

Appendix A to Draft Strategy

Pay on Exit 'v' Pay and Display

The service has over the last 6 years received numerous requests, from various agencies including Keswick Town Council, Chamber of Trade and Keswick Partnership to consider the use of 'Pay on exit/Pay on foot' parking.

Both Pay on foot and Pay on Exit are 'titles' given to the same method of paying for parking whereby a ticket is issued at a barrier system on entrance to the car park, the motorist finds a suitable space, leaves the car park to carry out his/her business. Payment is made, for the amount of time they have parked, on their return to the car park by inserting the ticket they received on entering the car park into a 'pay' machine. Once the amount owing is paid into the pay machine, the ticket is then electronically tagged and returned to the car park user. The user will then present the ticket to a machine at the exit which will lift an exit barrier and allow the motorist to egress the Car Park.

These systems are primarily designed for use in Multi Storey Car Parks, but may also be installed in suitable surface car parks.

It is not the intention of this annex to go through every individual car park the council owns and give reasons why a pay on foot system is either suitable or otherwise, but to give senior officers and Councillors sufficient information for them to be able to give informed answers to queries raised in regards this matter.

As previously stated, Pay on Exit parking is extensively used in Multi Storey Car Parks, and can be used in other suitable surface Car Parks. The use of such a system carries both advantages and disadvantages and, when considering their use in surface car parks, both the advantages and the disadvantages need to be carefully considered.

Below is a table that gives a quick check list on factors that may decide which system is suited to a particular Car Park. The pages following the table in this annex, detail all the areas the author believes need to be considered when deciding which system should be adopted.

Quick check List

Car Park Feature	Payment System Favoured		Reasoning
	P & D	Pay on Foot	
High Tariffs		✓	Note reading, credit card reading and change facilities needed
Many busy hours/week		✓	Higher income helps justify the expensive outlay
Many comparison shoppers		✓	Users not sure of visit duration and may dislike the prediction of P & D
Very Busy Car Parks		✓	P & D generates higher pedestrian movements within the Car Park
Complex Tariffs		✓	Machine calculates what is required for payment from data on the readable ticket
Controlled Environment		✓	All users pay the correct amount (no overpayment). Barriers control vehicle movement precisely
Small Size (<100 spaces)	✓		Cheap to install and operate – no space consuming entry/exit lanes
Low Tariffs	✓		No requirement for note reading and change giving facilities
Simple Tariffs	✓		Relatively easy for parkers to decide which tariff
Many Regular Users	✓		Tend to know visit duration
Many Return Pedestrian Routes	✓		Proper coverage of these routes with Pay on foot systems can be very expensive. With P & D return route is irrelevant
Limited Lane capacity at entry and exit	✓		Could result in large queues of vehicles at both entry and exit lanes causing tailbacks on highways
Few Parking staff available	✓		No barriers to lock users in the Car Park in event of system failure – system will continue to operate without staff being present

A paper produced by the British Parking Association (BPA) concluded:

Pay on Foot/Exit systems have been around for more than twenty years. Their origins were with airport car parking which is a 24/7 operation and it has been widely taken up in shopping malls. There have been many product developments and sophistications. These

include note readers, credit/debit/smart card readers, improved change givers, better ticket systems, better networking, and better management information.

Pay & Display has been around for longer and has also achieved most of these developments plus solar power and now payment by mobile phone technology. Both payment systems offer up to the minute technology at ever more competitive prices and both are in demand and are likely to remain so.

The detailed considerations when deciding to install either system whether from scratch, as was the case with the Workington Multi Storey Car Park, or as a replacement to a previously installed system, are as follows:

Power sources —if no mains power is available, Pay & Display, which can use solar or battery power is the only option. Rural car parks exemplify this situation.

Size of the Car Park – Installation and operation of a Pay on Foot system will cost considerably more than Pay & Display in a small car park and the space needed by the entry and exit lanes will be disproportionately high. Pay on Foot is rarely installed in car parks below 100 spaces.

Vehicle access – A car park entry lane with no parking barrier can admit up to 15 cars per minute. Place a ticket dispenser and barrier in the lane and that flow is reduced to 6 cars per minute (and occasionally to much less). If a car park has periods of high inflow (eg a commuter car park at 8.30am) this can be critical.

Vehicle egress – A similar argument applies. Car parks that serve theatres, cinemas and sports facilities often have high peaks of exit flow. These peaks often pass without comment where there are no exit ticket readers and barriers to restrain the flow. Introduce these Pay on Foot features when there are insufficient pay stations or exit lanes and long queues may form at both.

Grace periods – An essential feature of Pay on Foot systems is the grace period. This is the time period allowed to the driver, who has just paid for his/her ticket, to return to the car, to drive to the exit and to present the paid ticket to the exit ticket reader. Commonly this period is set at 10 or 15 minutes. If a driver takes longer to present the exit ticket it will not open the barrier. A further payment will be required to achieve exit. If a queue has already delayed the driver in reaching the exit a demand for further payment will be unacceptable. Furthermore, the driver who is held up by this demand simply lengthens the following queue and subsequent drivers become increasingly likely to exceed their grace periods. This is a potentially explosive situation. It is

normally avoided by prompt system intervention by Car Park staff, but that means that staff must be in attendance.

Traffic on local roads – If there is heavy traffic on the roads adjacent to the car park, vehicles may not be able to exit the car park freely. In this case exit queues may form within the car park and, if a Pay on Foot system is operational, some drivers may not reach the exit within the grace period. The presence of highway traffic signals immediately downstream of a car park exit can cause this problem. It is probable that some drivers will wrongly attribute these delays to the barrier system. It should also be noted that in towns serviced by a small number of roads, then queues may form on the roads whereby motorists are waiting to get in to the car park. This may cause a traffic management problem, and careful consideration should be given to this point by the appropriate highways authority.

Car park dynamics – Car park dynamics are good when vehicles and pedestrians are able to move freely and easily to their intended location in the car park without obstruction from others or from the physical characteristics of the car park. This freedom from obstruction is particularly important at times when high levels of entry and exit coincide and there is considerable vehicular and pedestrian traffic. Wide aisles and parking stalls, sensible turning radii and ramps, good sight lines and coherent signage, uniform lighting levels and well designed search and exit routes all facilitate good vehicle dynamics. The vehicle dynamics are particularly relevant to the payment system near to the vehicle entry and exit points. The optimal flow rates of 15 vehicles per minute (no barriers) and 6 per minute (with barriers) mentioned above can only be achieved if vehicles can move freely towards and away from the entry and exit points.

Driver considerations – In a Pay & Display car park, payment for parking time begins after the car has been parked and it effectively ends when the driver returns to the car. If no space is found there is no question of payment no matter how long the search. A driver who enters a Pay on Foot car park starts to pay for time as soon as he/she takes an entry ticket and is paying for time whilst searching for and occupying a parking space. Although payment for time ends when the departing driver reaches the pay on foot machine and pays, there is still a time pressure to exit within the grace period. The point of the previous two paragraphs is to indicate that good car park dynamics gain extra importance when a Pay on Foot system is installed.

Pedestrian Considerations – Every driver parking in a Pay on Foot car park makes two pedestrian movements across the car parking area- to and from the exit or stairs/lift. Every Pay & Display parker makes two more – to and from a Paypoint which is located on the car parking area. Good pedestrian routes to and from Pay & Display machines are important. They should be short and should keep clear of the main vehicle entry and exit routes. Drivers do not want a 50

metre plus walk to and from the machine because this can easily take two minutes. This means that the provision of Pay & Display machines should be greater than one per 80 spaces in a regularly laid out car park and with greater provision in unusually shaped car parks. Other features in the siting of Pay & Display machines include high visibility, clear signage, good lighting levels, CCTV coverage and consideration for the costs of cabling and conduiting to the location.

Pedestrian Routes – Once a driver has placed the Pay & Display ticket in the car, the payment for parking is complete. The route by which he/she leaves the car park and returns to the car has no relevance to the payment process. Pay & Display suits car parks where there are many possible pedestrian routes. In an ideal Pay on Foot installation returning pedestrians do not have to deviate from their chosen return route to pay for their parking because at least one Paypoint is available on every pedestrian return route to the car park. In a car park where there are few possible return routes this is quite practical. In car parks with many pedestrian return routes such provision of Paypoints may prove too expensive.

Pay on Foot Paystations may cost 7 to 8 times the cost of a Pay & Display machine. The less popular pedestrian return routes may therefore have no Paypoints while the more popular require two or more. It may even be appropriate to close off the least popular return routes but care must be taken that such action does not interfere with fire escape routes. Pay on Foot specifiers need to ensure that the public will still be reasonably served by Paypoints when one of the units is out of service. This is particularly important where a small number of units (say less than 5) are to be installed. Machines, even the most reliable, do have periods out of service and this is most likely to happen during busy periods.

Siting Pay on Foot Paypoints in established car parks is not always easy — in addition to being adjacent to an established return route each site needs to be highly visible, well signed, well lit and easily covered by CCTV, and it also needs to be large enough. The machines themselves have quite a small foot print (say 1.0m x 0.5 m) but public space around needs to accommodate all types of users including single car groups of 3 or 4 people, some with pushchairs, some with bags or supermarket trolleys or other bulk, and there must be space for others to queue and for yet others to pass by. Proper provision must also be made for disabled drivers to access the equipment easily. Occasionally, sufficient suitable locations for Paypoints are not available.

Types of User –

Commuters and other very regular users of a car park may pay by purchase of a season ticket, whether they then display a windscreen

permit in a Pay & Display car park or use a pass card or tag to operate the barriers on a Pay on Foot car park is generally not a major issue when choosing which system to install. If, however, this class of user is the main occupant of the car park the provision of a Pay on Foot system for the minority users may be hard to justify. It should also be noted that 'season ticket' users may find themselves queuing to get in a Car Park that is full in busy periods.

Shoppers who use a car park for a regular weekly purpose probably know how long they will park for and may be content with Pay & Display. They will normally come with the right coins available to pay for their expected stay. Shoppers who do not wish to predetermine their length of stay or who have no suitable change prior to shopping (to purchase a Pay & Display ticket) will probably prefer the Pay on Foot system.

Business visitors will probably not wish to predetermine their length of stay and therefore prefer Pay on Foot. At Pay & Display they may well pay for longer than they expect to need.

Recreational/social. Regular users may seek a season ticket if provided. Occasional users may prefer Pay & Display if the tariff is simple and unlikely to require change giving (e.g. 50p for up to 4 hours and £1.00 for all day) though some may argue that the P&D ticket advises thieves of the time for which the car may be unattended. If the tariff is complex and/or high then Pay on Foot may be preferable because parking stay need not be predicted, payment need not be calculated and note payment and change giving facilities can be made available.

Special interest groups – Special interest groups may well represent a small proportion of all users but each group using the car park will have to be considered in any system change plan.

Blue Badge Holders may be accustomed to free parking and any change to this will require political endorsement and the provision of Paypoints which are universally accessible. However, if free parking is to continue there will be a requirement for special arrangements to open barriers/certify tickets for disabled drivers.

Shopmobility schemes where offered are often located in town centre car parks and may be affected by the introduction of a change in parking control system.

Motorcyclists may be permitted to use car parks where there are no traffic control barriers, but it is not advisable for them to travel through barrier controlled entry and exit lanes. The induction loops, which control the barriers, may not operate reliably for motorcycles and this presents a safety hazard. If barriers are to be introduced, alternative arrangements will be required for motorcyclists.

Permit Holders may be people who are permitted to use the car park outside and during normal operating hours — for example local residents, churchgoers or parents dropping off children at school. Will their concessions be continued and if so what system changes will be needed to ensure their entry and exit movements?

Service providers may need to bring vehicles to the car park to carry out a service in or on property adjacent to the car park — for example delivery vehicles, buses, Utilities companies, concession holders, the AA and similar breakdown services. The system must accommodate their needs.

Local custom and practice – Introducing a local population to a new type of parking system can require some determination — particularly with a barrier controlled system like Pay on Foot where the system imposes a precise performance on every user from day one. Every user has to learn and it is advisable to have plenty of personnel on hand to teach in the early days. Once a proportion of local users have learned they will normally assist any first timers in front of them. If no tuition is provided the system may not be well received. It is strongly advisable to brief the local media properly about a major new system because, if they first learn about it from dissatisfied users, they will probably amplify the difficulties to crisis proportion. Management and elected representatives must take ownership of the new system and promote it and answer any public criticism and so ensure that it is accepted by the users.

Management matters – It is desirable for revenues to exceed costs for every day when the car park is open and therefore daily revenues and operating costs must be considered. Modern parking systems of either type can provide very detailed information about patterns of occupancy and hours of use, and management can use this data to develop pricing and marketing strategies which will optimise revenues. Many car park operating costs will not be affected by the choice of revenue collection system, however equipment and personnel costs will be. Equipment costs per 100 spaces will be higher for Pay on Foot than for Pay & Display. Personnel needs for enforcing Pay & Display systems and for operating Pay on Foot do vary particularly when taking into account the requirement to permanently man a pay on foot car park.

Security – Security has four important components:

- ❖ the feeling of security for users of the car park
- ❖ the risk of vehicle theft
- ❖ the risk of theft from vehicles
- ❖ the risk of damage to vehicles

Good lighting, CCTV cover, help points, smart uniformed patrols and a clean and tidy environment are all important components of the user's

perception of security. The type of payment system chosen has little effect on these characteristics. Entry and exit barriers do little to affect theft from and damage to cars in the car park. It can be argued that CCTV, lighting and uniformed patrolling (which is an essential part of Pay & Display parking control) is a bigger deterrent to these 'in car park' crimes.

Tariffs – Change giving – Change giving equipment, required for Pay on Foot systems is complex, expensive and space consuming. It also represents a security risk for cash collection teams, may require frequent 'filling' and in the past the cash held in the machines has proven to be uninsurable on surface car parks. The equipment also provides extra challenge for accurate auditing of the system. The virtues of Pay & Display equipment include compact dimensions and relatively low price. These two statements indicate that Pay & Display and change giving are incompatible. If change giving is needed, Pay on Foot will generally be required. The performance of change givers can be greatly affected by the tariffs which are set. For example, a tariff of 45p for one hour and 95p for two hours would demand large numbers of 5p coins to give for change — relatively few would be used in payment so that most would have to be placed in the change hoppers by the operator. Very similar overall revenue would be achieved by charging 50p for one hour and 90p for two hours and the demand for 5p coins as change would be non-existent. A system may start out with tariffs which are friendly to the change giving mechanism, but a simple instruction to increase charges by 5% in year two can lead to considerable difficulties in this area.

Discounts – Parking discounts are sometimes given to particular categories of parkers. Pay & Display parkers may receive benefits by various methods such as the issue of a two part ticket —one part for display in the car and the other to be exchanged for cash or discounts on goods or services at local shops, cafes etc.

Cashless Payments – Parking equipment is generally installed with a view to use over 7 to 10 years, so in choosing equipment today it is important to consider the level of charges which may be common by 2017. Coin only payment was almost universally acceptable 10 years ago but this is less often the case now. Note handling is complex and expensive, not least because it must be accompanied by change giving capability – hence the pressure for cashless payment systems. Credit and debit card payment facilities are now fairly commonplace for Pay on Foot systems and increasingly available for Pay & Display. Practical mobile phone payment systems are already in use on some Pay & Display machines and will soon be available with Pay on Foot.

Control/Audit Information – All systems have audit information and it is a vital part of management control of the cash collected. Pay and Display is straightforward because a machine starts a working period with an empty coin safe and all coins accepted by the machine should

go straight to it. The machine records and totals coin accepted and when the coin safe is removed it locks automatically and the machine automatically prints out the amount which is in the safe. Management must ensure that cash and print out reconcile or fully investigate discrepancies. Pay on Foot is more complex because it accepts notes and coins and gives change in coins. The note safe follows similar procedures to the Pay & Display Coin safe — every note accepted should go straight to the note safe — this locks automatically on withdrawal and a print out of contents is generated for reconciliation. The change giving mechanism always contains a variable cash float of coins of different denominations (typical total value £200 per automatic pay station). Coins accepted by the pay station may go to top up the change reservoirs or, if these are at the required level, they go to the coin box. The amount in the coin box at the end of the shift should match the amount printed out by the pay station and this gives a basic control. If a full audit is required then an exact count of the value in the coin safe and note safes being removed and in the change giver is needed.

Management Information – Modern Pay on Foot and Pay & Display systems record details of all system transactions and many other events. These can be assembled in many different report formats which help management to understand fully the pattern of use of the car park, to spot trends and abuses and to identify the impact of local events and changes. These in turn provide the basis for management action and future business plans and forecasts.

System costs – It is probable that Pay on Foot systems will prove more expensive to own and maintain than Pay & Display systems. A typical cost to install a Pay on foot system with 1 entry and 2 exit lanes, and 2 Pay stations has been estimated at in excess of £100,000. The cost to install a single Pay and display machine is £3,000.

Some frequently asked questions

1. WHICH SYSTEM COLLECTS MORE MONEY? – Motorists who use Pay on Foot always pay the calculated amount for their parking. However, many who use Pay & Display pay more than the correct amount (either because they overestimate their stay for safety or because they do not have the coins needed to pay exactly) and this may offset those who underpay or do not pay. With Pay on Foot there are no penalty charges to collect so this income is lost. There are strong advocates of each system but the author has not seen a convincing answer to this question.

2. WHICH SYSTEM DO MOTORISTS PREFER? – It depends, amongst other things, on which system they are used to, the nature of their reason for parking, and the frequency with which they park and the location of the paypoints. There may be no strong preferences for either system. Remember that:

- ❖ Pay & Display requires only one action of the motorist whilst
- ❖ Pay on Foot requires three actions
- ❖ Pay & Display requires the motorist to predict duration of stay and to have suitable change available to pay.

3. WHAT ARE THE STAFFING IMPLICATIONS OF EACH SYSTEM?

– The main staffing implications for the council lie around the fact that we already carry out patrols of both the streets and the Car Parks as part of our enforcement role. The introduction of a Pay on foot system in any Car Park would require staff dedicated to the management of that Car Park.

Pay on Foot systems are automatic, reliable and, in theory, they too can operate without staffing. However they cannot accommodate some of the incorrect actions and unusual circumstances of the users.

Examples of these are:

- ❖ attempting to insert a folded ticket in the ticket slot
- ❖ attempting to insert a banknote in the coin slot
- ❖ presenting an unpaid ticket at the exit ticket reader
- ❖ having a mutilated ticket which the automatic Paystation cannot process
- ❖ having insufficient funds to pay the amount required

When the user/machine interface fails for any reason the user will not be able to drive out of the car park, and may obstruct others from doing so. Rapid human intervention is then necessary. If 1% of drivers have a problem there can be 20 or 30 daily events in a busy car park – which is one every 20 minutes. Each event can quickly become unmemorable, especially if it is not tackled because the car park is unstaffed. This would obviously create unnecessary tensions, and could result in the delay of not one motorist, but many.