the damage caused in the future.

Other external costs arise from transport, which are not related to pollution. One obvious factor is the cost of accidents. Insurance payments cover some elements of the immediate costs of accidents but do not nearly cover the full costs in terms of a person's own valuations of their injuries or their lives. Thus injury and death caused by road accidents represents a major external cost of transport and cars are the most significant contributor in this regard.

Other costs worth considering include noise costs and congestion costs. Traffic noise costs money: it causes stress, makes areas less pleasant and devalues property. It is difficult to put a price on traffic noise but estimates can be made. Congestion also entails considerable economic costs.

## Estimating transport impacts – the Impacts Calculator

This guide includes a CD-ROM that contains a tool for estimating the full costs of an organisation's car commuting. This Impacts Calculator requires just a few basic pieces of information about the organisation's commuting patterns and will then calculate a range of estimated impacts in environmental and economic terms. The analysis is restricted to cars, which are the source of the bulk of the impacts and are also the main target of mobility management plans.



### Typical emissions for different transport modes

For a 10 km journey:

- a car, typically carrying 1 to 2 passengers, consumes about 1.2 litres of petrol and emits about 3 kg of carbon dioxide, i.e. about 1.7 kg per passenger
- a bus, typically carrying 60 people during peak hours, emits about 15 kg of CO<sub>2</sub>, i.e. about 0.25 kg per passenger
- an electric train emits about 36 kg of CO<sub>2</sub> (in electricity generation stations), and could easily carry 150 people per vehicle during peak hours, about 0.24 kg per passenger

These figures are approximate and comparability is limited by issues such as occupancy rates, vehicle specification and the type of journeys. But they do illustrate that cars cause more pollution than any other form of passenger transport.

Some of the results from the organisations involved in the Way to Go analysis clearly illustrate the impact of cars and, as such, show the savings that could be made by implementing a mobility management plan.

Over a year's commuting, a typical car in a city centre site accounted for:

- 700 litres of fuel consumed
- 4200 Euros per annum total car costs to the user
- 5400 Euros total external costs (including congestion) and car costs

These figures are based on analysis of the five organisations in Dublin, which are characterised by journeys of about 14km each way, in heavily congested conditions. Congestion makes the impacts worse, since cars are idling or stopping and starting a lot. The above figures are indicative of the potential savings that are possible if car use is reduced.

### What are some of the key factors that affect the levels of impacts for different organisations?

Variation among sites is obviously very dependent on the specifics of the site location:

- distance from living areas - a suburban site will tend to have a higher proportion of people living nearby than a city centre site
- The range of travel options - city centre sites have fewer car users since congestion is worse and alternatives are usually better

Overall, non-city centre sites tend to get higher proportions of car drivers but with less congested and often shorter journeys, so that the impact per car is lower than a city centre site, but the impact per organisation is higher.

## How to use impacts estimates in a mobility management plan project

Information used well can greatly enhance a project where the aim is to encourage behavioural change.

Lack of information is often a significant barrier in itself to behaviour change. For example, as discussed earlier, people may not know how convenient the bus is for them. The same applies to information about impacts – many people are not aware of the full range of impacts that car travel has, and are surprised when they see the figures on total costs both to themselves and to the wider economy. This applies both to people who might be persuaded to change their commuting habits and also to organisations that might be persuaded to implement a mobility management plan.

### Awareness of full costs

The data derived from the Impacts Calculator can be used to make the individual aware of the full costs of car travel, both to them and to the environment. Since awareness of these costs is usually low, some people may be motivated to act once they are informed.

The impacts data also contributes to the branding of sustainability within an organisation. Informing staff of the negative impacts of car driving increases their awareness of more sustainable modes of transport. Publicising the impacts data within the organisation helps to label certain behaviours as desirable.

However, it is important to remember that the same dangers exist here as with other efforts to label certain behaviour as desirable. Staff will not react positively to criticism, especially where no real alternatives currently exist.

### Environmental data for the organisation

On the organisation side, there is value in specific information about existing environmental impacts and potential improvements. This information can play an important part in gaining organisation-wide support for a mobility management project, or for specific measures in the project, especially when investment is required.

Several pilot project co-ordinators involved in the Way to Go project incorporated impacts data into their presentations to senior management when proposing specific measures for the mobility management plan.

Expected behavioural change (for example, 10 less people driving to work once each week) were converted into the tonnes of CO<sub>2</sub> this would save, the avoided environmental costs, and the savings to the drivers themselves.

The impacts data can help the mobility manager set the scale of the plan and can also create an important link between the mobility management plan and other environmental performance measures in the organisation.

Environmental standards such as ISO 14001 and EMAS require the quantification of environmental impacts in order to ensure the management of significant environmental effects. For service sector organisations in particular, the impacts of commuting (and other transport) can be seen as a major element of the organisation's environmental performance. The ability to quantify the environmental benefits from an effective mobility management plan can strengthen the case for environmental accreditation.

For companies not considering formal environmental standards, the quantification of environmental benefits of mobility management plan projects can be a useful tool in publicity and green branding.

### Using environmental impacts in mobility management plans

Impacts data also allows project goals to be translated into environmental and economic values. For example, an organisation could say:

- if 10% of car drivers in our organisation left their cars at home once each week, this would save 7 tonnes of carbon dioxide emissions every year (this is a typical figure for an organisation with 200 employees)
- leaving the car at home two days every week will reduce petrol consumption by 160 litres per annum (this is a typical figure from the experience of the Way to Go project)

In attempting to put a value on environmental impacts, it is important to remember that environmental economics involves assumptions, approximations and value judgements. Different methods will give different results and no estimates are entirely precise. The Impacts Calculator is based on some of the most widely accepted methods currently in use. Therefore, the figures can be seen as “best estimates”. As long as they are presented as such, they can add considerable weight to a mobility management plan.



### Key lessons

- With just a small amount of information about staff commuting habits, valuable information about environmental and economic impacts can be calculated.
- Calculations will reveal the true costs of car driving and will show that other modes are much more environmentally sustainable.
- This kind of information can be very powerful in making a case for a mobility management plan and in persuading people to participate and change their behaviour.

# 6. Measuring Success

Measuring success in mobility management is, like the mobility management plan itself, a process that will be unique to each organisation. The specifics of the measures implemented and the priorities of the organisation will determine the appropriate indicators of success.

It is important to remember that success is not measured purely in terms of modal change among commuting staff. There are also other benefits that can result from a mobility management plan.

As discussed earlier, these can include:

- a reduction in the environmental impact of staff travel patterns
- a more environmentally sound organisation image
  - a positive organisation profile and public relations
  - improved staff morale resulting from 'inclusion' in a process that is sustainable and promotes healthy lifestyles
  - financial gain (in some cases) for employees



Making the work site more easily accessible by modes other than driving alone can also facilitate easier recruitment and retention of staff. All of these elements can be brought into the process of measuring success.

The baseline research will suggest the kinds of change that are most achievable. If, for example, the staff travel survey indicates resistance to certain types of measures, then significant success in these areas is less likely in the short term. These will require considerable promotion before behaviour will be affected. Explicit objectives and targets should be set in line with the desired level and type of change.

## What level of change can be achieved?

In general, a modal shift of 5% away from cars would be seen as a significant success for a mobility management plan. However, overall modal shift is not the best measure of all elements of a plan, even if it is the most desirable.

It is important that minor changes in behaviour are recognised. Methods of evaluating change must recognise small individual actions. Gradual change is a more attractive and realistic option for most staff. Attitudinal change should also be considered a success.

## How to monitor success

The approach to evaluation will be specific to each organisation. Options can be classified as top down evaluation that is not specific to individual measures, or bottom-up-evaluation of a particular measure in itself.

### Top down evaluation

Top down approaches can include surveys, focus groups and travel diaries. Surveying for evaluation may mean another full staff travel survey following implementation of the mobility management plan to directly compare the baseline with the new situation. Quantitative evaluation methods are obviously much more valuable when they are directly comparable with the baseline data. Repeat surveys should use the same wording and happen at the same time of year as the original staff travel survey.

An ideal time for such a survey would be exactly one year after the original survey.

However, many of the impacts of a mobility management plan are difficult to measure in a survey, and many more are of the size that a survey is not reliable in measuring.

As well as a full repeat survey, a smaller survey could be conducted that focuses exclusively on current commuting patterns. This analysis could also be done through an observation exercise, where commuters by mode are counted on a given day. These approaches are useful for answering the simple bottom-line question of what is the current modal split. Another quantitative approach useful in this regard is a travel diary project, where a number of commuters record their travel patterns in a set format for a week or a month.



Quantitative measures of success are desirable and very valuable, but the role of qualitative assessment should not be discounted. Top down monitoring can include such qualitative assessment. Repeat focus groups or interviews can form an important part of an evaluation, gathering more detailed information on impacts and relevant issues than a survey would. Anecdotal evidence gathered by the mobility manager or steering group members can also be useful.

### Bottom-up approaches

The main limitations of top-down approaches relate to their inability to capture small, partial or indirect changes in behaviour and attitudes. Individual measures in the mobility management plan can also be monitored on a 'bottom-up' basis, which allows a more detailed evaluation of their impacts. The main drawback is the loss of the overall picture, and so an ideal evaluation approach will incorporate both top-down and bottom-up elements.

A good example of bottom-up evaluation of a measure is the utilisation of a car share database. The number of registrations, matches and uptake of matches can all be easily accessed. Whenever possible, registration to schemes should include asking for the user's current travel habits, so it will be possible to see who is actually changing modes. Also, the database can provide access to the participants if further evaluation is desired, say through circulation of a short survey.

Many measures are not readily amenable to direct evaluation. For example, it can be very difficult to quantify success in encouraging cycling. User groups can be an important source of information about numbers using the mode or remaining barriers to uptake. Even if the measures do not generate their own evaluation data directly they should at least provide a route of access to the target group.

## Reporting to stakeholders

As a mobility management plan is implemented, it is important to communicate the results to senior management and to all staff. If the mobility management plan forms part of an internal or accredited environmental management system, the local or wider community may also be appropriate target groups for communicating success. This information will also be of interest to other organisations, clients and the media.

**Staff** in particular need to be kept informed. The direct benefits of change such as a reduction in environmental impacts or increased access will be of most interest to those directly involved. A good mobility management plan is owned by all staff, so the information on its impacts should be freely available. Also, continued participation among staff will be contingent on tangible results being communicated to them.

**Senior management** probably initiated the mobility management plan project and will have committed financial and staff resources to it. As such, they need to be part of the evaluation process and fully aware of all impacts. They might also be interested in summary results that can be used in other forums.

The benefits of a mobility management plan include the external acknowledgement and publicity, so these should be maximised through effective communication to external audiences.



## Key Lessons

- Evaluation of the mobility management plan is important for four reasons:
  - the requirement for the performance assessment of specific measures and investments
  - the identification of ways in which measures should be taken forward;
  - its role in sustaining and enhancing participation by staff
  - the benefits of reporting success to all stakeholders
- Evaluation should be wider than simple measurements of direct changes in travel behaviour.
- Top-down monitoring, through staff surveys, travel diaries or focus groups, gives an overall sense of the success of the project and also provides important quantitative evaluation of the plan as a whole.
- Bottom-up monitoring of individual measures can often provide more information about partial or indirect behavioural change, and can also provide insights into what is impeding further change.
- The results of any evaluation should be shared with all principal stakeholders and can be communicated externally to enhance the benefits of the plan.

# 7. Conclusions

This guide has introduced the concept of mobility management and has provided an introduction to the processes involved in the planning and implementation of a mobility management plan.

The following sections present a few short comments on some of the key lessons learned from the organisations on whose experiences this guide is based. These experiences identify some central issues that should be addressed at the start of the process, and some key points that can influence success. Some of the advantages and disadvantages of a centralised approach versus an individual approach are also discussed.

## Commitment and time

High level and ongoing commitment is essential for success. This must start with senior management and must also include the mobility manager and any other key groups and individuals, such as steering group members. Above all, the mobility manager must be allowed the time and the financial resources to champion the project.

Although the position of mobility manager is pivotal, an over-reliance on one individual can lead to a break in continuity should that person leave their position or find themselves with insufficient time or resources. A group approach, with the active involvement of a steering group and working groups, can help protect against this.

The amount of time involved in designing and implementing a mobility management plan should not be under-estimated. It is essential that this time is made available to the mobility manager and other key people over a long time frame so that momentum in the project can be maintained, and that progress is tangible to staff.

Putting the elements of a mobility management plan in place will take at least a year, but probably longer. The measures which have been adopted and implemented will, for the most part, continue indefinitely. Resource requirements associated with these measures may in some cases decrease over time, but are unlikely to disappear entirely.

## Building success into the process

Mobility management plans alone cannot deliver a truly sustainable commuting environment. There will be many challenging constraints in terms of organisation policy, infrastructure, public transport service levels, general staff culture and individual staff circumstances, that will affect the process of change towards more sustainable commuting behaviour.

The plan should start from a small base, achieve early successes and thus build momentum. Therefore:

- Choose measures at the start that are practical, show results in the short term, and have been indicated as potential winners on the basis of the staff survey.
- Consider from the start how measures in the plan will be evaluated. If resources are to be committed, some measure of success will be necessary.
- Promotion and publicity are crucial to the success of a mobility management plan. Short phases of intensive publicity as well as on going drip-feeding of information will be required. If employees' interest is raised, it must be maintained; lost ground is difficult to recover.
- Implementation works best if measures are made mainstream throughout the organisation. This ensures that the benefits continue beyond the 'project' of developing a mobility management plan.
- No one measure will achieve full impact on its own. A suite of measures will give the opportunity for all to participate in individually small, but collectively significant ways.



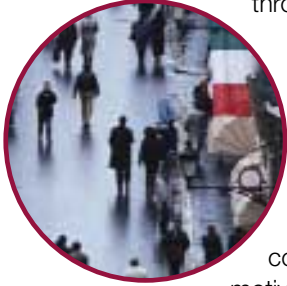
## Working with other organisations or working alone?

There are advantages to both approaches. The collective approach allows sharing of experiences, peer motivation and possible pooling of resources. The individual approach might favour a stronger project when the organisation is well motivated and well resourced and does not wish to wait for others to catch up.

If a collective approach is used, a clear and streamlined decision-making process should be established for all participating organisations. Some kind of facilitator or chairperson will be required, either chosen from among the participants or appointed separately.

Finding a way to participate in a collective approach will be easier in some cases than in others.

Industrial estates or business parks are ideal candidates for this approach, possibly organised through the site management company.



Public organisations are probably more likely to be able to get together and work collectively than private companies, which may find it difficult to make connections or establish common ground. On the other hand, private companies may find it easier to commit resources to external facilitators or consultants to manage the process.

The group approach used for most of the organisations in the Way to Go project was considered by participants to be effective in keeping mobility managers informed and motivated. However, the one organisation that undertook the project on its own probably achieved the most success in terms of achieving targets.

The general conclusion is that organisations that are starting the mobility management process for the first time may benefit most from a collective approach. Those with experience in this area, or who have significant resources available, may find it more efficient to proceed on their own.

## Closing remarks

A mobility management plan can be a significant and long-term undertaking. Any organisation considering such a plan will need to secure a long-term resource commitment for its development. They will also need to be open to changes in their day-to-day operations.

A mobility management plan is an organic process that develops and changes over time. It is guided by the specific circumstances and priorities prevailing in an organisation.

While this guide will serve as a useful reference point and support, each organisation must learn for itself and must incrementally adopt a 'culture' of mobility management. Above all, the level and consistency of commitment to the plan will determine success.

# Appendix 1 *The Way to Go Project*

Way to Go was a research project co-funded through the European Commission's SAVE II programme. It focused on the promotion and piloting of "soft" (non-infrastructure) mobility management measures at the level of the work site, and the assessment of these measures in terms of:

- reduced car trips
- changing travel to work and work style patterns
- the likely problems in implementing specific measures
- the impact of mobility management measures on energy consumption
- the external environmental impacts of car based commuting

The project was jointly undertaken by three organisations, the Dublin Transportation Office, Kirklees Metropolitan Council (UK) and the Irish Energy Centre.

The project partners adopted two different but complementary approaches to the overall Way to Go project:

## **1. Providing an area-wide service for organisations developing mobility management plans**

Dublin Transportation Office (DTO) provided a centralised consultative service to six pilot project organisations within the greater Dublin area. The organisations ranged in size from 20 to 3,500 employees.

All of the pilot organisations assigned the role of co-ordinator to an existing member of staff, most often from the Human Resources Departments.

A DTO staff member undertook an overall co-ordination and liaison role for the six organisations on a part-time basis. Assistance provided included survey design, analysis and interpretation, focus group work and a car-sharing service.

The implementation of mobility management plan measures was the responsibility of each of the pilot organisations.

## **2. Concentrated in-house development of a mobility management plan**

Kirklees Metropolitan Council (KMC) focused solely on the development of Mobility Management Plan Measures within their own organisation.

With KMC administering an area of 40,860 hectares and employing up to 12,500 full time equivalent, the Council's Huddersfield town centre work sites were chosen as a pilot area for the project.

These sites feature KMC's main administrative centre and incorporate 2,500 employees spread across many services.

A co-ordinator was internally seconded to work on the project on a part-time basis.

## Common Supporting Resources

The role of the Irish Energy Centre (IEC) was to provide expertise regarding the energy issues associated with transport and to assist in overall project co-ordination.

This work was delivered by IEC staff and an independent consultant appointed by the Centre.

The IEC also featured as one of the pilot organisations, supported by the work of the DTO. Participating Organisations:

Department of Environment and Local Government  
Department of Public Enterprise  
Dun Laoghaire Rathdown County Council  
Irish Energy Centre  
Intel Ireland  
Irish Life  
Kirklees Metropolitan Council

Government Department  
Government Department  
Local Authority  
National Agency  
Manufacturer  
Services Sector  
Local Authority



# Appendix 2 Data Collection

## A. Staff Travel Survey

The staff travel survey can be a key element of the research that informs the development of mobility management plan measures.

The questionnaire presented below is typical of those used in the Way to Go project. Time should be taken to tailor the questionnaire to the particular requirements of the organisation.

### Note on Survey Data Use

As with all questionnaires that are to be manually or electronically processed, rules concerning data protection must be followed. Staff may be sensitive about providing their name and home details. However, this information can be useful for the mobility manager who wishes to map home addresses (for car share matching for example), or target specific individuals with car share or bus/train service information.

Staff should be fully informed as to who will be using the data and for what purpose. If survey data is to be used for other purposes outside the immediate scope of the mobility management plan, such as targeted mailing or the sharing of data with other organisations, full consent is essential.

Much of the personal information and work details may be held on databases within human resources sections. Using such databases for surveys may save a great deal of time and effort and improve response rates but again adherence to laws and organisation policies on data protection must be ensured.

## Way to Go Staff Travel Survey Questionnaire (sample)

All staff are being surveyed on the way they travel to, from and at work. The data will be used exclusively to develop and promote measures to improve the journey to our work site for all employees and visitors.

Please take 5 minutes to complete the questionnaire and return in the envelope provided. Thank you for taking the time and trouble to complete this questionnaire.

## Mode of Travel and Journey Details

### 1. How do you travel to and from work during a typical week?

- ☐ Car (you driving)
- ☐ Car (as passenger)
- ☐ Bus
- ☐ Train
- ☐ Motorbike/scooter
- ☐ Cycle
- ☐ Walk
- ☐ Other
- ☐ Combination (please give details)

### 2. Does your journey to or from work include a school (or other) drop off or pick up?

☐ Yes ☐ No

### 3. How far do you travel to work?

.....(kilometres)

### Impacts calculator

The Impacts Calculator included on the CD-ROM requires the input of survey data. Inclusion of questions 4, 5, 6 and 7 provides the most accurate source of data for use with this software.

### 4. What is your typical travel time to work, door to door?

.....(minutes)

*Driver Commuters Only (questions 5-8)*

### 5. How long is the section you drive to work (if different from question 3)?

.....(kilometres)

### 6. What is the engine size?

.....(cc)

### 7. Is your car?

☐ Petrol or ☐ Diesel?

### 8. Do you currently give a colleague a lift to or from work?

- ☐ Most days
- ☐ Occasionally
- ☐ Never

# Personal Transport Options

## 9. How often is a car available to you for commuting to work?

- ☐ Most days
- ☐ Occasionally
- ☐ Never

## 10. How often is a bicycle available to you for commuting to work?

- ☐ Most days
- ☐ Occasionally
- ☐ Never

### Motivations

Trying to assess motivations for behaviour is difficult to do within the restrictions of a questionnaire. It also requires a degree of self-awareness and honesty by the individual completing the survey. Whilst inclusion of such questions is valid, greater detail is gained through either focus groups or personal interviews.

## 11. Why do you normally travel to work the way you do? (please tick one or more)

- ☐ No alternative
- ☐ No public transport nearby
- ☐ Cheapest way
- ☐ Quickest way
- ☐ Gives me flexibility
- ☐ Reliable
- ☐ Health reasons
- ☐ Need car/van for my work in the day
- ☐ Other:.....

## 12. Which of the following would encourage you to use the bus or train more, for your journey to work? (please tick one or more)

- ☐ More direct bus routes
- ☐ More frequent bus services
- ☐ Better facilities at bus shelters
- ☐ Discount tickets/passes available at work
- ☐ More convenient bus drop-off points
- ☐ More frequent rail services
- ☐ Better connections from work to the rail network
- ☐ Better public transport information at work
- ☐ Nothing
- ☐ Other:.....

## 13. Which of the following changes would encourage you to cycle to work more? (please tick one or more)

- ☐ Improved cycle paths
- ☐ Improved cycle parking at work
- ☐ Improved changing/showering facilities and
- ☐ More lockers at work
- ☐ Arrangements to buy bicycles at a discount
- ☐ Nothing
- ☐ Other:.....

## 14a. How have your commuting work habits changed in the last 12 months?

- ☐ No change
- ☐ Drive less
- ☐ Drive more
- ☐ Use public transport more
- ☐ Use public transport less
- ☐ Walk or cycle more
- ☐ Walk or cycle less
- ☐ Other: .....

## 14b. Why have your commuting habits changed?

- ☐ Moved house
- ☐ Health reasons
- ☐ Difficulties of alternatives
- ☐ Other: .....

# Work Details

## 15. Work Department/Section:

...../.....

## 16. Job Title:.....

## 17. What hours do you usually work?

Start time:.....

Finish time:.....

## 18. Do you work flexi-time?

- ☐ Yes or ☐ No

## 19a. Do you use a vehicle in the course of your work?

- ☐ Yes (own or company vehicle) or ☐ No

## 19b. If Yes, how often?

- ☐ Most days
- ☐ Occasionally
- ☐ Never

## Demographic Details

### 20. Gender

- ☐ Male ☐ Female

### 21. Age

- ☐ 24 or under  
☐ 25 - 34  
☐ 35 - 44  
☐ 45 - 54  
☐ 55 or over

### 22. Do you have a disability that affects your choice of transport?

Please give details:

.....

### 23. Where do you live?

County: .....

Town: .....

Area: .....

Post Code: .....

### 24. Full Name: .....

## Data Protection

**25. Data gathered through this survey may also be used to send you personalised information on transport services to your work address. Data may also be shared with public transport providers solely for the purposes of enhancing services.**

- ☐ I consent to data being used as outlined above.



## B. Focus Groups

### Recruiting Participants

There are three ways of thinking about how to recruit people for a focus group session:

**Interested participants** - recruit by asking for volunteers, which will attract interested people, or by approaching people who have been active in the past (for example, people who have been involved in a cycling group).

It is good to get people who have thought the issues through and are interested, but the danger of this approach is that the possibility of only getting one side of the story or getting an impression of openness to change that is not representative of the organisation in general.

**Representative participants** - look for spokespersons, say leaders of societies, unions, section heads and so forth, to speak on behalf of staff. This approach can help an investigation into the organisation's culture and raise particular issues that might apply. Also, such people are probably willing to participate well.

This approach can be effective for getting a wide overview but is not so effective for understanding personal motivations, since people may only be speaking in their official capacity. Some organisations may find it necessary to take this approach for political reasons.

**Random participants** - it may be possible to ask people on a random basis to join the focus group, in order to provide a broad range of views.

This approach is not particularly effective, as people randomly selected may feel they have little to contribute. In any case, since focus groups are never large enough to be statistically representative, there is nothing much to gain from random selection.

In conclusion, the first option is recommended where volunteers are sought through a general announcement through existing groups or committees within the organisation, or through the invitation of people with a known interest in mobility management issues.

# Structuring the Discussion

The focus groups in the Way to Go project were structured around the following questions:

- What is your current travel behaviour?
- Are you happy with your travel behaviour? Would you like to change it?
- Are there alternatives to the car?
- What would help you change?
- What would stop you changing?
- Where should we go from here?

These basic questions can allow a discussion to proceed in many different directions, but the questions can also be used to keep the session orientated towards the fact finding goals. Beyond these basic questions, the results of the survey, if it has been carried out and analysed, can stimulate discussion on key points and can also suggest what topics are unclear and thus worthy of exploration. For instance, if a survey suggests that few people would be interested in car sharing, the focus group can explore why this is so.

The basic rule is to allow the discussion to proceed naturally, within the bounds of the relevant issues. In particular, people tend to have wide ranging views on transport issues and the facilitator must ensure the conversation stays on those aspects related to the project in hand. The focus group facilitator can lead off, asking some questions, or introducing some ideas - anything to get the discussion going.

If possible, the session should be tape recorded to help reporting and analysis. Also, it is probably better to use an outside facilitator, although the mobility manager should preferably be present. An outside facilitator can direct the discussion more freely and hopefully encourage people to be open.

## Analysis and Reporting

The facilitator can use his/her notes and the tape recording of the session as a basis for reporting. This report does not have to cover every word spoken, but should provide a broad summary of the session. The report could be structured around the questions listed above or around modes or potential measures.

This report should be seen as a complement to the staff travel survey report. It should also be seen as a link from data collection to plan design. The report may include quotes from participants, but should preserve everyone's anonymity.

# Appendix 3

## Way to Go Car Sharing Service

### Introduction

Promotion of car sharing can form an important part of a mobility management plan, and providing a matching service for potential sharers is a powerful way to both encourage and facilitate participation.

Commercial car share matching software is readily available and indeed was purchased and utilised by one of the pilot organisations in the Way to Go project. However, commercial software generally suffers from two drawbacks.

Firstly, it can be quite expensive to buy and the expenditure may be difficult to justify in terms of expected returns, especially for smaller organisations. Secondly, most available software performs matching on the basis of registrants' addresses, relying on some form of post code system to ensure that people living near each other are identified as potential matches. However, not all countries have such a post code system and a different way of matching home locations thus becomes necessary.

Car share matching software capable of operating in the absence of a suitable post code system was developed as part of the Way to Go project and piloted among several organisations in Dublin. The scheme was centrally administered by the Dublin Transportation Office (DTO) for the duration of the project.

A single car sharing register was set up for two organisations whose worksites are in close proximity in the centre of Dublin. Together, they have a combined workforce of about 1800 and provide the critical mass for a viable car sharing register.

A third participating organisation, employing about 4500 people, is not located in the same vicinity as the other participants and so a separate register was set up.

### Objectives

The main objective of a car sharing service is to let people know:

- who can offer a lift
- who wants a lift
- who is living and working in the same location, and travelling at similar times

### Operation

The Way to Go car sharing service operated according to the following process:

#### Registration

Registration was made available in each of the work sites on a continual registration process. The forms were accessed from a dedicated site on each organisation's Intranet and completed electronically.

The completed forms were forwarded by e-mail to the car share administrator in DTO. The data from each form was then entered into a database, developed by Kirklees Metropolitan Council.

The registration form asked for the following information:

1. title
2. name
3. full home address/telephone
4. full work address (including department/division)/telephone
5. work days
6. work hours (including start/finish times and shift hours, if applicable)
7. sharing options/preferences (driver, passenger, non-smoker, male, female, etc.)
8. route points (towns/villages/districts passed through, main route choices)
9. other details (such as school runs)



### Identifying home location

In the absence of a detailed post code system, the following methodology was devised. Home addresses are identified by the administrator of the car sharing service. Location is determined from the Ordnance Survey (OS) national grid and, where possible, from street gazetteers. OS digitised mapping is based on a scale of 1:1000 but smaller scales (larger-area maps) can also be used.

Where possible, the home address is identified according to an Ordnance Survey grid reference (OSGR) number and street name. At the next level down, the address would be identified according to the OS 1km grid and then at a broader 5km or possibly 10km grid.

Identification of home location using the OS map base is done in one of two ways:

- Where the location can be identified as a specific OSGR on the national grid, catchment is defined according to 1km, 5km and 10km radii.
- Where the location cannot be identified as a specific OSGR, it will be identified as an OSGR centroid within a 1km or 5km grid.

In the absence of detailed post-code sectors, this is the only feasible way of identifying address locations in a way that is geographically meaningful. Where road network or street gazetteer information is not available, this identification does not take account of the characteristics of the local road network and the precise travelling distances between selected car sharing matches.

### Identifying and ranking potential car share matches

A system of ranking is applied to potential car-sharing matches on the basis of the following criteria:

#### Home Location

1. same street (as identified in Street Gazetteer)
2. within the same 1km OS grid
3. within the same 5km OS grid
4. within the same 10km OS grid (possibly)

#### Worksite Location/Travel Times, Preferences/Other

5. within the same worksite
6. within nearby work site (where several worksites are included in the registration process for input into the same database)
7. same gender preferences
8. same smoking preferences
9. same/similar start and finish times at work
10. same day match for requiring/offering lifts

The ranking criteria are based on a points system, which apply on the one hand, to home location (items 1-4) and on the other hand, to worksite location (items 5-10) listed above.

The selection of suitable car sharers by the administrator is based on two separate scores. With one point being allocated for each applicable item, a maximum score of 4 points would apply for items 1 to 4 and 6 points for items 5 to 10. The more points scored, the better the match is considered to be.

### Informing registrants of potential matches

The administrator contacts would-be car sharers by letter, informing them of the most suitable matches. Work contact details are provided for the matches, and the registrant is encouraged to make contact with their preferred match.

The database software developed for the Way to Go project generates these contact letters automatically, minimising the administrative load. When initial registrations are received, a full-scale matching run can be undertaken and letters generated for all potential matches. As the car share scheme develops, further matching runs can be carried out to update the matches identified and provided details for new registrants.

### Monitoring the car sharing register

An administrative procedure is required for the effective monitoring of the car sharing register. Registered car sharers are asked to inform the administrator as to whether they have actually entered into a sharing arrangement. Equally, where the car sharing arrangement has been terminated or the details changed in terms of travel time, etc., the registered car sharers should inform the administrator.

The car share database allows for the recording of this information and thus enables efficient overall monitoring of the success of the scheme.

Many measures in a mobility management plan involve financial incentives or disincentives such as loans for cycle purchase, public transport season ticket subsidies, car parking charges or benefits such as prizes and rewards, which are not directly financial as such but do have a monetary value.

At present, most organisation-provided benefits to employees are technically liable to income tax. The reason for this is that under the systems in both Ireland and the UK, the cost of travelling between home and work is not seen as an allowable deduction for income tax purposes. Consequently, any incentive in the form of financial assistance associated with the cost of travelling to work may be classified as taxable income. In calculating the precise value of the benefit, the tax is based on the cost to the employer of providing the benefit.

In addition to normal wages and salaries, the remuneration of employees by additional benefits can be categorised as follows:

### **Benefits (other than benefits in kind)**

These would include any benefits which, though not paid in cash, are convertible into cash or money's worth. Examples of such benefits include expenses payments, vouchers, payment by the employer of employee's private bills, bonus bonds and prizes. The full value to the employees of these benefits is treated as income in the hands of the employee and is liable to income tax.

### **Benefits in Kind (BIK)**

Benefits in kind are benefits that are in a form that cannot be converted into money. Examples include cars provided for private use and personal loans provided on favourable terms.

All benefits in kind received from an employer by an employee whose total remuneration (including benefits) is £8500 (13770 Euros) in UK, £1500 (1905 Euros) in Ireland or more, are taxable.

In Ireland, where an organisation director receives such benefits they are taxable regardless of the level of remuneration. For BIK, the general rule for establishing the value to an employee is that it equals the cost to the employer of providing the benefit, less any amount contributed to the employer by the employee. Special rules apply in valuing some BIK, including loans on favourable terms.

These are the basic definitions of benefits and their tax status. The next section examines tax implications (in the Republic of Ireland and the United Kingdom) for a range of mobility management plan measures (where neither country is specified, the policy in question applies to both):

### **Public transport services**

Where public bus service subsidies are provided by an employer for the extension or enhancement of that service, usage by employees is exempt from tax, provided that staff pay the same fare as other members of the public.

### **Employer-provided (discounted) public transport season tickets**

In the UK, employer-provided season ticket discounts are not exempt from tax unless the employer negotiates a bulk discount. The discount itself should come from the public transport operator, not the employer.

In Ireland, a tax concession for employer-provided public transport tickets purchased from a licensed passenger transport service was made under the 1999 Finance Act. Benefits in kind by way of monthly or annual bus and rail passes were exempted, subject to an annual limit of 884 Euros.

### **Company buses (employer-provided shuttle bus services)**

In the UK, company buses (which seat 12 or more people) used to bring employees to work are exempt from tax.

In Ireland, the uses of such services where no passenger fare is applied would make employees technically liable to income tax.

### **Employer-provided low interest or interest-free loans**

In the UK, where employer loans are offered on preferential terms to buy public transport season tickets, bicycles or bicycle safety equipment, the loans are tax exempt when the outstanding balance is less than Stg. £5000 (8100 Euros).

In Ireland, all such loans (whether or not they are related to mobility management measures) are technically liable to income tax. This is based on the value of the difference between the interest rate (if any) charged by the employer and a rate of interest that is kept in line with market rates.

### **Teleworking**

In the UK, staff members who sometimes work from home can set expenses incurred against tax while undertaking their employment duties. These expenses include work-related telephone calls, heating and lighting. Furthermore, the cost of travel from home to a temporary workplace (such as a telecentre) is also tax deductible.

In Ireland, the tax situation for teleworkers is unclear, but no exemptions are specified for working from home and clear guidelines do not exist.

### **Parking**

Employer-provided car parking is not considered as a benefit and is therefore not subject to taxation. In the UK, free parking for other modes of transport such as bicycles and mopeds is also exempt, although in Ireland these are technically considered as benefits.

### **Pool cars**

A pool car is one that is available to more than one employee. Where such cars are not used exclusively for work-related journeys (i.e. if the car is kept overnight at the home of an employee), its use is treated as a benefit in kind and its user is subject to taxation. There is no distinction between the provision of company cars for individual use and pool cars for common use.

### **Mileage allowances (bicycle use)**

In the UK, employees who use their own cycles for business travel can claim capital allowances on a proportion of the cost of the bicycle. Furthermore, employers can pay employees up to Stg. £0.12 (0.19 Euros) per mile, tax free, for business mileage. From April 2002 it is proposed to raise this allowance to Stg. £0.20 (0.32 Euros).

### **Employer funded “Guaranteed Ride Home” facility**

In the context of unforeseen and exceptional circumstances, this facility is not liable to income tax on the cost of the taxi or hired car.

In the UK, staff members are not charged tax where they are required to work late on an occasional basis, or if, at the time of going home, either public transport services have ceased, or it would be unreasonable to expect staff to use them.

### **Employer “buying out” of employee parking**

Where parking space allocations are included as a condition of employment, an employer may wish to reduce parking space requirements and provide an incentive to use public transport by buying from the employee the rights to that space. This would often be conditional on the take-up of a public transport season ticket. However, this transaction is taxable on the basis of its value.

# Employers - Taxation and Capital Allowances for site specific measures

There are a number of tax issues for employers relating to provision of services and other benefits. For example, if an employer were to charge for parking at its site, the revenue earned from this would be subject to VAT. There may be capital allowance issues that may benefit an organisation.

In the UK, for example, organisations that pay corporation tax are able to claim capital allowances for expenditure on pool bicycles, bicycle parking and shower equipment, and also a limited amount of the value of a bus can be written off by way of capital allowance.

In Ireland, no such capital allowances are currently available.

## Further Information

Inland Revenue (UK), (January 1998). *Booklet 490 (Employee Travel - A Tax and NCI's Guide for Employers)*.

Office of the Chief Inspector of Taxes (Republic of Ireland) (July 1999). *IT 20 Benefits from Employment*.

Potter, S., Rye, T., Smith, M., (September 1998). *Tax and Green Transport Plans – A study of the impacts of the tax regime upon employer measures to “green” staff travel*. Open University (Faculty of Technology).

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Oscar Faber, Open University, Amsterdam University, (April 2000). *Fair and Efficient Pricing in Transport – The Role of Charges and Taxes*. European Commission DG TREN.

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# Appendix 5 *Calculating the Impacts of Transport*

## The Impacts Calculator CD-ROM

As well as an electronic version of the guide itself, the CD-ROM that accompanies this guide includes all the files necessary to install the Impacts Calculator. To install the Impacts Calculator, simply go to the Impacts Calculator Folder on the CD-ROM and run the Setup program (double click on Setup.exe). This program will automatically install the calculator to your preferred location on your computer.

## How to use the Impacts Calculator

When you run the Impacts Calculator, you will see a page that allows you to provide all the information required for the calculations. The first step is to set the country option, and then fill in all the data available, choosing default options where required. The results can then be viewed by clicking on the tabs for summary results or more detailed environmental or economic results. More advanced users can choose to change some of the assumptions and settings used in the calculations. More information on how to operate the calculator is contained in the help section of the program.

## Gathering information from a staff survey for the Impacts Calculator

The more information available as input for the Impacts Calculator, the more reliable the output. However, in its most basic form, the program requires no more data than the typical journey distance travelled by staff commuting by car. The program can use country-specific defaults for all other required information. The number of vehicles can be input as “1” where individual car journeys are being analysed.

To make the calculations more precise for the specific site situation, the staff travel survey can be used to provide information on typical car journey lengths and times, and details about the cars making these journeys. The information required about the cars relates to the numbers using petrol or diesel and the engine sizes. Suitable questions for gathering this information in the survey are given in Appendix 1.

## Technical details of the impacts calculations

There are several methods of calculating the energy, environmental and social impacts of transport. The methods employed by the Impacts Calculator aim to make best use of the quality of data available as input, the precision of the results is based on the extent and reliability of the input data. The bottom-up approach employed here allows users to make good estimates using basic information about car commuting patterns. Many complicating factors such as local conditions (topography and weather patterns, for example) are not incorporated.

The methods used here also have the advantage of being widely accepted and employed and thus are good for comparative analyses.

## Estimating pollutant emissions

Fuel consumption and air emissions are estimated using data from the MEET project (Methodologies for estimating air pollutant emissions from transport - see Hickman, 1998) which was funded by the European Commission. The aim of this project was to develop a European Union-wide approach to estimating the air pollution impacts of transport, by collating the best available data from across Europe and then converting them into factors and equations for estimating emissions.

The calculation process involves the following steps:

- gather basic travel data (journey distances and times)
- gather data about the vehicles used (fuel, engine size)
- choose empirically derived emission factors on the basis of the vehicle data
- apply these factors to the journey details





- collate the total emissions results
- apply economic factors to the emissions estimates



The method starts at the level of the vehicle by using laboratory emissions test data to develop equations which relate emissions to speed over more than 40 real world driving cycles. Test vehicles were put through realistic driving cycles and the various emissions were collected and measured. The use of these real world cycles is important since it means that if the average journey speed is known, it is a very good way of factoring in conditions of congestion: a low speed will draw on the results of the congested test cycles, and higher speeds will represent freer conditions.

Total emissions can be broken down into *hot emissions*, *cold emissions*, and *evaporative emissions*:

**Hot emissions** are the emissions from an engine running at its optimal temperature, and can be calculated as grams per kilometre for a given speed (engine size also has an influence).

**Cold emissions** represent the extra load of emissions associated with the engine running below its optimal temperature, just after start up. Various ways of modelling this element exist, but the most straightforward is to assign a fixed load of emissions to each cold start. This approach retains good accuracy without the need for information about ambient temperatures.

**Evaporative emissions** are not derived from fuel combustion but from evaporation of volatile components. This element is relatively small and is not included in the Way to Go project (see Hickman, 1998, for full details of the MEET methodologies).

All of the air pollutants of concern are calculated by combining equations for hot emissions with extra factors for cold starts. Fuel consumption is then derived by using chemical equations to calculate the amount of fuel consumed to produce the known amounts of all emissions.

**Carbon dioxide** is calculated in the same way as other pollutants, but it is calculated as ultimate CO<sub>2</sub>, i.e. the total amount of CO<sub>2</sub> produced both directly at the exhaust and also the amount produced as all other carbon based components eventually oxidise to CO<sub>2</sub>. Also, since CO<sub>2</sub> is of interest as a global pollutant, it makes sense to consider the total global emissions associated with the fuel production, transportation and consumption, rather than simply the consumption per vehicle.

For Ireland, the MEET project has estimated that for every 1000 grams of fuel consumed by vehicles, a load of 419.8 grams of CO<sub>2</sub> is emitted in the processes of production and transportation, and similar figures are available for other countries. The Impacts Calculator incorporates this extra load into the estimates of CO<sub>2</sub> emissions.

For each car journey, fuel consumption and emissions of each pollutant are calculated from the MEET equations according to engine type, average speed and journey length. This information is then compiled and converted to economic impacts using the factors discussed in the following section.

## Calculating the social costs (health impacts) of air pollution

Health impacts of particular air pollutants are expressed as 'dose-response functions', meaning the response of a population to exposure to a certain dose of the pollutant. These factors are usually derived from laboratory or epidemiological studies, or a combination of both. Data of high quality is difficult to find due to the complex nature of the processes involved, and this will always be a limitation on the reliability of calculations of the type under discussion here.

Health impacts are usually converted to economic values by means of 'willingness to pay' methods, which try to determine how much people or society are willing to pay to prevent damage to health, including mortality. This process invariably involves the difficult and controversial step of putting a price on human life, referred to as the "value of a statistical life" or VOSL. These estimates are combined with calculations of the cost of illness, through lost earnings or hospital costs for example, to produce values for illness or death caused by air pollution.

Once again, it must be stressed that all such calculations are fraught with difficulties and contain many assumptions and approximations. These assumptions include the relationship between exhaust emissions and ambient concentrations, which can never be known exactly. Also, it is usually assumed that there is a fairly simple relationship between increasing concentrations and

increasing health impacts. In reality, these relationships are obviously very complicated, and are interrelated with a wide range of other factors. However, some fairly robust approaches have been developed, and at the very least there are approaches that are generally agreed upon and that allow comparisons and time-based trend monitoring. Results from these types of calculations are better seen as useful for comparison rather than for absolute values.

The general approach used here for calculating health costs is that of the European Conference of Ministers of Transport (ECMT). ECMT has developed factors that are applicable across Europe for estimating the costs of a range of social impacts of transport activity.

These factors are derived, as are most equivalent factors, by working back from overall national or Europe-wide impacts estimates. These are divided down by the level of transport activity, to produce factors in terms of vehicle-kilometres or passenger-kilometres.

One weakness of this approach is that it is strongly influenced by the state of car engine technology, since assumptions are made about average emissions. Much of the research dates from 1994, and vehicle technology, particularly the penetration of catalytic converters, has significantly reduced emissions in the intervening years. This can be accommodated, however, by using factors related to quantities of pollutant emissions rather than kilometres driven. The relationship between quantities of emissions and their health impacts is relatively fixed. Thus the Impacts Calculator method, by separately calculating pollutant emissions and then their economic impacts, can allow for technology changes and also for variations in driving conditions, greater than typical levels of congestion for example.

## Other social and economic costs

The calculation of social cost as described above reveals the impact that the polluting emissions from transport activities can have on human health. However, there are a number of other social impacts which must also be considered.

The principal impacts of noise, accidents and congestion, will be discussed in this section, and methods for calculating their value will be considered. Many other social and environmental impacts of transport can be identified, but they are not included in this analysis or in the Impacts Calculator.

### Noise pollution

The impacts of noise pollution can be valued in a number of ways, including property price reduction and expenditure on abatement, but only 'willingness to pay' approaches can really put a value on how individuals view noise. Willingness to pay means using surveys, property price patterns and other inputs to estimate how much people value the negative impact of noise, by discovering how much they are willing to pay to avoid it. As a guiding estimate, Maddison et al (1996) suggest that for car travel in the UK, the cost of noise pollution is £0.41 (0.66 Euros) per passenger kilometre. Based on this, it is estimated that noise pollution costs the economy about £3 billion (4.86 billion Euros) per annum in the UK.

### Accidents

Without even considering the emotional and social damage caused by traffic accidents, it can be stated that accidents account for as much external cost as all other impacts combined (ECMT, 1998). Calculations of the economic impacts of traffic accidents rely on a mixture of willingness to pay estimates and costs associated with elements such as material damage and medical costs.

Recent research in Ireland estimates that for 1989, a total of over 43,000 traffic accidents cost the economy over 1 billion Euros (Bacon, 1999). To preserve Europe wide applicability, the Way to Go project will use the ECMT factors for calculating accident costs, which are based on dividing total accident costs by transport activity to produce factors per passenger-kilometre or vehicle-kilometre.

### The economics of congestion

While everyone is aware of its negative impacts, it is difficult to put an economic value on congestion. It is not possible to determine the specific value of time lost (the "opportunity cost") by car commuters on congested roads without knowing how else this time might have been used. For instance whether it is lost leisure time or work time, and even then assigning economic value to this time is extremely difficult.

A more common way to estimate the cost of congestion is to consider the net economic effect of additional users on a congested road. In congested conditions, the economic value (or utility) which any one road user derives from the use of that road will be more than offset by the economic cost that they impose on all road users (including themselves), by contributing to increased journey times (Maddison et. al., 1996: pg100).



The most effective way of evaluating these relative impacts is through road pricing research, i.e. by finding out how much people are willing to pay to use particular roads at particular times of the day, and thus estimating the “value” of these journeys.

A major road pricing study was carried out in Dublin in 1999. One of the principal recommendations that came from the study was that a 3.81 Euros charge, per car per day could be imposed on road users entering the city (Oscar Faber, 1999). The research suggested that the vast majority of car drivers would be willing to pay this charge to make their journey. Thus this value can be used as a very broad estimate of the “shadow” price, or “economic cost” of congestion to the road user travelling into Dublin. It suggests each journey is valued at least this amount. This value is taken as a reasonable estimate of the lower bound value for most European cities.

In the Impacts Calculator the above value is to be used to measure the external economic cost of congestion per vehicle per day. These calculations will represent no more than a first pass estimate of the economic impact of congestion. Since they are a lower bound estimate, the “true” costs may be much higher.

## Summary

The following are the factors used in the Impacts Calculator project to calculate the impacts of car based commuting among the pilot organisations and to estimate the potential benefits of any mobility management plans implemented. All factors are from ECMT (1998) unless otherwise noted. The Impacts Calculator allows the user to view these factors and make changes if desired.

Impact	Cost per factor (Euros)
Health effects of air pollution	5 per kg of NO <sub>x</sub> 5 per kg of VOC 70 per kg of particulates 4 per kg of SO <sub>2</sub> (from European Commission, 1997)
Noise	3 per 1000 p-km
Climate Change	50 per tonne CO <sub>2</sub>
Accidents	33 per 1000 p-km
Congestion	3.81 per car per day (Oscar Faber, 1999)

## Bibliography

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- Hickman, J., et al (eds), (1998). *Methodology for calculating transport emissions and energy consumption*. European Commission (COST Action 319).
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- Oscar Faber, (1999). *A Study of Road Pricing in Dublin*.
- Quinet, E., (1998). *The Social Costs of Transport: Evaluation and Links with Internalisation Policies*. European Conference of Ministers of Transport.

# Appendix 6

## Contacts

### Way to Go Project Partners

#### **Dublin Transportation Office** (Lead Partner)

Floor 3, 69-71 St. Stephen's Green, Dublin 2, IRELAND

**email:** postmaster@dto.ie **web:** www.dto.ie

#### **Kirklees Metropolitan Council**

Environment Unit, 23 Estate Buildings, Railway Street, Huddersfield HD1 1JY, UK

**email:** employee.travel@kirkleesmc.gov.uk **web:** www.kirkleesmc.gov.uk

#### **Irish Energy Centre**

Glasnevin, Dublin 9, IRELAND

**email:** info@irish-energy.ie **web:** www.irish-energy.ie

### Contacts for information, advice and funding in the European Union

#### **European Commission**

www.europa.eu.int/comm

- Information on Transport and Energy projects
- EC Funding Information (when announced)
- SAVE, INTEREG, CIVITAS, PACT etc.

#### **CORDIS Transport RTD Programme**

www.cordis.lu/transport/home.html

- Information on funding and research for sustainable mobility.

#### **Energy-Cities**

www.energie-cities.org

- Network of municipalities addressing range of energy and related issues.
- Topics covered include: urban mobility, air quality, pollution and greenhouse gas prevention, Local Agenda 21.

### Ireland Specific

#### **Department of the Environment and Local Government (Ireland)**

www.environ.ie/main.html

- General Information on transport and environment policies and projects.

#### **Irish Energy Centre (Ireland)**

www.irish-energy.ie

- Ireland's national agency for energy efficiency and renewable energy information, advice and support.

#### **Dublin Transportation Office (Ireland)**

www.dto.ie

- The DTO co-ordinates the implementation of an integrated transport strategy for the Greater Dublin Area.

### UK Specific

#### **Department of Environment Transport & Regions (UK)**

www.local-transport.detr.gov.uk/travelplans

- Comprehensive information and guides for Mobility Management Planning.

**Powershift:** www.est-powershift.org.uk

Grants for alternatively fuelled vehicles:

**Motorvate:** www.greenerfleet.org.uk

Help for companies in cut fleet travel costs and environment impact.

#### **National TravelWise Association (UK)**

www.ntwa.org.uk

- The National TravelWise Association (NTWA) is a partnership of local authorities and other organisations working together to promote sustainable transport.

#### **Association for Commuter Transport (UK)**

www.act-uk.com

- Promotion of sustainable transport, improved air quality and reduced car dependency through the encouragement of commuter travel planning and travel plans.

#### **ETSU (UK)**

www.etsu.com

- Provides links to wide range of transport and energy initiatives including Energy Efficiency Best Practice Programme, FANTASIE etc.

#### **Local Government Information (UK)**

www.info4local.gov.uk

- Information and links across all areas of local government including transport and environment.



## The Route to Sustainable Commuting

### *An Employer's Guide to Mobility Management Plans*

*The Route to Sustainable Commuting* is a guide for organisations that are considering, or already implementing, measures to reduce dependency on the car for staff commuting and other work related journeys.

It offers advice and guidance on all of the key steps in designing, implementing and evaluating a mobility management plan.

The CD-ROM enclosed features software that enables the calculation of energy, environmental and economic impacts of staff car travel.

This guide has been produced through the Way to Go research project (1999-2001), which was co-funded by the European Commission's SAVE II programme.

#### **Partners in the Way to Go project:**

Dublin Transportation Office  
Kirklees Metropolitan Council  
Irish Energy Centre

