Public Document Pack

This page is intentionally left blank

Transport Research Institute

Aberdeen Taxi Demand Study 2011

REPORT

Completed by the Transport Research Institute, Edinburgh Napier University

CONTENT

EXECUTIVE SUMMARY

The TRI Taxi Studies Group has been commissioned by the Aberdeen City Council (the Licensing Authority – the Authority) to undertake a review of taxi services across Aberdeen. Our work is focused on the demand for taxis and allows for identification of optimal conditions for taxi supply. The work is consistent with the requirements set out in the Civic Government (Scotland) Act 1982 (CGSA) and Best Practice Guidance (BPG) issued by the Scottish Government (Scotland, 2007), similar guidance from the Department for Transport (DfT, 2004, 2006, and 2010).

We have summarised the background to demand studies, the methodologies we have used and our conclusions in this document, with a full description set out in our main report. Statistical analyses and copies of the surveys used are included in a separate appendices document.

As a result of our work we recommend that the Authority consider changes to rank use to ensure that ranks are suitable and well placed in relation to demand. We recommend that the Authority consider placing a licence cap on the numbers of Taxi Licences (Hackney Carriages), and put in place a review process to take place every three years or more often. We also recommend that the Authority consider linking reviews of taxi tariff to those of supply, and base tariff reviews on regular consideration of the full production costs associated with operating a taxi.

Background

Taxi demand reviews, sometimes called taxi surveys, are regularly carried out to inform policy decisions, particularly in relation to taxi licence restrictions, or licence caps. The most common reviews follow a standard methodology expressed as an Index of Significant Unmet Demand (ISUD) with a threshold value (ISUD = 80). Values above the threshold are considered to indicate an under supply of taxi services, below the level taxis may be suggested to meet market demand. The Aberdeen value (ISUD = 14.82) is well within the threshold levels, and on this basis alone it may be considered that Aberdeen does not demonstrate SUD. The SUD measurement is most commonly used in relation to a single element of taxi control, that of quantity control, and can be applied in support of a licence cap, change in licence numbers, or the removal of an existing cap. We do not

consider, however, that the market for taxi services is limited to the constituent elements of ISUD alone, and should rather be considered against a range of measures, which, in combination, enhance passenger services.

Methodological Approach

Our approach is based on three primary elements, a review of the observable market for taxis; a review of the patterns of demand; and a review of the physical conditions in which services are supplied, including rank locations, accessibility and the relative performance of taxi suppliers in serving all passengers. The study also developed a Geographical Information System (GIS) framework, which we have used to measure and highlight the location of taxi ranks, primary trip generators, and gaps between demand and supply.

Market Overview

On the basis of our study, it is our view that current demand for taxis in Aberdeen is well catered for. Daytime supply of taxis appears to serve ranks well, and we have seen limited evidence of delay to pre-booked or hailed journeys. Night time supply demonstrates peaks in demand coinciding with pub and club closing times, particularly at weekend night times, with a number of issues apparent in the location and use of taxi ranks in central Aberdeen. The highest levels of unmet demand occur in the city centre at weekend nights, with peaks in observed at the Union Street night time ranks, with some instances of more significant delay

The case for quantity control is finely balanced between the ability of the market to define a level for supply, and the stated wish of some to introduce a licence cap. We have undertaken a detailed analysis of the issues including a framework assessment, detailed in the main report. Whilst we feel there to be little evidence of any harmful effects arising from controls being applied, it is equally true that the application of such controls is unlikely to result in the (positive) impacts to the trade that form the basis for calls for such controls. Specific issues at individual rank locations can also impact on the market by reducing traffic flow and accessibility. A rank audit was included in our detailed review allowing for specific recommendations in a number of cases.

We also noted that some areas appear poorly served by taxis, including Union Square, and we have included development of new ranks in our conclusion.

Recommendations

We have identified a number of issues that we consider appropriate for recommendation, set out below. As the market for taxis is comprised of inter-related factors we have included recommendations specific to each. We strongly advise these be considered as a part of a "package" of measures that, in combination, enhance the supply of taxis in Aberdeen.

TAXI LICENCE CAP (Quantity Control)

The case for quantity control is very finely balanced, and strong views were expressed to us both for and against quantity control in the course of our work.

On balance we consider there to be benefit from quantity control. Benefits arise specifically in relation to subsequent market reviews, a requirement currently defined in the CGSA. As regular reviews provide detailed quantifiable market information to the Authority, so the Authority is better placed to respond to issues arising in the supply and optimisation of the taxi fleet. On this basis we consider the application to result in benefits to the travelling public, and consequently recommend that a licence cap is considered, to be set at the current numbers of Hackney Carriage licences.

We would underline the need to review the market regularly, and to ensure that no negative impacts arise in the future. We feel this also relates to ensuring no additional value accrues to the ownership or transfer of plates.

We recommend that the application of a taxi licence cap is accompanied by, and conditional upon, regular and frequent reviews of the operation of the taxi market. We recommend that market reviews associated with the application of a licence cap be undertaken in full knowledge of fare reviews and, wherever possible, undertaken together.

We recommend that new Taxi Licences remain restricted to Wheelchair Accessible Vehicles (WAV), and that the Authority reviews its definition of WAVs to ensure they are accessible and appropriate to use.

RANK OPTIMISATION

We recommend that the Authority address a number of rank specific issues, both in terms of current provision, rank design and enhancement. These are detailed by rank below:

* *Union Square*

We recommend the provision of a new rank at the rear exit (Union Square Market) to serve the market for taxis at Union Square.

* *Back Wynd*

We recommend the provision of clearer signage and carriageway markings at Back Wynd, in common with other ranks across the city. We recommend that signs be considered to set out closure hours and alternative night time ranks. Signs should be visible along the length of the ranking area of Back Wynd. We recommend the provision of one marked disabled bay at the head of the Back Wynd rank, located on the nearside (eastern pavement) at the junction of Union Street. We recommend signage indicating that the disabled bay be used to pick up and drop off, and agreement be reached with the trade that the bay be served by the next available Wheelchair Accessible Vehicle from the body of the rank when such a taxi is required.

* *Bridge Street*

We recommend the relocation of the Bridge Street night time rank to a new location on Union Street, to be located on the southern carriageway directly to the east of Bridge Street (ie: vehicles departing in a westerly direction).

* *Union Street at Castlegate*

We recommend that apparently contradictory blue finger signs are adjusted to reflect actual position of the rank. Blue taxi rank signs should include detail of operating hours. We recommend use of the wording “Night Time Taxi Rank” where this is appropriate.

* *Hadden Street*

We recommend the provision of additional pavement space on the northern pavement between Market Street and Exchange Street to mitigate the negative impacts of tree planters.

- *Aberdeen Railway Station*

We recommend that traffic signals located at the junction of the railway station roadway and Guild Street be retimed to extend the departure time available to taxis from the station. We recommend the city consider the use of timing and induction loops in combination at this site.

* *Citywide*

We recommend that a common standard of signage and street markings be applied to all city taxi ranks. Ranks need be visible and identifiable in all locations with sufficient visible information to inform users and potential users of operating hours and, where appropriate, alternatives. Standard signage should be extended, with agreement, to private rank locations.

We recommend that ranks that are unused be removed.

TAXI TARIFF

We consider that the sufficient relationships exist between taxi tariff and taxi demand to include taxi tariff into future demand assessment. We recommend that the Authority apply a bottom up review of production costs in its future taxi fare reviews, and these be incorporated in demand analysis in future reviews.

Full details of the analysis accompanying our recommendations, and their review are set out in subsequent sections.

1. Methodological Approach

The study team has developed a comprehensive framework of analysis in our review. The framework relates to three main strands of enquiry:

A review of demand patterns over time, observed demand for taxi services, and a review of the physical conditions in which services are supplied.

1.1 Demand patterns by time and user group

This review sought to identify the changing patterns of demand over time, and in individual needs across differing user groups. Changing patterns of demand reflect the various peaks and troughs in taxi use, which will often differ from other forms of transport, which may in turn reflect the availability or desirability of other modes of transport, and shifts in the balance between supply and demand. The most common illustration of changing patterns of demand include peaked demand at weekend nighttime and seasonal peaks allied to changes in the population and their use of taxis. Peaks in demand may occur as a result of increased numbers of intending passengers, as for example may occur at closing time of pubs and clubs, but may also occur where a proportion of the supply of taxis are engaged elsewhere, as may be the case during schools transport hours.

The market for taxi use is further influenced by the physical facilities allied to its supply. This relating, in the main, to the location and visibility of taxi stance, but further extending to their design, as well as availability of drop off points.

We have used two survey techniques, pedestrian surveys undertaken on street in Aberdeen, and focus groups amongst key stakeholder groups. This included representative groups for disabled, commercial and retail groups. A further review of perceptions amongst hoteliers and service industries was competed via an on-line survey, and this is used to develop contextual understanding as well as views on delivery and taxi service standards.

1.2 Observable Demand

Observable demand relates to the demand for taxi services that may be identified through a review of taxi use and supply. The concept forms the mainstay of the majority of taxi analyses, and is typically reported as an Index of Significant unmet Demand (ISUD). Observable demand is not limited to the movement of vehicles on ranks, but also includes the patterns of hires through hailing and pre-booking. The measurement has been the subject of review on a number of occasions and is included in recommendations of current best practice.

We have applied a common SUD methodology in calculating the impacts of supply on observable demand, resulting in ISUD values across the city, and for each rank. This includes the use of both video data capture at ranks, and survey questionnaire. The calculation of ISUD values is described in more detail in section 2, below.

1.3 Physical Infrastructure

The third strand of our review relates to the physical conditions in which taxi services are provided. This includes, but is not limited to the nature of rank provision and use, and has also included the review of traffic control and design limitations affecting but outwith the rank itself.

We have approached this review by defining a mapping base for detailed analysis. Current rank provision, physical conditions and infrastructure have been entered onto an Ordnance Survey mapping base using Quantum GIS, a proprietary Geographical Information System. GIS allows for the identification of physical characteristics of locations, as point or area information, using layers of information to build up a detailed picture of the operational characteristics of a location. In our analysis we have defined layers specific to rank location; trip use, including taxi trip generation data from the pedestrian surveys detailed in subsequent sections, and zones of influence for each rank location.

Specific issues associated with individual ranks have been identified using the GIS tool, as well as identification of areas where ranks may be appropriate for further development (gaps analysis), and the impact of any changes at current rank locations. Further uses of the GIS tools are detailed in section 4 of this report.

2. Market supply and demand

The most common measurements applied to analysis of the taxi market relate to the ability of taxi providers to respond to the demand for services. Best Practice Guidance typically relates to the definition of an Index of Significant Unmet Demand (ISUD) and it is this value that has been most commonly applied to taxi surveys in Scotland. The requirement to undertake a taxi survey arises as a consequence of legislation relating to taxi Licence restrictions set out in the Civic Government (Scotland) Act 1982 (CGSA). The measurement is broadly consistent with legislation applied to England and Wales. There is no similar legislation applied to Northern Ireland. The 1982 Act includes an implicit requirement to test under its section addressing Entry Role Restrictions, which states:

> *"the grant of a taxi licence may be refused by a licensing authority for the purpose of limiting the number of taxis in respect of which licences are granted by them if, but only if, they are satisfied that there is no significant demand for the services of taxis in their area which is unmet".*

In 2007 the Scottish Government issued "Taxi and Private Hire Car Licensing Best Practice Guidance for Licensing Authorities" (Scottish - BPG) including, sections 43 – 61, guidance specific to quantity restrictions of taxi Licences. The Scottish guidance followed closely from similar guidance set out by the Department for Transport (DfT, 2006), and conveyed much of the same guidance in terms of appropriate assessment and questions specific to restraint in the taxi market. Very specific elements of the guidance relate (section 46) to the question whether Licence restrain benefited taxi passengers. The guidance continues, in common with DfT (2006), to determine a range of considerations felt appropriate to application by Scottish Authorities including (Section 49):

- Length of time that would be customers wait at ranks,
- Waiting times for street hailing and for telephone bookings,
- Latent demand, and
- Peaked Demand

The Scottish BPG also suggests need for consultation, publication and a specific approach to the financing of surveys that would not, in itself, affect the result or contribute to bias.

DfT guidance was updated in 2010, with a Scottish Government review of its own guidance in 2011.

Both DfT and Scottish BPG recommend the undertaking of taxi surveys on a regular basis, to include observed and latent demand measurement, and this repeated on a regular basis to ensure continuing validity of conclusion. A maximum period between surveys is suggested, three years survey validity indicated in the initial DfT guidance (2006). Elements of the Civic Government (Scotland) Act 1982 are amended by the Criminal Justice and Licensing (Scotland) Act 2010, entered force in 2011, which impact on the licensing of taxis (section 174), but are not specific to the measurement of SUD. Recommendation on validity and review of demand within the wider market for taxi supply is set out in subsequent analysis.

Following from the current legislative framework and guidance we have defined our initial measurement objectives as:

- The measurement for Significant Unmet Demand (SUD) for Taxi services in Aberdeen, based on existing (standard) measurement approaches
- The identification of latent demand for taxi use
- The identification of any seasonal issues impacting on the demand for taxi service
- To provide recommendations specific to the Aberdeen Taxi fleet, its operation and future analysis.

2.1 ISUD measurement

The measurement of an ISUD index has been developed from a structure applied in similar studies in other locations, of which a large number of similar examples are available.

The approach is based on observations of current use of taxis, and on public survey and provides an index value, effectively a comparison of taxi performance between locations. Index values below ISUD=80 are indicative of no significant unmet demand, whilst those above this threshold suggest unmet demand may be present.

Primary observation relates to surveys undertaken in Aberdeen in October 2011 comprising:

- Video based observation surveys at all official ranks,
- Pedestrian Surveys using clipboard techniques
- Surveys of the taxi trade including questionnaire surveys to Licence holders and focus groups
- Consultation with wider stakeholders including commercial and retail owners, Hotel and leisure trade, disability and passenger user groups.

All central taxi stances in Aberdeen were included in our assessment. We have also observed taxi flows at private ranks controlled by BAA Aberdeen Airport, Network Rail and Sainsbury's respectively. It is noted that privately controlled ranks generally fall outwith direct influence of a restrictive or open market policy applied to the wider city, as the market tends to be separately controlled under a supplementary permit scheme, in the case of Aberdeen this applies to the Railway station and at Aberdeen Airport. Ranking at supermarkets being open in access but generally serving a more specific user market. This is discussed in more detail in section 5, which addresses issues at individual taxi ranks.

2.2 Quantitative Analysis

The index of Significant Unmet Demand is based on the observation of delays in accessing taxi services, and is based on the formula:

ISUD = APD x PF x GID x SSP x LDF

Where:
APD = Average passenger delay,
PF = Peaking Factor
GID = General Incidence of Delay
SSP = Standard State Performance
LDF = Latent Demand Factor

The calculation has developed from previous analysis, in line with updates to BPG. The individual elements are derived from observation and include delays observed (Average Passenger Delay); a peaking factor, addressing differences in demand across peak and off peak periods; the incidence of delay (GID), normal or standard performance; and a Latent Demand Factor, accounting for hidden demand for taxi services.

Passenger delay, resulting in the definition of an Average Passenger Delay (APD) reflects the time taken between seeking a taxi and its engagement. At a taxi rank this is taken to mean the time between joining the back of a queue, and departing in a taxi. Pre-booked taxis can be measured in terms of the time between making a booking by phone, or other means, and the arrival of a taxi. The third engagement type, hailing, is less clear as the measurement of a hailed journey will often reflect an individual walking toward a taxi rank, reducing the ability to determine the starting point of a hail. We have addressed pre-booked trips through a combination of data supplied by taxi companies in Aberdeen and our own mystery shopper. Hailed trips are identified solely on the basis of mystery shopper engagement. A peak factor is entered as a binary condition, whether peaking occurs or not, with a value according to the presence of peaking. Incidence of delay, the extent to which passengers queue against equilibrium or driver queues together with a standard state performance, the normal levels of delay, provide a calculation against the level of delay at rank that is normally observed. Delays below one minute are generally felt to indicate no delay as vehicle access, boarding and departure themselves create a short waiting time. A latent demand factor, which we have derived from public surveys, accounts for the extent to which trips are avoided.

2.3 ISUD application

Taxi rank observations were made during October 2011, and include 768 hours of camera observations. A summary of observation locations and camera placements is included in appendix 2. Street surveys were completed in the same period. Stakeholder surveys were undertaken in the period of September and October 2011, with focus group and individual meetings undertaken in October 2011. A detailed description of the surveys undertaken is set out in section 3.

Typical mean delays during daytime taxi use are less than a minute, though peaks exist in this, with maximum delay peaks significantly higher. Night time delays can be significantly longer. A review of the performance of individual ranks is set out in section 4, below.

A further distinction is drawn between daytime ranks, including those operating late into the evening, and nighttime ranks, being those located on Union Street serving the late night market from the city centre. Late night ranks located along Union Street are served by taxi marshals, assisting in queue guidance and dispatch. The provision of Marshals having a significant and positive effect on departure rates from the ranks.

Nighttime ranks operate from midnight and generally replace their alternatives in the city centre. This results in a hand over from daytime to nighttime ranks. Though rank operating hours are signed, this is the cause of some confusion and has been highlighted by stakeholders and trade.

Figure 1: Taxi rank closed sign and operational hours plate

2.3.1 Observed rank performance

The majority of taxi ranks in Aberdeen perform well, with side street locations serving Union Street displaying excess levels of taxi supply compared to demand. The measurement of levels of excess supply itself an issue associated with the need for taxis to await passengers during the day, a practice of effective garaging within the confines of the rank. Garaging can itself create an issue, and relates to the effective parking of taxis for prolonged periods at taxi ranks in the absence of demand. Effectively the rank becomes a parking garage between trips. Excess supply, being larger numbers of available taxis compared to taxi trips, exacerbates the difficulty as numbers of spaces available on ranks fall below the level sufficient to accommodate waiting taxis. The alternative to, and consequence of, low levels of ranking spaces being cruising, taxis driving around in search of custom. Whilst cruising is clearly an important market element, it also impact on congestion and environmental pollution.

Nighttime ranks allow for a higher concentration of demand at a small number of ranks, and these do not demonstrate the same pressures on garaging, and appear to work well in the main part.

Some rank locations attract very limited demand, and this is reflected in limited numbers of vehicles serving the rank. In some instances lack of marking exacerbates the low levels of use and this is discussed in terms of individual locations in section 5. A pattern of vehicles “pausing” at a rank has been observed, taxis pausing at rank locations and moving on where no passengers were present.

Some issues in passengers waiting delays were observed in the Union Street side streets at night, particularly at the point of transfer from daytime operation to nighttime operation, as the etiquette for the transfer appears confused. We observed the manual placement of “rank closed” signs (see figure 1) to indicate the closure of side street ranks, having a limited impact in some instances on waiting queues of passengers nor of taxis. Hand over appeared to occur on the departure of the last passenger from the side street rank. The issue of nighttime hand overs was also raised by the taxi trade in focus discussion.

Rank based observations allow for the calculation of an ISUD value, see section 2.2, which in Aberdeen results in a minimal index value. The city value of 15 falls well within

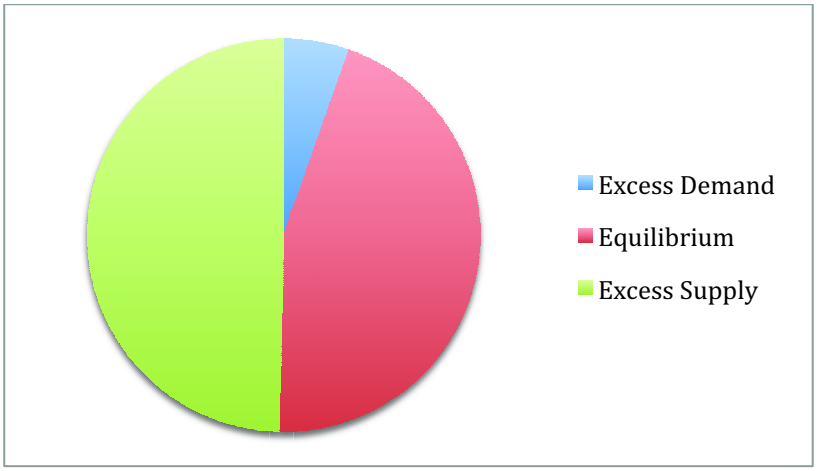
the threshold values most commonly used as indicators of significance. On this calculation we conclude that Aberdeen does not display Significant Unmet Demand.

The conclusion that Aberdeen does not display significant unmet demand does not, however, indicate an absence of issues in the market. The study further addresses issues of the use of taxis in the city, their relative availability and suitability, as well as the physical infrastructure supporting taxi supply.

2.3.2 Balance of supply and demand

In common with other such studies it is possible to identify the relationships between supply of services, and their demand. This is a key element in the determination whether unmet demand may be classified as significant. Three potential categories exist specific to the balance of supply and demand; excess demand, excess supply and equilibrium. The optimal, equilibrium, exists at the point where supply is sufficient to satisfy demand but not excessive. Chart 1, below, illustrates the situation in Aberdeen and highlights the significant extent of excess supply. The table illustrates both the relatively small levels of excess demand over supply, and the larger incidence of excess supply. The latter, excess supply, may be indicative of other issues in the market, including a need to consider rankling space and associated impacts.

Chart 1 Balance of Supply and Demand



In the majority of unmet demand studies, a focus is placed on excess demand, an indicator of a failure within the market to meet passenger expectation. This is a natural and necessary consideration in addressing the requirements of the Civic Government (Scotland) Act 1982 (CGSA). Excess demand, where outwith and above a standard deviation, represents a failure of the taxi industry to supply and may be indicative of Significant Unmet Demand. This is not the case in the city of Aberdeen, but rather the reverse, that the extent of excess supply should be considered as an issue, as it impacts on numbers of vehicles waiting at rank, rather than queuing passengers, for the main part of the day; the ability of the driver to earn a living without impacting negative on fares; and consequent impacts on vehicle types.

Measurement in Aberdeen suggests that, in more than 90% of all time periods, taxi supply is typified by and Equilibrium of Supply to demand, or excess levels of supply.

Whilst not unknown, this level of excess supply exceeds the typical values in other Scottish cities we have observed. One conclusion that may be drawn being the need to consider additional taxi ranking spaces to accommodate or garage vehicles whilst waiting between passengers. This is further explored below.

2.3 Regulatory Impacts of imbalance between supply and demand

Whilst the majority of Demand Studies are intended to address the impacts of reduced levels of supply, we feel it appropriate to consider the impacts of imbalances between supply and demand on a wider base. In this respect it is necessary to consider the full range of impacts across three areas of regulation: Quantity, Quality and Economic Control. Quantity Regulation relates directly to the numbers of vehicles operating within a licensing authority area, and this has been the primary focus of the majority of taxi surveys undertaken in Scotland.

Quality Regulation is the application of control to vehicle quality, and service standards. Minima include vehicle roadworthiness, but this will also extend to include types of vehicles, vehicle age and, in some instances, driver appearance.

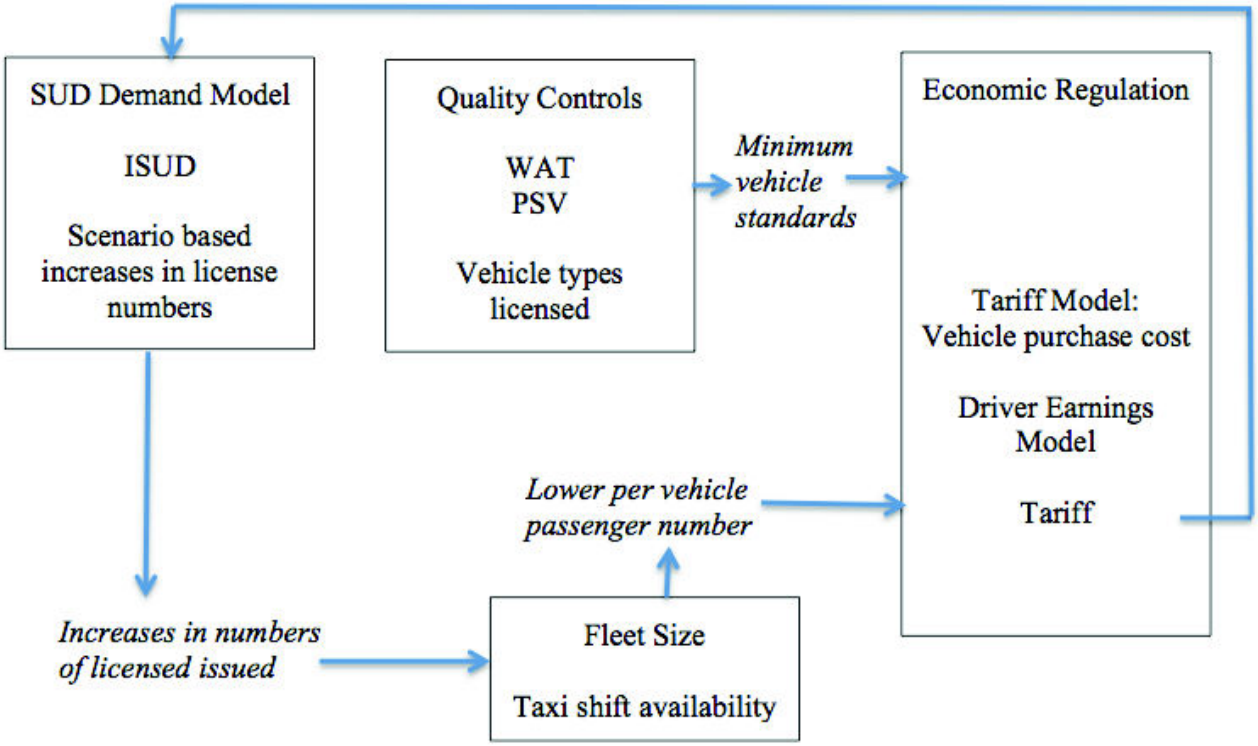
Economic Control is most commonly related to the control of tariff, effectively setting fares. Tariff controls are based on taxi cost models and are generally considered appropriate to protect consumers from overcharging or incorrect charges being applied.

It is common for the three elements to be treated in isolation, thus quantity reviews (ISUD) are separated from Tariff Reviews (Fares), are separated from quality controls (Vehicle Age, Appearance, Roadworthiness). An ISUD measurement is typically used to allow an authority to draw conclusions on the extent to which an existing fleet is able to serve market demand, but this excludes any interrelationships between quantity demanded and price, effectively looking at the impact of changes to one element on a static market in the other two. In reality, the ISUD measurement effectively indicates the relationship between numbers of Licences and supply equilibrium without considering knock on impacts of changes in supply.

Whilst it is unquestionably the case that increasing the numbers of Licences will impact on the effective supply, this is only a partial view of the market for taxi services.

A more sustainable argument exists that changes in one area of regulatory control actually impacts across all other areas. Thus any change in the numbers of taxis in a fleet will also impact on other areas of service, fares and quality, see figures 2 – 4. Thus any perceived deficiencies resulting from the imbalance between supply and demand, or any failure in the market to optimize supply as felt appropriate for the city, need be considered in respect of impact across domains, with any policy decision, including market intervention, made on the same basis.

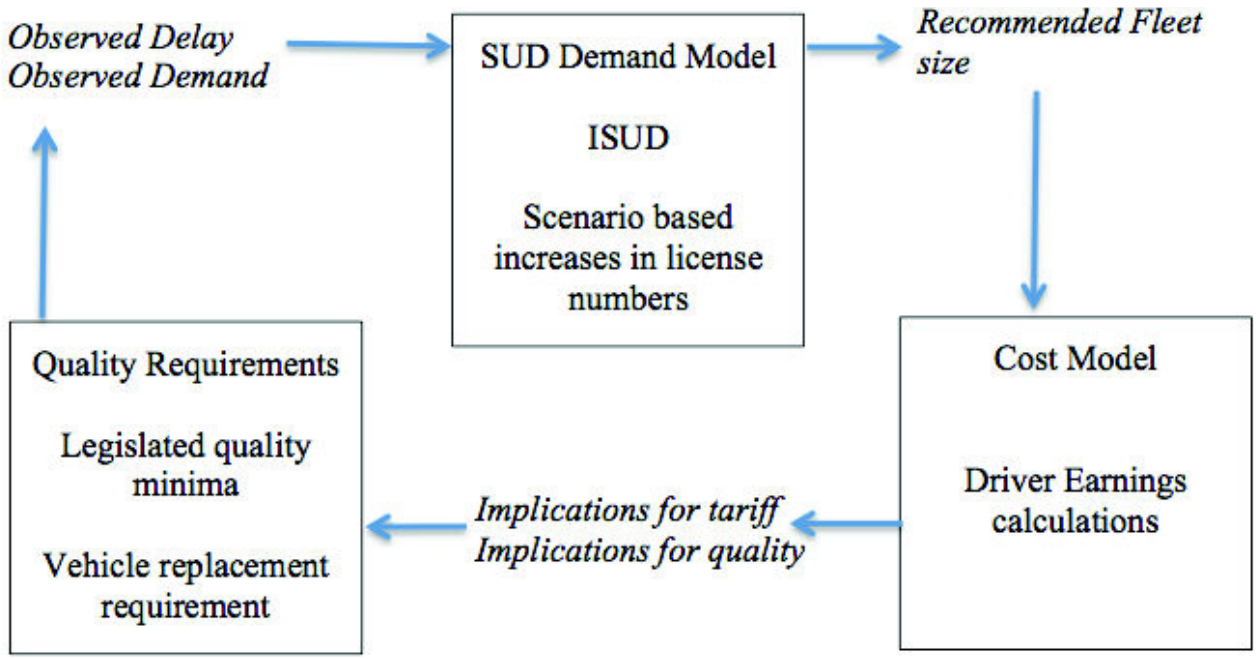
Figure 2 Interaction between fleet size (Quantity Regulation) and other domains



Fleet size impacts on, and is impacted by, a large cross section of other control elements. Policies affecting the numbers of Licences can only fully be considered where the secondary and subsequent implications are fully understood. Figure 2 illustrates linkages and impacts that may arise as a result of changes in numbers of Licences. As a fleet size increases numbers of pick ups per vehicle decline. The extent of this decline is influenced by the numbers of journeys that have been suppressed, but any such change influences income and potentially vehicle quality.

The presence of a relationship between fleet numbers and quality is suggested within the Office of Fair Trading report (OFT, 2003) acknowledging the potential of a causal link, concluding that derestriction in numbers may be replaced by an increase in the controls applied to quality. Thus the removal of one form of constraint be replaced by another, ie: removal of quantity control may be replaced by quality control. The link between fleet size and cost need also be considered, figure 3, insofar as increasing numbers of vehicles may reduce the income per vehicle and, where tariffs are calculated to include a level of driver earnings, have the counter-intuitive impact of increased fares.

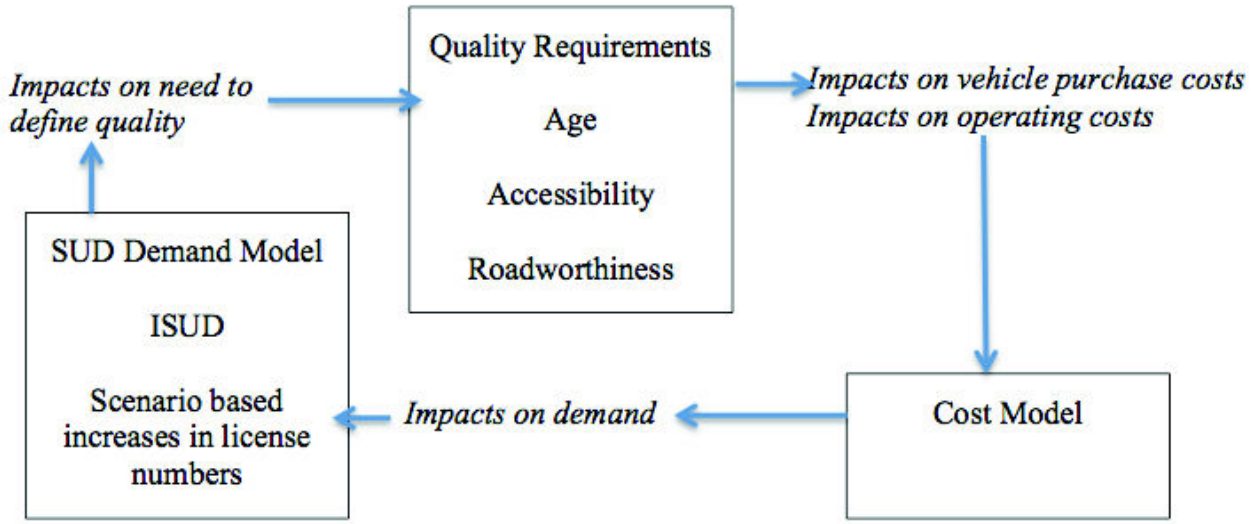
Figure 3 Interaction between fleet size and tariff



A significant link exists between the fleet size and tariff. In the instance where a minimum level of driver income is included in the calculation of tariff, as is the case in a number of cities, changes in the numbers of taxis may have an unexpected and inverse impact on base tariff levels. Reducing numbers of trips per vehicle, resulting from increased numbers of vehicles in the fleet, will reduce the income received by the driver. A cost model with a determined income level to drivers would counteract the reduced fare take by an increase in tariff, resulting in the paradox that observed increased levels of competition will have the long term impact of increasing fares.

The third area of control relates to quality control. The OFT study outlined the need for minimum quality standards, and this is borne out across a number of locations by legislated criteria and guidance on minimum quality levels. A basic vehicle roadworthiness requirement is applied in all UK authorities, with wide application of vehicle age requirements. Aberdeen also applies a requirement that new Licences be restricted to Wheelchair Accessible Vehicles (WAVs) and sets out criteria for such vehicles. Figure 4 illustrates the relationships between quality control and other regulatory domains.

Figure 4 Quality Control Interactions



As authorities demand specific quality of vehicles, which may in turn result from a perceived shortfall within the market, purchase and operating costs are affected. A cycle exists as increased costs impact on cost models, and may in turn impact on demand, and thus call for services.

As imbalances between supply and demand highlight specific areas of market failure, whether in terms of supply side or in relation to demand, it is appropriate and necessary to consider policy direction in light of the full range of impacts, not simply those applied to quantity alone. In section 6 we consider the likely impacts of any change in Aberdeen policy across all of the regulatory domains.

3. Surveys and Consultation

A variety of surveys were undertaken in the completion our work. Surveys provide a snapshot of the demand for taxis and any issues experienced in their use. The team undertook four primary surveys, detailed in subsequent sections and summarised:

- Observation Surveys at Taxi Ranks
- Public surveys, using pedestrian clipboard techniques
- Stakeholder surveys, using a variety of methods including online surveys, street surveys and focus groups, and
- Trade Surveys, including on-line surveys, street surveys and focus groups

3.1 Observation surveys

Observation surveys of rank movements have been undertaken at ranks using covert filming. A total of 14 ranks were observed in this way resulting in 768 hours of rank observation data. Recordings cover 24 hour period during the week, typically Wednesday to Thursday, and 24 hour observations at the weekend. Weekend observations are taken Friday Night / Saturday morning.

Sites chosen cover all central public ranks, those not located on private property, and include:

- Back Wynd,
- Bridge Street,
- Chapel Street,
- Dee Street,
- Diamond Street,
- Union Street at Castlegate,
- Exchequer Row,
- Fredrick Street,

- Hadden Street,
- Justice Mill Lane,
- Little Chapel Street,
- Rubislaw Place,
- Union Street at Correction Wynd, and
- Union Street at Bon Accord Street

The extent of detail and information derived from camera observations allows for a detailed analysis of all taxi departures over the periods of recording. A review of issues arising at individual ranks us set out in section 4.

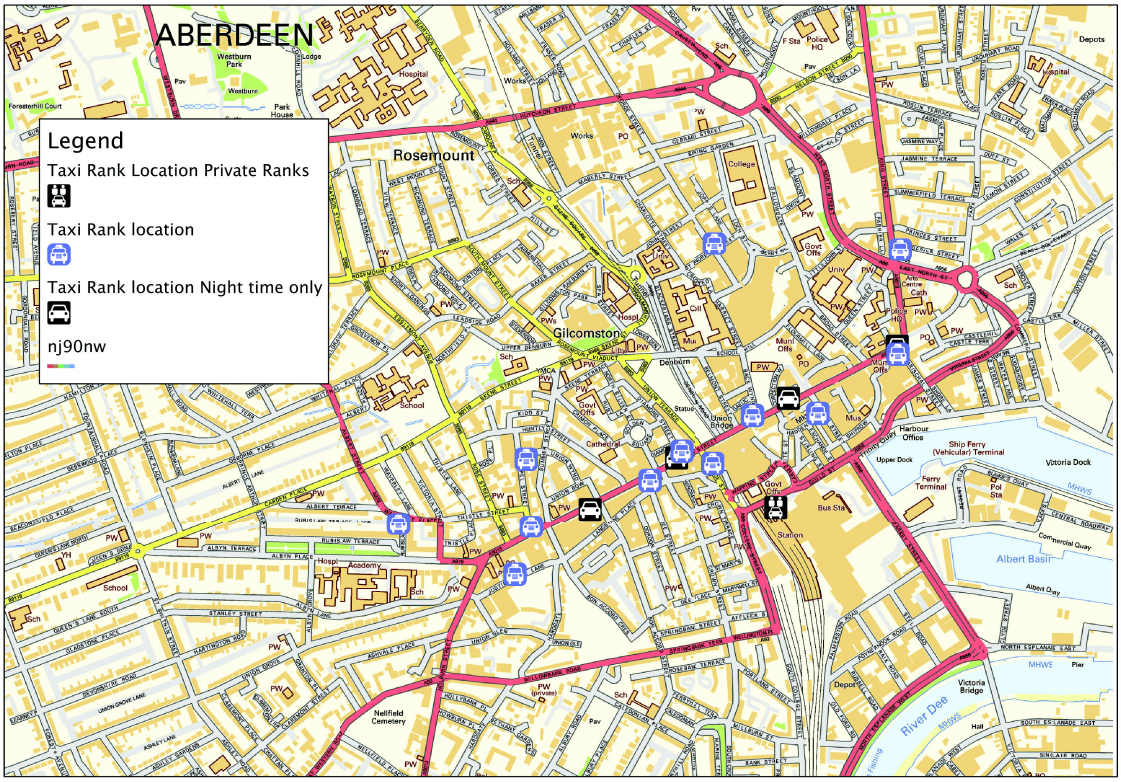
Further reviews were undertaken at taxi ranks located on private land, summarised as:

- Railway Station Forecourt,
- Aberdeen Airport,
- Sainsburys

Sample data taken from all ranks is included in the calculation of ISUD, and in more detailed analysis. It is noted that whilst taxi control policies have a direct impact in the operation of services at public ranks, the impact is only indirect in the case of private ranks, which may be subject to further controls and restrictions applied by the land owner. City centre sites are shown in figure 5, below, and set out in detail in appendix 2.

Observations over a 24 hour period allow for a full assessment of taxi rank performance, and are particularly appropriate in identifying unusual and unexpected behaviour. Examples of this include use of closed ranks late at night, and instances where neither demand nor supply are present. Full datasets are also significant in ensuring details of all passenger departures.

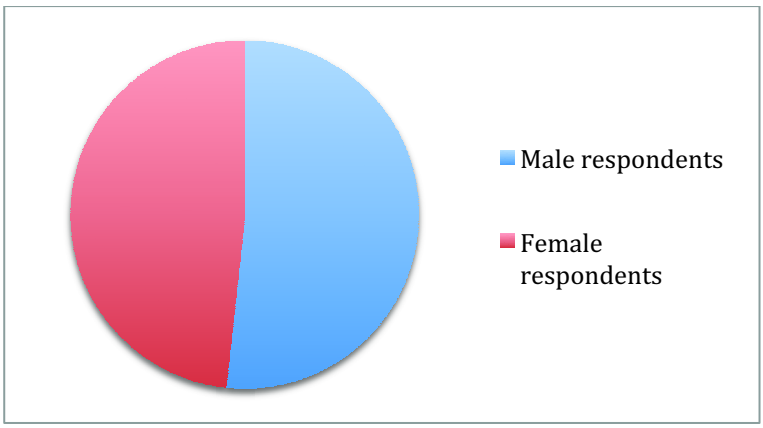
Figure 5 Location of city centre ranks included in review.



3.2 Public Survey

An on-street questionnaire was undertaken to elicit the views of members of the public in Aberdeen. Surveys were undertaken using a clipboard technique in October 2011. A copy of the survey is included in the appendices. The survey was completed by 448 respondents, with a slight bias to male respondents (52%), see Chart 2. This is not considered a significant bias.

Chart 2 Survey Respondents by gender



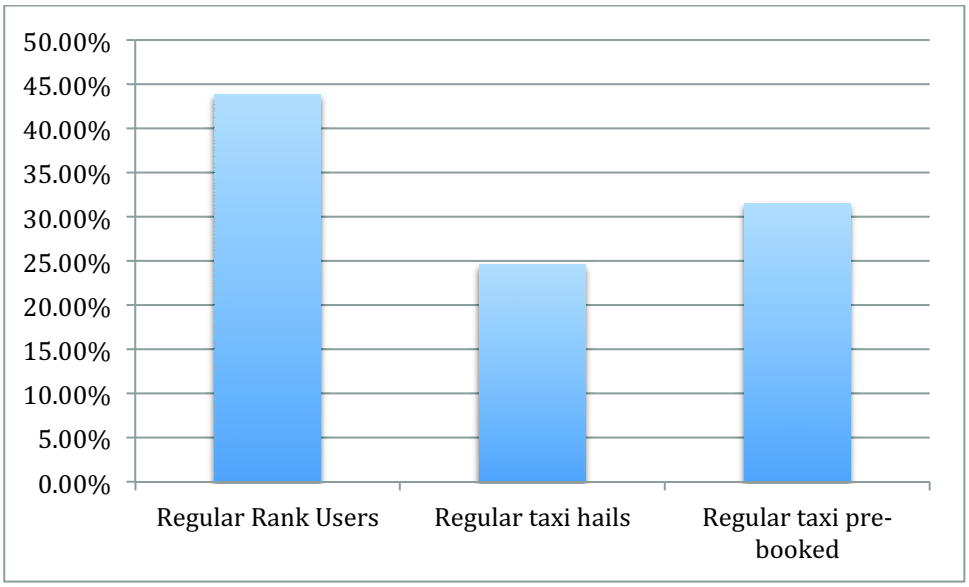
The survey considered both overall views of taxi services across the city and the individual experiences of respondents in their last trip. This was included to remove any bias specific to the time of survey collection, allowing as many journeys to be considered as possible.

Question 1 includes a space for reported personal needs, such as sight, speech and other impairments that may otherwise be overlooked. Selection of a wheelchair access need was also included, although no wheelchair users responded to the on street survey.

Separate focus group discussions were undertaken with representatives of disabled groups, and separately with commercial and businesses in the city to ensure a full cross section of views were considered. Two respondents indicated additional personal needs, one having a hearing impediment, the second requiring more time to board (infirm).

The second question, illustrated in chart 3, related to the most common methods of taxi engagement amongst respondents. It is noted that the majority of taxi rank engagement from ranks occurs within the city centre and at the airport, being locations where ranking facilities are available. Journeys using taxis originating from suburban and residential locations are more likely to engage a taxi by pre-booking. This is a common factor across all major cities.

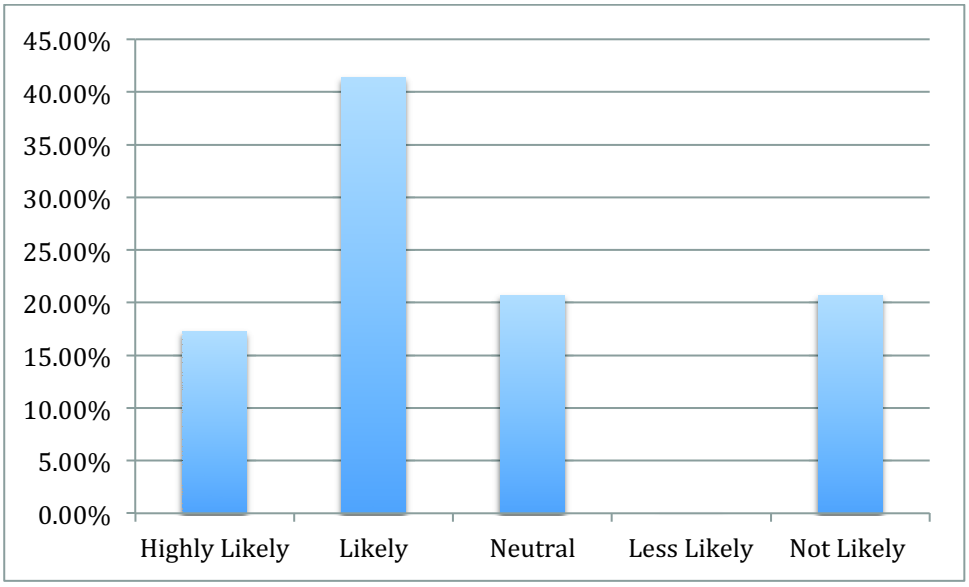
Chart 3, mode of engagement



3.2.1 Public Perceptions

The survey provides a detailed review of taxi trips made in Aberdeen, and perceptions related to taxi supply and use across the city. Factors affecting the levels of use were reviewed across six measures, with respondents asked to value each. Values were requested across a range from very likely, a factor that would increase taxi use significantly; to not likely, a factor that does not influence taxi use. Charts 5 to 9 illustrate responses, with analysis detailed below.

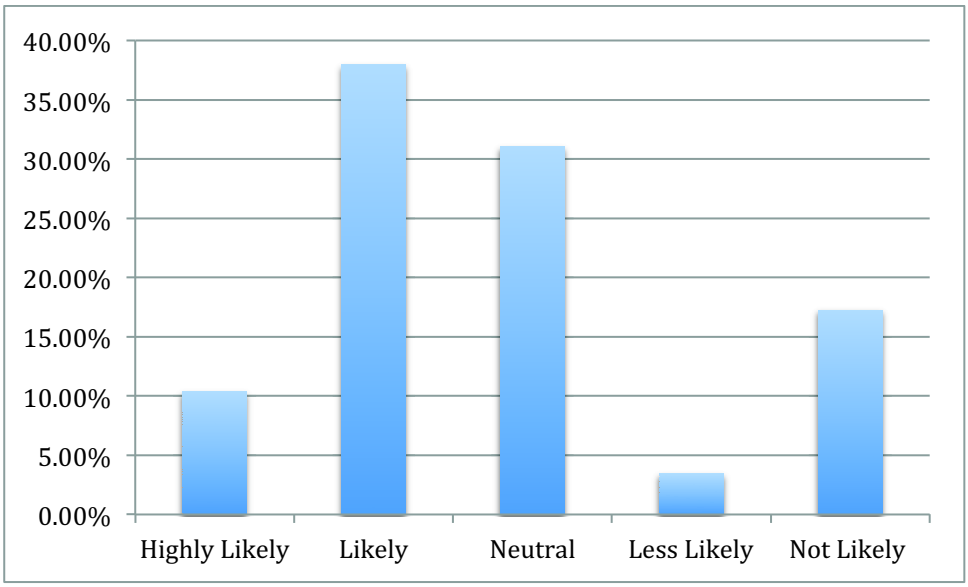
Chart 5 Impact of greater taxi supply on taxi use



In the first question of this series we asked if a greater number of taxis available would increase the extent of taxi use. 56% of all responses indicated that a higher level of supply would result in a higher level of taxi use. This measurement is particularly significant as indicates the presence of supressed demand, journeys not being made as a result of limitations in supply or a perception that additional taxi trips would be difficult. The response of “not likely” relates to passengers for whom additional taxis would not influence trips made.

The second question relates to the impact of accessible taxis on taxi use, see chart 6.

Chart 6 Impact of greater numbers of accessible taxis on taxi use

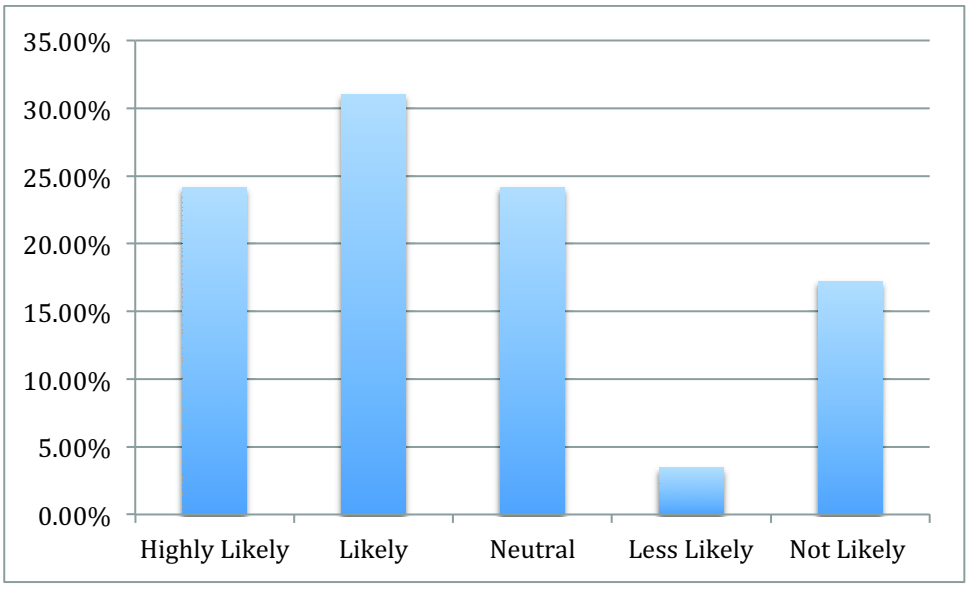


The supply and use of Wheelchair Accessible Vehicles in Aberdeen appears to be an issue to user and trade. The Authority has pursued a policy of issuing Licences only to Wheelchair Accessible Vehicle (WAV) vehicles in recent years, and this policy has contributed to the perceptions and views of the main stakeholders in the city.

Despite a minimal number of journeys that would require WAVs being represented in the public survey, a clear preference does emerge in relation to their supply. 47% of all respondents indicating that increased numbers of WAVs would affect increase their use of taxis. A smaller number, 23% suggest that is less likely or unlikely to impact on use, reflecting the fact that a number of passengers actively prefer saloon vehicles. It is desirable that an opportunity remains within the supply of taxis, whether through Hackney Carriages or Private Hire markets, for saloon cars to be engaged.

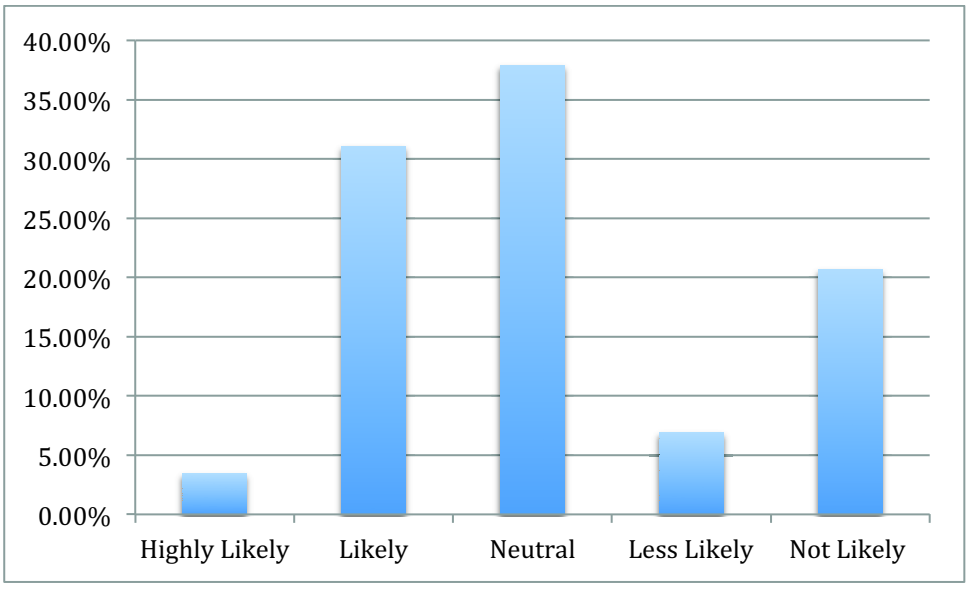
The survey also addressed the issues of taxi rank design using the same format. Chart 7 illustrates responses to rank lighting, often considered an issue in nighttime use of taxi ranks. The question was asked whether improvements in lighting at ranks would result in an increase in use of taxis, with a significant majority of respondents indicating that it would.

Chart 7 Impact of improved lighting, likely increase in taxi use



55% of respondents indicated that an improvement in lighting at rank would result in an increase in taxi use, and this is likely to follow from the perceived and actual improvement in individual safety at rank. The further measure, being the presence of taxi marshals at nighttime ranks was also considered, chart 8, though the extent to which marshals impact on increasing taxi use is less clearly defined than in the case of improved lighting, a number feel this would positively affect their use.

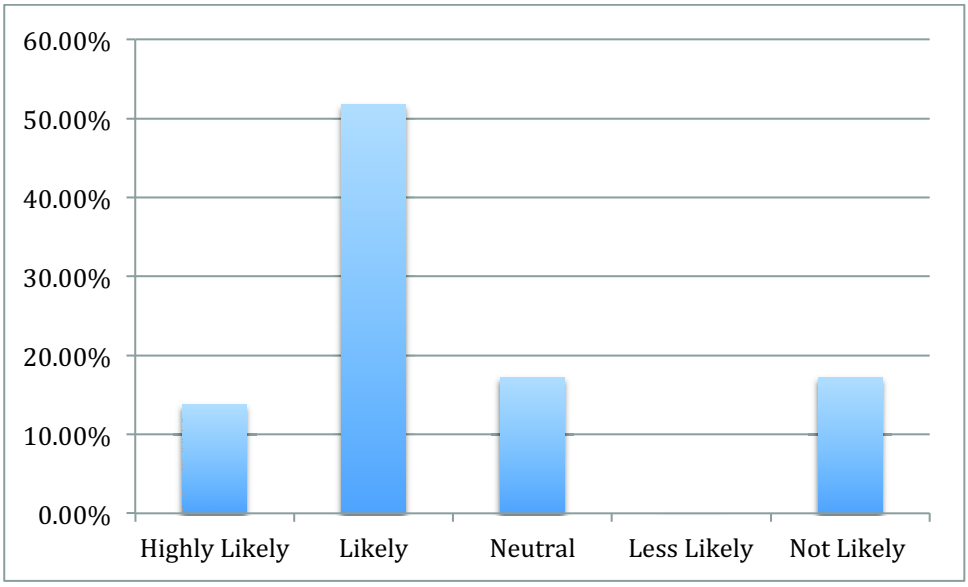
Chart 8 Impact of taxi marshals, likely increase in taxi use



It worth also considering that taxi marshals play a significant role in the efficiency of taxi movements and operations at nighttime ranks, and that the justification for their presence should be considered in this respect as well. A detailed analysis of the impacts of marshals at ranks is included in section 5.

Location of taxi ranks, whether centrally located close to shops, was considered using the same format. The survey asked whether ranks more centrally located to demand would impact on taxi use, see chart 9.

Chart 9 Impact of more centrally located ranks, likely increase in taxi use

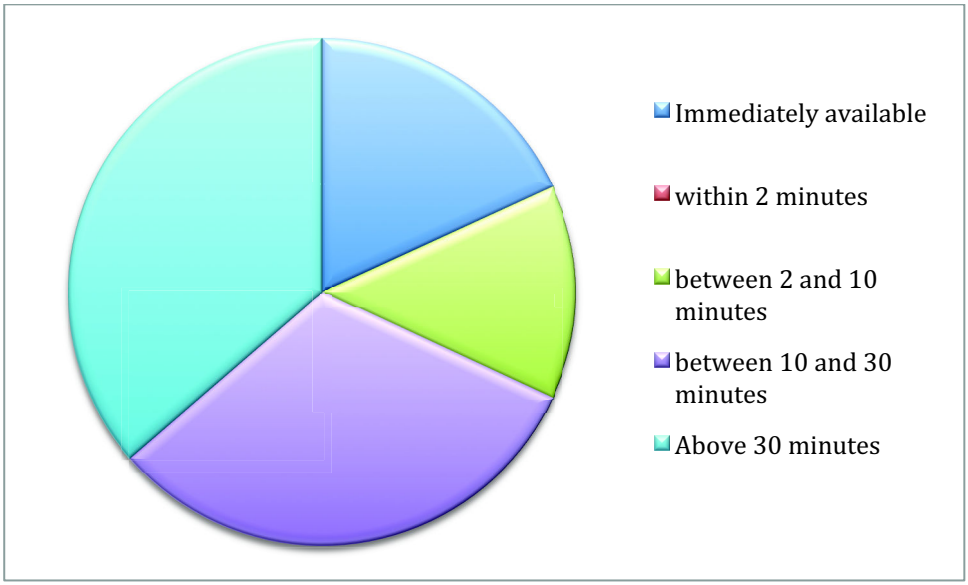


A majority of respondents considered that the location of ranks more centrally to demand would increase their likely use. Subsequent analysis draws from this by mapping both rank location, and the location of trip productions using a GIS model, described in section 5. Specific areas of the city appearing to be well served, whilst others, including Union Square, would benefit from better rank provision.

3.2.2 Waiting Times

The public survey sought to identify the extent of waiting times experienced by passengers on the occasion of their last use of a taxi in the city. Waiting times were stated for each of the three engagement methods, ranking, hailing and pre-bookings, and these are illustrated in charts 10 to 12.

Chart 10 Waiting time at rank



Waiting times at rank, as reported within the survey, indicate a significant number of taxi journeys with delays in excess of 10 minutes, though this is not borne out in actual observed waiting times. Although delays are experienced, some of a significant amount of time, these are the exceptions rather than normally encountered. This is discussed in more detail below, but may be related to respondents highlighting worst cases they have experienced.

Chart 11 Waiting time, hailed journeys

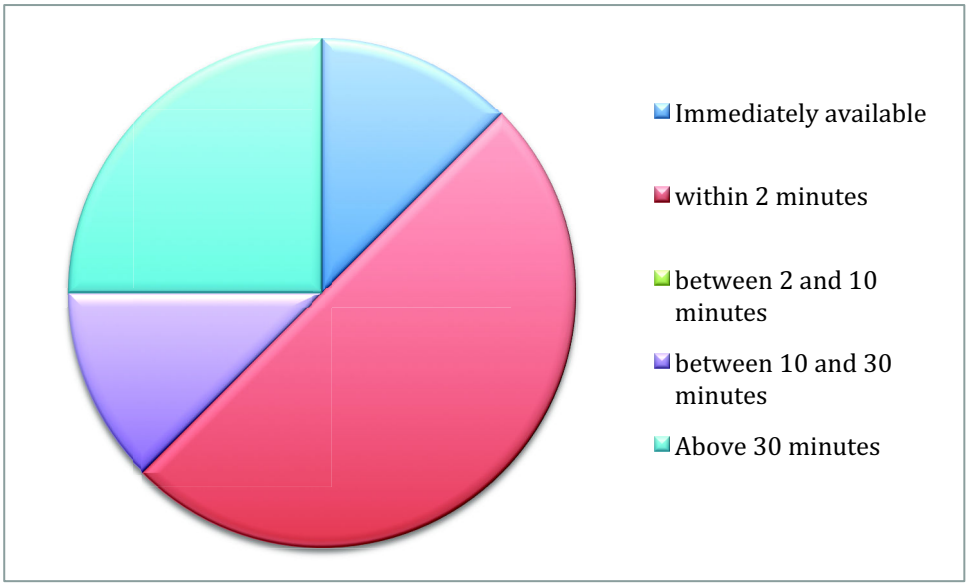
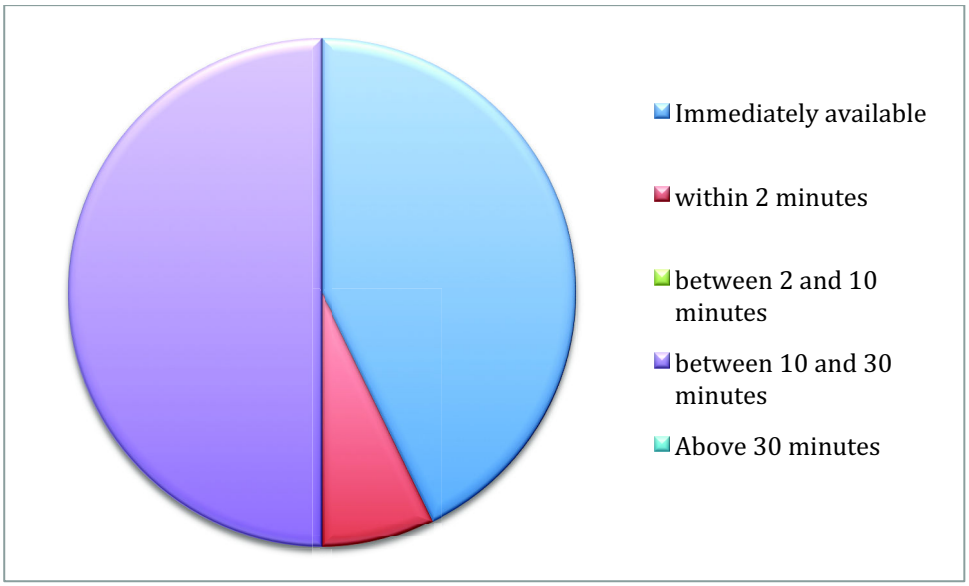


Chart 12 Waiting time, pre-booked journeys



In comparison to rank originating trips, both hailed and pre-booked journeys perform better, with a majority of hailed journeys resulting in engagements within 2 minutes. Pre-booked journeys also perform reasonably, though a significant split is demonstrated between immediately available trips and those encountering a delay of up to 30 minutes. No reported delays above 30 minutes were experienced for pre-booked taxis.

3.2.3 Passenger experiences of rank based taxis

The public survey also sought opinions specifically in relation to ranking taxis. A clear dichotomy emerges in relation to the relative ease of engaging a taxi, between daytime and nighttime use, see charts 13 and 14.

Chart 13 Relative ease of engaging a taxi at rank, daytime

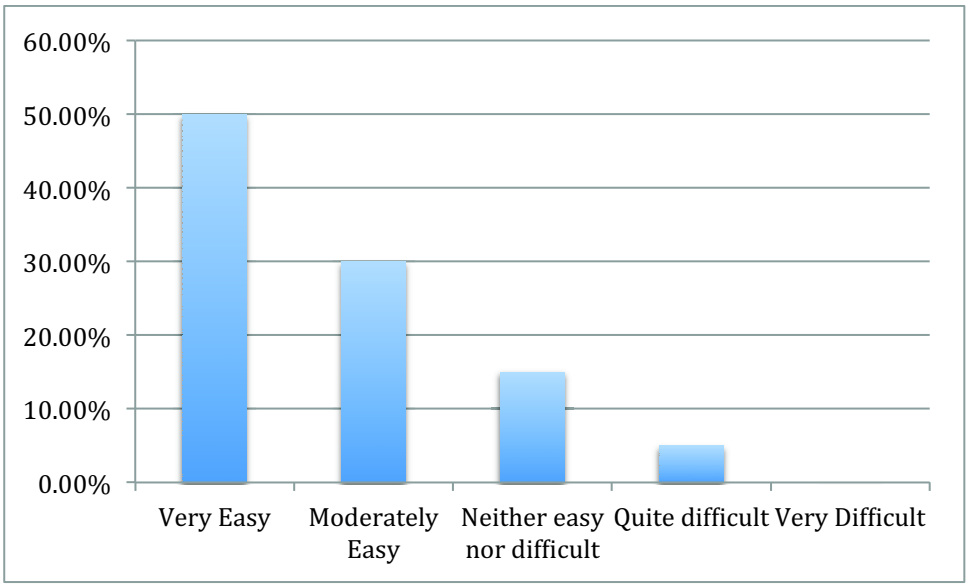
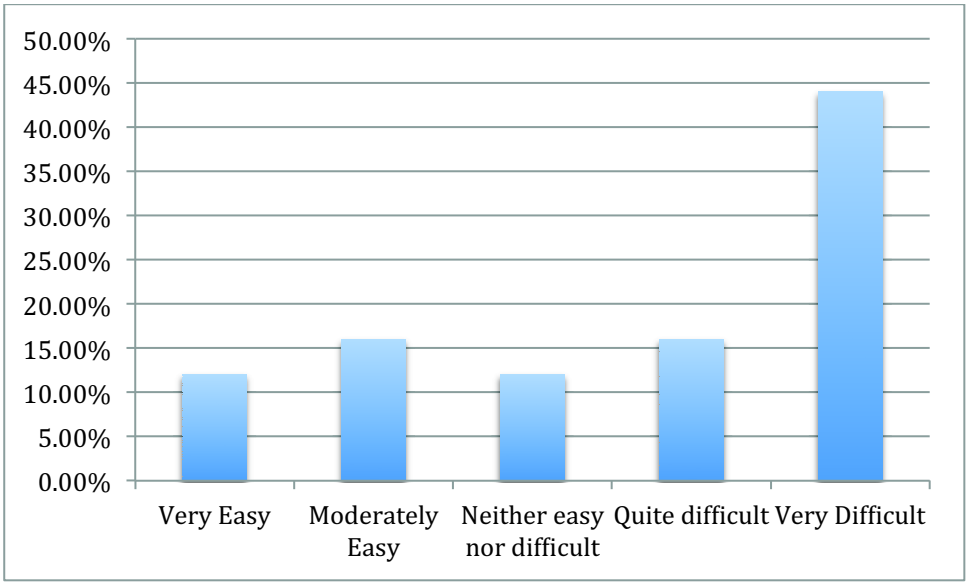


Chart 14 Relative ease of engaging a taxi at rank, nighttime



A significant difference is visible between perceived ease of accessing taxi services during the day compared to night time engagement at rank. This is further considered in relation to the limitation it imposes on the introduction of licensing controls, particularly with the stated requirement that services need be appropriate to peak as well as overall demand.

Further questions considered the public view on vehicle quality, chart 15, and value for money, chart 16. Value for money received a particularly low score, with a wide range of comments specific to this issue.

Chart 15 Quality of taxi vehicles

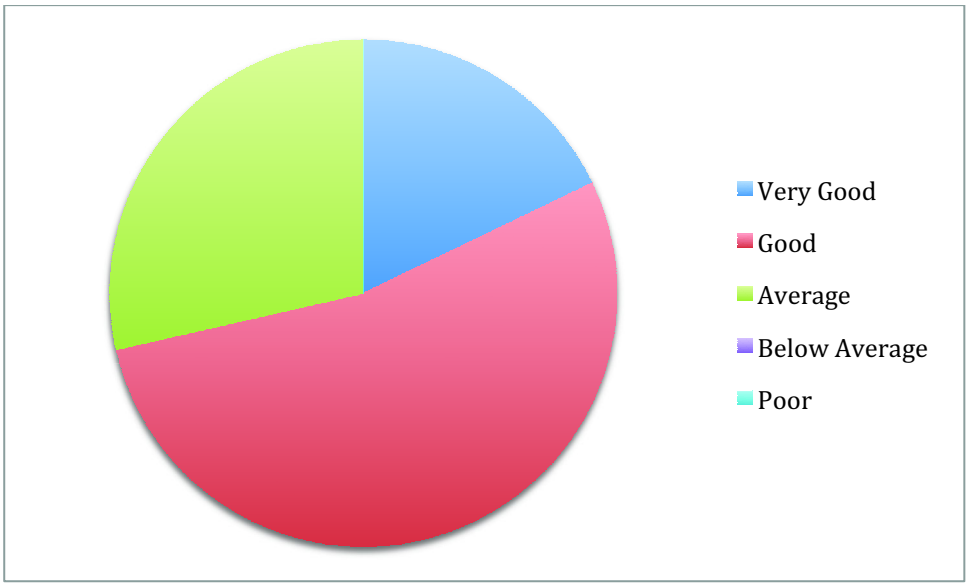
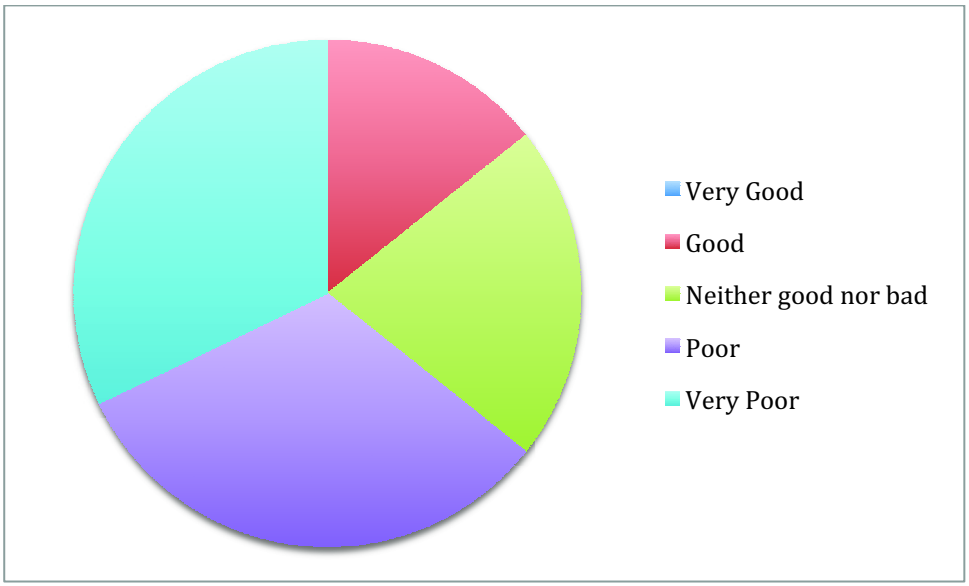


Chart 16 Value for money, Aberdeen Taxi fares



Whilst vehicle quality does not appear to be an issue to the public, that of taxi fare value for money represents a significant issue. 64% of all respondents considered value for money as poor or very poor, with only 14% seeing this as good value for money.

The relationship between quantity restriction and tariff is a complicated one, but it is clear that relationships do exist between the numbers of trips and income levels, and this is further affected by taxi tariff. The levels of tariff thus impact on market dynamics, and this is an area discussed in more detail in section 5.

3.3 Stakeholder Surveys

The study included stakeholder consultation with a wide range of interested parties, including Grampian Police, BAA Aberdeen Airport, the Unite union, trade representatives and representatives of passenger and disabled groups. Meetings were also held with the council representing the Legal services and officers with a direct interest in the taxi trade, including the roads service. A list of consultees is included in the appendix. Local commercial and retail premises were also included, with local hoteliers and the licensed trade through an on-line survey.

A copy of the online survey is included in appendix 5.

The on-line survey was initiated from the outset of the project to allow the maximum amount of time for consultation. Issues raised in the questionnaire were then incorporated as appropriate to focused discussions in focus group and individual interview.

Key elements in responses and subsequent discussions are set out below in summary, and detailed specific to user groups in subsequent sections.

Use of Taxis

A broad range of responses indicated that the use of taxis fulfils a significant range of roles in the community. In addition to 15 stated origin / destination pairs, the survey revealed a significant market for staff transport to and from night time employment. A further market, for return transport from supermarket shopping was also highlighted.

Significance of taxis

89% of commercial respondents indicated that taxis were significant to the operation of their work, specifically that taxi availability had a positive impact on their business, with 11% considering that taxis did not impact on their business. This is a significant percentage, and is further considered in relation to the wider economic impact of a lack of supply, see section 6.

89% of all commercial respondents made use of taxis weekly or more often, with 45% indicating use daily. 11% used taxis monthly.

Appropriateness of supply

51% of commercial respondents indicated that taxi supply was inadequate at some point in time, with specific comments suggesting failure to answer phone bookings at peak times.

Trade Responsiveness to demands

The majority of responses indicated that the Aberdeen taxi trade was considered helpful or appropriately helpful to requests for services.

Rank locations

The majority of responses suggested that the supply of ranks within the city centre was appropriate with ranks close to demand. Some respondents commented on the need for incoming visitors to be made aware of rank locations, and this was repeated with reference to bus passengers being unaware of taxi facilities.

Taxi Availability

Specific times of the day were identified as suffering from low taxi availability. A split between daytime and night time emerged. 90% considered taxis were easy to get during the day compared with nighttime where 33% considered taxis hard to get. Individual comments also suggested difficulty in accessing taxis weekday mornings, coinciding with school runs; and on Saturday nights, reflecting the general delay in accessing taxis at weekend nighttime.

Taxi Performance

As reflecting public survey responses, stakeholders mirrored a concern that taxis represented poor or very poor value for money. 63% of respondents identifying value as poor or very poor. Equally concerning, stakeholder respondents also identified drivers as average or below average in presentation, 11% considering drivers to be very poorly presented. Individual comments also included concerns over the use and allocation of extras, with one respondent complaining that six seaters were regularly sent despite these not being requested.

3.4 Disabled Users of taxis

The study team held meetings on three occasions with representatives of disabled users, including access panel, individual users and Aberdeen Action on Disability. Discussions were focused on the same issues and have been set out according to issue below.

Nature of Demand

It was recognised by all that the demand for taxis crossed a wide number of users with a variety of needs. The most common disability appears to be wheelchair access to taxis, but it was underlined that this did not represent the full spectrum of disabled users, many of whom had differing needs not well suited to a single approach to accessible transport.

Disabled passengers would often prefer to engage taxis through pre-booking as this permitted a level of certainty in taxi delivery felt lacking in other forms of engagement. This said, the view that taxi engagement at rank and by hailing was felt to be appropriate and equitable. Individual stories of difficulty in engaging at rank were described, and this was further expressed in terms of driver approach, and the granting of exemptions for some drivers of Wheelchair Accessible Vehicles.

The issue of passengers becoming stranded at a destination was discussed. Passengers become stranded when the services intended for return become unavailable, mainly through operating hours of some companies, but also as a result of lack of response in requesting bookings. Passengers becoming stranded was felt to be an important issue in choice of engagement method and company.

Nature of Fleet

Some divergence of opinion appears in relation to the fleet, which can be summarised insofar as a proportion of disabled passengers are able to use saloon vehicles, and of these a number prefer saloon taxis over WAVs.

A series of views was expressed as to the suitability of particular vehicle types, particularly differing types of WAV, with concerns expressed about the floor height in a number of vehicles being an issue for infirm travelling passengers.

The ability to choose between vehicle types was appreciated, and this was underlined as an advantage offered through pre-booking.

An issue was raised in relation to the ability of some drivers to become exempt from assisting wheelchairs despite the same drivers operating WAVs. This was considered a particular issue as the exemption is not immediately apparent and a vehicle may appear accessible as a WAV without being so as a result of the exemption. The issue of difficulties and hazards in handling wheelchairs was understood, but this did not replace the need for a WAV to be allied to an appropriate driver. It was felt that drivers with WAVs should be capable of assisting wheelchair users as appropriate to their need.

Concerns were raised in relation to the most common method of securing wheelchairs with back to the direction of travel. It was highlighted that this was considered uncomfortable and may represent a medical concern to a number of wheelchair users.

Nature of driver training

A common view emerged that a role was played by the driver being aware if and equipped to deal with issues arising from the carriage of individuals with specialist needs. It was considered that the vast majority of journeys were completed safely with appropriate assistance, and a number of examples were given of drivers going out of their way to be helpful. The picture was not consistent however, and the role that training would have in improving this level of consistency was discussed. A consensus emerged around the benefit of WAV drivers receiving appropriate training.

Individual Rank Issues

The design and appropriateness of a number of ranks throughout the city were highlighted. This was concentrated on locations considered to have poor deign. Particular note was made of Back Wynd and Union Square.

Minimum levels of rank design were felt appropriate, and this would include facilities for all disabled passengers to enter and exit from vehicles without issue. Back Wynd was highlighted as an example of offside loading precluding the use of a large number of WAVs. This effectively made the rank inaccessible to wheelchairs. The same situation arose in all locations where offside loading was normal. Some issues were raised concerning the railway station pick up place, with a further discussion regarding the unmarked bay outside the station serving Jury's Inn.

Concerns were expressed about cobbles restricting some forms of movement, and a further issue raised on the related matter of tactile paving. Particular concern was expressed as to the suitability of raised mettle studs, sometimes used as a form of tactile indicator, in poor weather. The mettle studs were felt to be particularly slippery in wet and snowy conditions, and this adding to the issues faced by partially sighted, rather than solving them.

A number of further issues were raised, with a particular reference made to the withdrawal of the Aberdeen taxi card, and the impact this had on the economics of using a taxi in the city.

3.5 Taxi Trade Consultation

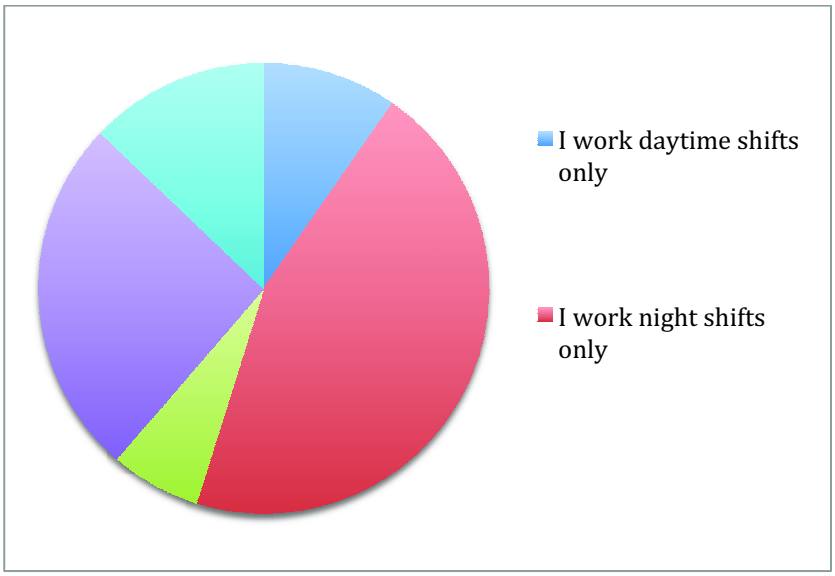
The study team sought the views of the taxi trade in three separate exercises. A taxi trade survey was posted out widely throughout Licence holders, with the same survey being available electronically. Focus group meetings were held with trade representatives and operator groups, and a further structured interview held with a representative of Unite, the union.

The taxi trade survey allowed for a review of the taxi fleet as well as factors affecting drivers choices. Specific consideration was also given to the issues raised in public and stakeholder surveys.

Drivers Hours

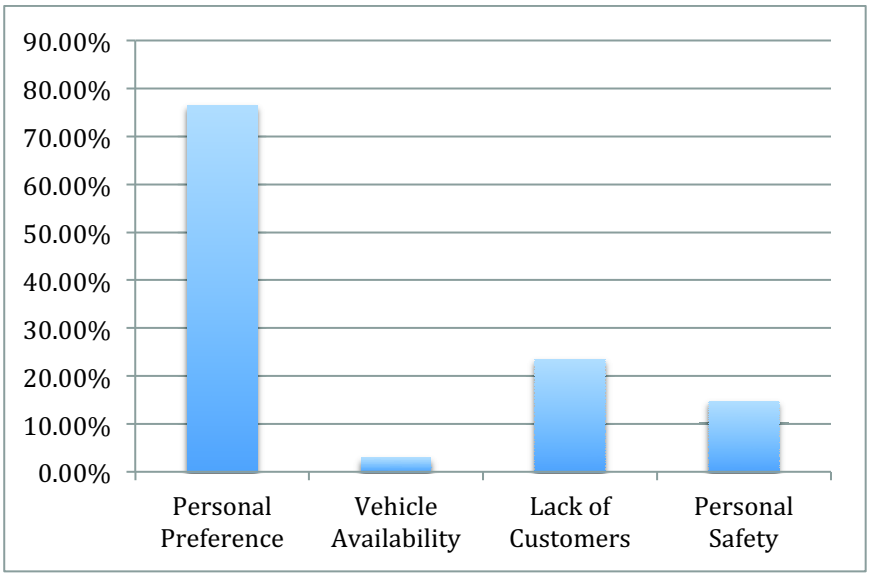
A consistent concern arises in public surveys in relation to the difficulty of engaging taxis at night. This relates to the levels of demand for services, particularly at weekends, and the choice of drivers to serve this market. Chart 17 illustrates the choice of shifts reported by respondents.

Chart 17 Working week shift choices



Working hours, stated within the survey, do not suggest an unwillingness to provide services at any particular time, and appear to suggest an even split between daytime and night time working, but would rather suggest that extended waiting times at night are more likely to result from significant peaks in demand than troughs in supply. Indeed the numbers of drivers working daytime shifts only appears significantly fewer than those working night shifts only. A further question within the survey sought to identify factors affecting choice of shifts, see chart 18

Chart 18 Factors affecting drivers' shift choice



A significant majority of drivers (77%) described their choice of working hours as a personal preference, with a relatively small number expressing concerns of safety (15%) as a reason for working at a particular time of day. A small number of respondents detailed abuse and nature of attack, but this does not appear to affect choice of shifts significantly. The majority of incidents reported appear verbal in nature rather than physical.

The survey sought individual views on wheelchair use, with a significant majority indicating that they had not been asked to carry wheelchair passengers from ranks. This fact is borne out in discussions with operator groups, and mirrors the comments made in accessible user panel discussion.

In response to the question whether there were sufficient ranks during the day 64% of respondents suggested that ranking space was insufficient. 78% considered there to be insufficient ranking spaces at night. A number of responses commented on the move to "super ranks" at night, and the consequential loss of ranking spaces in central side street ranks. A location of rank specific comments were made and are summarised:

- Bridge Street, appears to be confusion as to the status of the rank, many considering it to be closed at key times,
- Bon Accord, a need for ranks at the centre rear doors,
- Union Square being insufficiently served,

- Need for provision at Aberdeen Royal Infirmary
- Need for greater number of bays at Chapel Street
- Union Row needed better lighting
- AECC insufficiently served
- Aberdeen Bus Station insufficiently served

Further issues were expressed, with a significant proportion of drivers considering access to the airport rank a problem. The airport is serviced by a single contractor under Licence to BAA Aberdeen Airport, but this stipulation is relaxed at points of peak demand, using a system of “green light” access. A number of respondents considered that the green light was not being used appropriately or fairly. A large number of drivers considered the introduction of a Licence limit desirable.

Other responses are summarised:

- Railway station access was too restrictive,
- Wheelchair Accessible Vehicles were too expensive and not required. Some comments on alternatives including a limited period where WAVs would be required
- Companies or individuals should not be allowed to own multiple plates, hiring of plates should be avoided
- Nighttime super ranks were not required during the week. Though this issue was countered by a number of comments to the reverse

3.6 Operator Panels

In addition to the survey of drivers, the team undertook a number of meetings with operators. Discussion with operators followed the same format as applied in focus groups with user representatives, based on structured discussion. Operators highlighted a proactive role taken by the trade through the development of an Aberdeen Taxi Group, and that the trade was able to report through a single contact on the issues in consultation with the council. This was considered an example of good practice.

Nature of Demand / Supply

Changes in the market had occurred since derestriction, and it was considered appropriate to talk about both demand and supply in this context.

The market for taxi services in the city had developed since the lifting of a previous Licence limitation. The subsequent development of the trade was felt to have had a positive effect on supply and availability of taxis. One operator considered the ability to flag down a large number of taxis had worked to the benefit of the customer.

External economic pressures (the recession) played a role in the demand for taxis with a visible drop in demand for taxis. This has been somewhat cushioned in Aberdeen as a result of oil companies planning, but some considered this to have delayed rather than avoided a downturn. Responses within the oil industry to economic downturn from 2008 had impacted on the spending patterns of the oil industry from 2009, with a move in corporate transport on behalf of the oil companies falling sharply from 2009. Taxi contracts were being reduced with an increasing use of shared taxis by oil workers.

Nature of Fleet

It was considered appropriate and necessary that wheelchair journeys were allowed for without prejudice to the passenger. The majority of wheelchair journeys were pre-booked, and the companies were able to accommodate requests for specific vehicle types. Some of the dispatch companies used a system of “transfer” between WAVs and non accessible taxis, whereby the passenger is asked whether a trip could be “transferred” to a saloon vehicle if a WAV was not available.

Statistics were made available indicating that demand for wheelchairs represented 1.3% of all requested trips; with a further comparator of 2% of all bookings specifically requesting a saloon vehicle (Rainbow City Taxis, figures for September 2011).

A number of operators expressed views as to the efficiency of the airport green light system, though these were generally more favourable to the current system than similar comments amongst drivers.

It was widely understood and agreed that the airport was justified in seeking a dedicated fleet. The operation of the green light system was described, with an understanding of potential for conflict, and the suggestion that the system might not be engaged as fully as considered appropriate. An underlying feeling was expressed that the airport taxi operator, Comcabs, may be seeking to deploy their own city fleet prior to engaging the green light.

Reference was made to a derogation allowing airport fleet vehicles to operate within the city at weekend nighttime, though this was not considered to be a problem by the operators. It was suggested that only very few taxi drivers actually took advantage of the allowance. Indeed one operator considered the allowance to be beneficial to the use of taxis in the city. A general feeling was expressed that this represented a quid pro quo against city vehicles accessing the airport at points of high demand.

The existence of a supplementary permit fleet at the railway was considered. Unlike the airport, which is ostensibly restricted to a dedicated fleet; access to the railway station draws from the wider city fleet. One operator suggested that the operation of the railway fleet was more restrictive than that at the airport. Specific traffic management issues were felt to exist at the railway, described below under individual rank issues.

Nature of Driver Training

All operators considered it desirable to have a well-trained driver. The nature of the Aberdeen “taxi knowledge” test was discussed. Knowledge tests are a supplementary test required of taxi drivers applying for Hackney Carriage Licences. Not all cities chose to apply such a test, with a variety of levels of skills an competencies required in locations that do. The most well known test is that applied in London “the Knowledge”. The London knowledge test can be achieved in two years, with most candidates requiring four years.

Knowledge tests create a barrier to entry by restricting access to properly qualified individuals. The Aberdeen test takes 20 weeks to complete with a high level of attrition. It was suggested that only 10% of entrants will compete in one session.

The content of the test was described, as were the training schools run by some operators. The test addresses practical issues of geographical knowledge and driving, but was acknowledged as not addressing the handling of passengers. Some concerns were expressed about the costs and time involved in extending the knowledge test to include passenger handling and wheelchair assistance, though it was accepted by all that appropriate handling of wheelchairs was necessary and desirable. One operator suggested the SQV as an appropriate route for such training. “TopTaxi” was also presented as an alternative.

Individual Rank Issues

A number of rank issues were discussed, and these are summarised:

Chapel Street Rank, was not sufficiently large to accommodate vehicles wishing to use it, Back Wynd was not considered big enough to accommodate all vehicles. Conflict was recognised at the rear end of Back Wynd, and it was suggested that the entire road be allocated as a rank,

Access to the railway station was considered an issue, as was egress from the dedicated station rank. Both drop off outside Jury’s Inn and vehicles exiting the station rank were being held by traffic signals at the junction of the service road and Guild Street. Signal timing at these lights was a major issue and was leading to unnecessary delay to taxi passengers at peak times.

Union Street nighttime ranks were discussed with particular reference to the hand over fro daytime to nighttime use. This has created confusion in use, and has only slowly been fully understood by the public. Better and continued information was required. Despite the confusion, the current use has become recognised and the feeling was expressed that it should not be altered back.

The rank at Frederick Street was not being used and should be removed.

Rank facilities should be provided at the rear of Union Square (Union Square Markets)

Licence restraint and demand studies

In contrast to the views most commonly expressed by drivers, operators did not wish to see the re-introduction of a Licence cap.

The argument was made that any new Licence cap would not alter the current market for taxis, nor prevent individuals from entering the market as new entrants would move to the private hire market. Views on the effectiveness of a market equilibrium was discussed, and the view that a declining market automatically led to market exit. This did not require the imposition of a market intervention.

The period of the last 4 years was discussed with a general view that the market had achieved equilibrium at this point. The relationship between current equilibrium and fares was briefly discussed.

3.7 Grampian Police

The views of the Taxi Inspector for Grampian Police were sought, with discussion focused on the same areas as in previous stakeholder groups.

Nature of Demand and Supply

The inspector suggested that the supply of taxis across Aberdeen was generally in excess of demand creating an issue in the accommodation of taxis waiting passengers. This was replicated across the week and at most times, including at night, with the notable exception of demand for taxis at the weekend nighttime.

An issue exists in the hand over from daytime to nighttime use of taxis, and this has created confusion to the travelling public. The impacts of “super ranks” located on Union Street have taken time to get used, and these have now bedded in.

The issue of illegal taxi use at side street ranks at night was clarified and described in terms of an additional Licence condition precluding their use even for street hails, at night.

The view was expressed that the move to night time ranks on Union Street had become established, and that any reversion to side street rank use may be a confusion to the public. An possible solution may be to allow use of all ranks at night, ie: allowing the continued use of daytime ranks during night time hours in addition to those on Union Street, though it would be a specific police concern that all facilities were safe and monitored. This was more readily achieved through the supper ranks than on darkened side streets.

Fleet

It was not considered a major issue to the police that the fleet was mixed between accessible and non-accessible vehicles. This was an issue for the identification of demand and appropriate levels of supply. The figure of a 50:50 split was presented, and this was considered appropriate to meeting the observed demand for accessible and non accessible journeys.

Individual Rank Issues

Discussion concentrated on the performance of night time ranks and the use of these. Grampian police prefer super ranks as they are currently constituted in preference to alternative locations along side streets at night. A lack of visible signage was considered an issue as this led to some individuals standing at closed ranks. It was acknowledged that some pick ups continued at side street ranks though it was underlined this was against Licence conditions. Better signs were felt appropriate.

The lack of a taxi marshal at the Union Street / Castlegate rank was discussed and this was felt to be a budgetary issue. Taxi Marshals were felt to have a positive impact on the flow of taxis and behaviour of queuing passengers. Their continued presence was felt desirable.

3.8 Unite

A structured discussion was held with Mr Steve Robertson of Unite, the union. The discussion is summarised following the same structure as in previous stakeholder consultation.

Nature of Demand and Supply

The union underlined the nature of demand in Aberdeen was highly peaked toward engagement at weekend night time. This was considered a typical behaviour in taxi use and one replicated across a large number of cities. Despite the significant peaks in demand the delivery of taxi services even at peak times was good and comparable or better to many locations.

Fleet

The issue of vehicle composition in the fleet was discussed. The expense of WAVs compared to other vehicles was an issue, and it was widely considered that not all journeys would be appropriate to WAV use. The concept of a limited requirement to provide WAVs was suggested, effectively that Licence holders would be allowed to revert to saloon vehicles after a period of operating WAVs, though the practicalities of this were not discussed.

There was a feeling that the levels of taxis on the road was already in excess of need, and that it would be a logical step to introduce a limit to the expansion of the fleet. A cap placed on the entry of new operators would allow for individual drivers to recover a greater level of traffic and this would prove positive to the upkeep and future of the fleet.

Individual Rank Issues

Discussion focused on the use of taxi ranks in Union Street at night, and the issue of side street ranks. The night time ranks were generally liked, with some issues in their use

arising from locations close to bus stops. Queues into ranks were occasionally blocked by loading buses and, at weekend nights, this could be exacerbated by longer delays with buses waiting upto 5 minutes between journeys. As buses effectively blocked the line of sight to a rank taxi drivers were unable to tell whether space had become available on a rank. This was causing the problem of taxis being required to service a rank, but being unable to see this. This appeared to be a problem without ready solution, though the practice of observing the reflections of vehicle rear lights in shop windows facing the rank was outlined.

An issue was expressed at Bridge Street, and it was a surprise to some drivers that this rank had been opened up for night time use. A general feeling was expressed that the rank had extremely limited hours of operation. This said the rank was considered difficult both to passengers and drivers, particularly its location in a turning off Union Street rather than on the main drag. The view was expressed that the rank could be successfully moved round the corner to the southern carriageway of Union Street facing West. This would effectively serve the same night tie market more effectively and fall into line with other nighttime ranks on the street.

3.9 BAA Aberdeen Airport

The study team met with Mr Kevin Douglas, duty manager at Aberdeen Airport. The discussion followed the same format and is reported following the same headings as in previous meetings.

Nature of Demand

Demand for taxi use at the airport was directly related to the arrival of aircraft (derived demand), and reacted to schedules, delays and exceptional circumstances. The airport system had been designed with widely varying levels if demand in mind and allowed the airport to rely on the operating company to supply to a minimum service level. It was felt this was generally observed. Schedule changes affected the peaks in demand and the airport passed schedules and details of late arrivals. An example of flight schedules was given in respect of Paris and Amsterdam arrivals late at night.

It was noted that business flights, those arriving early morning and late evening, produced a greater demand for taxis, but this was not conclusive and could differ over time.

Nature of Fleet

The airport considered a mixed fleet to be appropriate to the needs of the airport. The rank was felt to be accessible and was unaware of any specific policies in relation to accessible vehicles.

Nature of driver training

It was felt appropriate that drivers were able to assist their passengers, and it was felt that the suppliers were able to do so.

Individual Rank Issues

The airport management were aware of the stated issues of allocating vehicles to passengers and felt that the current arrangement was working. The taxi marshal was good at allocating vehicles and was available at the head of the rank throughout airport operation. It was recognised that the fleet and marshal would remain available in the instance of delays to last planes.

The airport had invested in facilities and had lengthened the shelter to allow waiting passengers to remain dry. It was felt that the tunnel was sufficient to waiting numbers of passengers.

The airport duty manager would observe the taxi queue during the day and ensure that the call in procedure was operating properly. There had been very few occasions when it was felt not to be working, and the act of phoning the marshal had ensured no individual passenger was delayed. As a rule of thumb, the duty manager felt that the tunnel being no more than half full could be cleared within the agreed timescale.

4. Physical factors impacting on the taxi market

The third work strand relates to the identification of physical factors impacting on the ability of the taxi market to perform optimally, or affecting passengers use of taxi services across the city. The analysis was based on the development of a GIS framework applied to Aberdeen and comprising layers of information reflecting the various market elements, physical location and stated demand for taxi use.

4.1 GIS development

A proprietary GIS system, Quantum GIS, has been used to map the physical locations of taxi ranks across Aberdeen. Current Ordnance Survey mapping was sourced across the city, with an initial taxi rank layer applied. Raster based point information was then overlaid to provide physical rank description, including:

- Numbers of rank bays, as identified at each rank,
- Nominal location of head of rank,
- Movement patterns common to rank location, including access and egress patterns,
- Observed issues in rank use

Map 1, below, illustrates the location of taxi ranks in central Aberdeen. Two rank types are illustrated, Night time only ranks, located on the main drag of Union Street (A9013), operational during late night hours on all days of the week; and other taxi rank locations. Ranks located in the side streets facing on to Union Street serve restricted hours, with a hand over between daytime and nighttime ranks at midnight. The operational issues of hand over appear complex and this is discussed in more detail below.

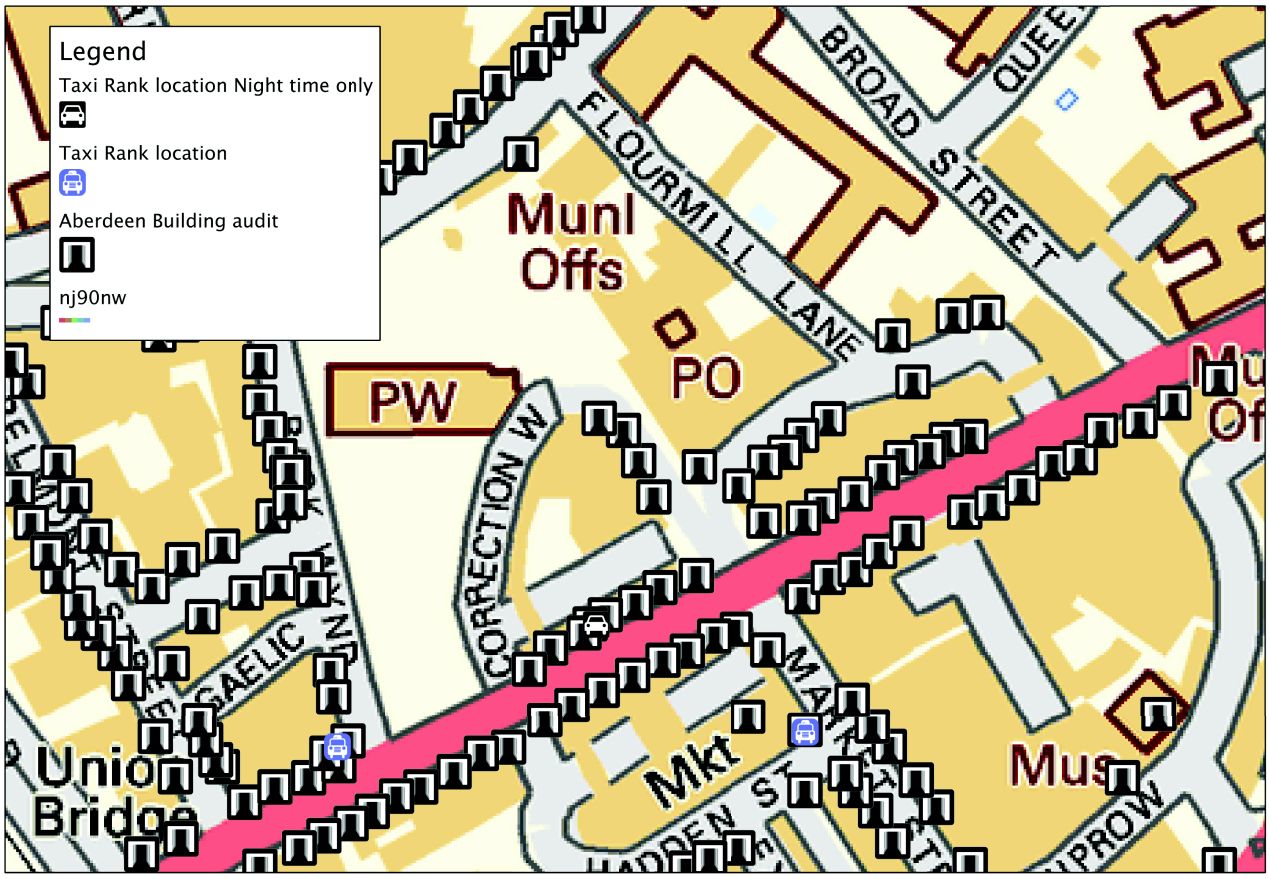
Map 1, rank locations in central Aberdeen

4.2 Taxi demand generators

In addition to identifying the location of ranks and their physical attributes as a GIS layer, we have further identified the location of potential demand generators across the city. Demand for taxi journeys will vary across time periods within a city and differ between city centre locations, where access to taxi ranks is common, and residential areas, where engagement is more typically achieved by pre-booking. We also note a correlation between central locations and cruising taxis, the cruising market most often supplied by taxis operating between ranks or returning to preferred ranking places. We have observed patterns of vehicle movement in Aberdeen suggesting a habitual "gravitation" to a known area for pick up, and this is replicated across cities in drivers' comments indicating "preferred ranks", sometimes allied to a view of the productivity, or likelihood of waiting passengers. In some instance, particular at times of reduced demand this may also relate to a social meeting place between known taxi drivers, though the evidence of the latter is not strongly supported in Aberdeen.

Taxi demand generators are identified through an iterative process of premises identification and user survey. The second layer within the GIS shows the physical location of active shops, restaurants and other typical generators. A full physical audit of central Aberdeen commercial premises has been completed and is entered on the GIS mapping base, illustrated in map 2.

Map 2, GIS mapping with rank location and premises audit, Back Wynd



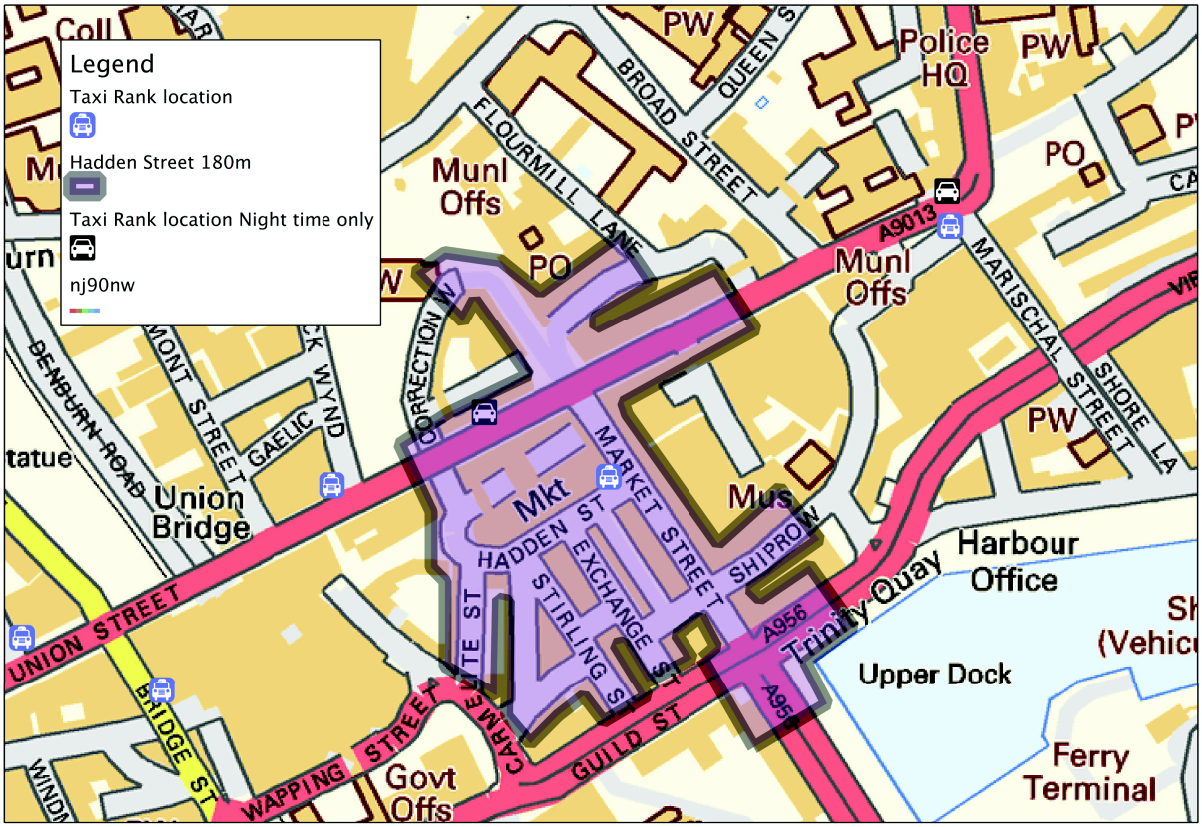
Map 2 illustrates all potential an overlay of commercial premises entries showing the head of rank locations at Hadden Street and Back Wynd ranks. Premises overlays are further defined into premises type, examples of which include nightclub, pub, local shop, supermarket etc., and by building size. A standard building size estimation is included and categorised as small, medium and large. Each building representing a potential for taxi trip production (trip origins), detailed below.

Trip demand generators, premises from which taxi trips might originate are allocated a production value on the basis of observed movement and stated origin, derived from pedestrian survey. This process allows specific premises to be allocated a trip production

factor, being an estimate of typical taxi demand by premises type and size. A further element, being the distance to rank is allocated with an optimal distance based on pedestrian surveys. We have sought two distance variables, a proximate distance, being the distance up to which a rank might be considered as close by, and a maximum walking distance, being the stated maximum beyond which a rank would not be used. Walking distance values are based on ambulant use in good weather, as weather conditions affect the desire to walk, lower distances are appropriate in inclement conditions. A separate calculation is applied to wheelchair use.

Walking distance to proximate ranks is entered as a GIS layer, see map 3, and demonstrates the effective attraction of ranks across the city. As most ranks are located to serve the market for taxis along Union Street, it is apparent that this market is well served. Gaps are noticeable, and these form the basis of subsequent analysis. It should be noted that gaps do not confirm absence of taxi services, but rather that ranking facilities are not optimal in those locations.

Map 3 Proximate distance zone applied to Hadden Street

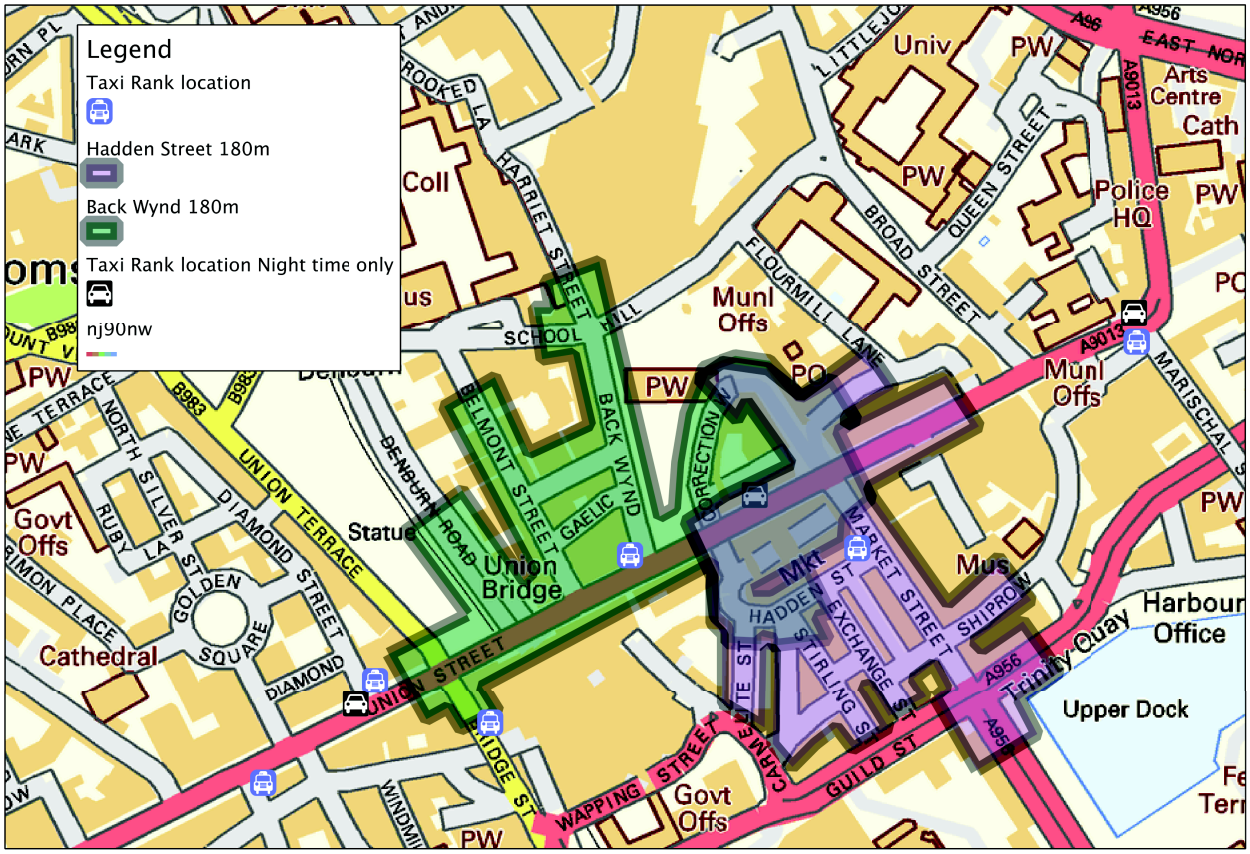


Map 3 illustrates the proximate distance surrounding the Hadden Street taxi rank. Trips originating within the shaded area would be likely, all other factors remaining the same, to use the rank located at Hadden Street. This assumes an equal and unbiased choice of rank with rank supply being appropriate and available. In the case of Hadden Street rank choice would also be affected by alternative ranking facilities, in this case Rank locations at Back Wynd, and further influenced by nighttime ranking policy.

Map 4 illustrates the effect of other ranks on demand for taxis at Hadden Street. Ranks located at Back Wynd and Shiprow may influence demand, as do the nighttime locations at Correction Wynd and Castlegate, though the effect of nighttime ranks is limited to the "handover" period between daytime and nighttime locations.

Rank choice may also be affected by perceptions of service reliability, the concept of a reliable rank, topographical and social characteristics of an area.

Map 4, Alternative rank zone intersection, Hadden Street / Back Wynd



The identification of premises trip production allows for more detailed analysis of rank impacts. This includes a review of the effect of any changes to ranks on:

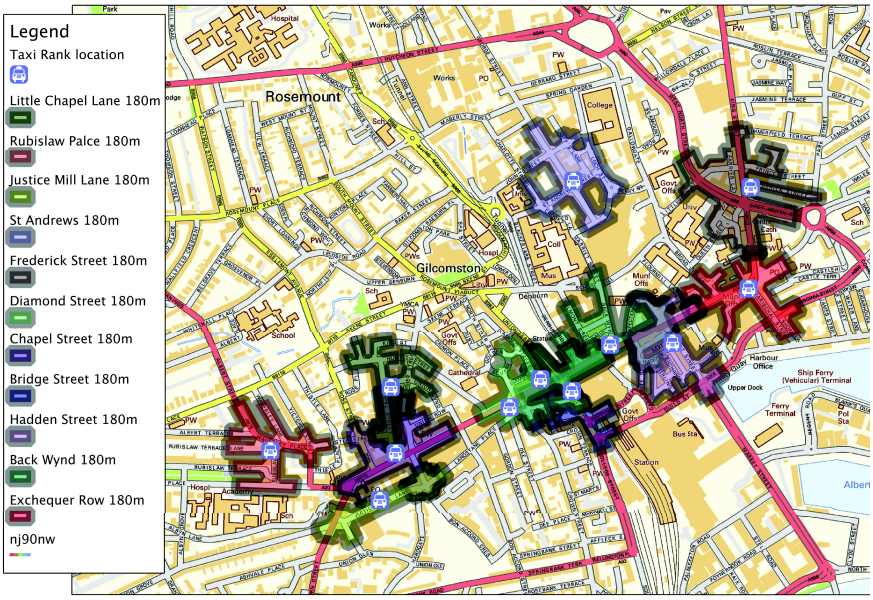
- Taxi Supply serving the rank under review,
- Taxi Supply serving nearby ranks
- Passenger demand in proximate area of rank under review
- Passenger demand at nearby ranks.

A further physical review is also included at individual locations to allow for detailed analysis for each rank. This providing for a review of both gaps in rank supply, oversupply, and physical factors affecting rank use.

4.3 Extent of Rank Coverage

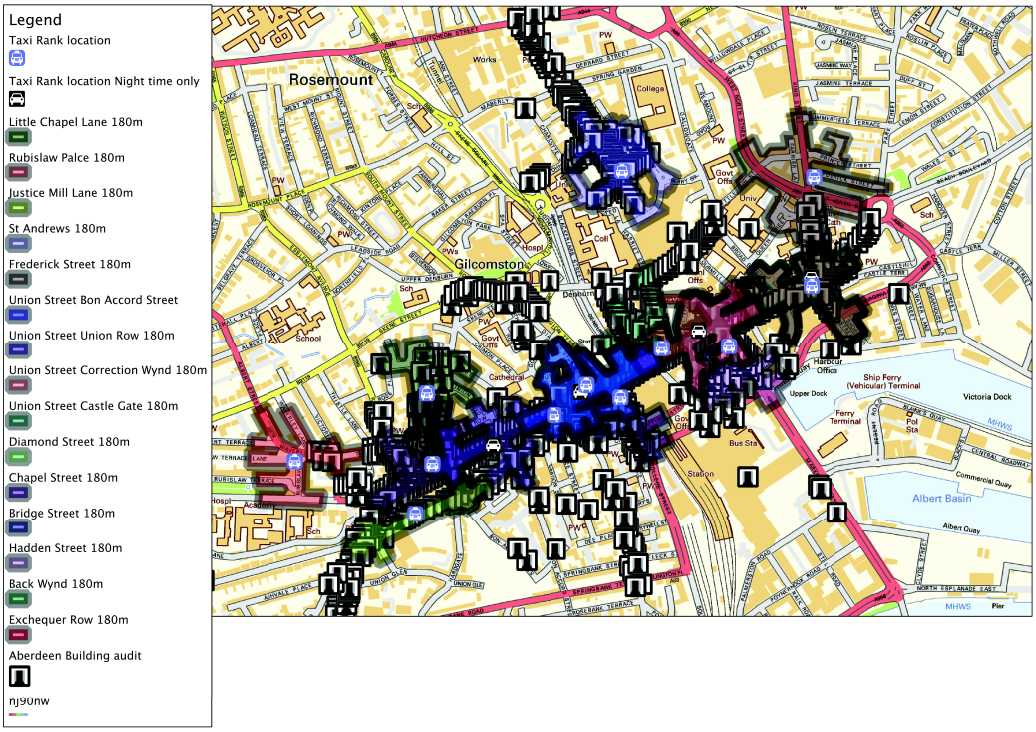
An initial test facilitated by the GIS model relates to the extent of taxi rank coverage within the city centre. The primary rank market contributes directly to the calculation of ISUD, and the extent to which the city is well served, or underserved, will impact on these results. Map 5 illustrates the extent to which the city is served by ranks. The shaded areas represent proximate distances of all daytime ranks.

Map 5 Aberdeen City Centre rank proximate zones



Both nighttime only and daytime ranks appear to serve the central area of Aberdeen well, and are particularly suited to origins along the length of Union Street. Gaps do exist, however, and are illustrated in Map 6 which overlays the premises audit data onto rank zones.

Map 6 City Centre zoning with premises overlay



It is possible at this stage to identify a number of gaps in provision, areas within the city centre that appear to be under supplied with ranks, including areas of Gilcomston, the southern stretch of Crown Street, the eastern end of School Hill, George Street, and the Market Street end of Union Square.

At the other end of the spectrum, a number of currently defined ranks appear poorly used or completely unused, an example of which being the rank at Fredrick Street. Low levels of use indicate a market response to low levels of demand, and this has the self-fulfilling effect of further reducing use of the location. Unused ranks are not neutral in impact, however, with an unused rank affecting expectation and tolerance of taxi services. This is particularly noticeable for visitors to Aberdeen who might, reasonably, attach assumed service levels to taxi ranks that would be disappointed where services were not provided.

In our group discussion the comment that such ranks may not be well marked in "any instance" suggested that the low service levels were offset by a lack of rank visibility. Whilst it is indisputable that rank marking and signage are limited across a number of ranks this does not justify the maintenance of an unused rank. It may be suggested that a lack of markings and signage may, in fact, contribute to the lack of use at a rank location.

4.4 Rank location audits

Allied to the development of a GIS framework, the team undertook audits of individual ranks. Rank audits contribute to a full understanding of the use of the rank, and allow for the identification of local measures that might positively impact on traffic flow and passenger experience. We have applied a common audit framework at each rank location, considering:

- Rank design
- Rank use by vehicles
- Rank use by pedestrians
- Physical accessibility
- Streetscape, Street furniture, lighting, shelter
- Traffic issues at rank

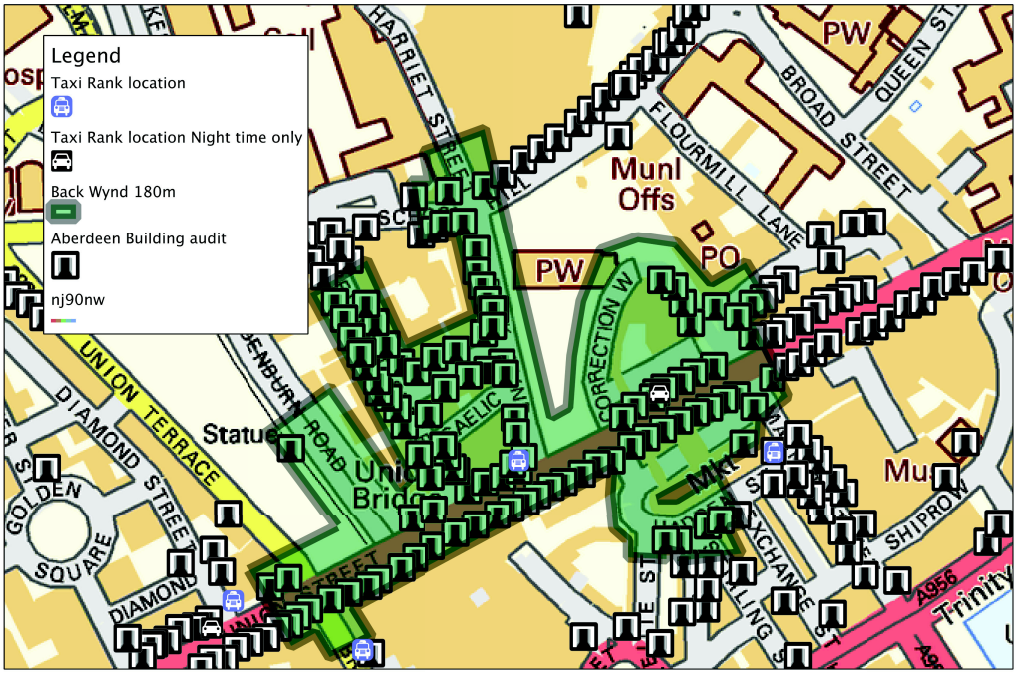
A further indicator is included of the general overall performance of the rank, measured in relation to the efficiencies of passenger boarding and overall use. This is further discussed at a rank level where performance appears constrained.

4.4.1 Back Wynd

Rank Characteristics:	
Allocated spaces:	15 vehicles
Operational Hours:	5am – Midnight, 7 days
Markings:	No road marking visible, rank designator on back of roadway no entry sign. 1 Finger post facing on opposite side of Union Street.
Marshals:	No
Location specific factors:	Specialised paving on roadway Site with conservation characteristics
Street Furniture:	None specific to rank
Overall performance:	Good, low levels of passenger delay

The rank at Back Wynd is observed as the busiest city centre rank for daytime use in Aberdeen. The rank follows a common pattern in central Aberdeen, of facing onto Union Street, serving the daytime market originating on Union Street, see map 7. Demand is also apparent from side streets to the rank itself and for passengers from School Hill. The rank demand zone intersects other rank locations at its southern end, with some dispersal of daytime demand to other rank locations serving Union Street.

Map 7, Back Wynd taxi rank with zoning and demand overlay



Rank design

The rank follows the length of Back Wynd as is located on the west pavement of a narrow road, figure 6. Commercial activity occurs on the west footpath with shop frontages situated in close proximity to the roadway. The eastern road length faces onto a high fence, with limited ability for pick up or activity. The rank requires offside pick up, which we would normally advise against. It is not possible, or would be extremely difficult to achieve near side pick up at this location without major engineering. The rank is intersected by one feeder side road, with a further conflict between ranking taxis and a marked "Green Badge" disabled parking bay, figure 7.

The rank appears to attract passengers from a variety of directions, though the majority are observed from Union Street. A head of rank is located at the junction with Union Street, though passenger arrivals, particularly from the North of the rank can result in mid rank departures.

Figure 6, Back Wynd Rank from Union Street

Taxi Behaviour

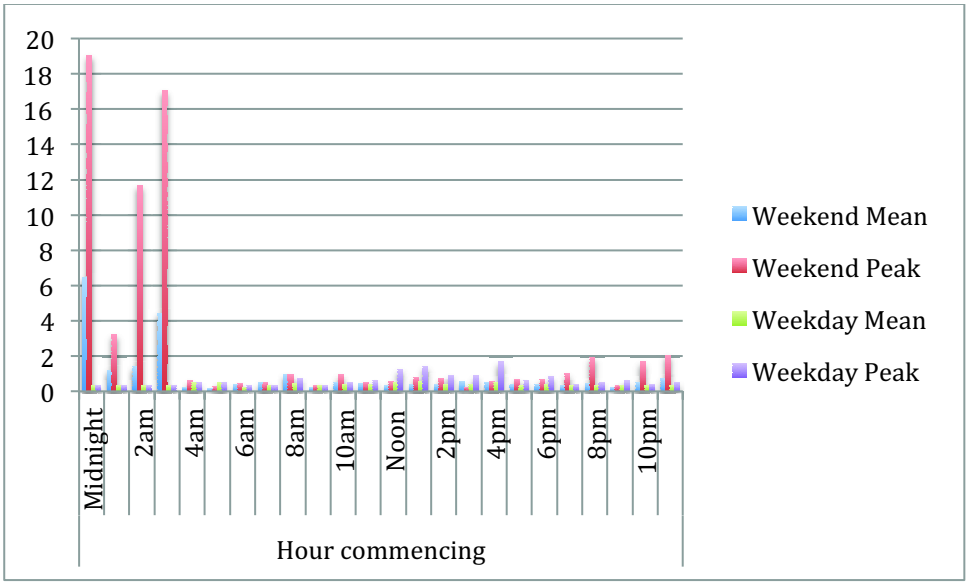
Taxis appear to operate well from the stance. No opportunity exists for U-Turns, and the majority of taxis observed operated in the first in first out sequence common in such ranks. A number of noteworthy behaviours have been observed in respect of taxi supply. In a small number of instances drivers appear to be selective as to the passengers picked up. Most particularly we note drivers moving away from a stand or “driving through”. Some instances of empty departures were noted.

Rank Use by Pedestrians

The rank at Back Wynd is one of the busiest in Aberdeen, and serves a central demand for taxis from shopping locations on Union Street and School Hill. Chart 19 tabulates the

waiting times experienced at Back Wynd. Despite high levels of demand, waiting times remain low, with means of less than a minute, and many trips served instantly. This is seen to the right of the chart with very low peaks in demand.

Chart 19 Demand profile, Back Wynd



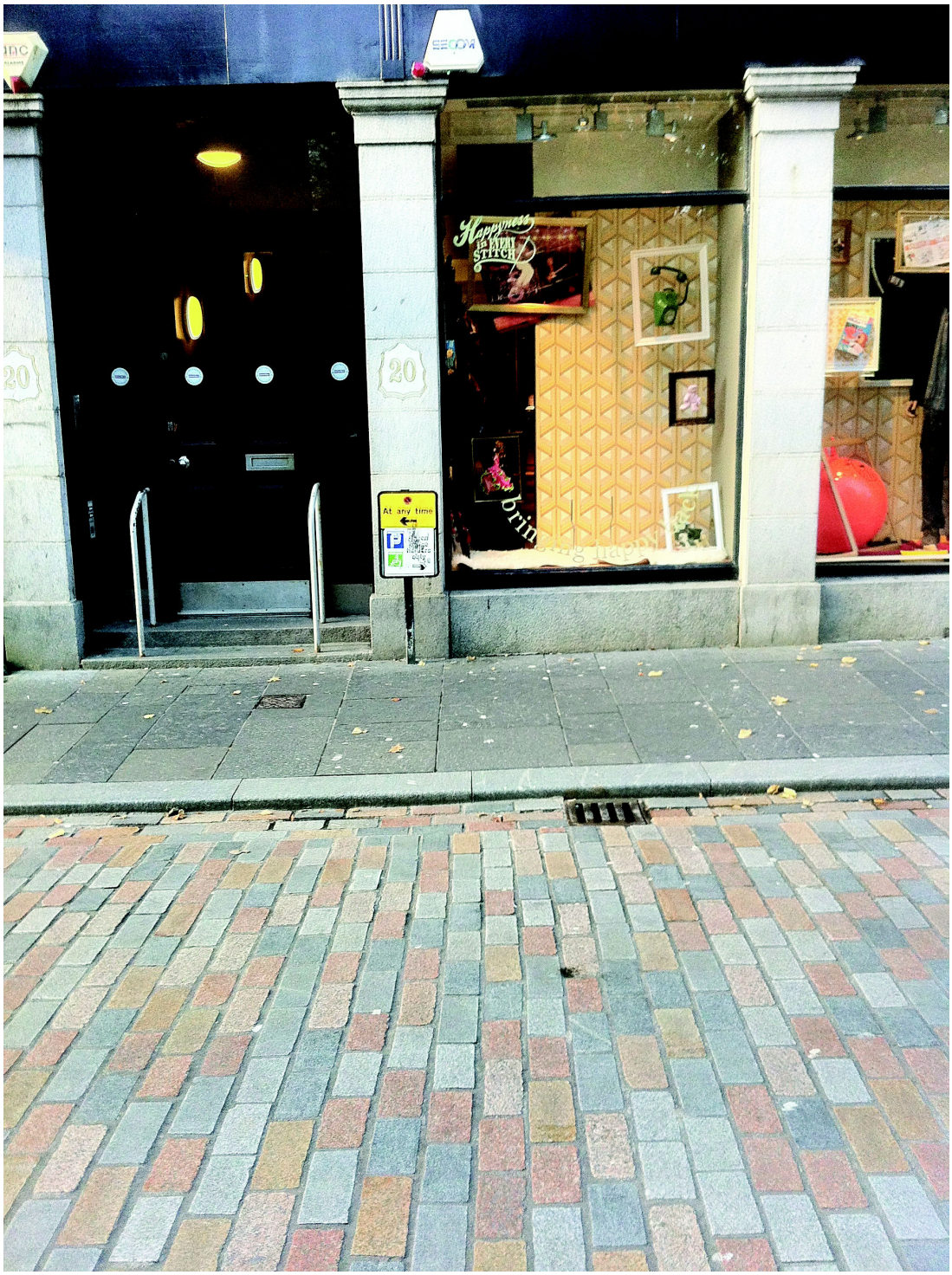
Unusual peaking is seen overnight, officially at times where supply has ostensibly moved to marshalled night time ranks along Union Street. Peaks of 20 minutes occur for a very limited number of passengers choosing to wait at the Back Wynd location rather than moving to the Union Street ranks. This is more indicative of a lack of clarity in night time rank etiquette than in any failings of the Back Wynd rank itself. Figure 7 illustrates the occasional use of taxis overnight from the Back Wynd rank.

Figure 7, Back Wynd overnight use

Passenger Mobility Issues

Back Wynd faces two challenges in relation to accessibility; conflicts arising from taxi incursion of Green Badge restricted parking areas, figure 8, and issues in the design of the rank itself.

Figure 8, Back Wynd Green Badge restriction



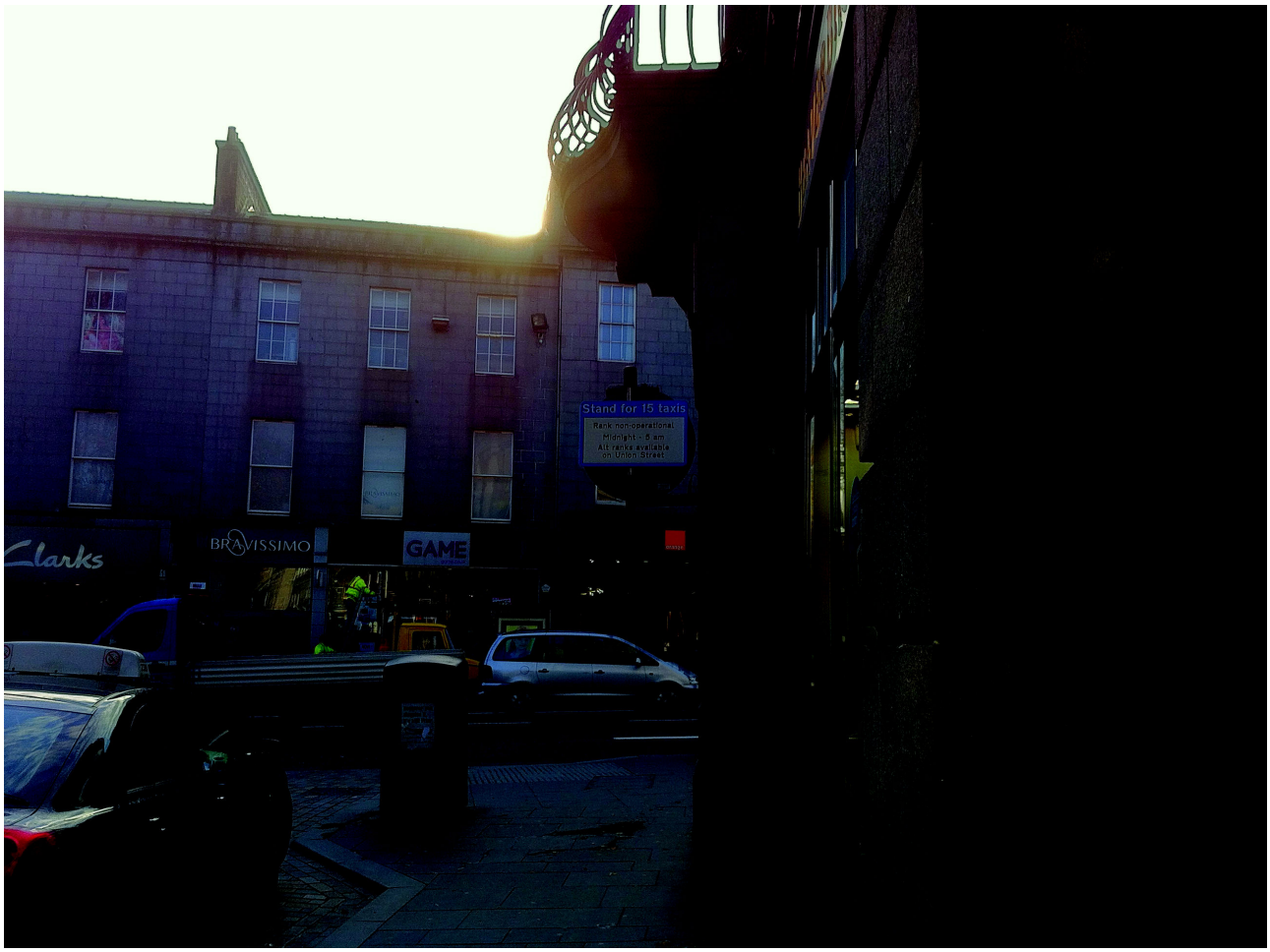
The rank is particularly affected by its offside loading, taxis loading from the right hand side in the direction of travel. As the majority of ramp equipped vehicles are designed to accommodate the loading of wheelchairs from the nearside alone, this presents a particular difficulty to the use of WAVs at this rank.

Streetscape

The rank is located alongside a narrow pavement without significant opportunity for additional facilities specific to use of the taxi rank. The location appears well known, and subsequently well used as a rank, but is limited in signage, an issue that appears repeated in a number of Aberdeen locations. Beside local knowledge the main rank signs relate to a blue finger sign located on Union Street, figure 9, and 1 official rank designator, figure 10.

Figure 9 Blue Finger Sign, facing Back Wynd

Figure 10 Official Rank designator, Back Wynd



Whilst the limited signs and markings allied to the Back Wynd rank do not appear to detract from local use of the rank, their absence is symptomatic of a wider issue in the city, discussed in more detail in section 5, below.

Traffic Issues

Vehicular access to Back Wynd is limited to access and taxis travelling in a southerly direction from School Hill. An access restriction sign is located at the northern end of the street, identified as the Belmont area zone, with similar constraints from Belmont Street. The rank covers approximately 2/3rds of the length of Back Wynd, with all traffic travelling in a southern direction, ie: toward Union Street. Conflict exists at the northern end of Back Wynd between the taxi use of the street and Green Badge bays from School Hill. Side street entries also have the potential to conflict with the rank. As demand for taxis can

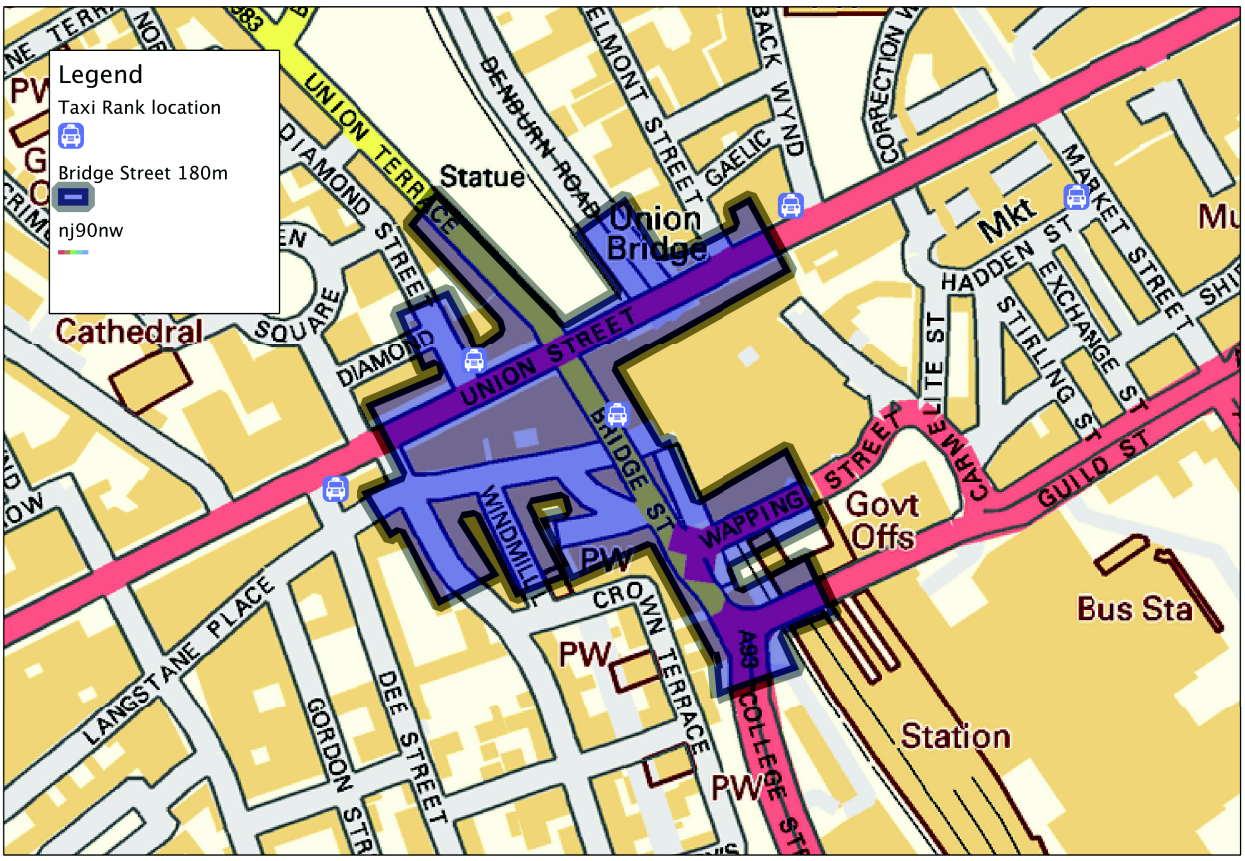
occur from either end of Back Wynd, and from the side entries it is possible that passengers may seek to use vehicles along the length of the rank, though this practice is not generally applied a number of mid rank departures were observed.

Nighttime demand appears to originate more toward the southern junction of the rank, see figure 15, and the same observed issues of hand over to nighttime ranks were observed on Back Wynd as elsewhere in the city.

4.4.2 Bridge Street

Rank Characteristics:	
Allocated spaces:	7 vehicles
Operational Hours:	Midnight to 6am, 7 days
Markings:	Road marking for taxis, intersects bus stop markings at lower end. Rank designator facing pavement at Travelodge entrance / Shopping Centre entry, on back of parking restriction sign. 1 Finger post at corner of Bridge Street / Union Street.
Marshals:	No
Location specific factors:	Night time rank intersects bus stop
Street Furniture:	None specific to rank. Two bus shelters along length of rank, and waste bins.
Overall performance:	Moderate, appropriate design with limited use

Fig 11 Bridge street rank with zoning

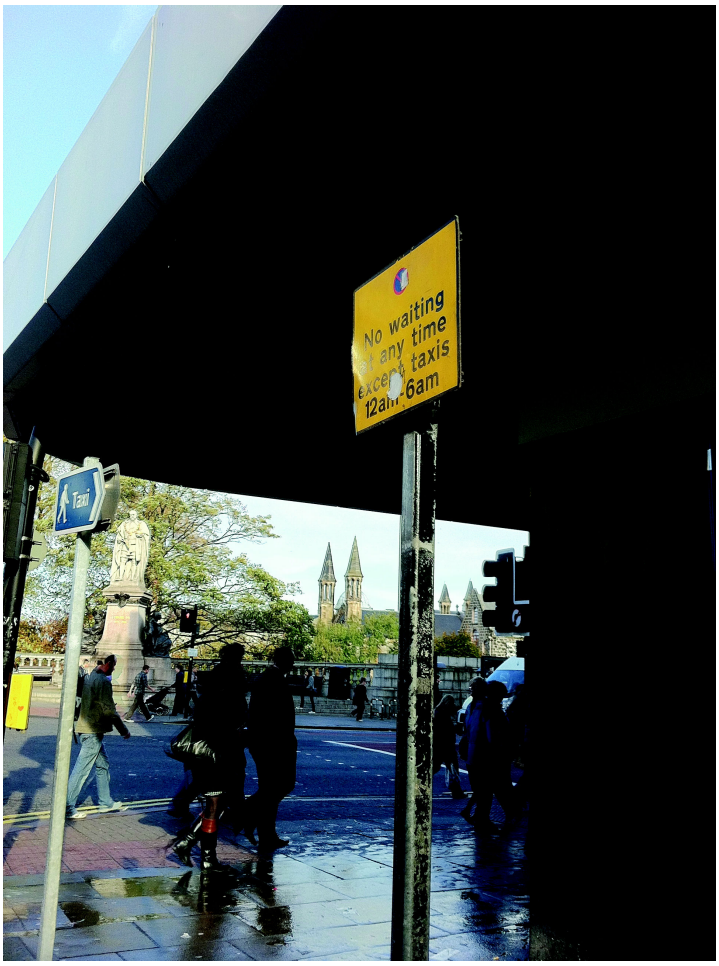


The rank at Bridge Street is used only occasionally and serves a market from mid Union Street, Bridge Street and Windmill Lane. The rank is collocated alongside two large bus stops and is operational at night.

Rank Design

The rank runs south along Bridge Street and is operational at night. Bridge Street is wide and rank bays are collocated for the majority of the length of the rank in two bus stops. As the rank is operational at night alone this tends to have limited impact on the use of the stops by buses. Commercial activity occurs above the rank, the mid and eastern sections of Union Street, and to the south of the rank on Bridge Street. The rank sits adjacent to the entry to the Travelodge Hotel, though very little use of the rank has been observed.

Figure 12 Bridge Street rank signing and finger board from Union Street



One difference is noted from the more normal patterns of use along Union Street, that the rank at Bridge Street is effectively a side street rank to Union Street that operates at night. A more typical patterns being that side street ranks are closed at night in preference to marshalled taxi ranks on Union Street itself. The rank benefits from relatively clear traffic markings, see figure 13.

Figure 13 Bridge Street rank showing street markings

Taxi Behaviour

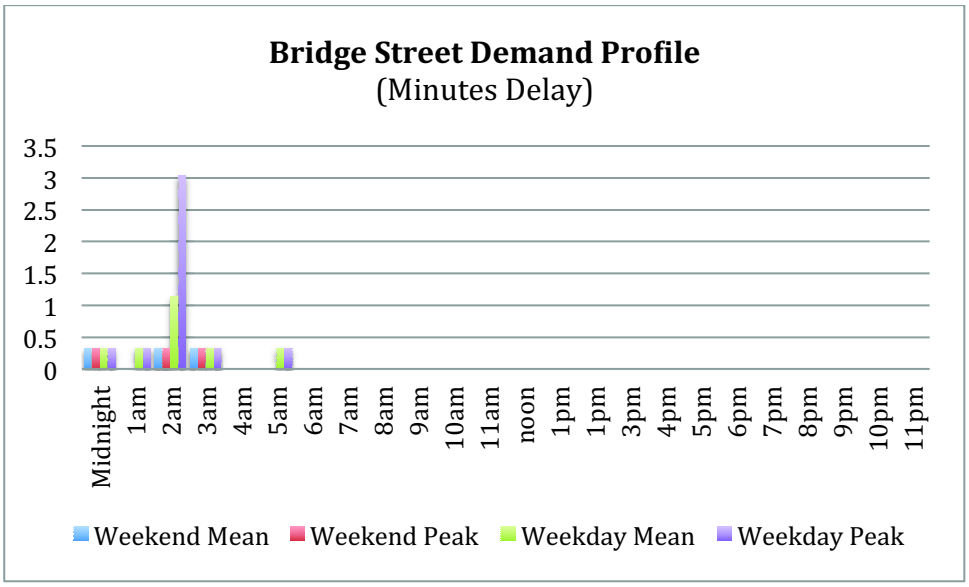
There appears to be relatively little use of the rank and, as such, it is difficult to predict the behaviour should the rank be more fully used. We have observed a maximum of two taxis standing at any one time, and these appeared to be resting between jobs rather than actively seeking engagement at the rank. There is no conflict or very little conflict between taxis and other traffic at the rank, mainly as a result of the rank's hours of operation.

Rank Use by Pedestrians

A similar problem in analysis of pedestrian use arises as for taxi use. Very low levels of rank throughput have been observed and it is not possible to predict, as a result, the impacts of higher levels of engagement at the rank. Chart 20 illustrates the very low levels of demand and waiting at the rank, with a peak waiting time of three minutes. It is

reasonable to conclude that no issues of unmet demand arise at the rank. The relocation of the rank from its current position to a location on Union Street directly to the East of Bridge Street departing to the west, would bring the rank into line with other night time ranks on Union Street.

Chart 20 Demand profile, Bridge Street



Streetscape

The rank is reasonably located for use from Union Street. Pavement facilities are appropriate to higher levels of use than observed, and the rank would be able to cater for use by wheelchair users accessing WAVs. The location is not well used, despite positive design and facilities, and this may be a result of the success of nighttime ranks located along the main drag of Union Street. Signage and street markings are appropriate to a higher level of use than observed.

Traffic Issues

Vehicular access to Bridge Street is unrestricted, with entry from Union Street. There are no limitations that affect use of the rank for entry, though some potential for conflict does

exist with the rank collocation on bus stops. In reality the low use of the rank minimises any actual conflict.

Overall Performance

The main consideration in assessing the Bridge Street rank is the apparent unwillingness on the part of passengers to engage taxis at the location. It is likely that the common approach in using night time ranks along the main drag of Union Street reduces the effectiveness of a side street rank available at night. The rank is located at the top of Bridge Street with a significant incline to pedestrian movement from the harbour or lower streets. Given the lack of use it may be appropriate to consider the removal of the rank in favour of the more widely used locations along Union Street.

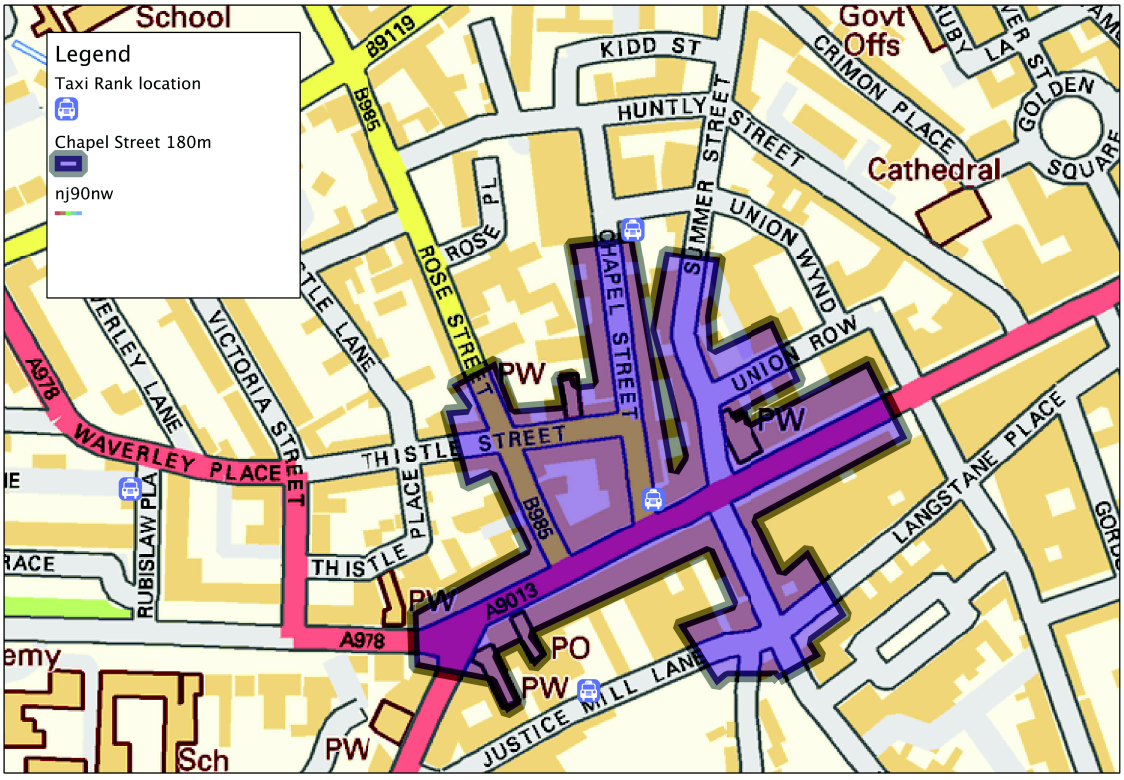
4.4.3 Chapel Street

Rank Characteristics:

Allocated Spaces:	7 Vehicles
Operational Hours:	5am to Midnight
Markings:	Appropriate road markings well defined rank bays. Rank designator self standing at head of rank. Finger post from Union Street.
Marshals:	No
Location specific factors:	None
Street Furniture:	None specific to rank
Overall performance:	Good, limited delay

The rank at Chapel Street appears well used and appropriate to demand. The rank has a steady throughput of passengers engaging taxis and follows a pattern of similar daytime ranks in serving Union Street demand between 5am and Midnight.

Map 8 Chapel Street zoning



Rank Design

The rank occupies a specific marked bay area at the southern end of Chapel Street. Commercial activity occurs along both sides of Chapel Street, with a further catchment along the western end of Union Street. The rank appears well signed with appropriate street markings. The rank allows for nearside loading of wheelchairs.

Figure 14 Chapel Street from Union Street

Taxi Behaviour

Taxis appear to operate well from this rank, with the vast majority of taxis following a first in first out pattern of movement. Occasional mid rank departures have been observed without passengers, and it is likely that these relate to taxis responding to radio calls. A manually placed “rank closed sign”, figure 15, is placed on the rank at night.

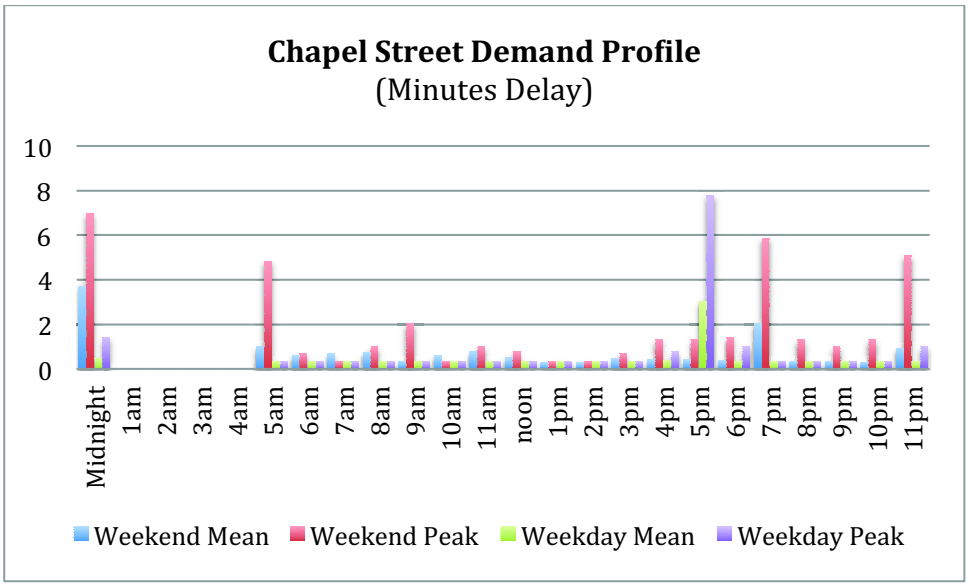
Figure 15, “Rank Closed” sign deployed at Chapel Street.

Rank use by pedestrians

The rank has a constant flow of passengers between 6am and midnight, see chart 21. Mean weekday delays are low, with some peaking around afternoon rush hours. A maximum passenger delay of 9 minutes was observed, with most periods demonstrating significantly lower mean values.

Hand over between the Chapel Street rank and night time ranks on Union Street appears to work well, and this is attributed in part to the use of a high visibility temporary sign.

Chart 21 Demand Profile, Chapel Street



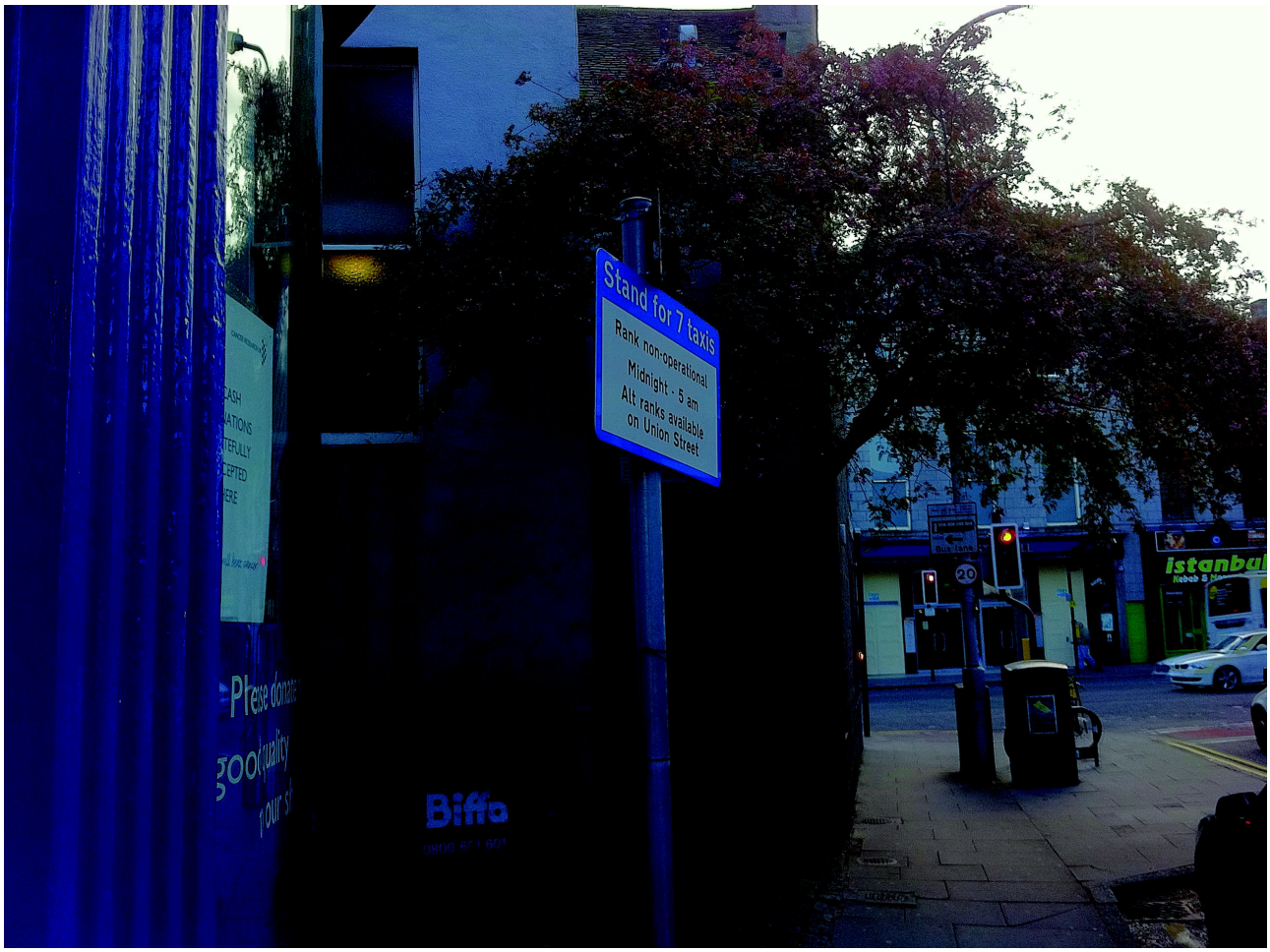
Passenger Mobility Issues

There appear to be no restrictions at the Chapel Street rank that would limit or preclude use of the rank by wheelchair users.

Streetscape

The rank is well located along the east pavement of Chapel Street, and this provides well for loading and unloading. A small restriction in pavement width occurs at the southern end of the rank, see figure 16. The rank is well marked, in comparison to many other central ranks, and pull in and pull out areas are hatched, see figure 17. The rank occupies a distinct bay area and this separates it from the majority of other traffic.

Figure 16 Chapel Street showing pavement restriction



Traffic Issues

Traffic entry to the Chapel Street rank can occur from Thistle Street, or along the northerly length of Chapel Street itself including access from Little Chapel Street and Huntly Street. Most traffic arrivals are from Thistle Street. There appear to be no conflicts between taxis picking up and other vehicular traffic.

Overall Performance

The Chapel Street rank appears to perform well and serve the market for taxis at this location.

Figure 17 Chapel Street Rank showing road markings at entry to rank

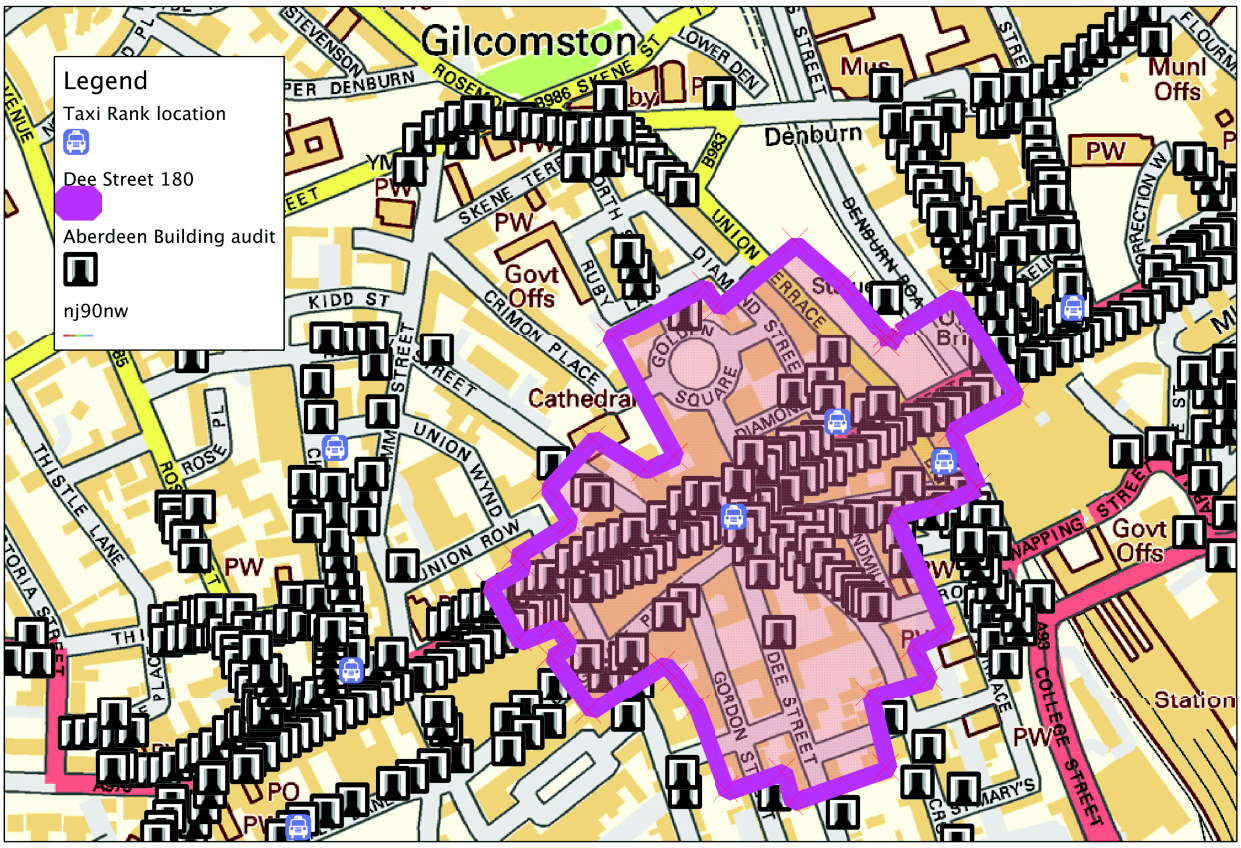
4.4.4 Dee Street

Rank Characteristics:	
Allocated Spaces:	6 Vehicles
Operational Hours:	5am to Midnight
Markings:	Appropriate road markings well defined rank bays. Rank designator self standing at head of rank. Finger post from Union Street. Some narrowing of pavement to accommodate taxi bays
Marshals:	No
Location specific factors:	None
Street Furniture:	None specific to rank
Overall performance:	Good, limited delay

The rank at Dee Street is one of a series of side street ranks serving the major market on Union Street. The rank is used at most times of day, with limited passenger delay across the day. The location does however appear less well used than other side street ranks and this can result in longer waiting times for passengers as taxis chose to serve other rank locations.

The rank is located on the easterly pavement, see map 9, and this promotes the departure of vehicles south, away from Union Street. The catchment area for the rank, map 9, covers a substantial number of demand generators, but intersects a number of other rank catchment areas, of ranks located at Diamond Street and Little Chapel Lane.

Map 9 Dee Street with zoning and demand overlay



Rank Design

The rank is situated from the junction of Union Street facing south, see figure 18. The rank is appropriately designed with clearly marked bays and occupies a layby area creating a narrowing of pavement width. A majority of passengers using the rank enter from the north, which requires an additional walk to reach the head of the rank when occupied by multiple vehicles, though additional demand does exist from other directions.

Taxi Behaviour

There are no impediments to rank use, and the entry of taxi to the rank is from Union Street. There appears no issue in traffic control at the rank.

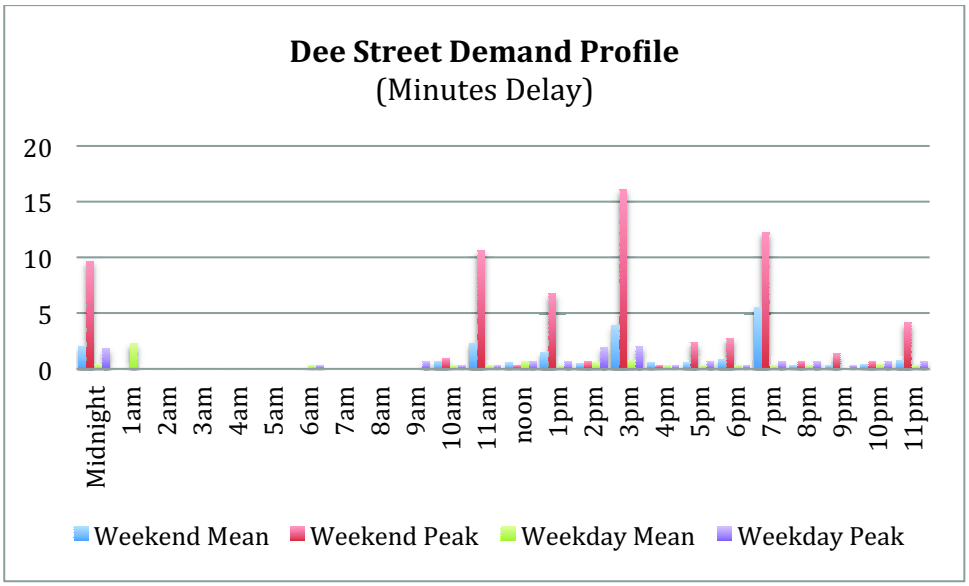
Figure 18 Dee Street showing waiting taxi

Rank use by pedestrians

The rank at Dee Street appears underused but not without passengers. Some peaking is observed, but this is mainly a result of taxis choosing to serve other ranks, than any systemic failing at the Dee Street rank.

Passenger delay peaks appear particularly acute at weekends with some extended waiting times of up to 16 minutes, though mean values peak at 5 minutes, also on weekend daytime.

Chart 22 Demand Profile, Dee Street



Overall performance

The rank at Dee Street has some issues particularly at weekends in delay, and this limits the overall performance of the rank. A primary issue does not appear to be systemic in nature but more related to driver choices of rank location, and this has impacted on supply at some periods.

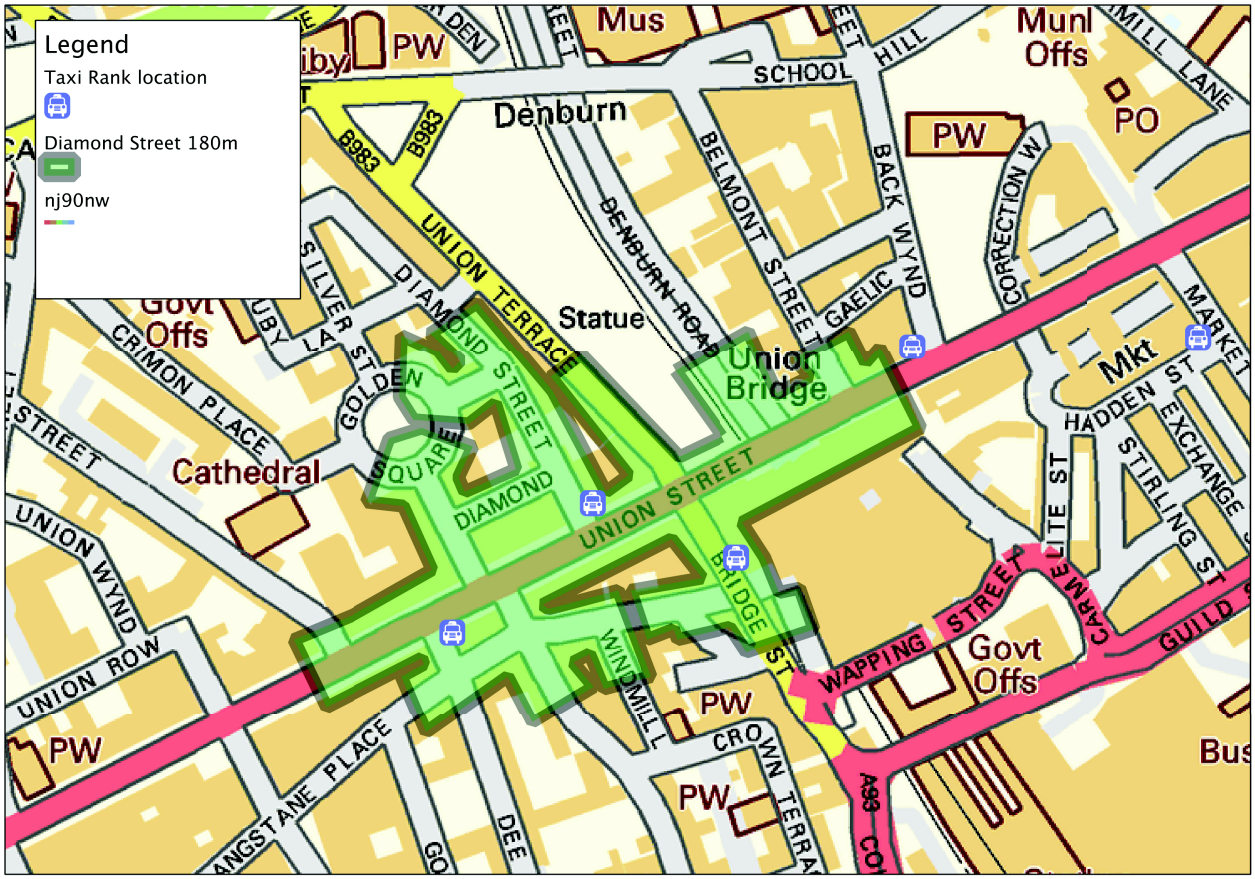
4.4.5 Diamond Street

Rank Characteristics:

Allocated Spaces:	2 Vehicles
Operational Hours:	5am to Midnight
Markings:	Standpole rank designator present, but no further markings.
Marshals:	No
Location specific factors:	Very restricted street width
Street Furniture:	None specific to rank
Overall performance:	Rank appears unused

The rank at Diamond Street appears to be unused, with very occasional taxi drop offs / pick ups associated with adjacent night club.

Map 9 Diamond Street Rank Zoning



Map 9, above, illustrates the potential catchment area served by the Diamond Street rank, and its proximity to other rank locations. It is likely that the lack of street markings has limited knowledge of the presence of the rank, although standpole and arrow indicators are both present. It is also possible that the restricted road width and difficulty in access to the rank limits its desirability to the trade.

We have observed more use of the area for parking private cars than movements associated with taxi use.

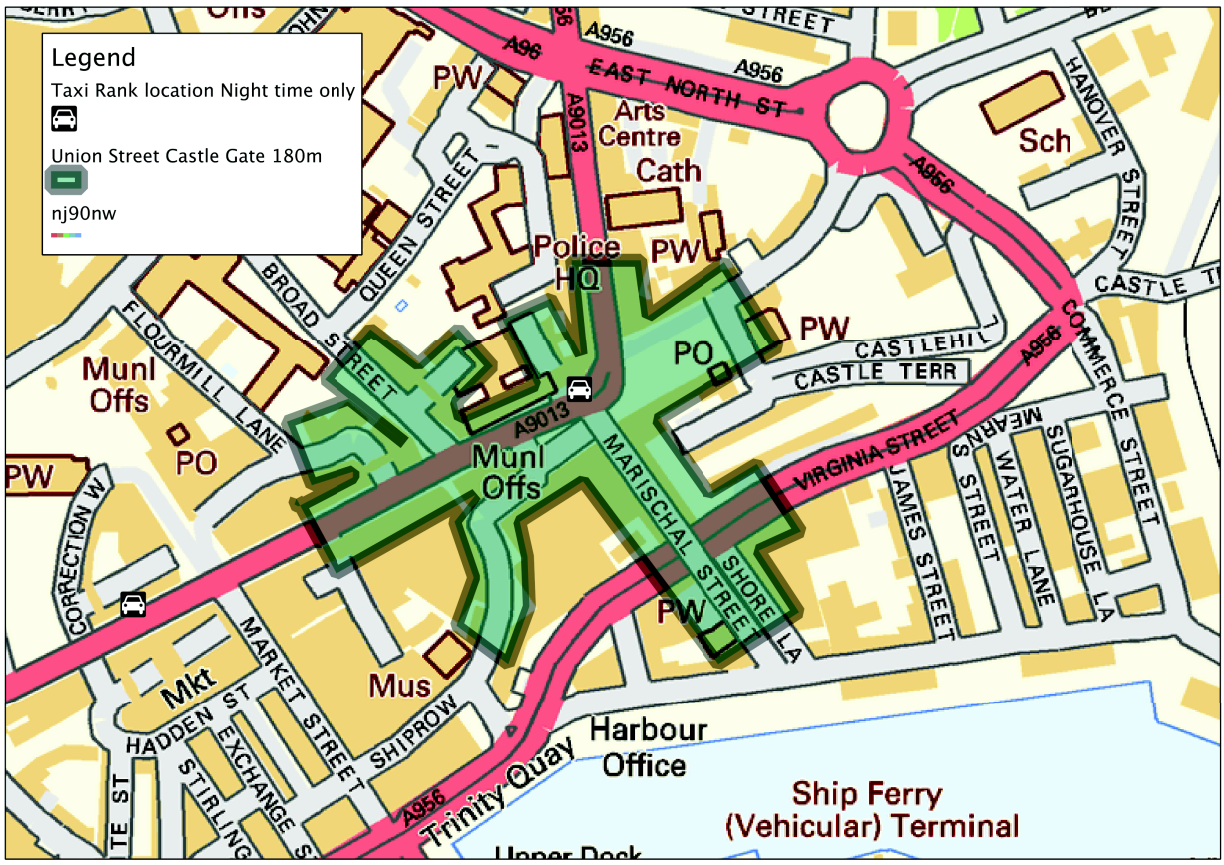
Figure 19 Diamond Street rank showing night club

4.4.5 Union Street at Castlegate

Rank Characteristics:	
Allocated Spaces:	Vehicles coincide with bus stop bays
Operational Hours:	Midnight to 5am
Markings:	Appropriate road markings well defined rank bays. Rank shared with bus stop in at grade layby. Contradictory finger posts at top of Shiprow.
Marshals:	No
Location specific factors:	Shared infrastructure with bus stop
Street Furniture:	Shared bus stop shelter
Overall performance:	Good, except when conflicting with bus movements

The Castlegate rank is the latest of a series of nighttime ranks located along Union Street with a catchment area appropriate to night time taxi supply, see map 10.

Map 10 Castlegate rank with rank zone



The rank differs from other Nighttime ranks along Union Street insofar as it is not controlled to the same extent as the marshalled “Super Ranks” located along central and western stretches of Union Street. There appears to be some conflict between the use of the rank by taxis and night buses, both of which are legitimately entitled to use the same bays. Figure 20 shows the rank used for taxi pick up, figure 21 showing the same location used for bus loading. It is also noted that bus dwell times at the stop can be extended periods of time, causing potential conflict with the use of the location by taxis.

Figure 19 Castlegate rank showing taxi pick up

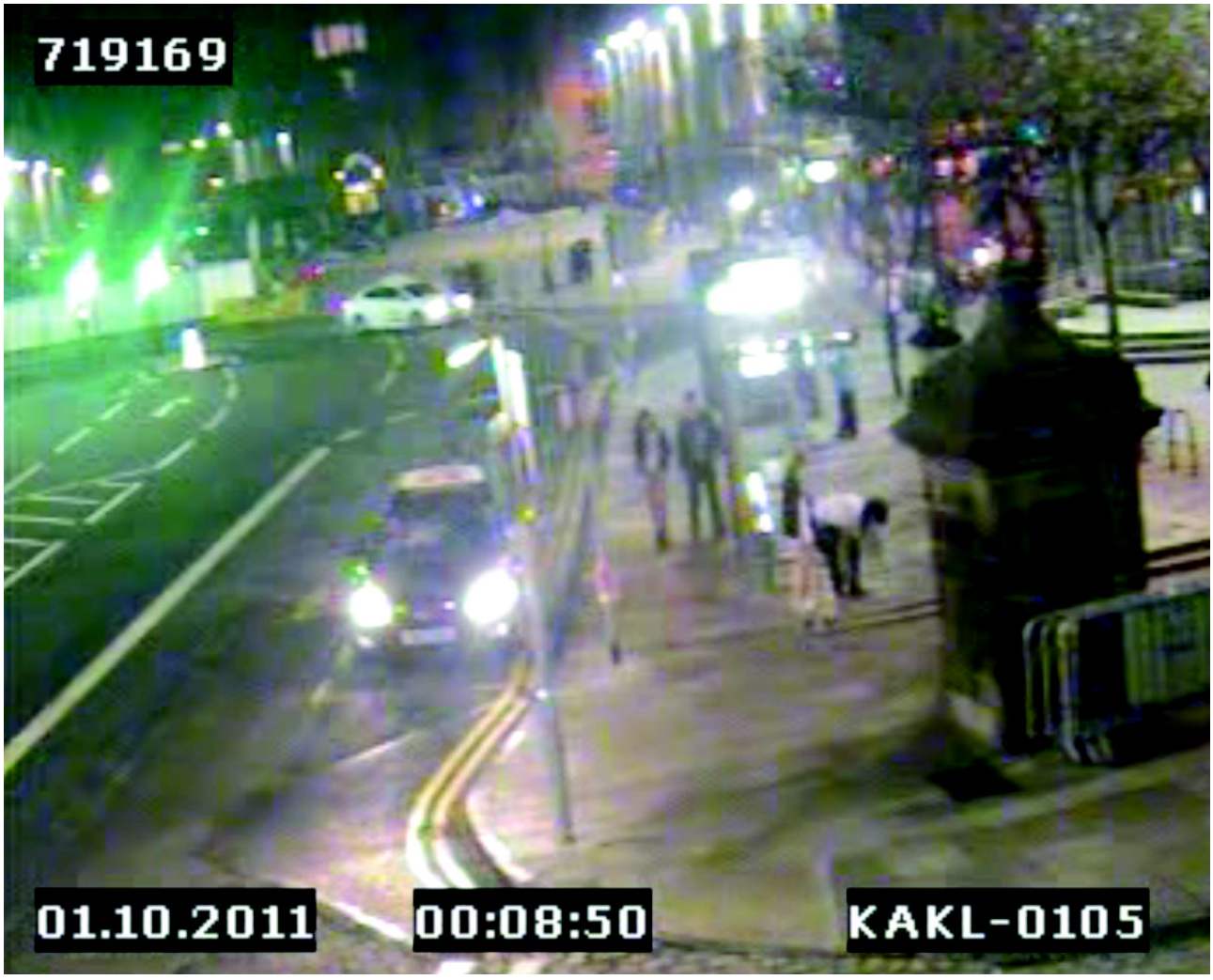
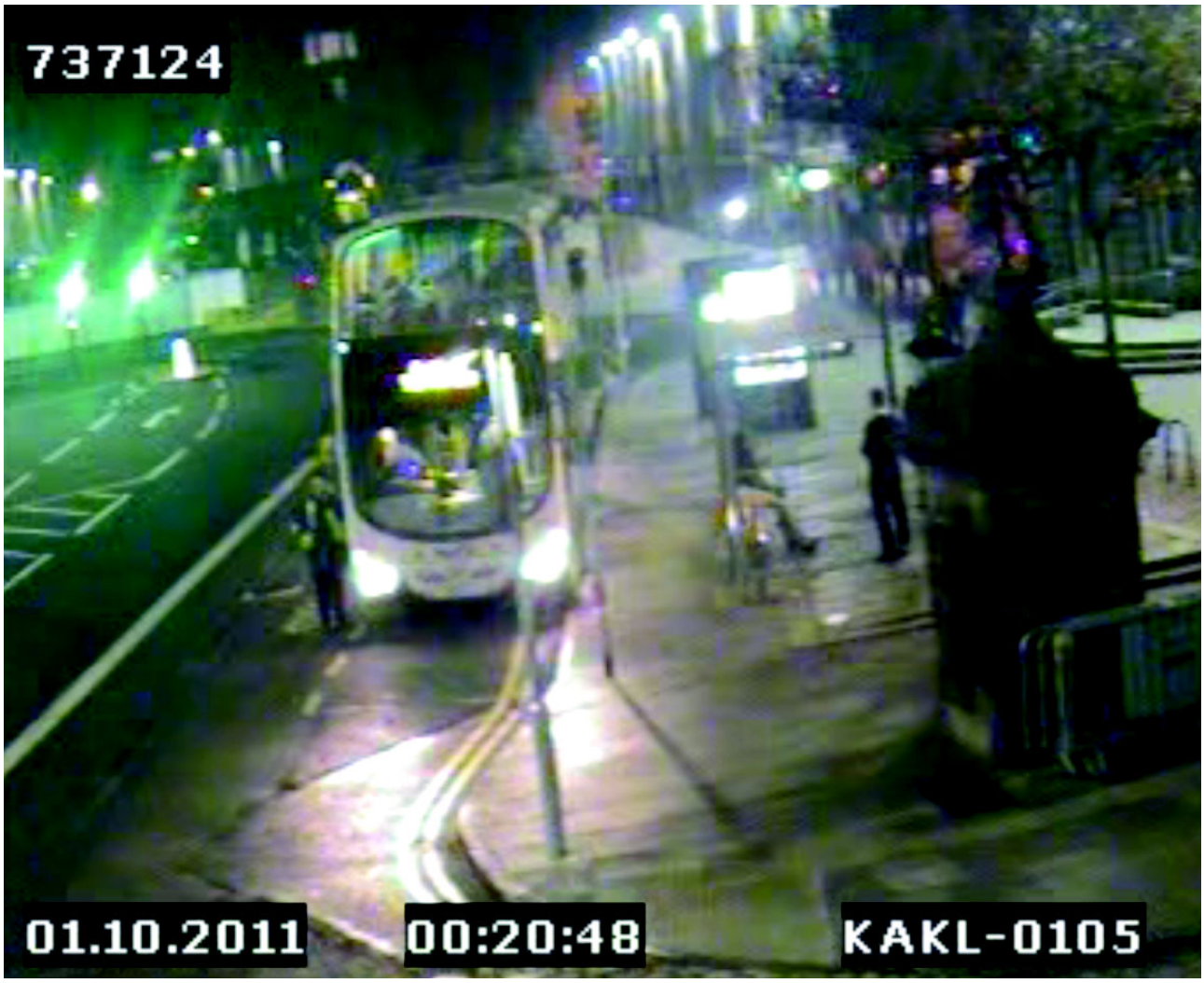


Figure 20 Castlegate rank showing bus waiting



Rank Design

The Castlegate rank is collocated in a bus stop and is active for nighttime periods alone. The rank has no taxi specific features other than road markings. Given that passenger facilities are already provided specific to bus use, the rank appears attractive and is well lit. Finger signs are present at the top of Shiprow / Exchequer Row, though these point in opposite directions to each other and appear contradictory.

Taxi Behaviour

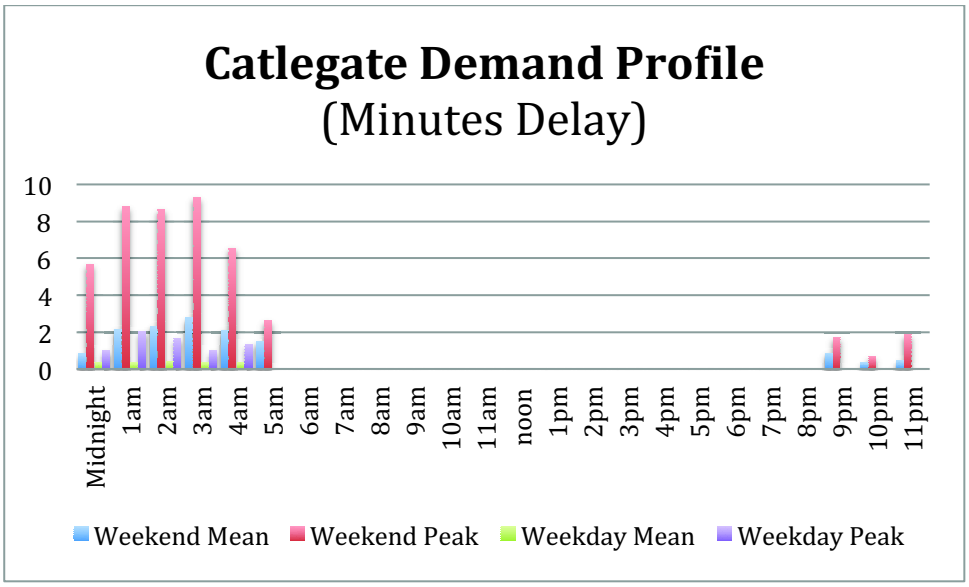
Taxis operate well at the rank when buses are not present. Buses located in the rank reduce the capacity of the rank to one vehicle, which will often pull up alongside rather

than in the rank. Buses in the marked bay reduce visibility both of passing taxis looking for passengers and passengers looking for taxis. The occurrence of this conflict remains limited to bus times.

Rank Use by Pedestrians

The rank is less used in comparison to other nighttime ranks along Union Street, but does get constant traffic coinciding with pub and club closing. Chart 23 indicates the demand patterns at the rank.

Chart 23 Demand Profile Castlegate



Nighttime peaking at the weekend results in delays of up to nine minutes, with an average delay of 2.75 minutes over the same period. Weekday demand at the rank is far lower,, with minimal delays, peaked at 1.3 minutes, and averaging 1 minute.

Passenger Mobility issues

There are no direct mobility issues at rank, with the allocated bays appropriate to loading all users and accommodating any vehicle type. This is limited, however, in instances when buses are present, as the majority of stopping taxis do not pull in parallel to the kerb to avoid conflict with buses.

Streetscape

The rank is well lit and appropriately protected from the weather by the bus shelter. There are few issues with street furniture, but an issue with contradictory blue finger signs on the occasion of our audit.

Overall Performance

The rank appears to operate well with the exception of conflicts with night buses. Without wholesale move of the rank we see little that can be done to mitigate this, and underline that its occurrence is limited.

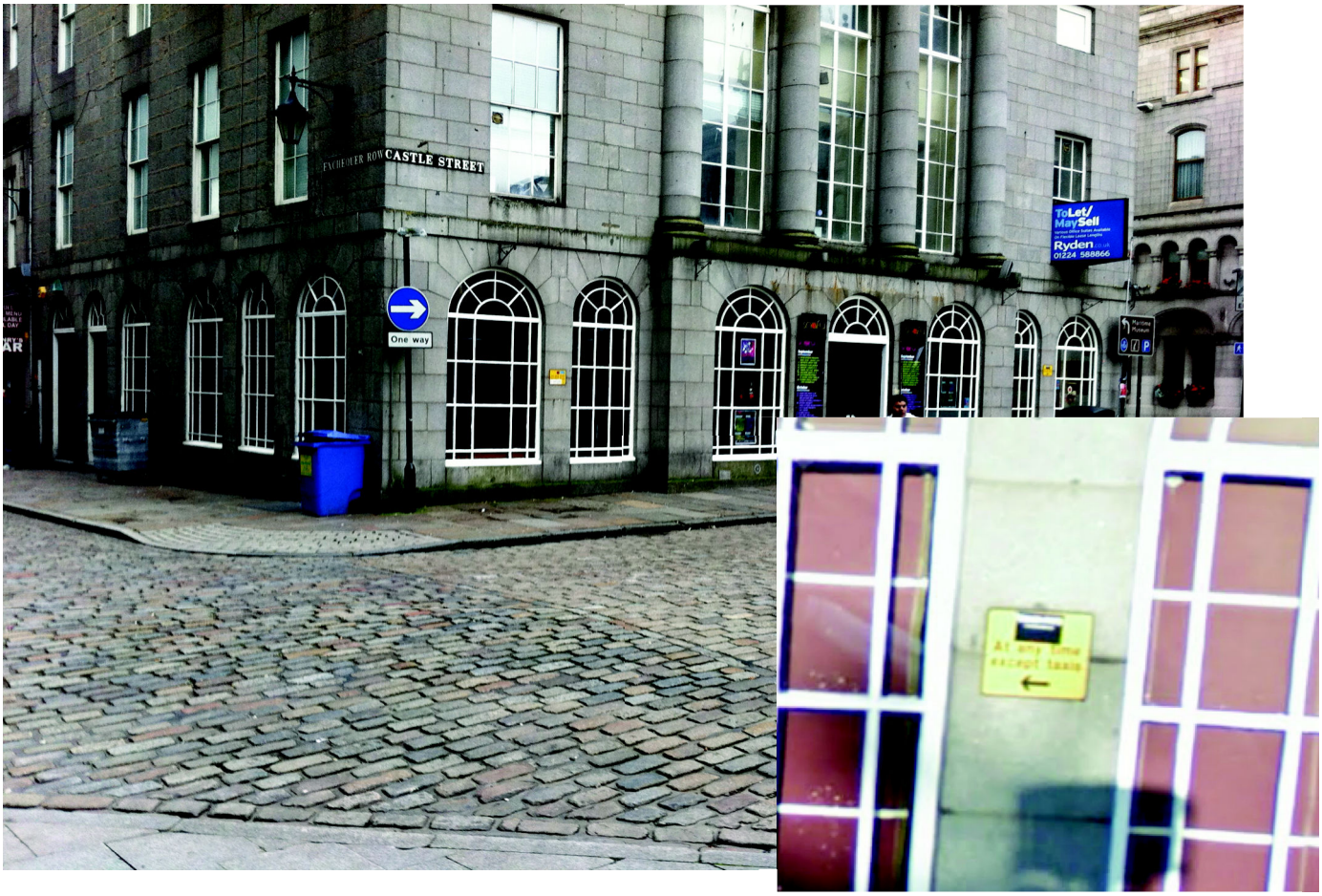
4.4.6 Exchequer Row / Castle Street

Rank Characteristics:

Allocated Spaces:	Not specified
Operational Hours:	Not specified
Markings:	None. Parking restriction signs indicate taxi spaces
Marshals:	No
Location specific factors:	Directly adjacent Union Street at Castlegate rank
Street Furniture:	None specific to rank
Overall performance:	Rank appears unused

Spaces for approximately 3 vehicles directly outside the SNAFU bar appear to be marked as a taxi rank by yellow parking restriction signs, illustrated in figures 21 and 21a. The rank appears unused.

Figure 21 and 21a(inset) Exchequer Row / Castle Street taxi signs



4.4.7 Frederick Street

Rank Characteristics:

Allocated Spaces:	Not specified
Operational Hours:	Not specified
Markings:	None. Parking restriction signs indicate taxi spaces
Marshals:	No
Location specific factors:	Directly adjacent Union Street at Castlegate rank
Street Furniture:	None specific to rank
Overall performance:	Rank appears unused

Parking restriction signs located at the western end of Frederick Street indicate the presence of a taxi rank, see figure 23. The rank appears unused by taxis, see figure 24. The location, facing Gala Bingo appears widely used by parked cars.

Figure 23 Taxi rank waiting exemption markings

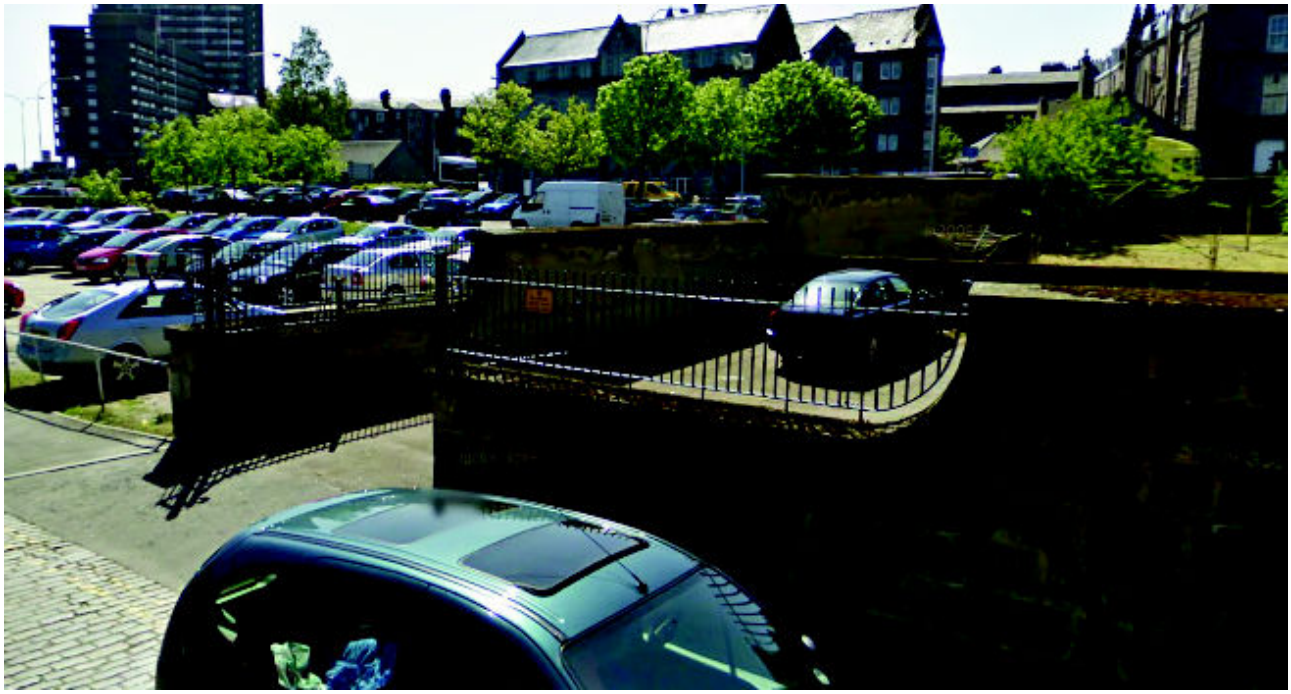
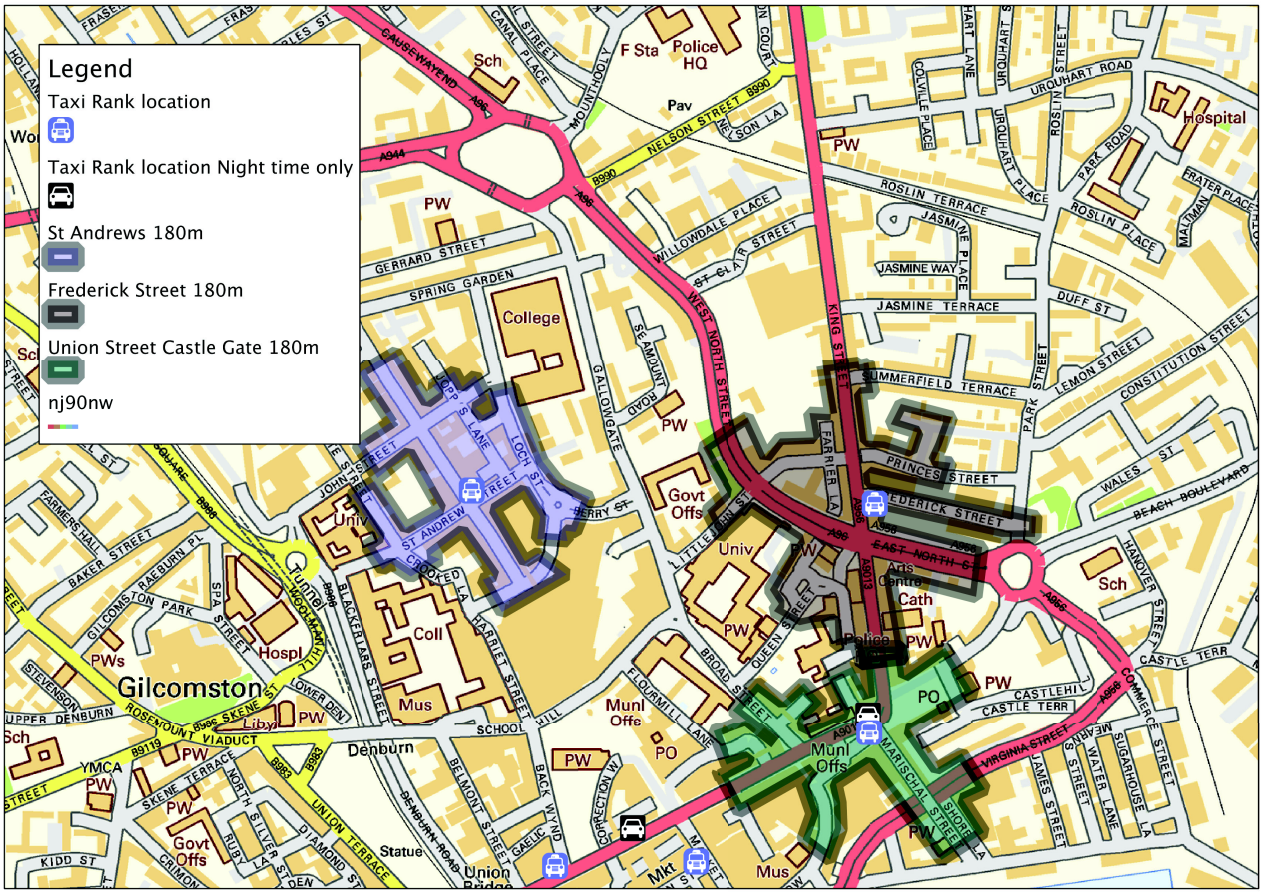


Figure 24 Taxi rank use by waiting vehicles

Impact of unused rank, Fredrick Street

Unlike the location at Exchequer Row / Castle Street, which benefits from immediately adjacent ranks, the location at Frederick Street has no immediate alternatives, see map 11.

Map 11 Frederick street showing zoning and rank intersects



Map 11 shows the inetersections between rank alternatives to Federick Street, and demonstrates that both alternatives to the south and west of the Ferderick Street location sit outwith stated comfortable walking distances (proximate zone). It is likely that the general lack of knowledge of the rank has supressed use from Federick Street to the extent that the stated ranking area is not considered in trip planning.

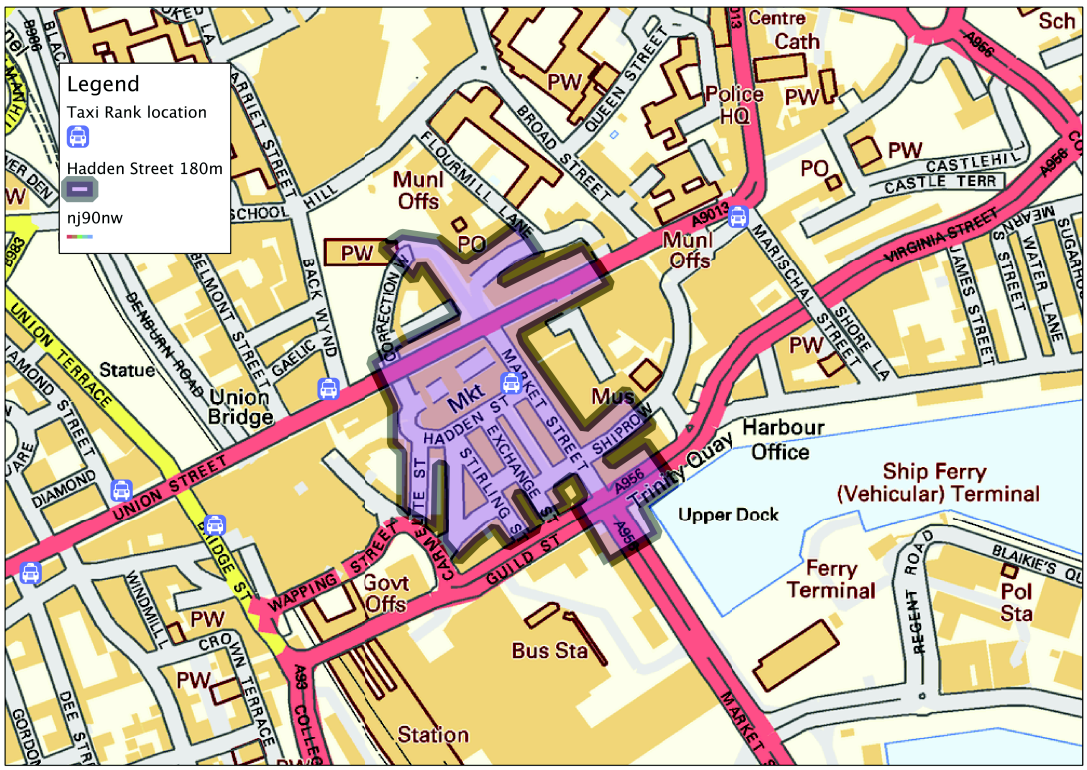
There would appear little purpose served in maintaining a rank location without sufficient signage to encourage use, nor regular taxi supply.

4.4.8 Hadden Street

Rank Characteristics:	
Allocated Spaces:	16 Vehicles
Operational Hours:	5am - Midnight
Markings:	Taxi rank designator, finger posts and (fading) road marking
Marshals:	No
Location specific factors:	Midtown rank serving Union Street and some lower town origins.
Street Furniture:	Waste bins, Tree planters directly adjacent to loading area
Overall performance:	Rank appears to function appropriately

The Hadden Street rank serves a number of differing markets and is located at a midway level between Union Street, on the upper level, and Guild Street at the lower level. The rank is located amongst small access lanes, but is located itself on a broad section of road. Map 12 illustrates the location and catchment area.

Map 12 Hadden Street rank location and catchment area



Rank Design

The rank is located along the length of Hadden Street between Market Street and Exchange Street and has a large capacity for vehicles. The location appears appropriate for the majority of taxi journeys, but is affected by a number of concrete tree planters along the northern pavement. The planters may have the effect of reducing accessibility to some users. The presence of rank and planters is illustrated in figure 25.

Figure 25 Hadden Street taxi rank showing tree planters adjacent to ranking area.

The proximity of the planters to the pavement edge appears to have an impact on vehicle positioning, with taxis stopping away from the pavement edge.

Taxi Behaviour

The rank is used by a smaller number of vehicles compared to other locations, and will often remain underused compared to capacity. Taxis serve the rank consistently and this is reflected in the low levels of waiting time for passengers at the rank.

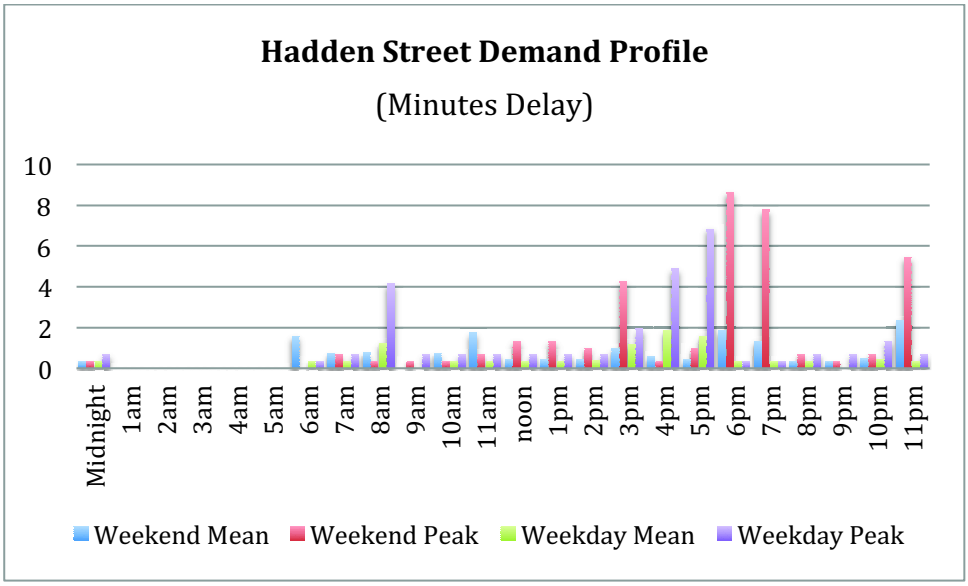
The width of the road allows for and appears to encourage U-Turns being made to access the rear of the rank.

Taxis will often park away from the curb edge to allow for full door opening without catching on the tree planters.

Rank Use by Pedestrians

There appear to be few issues preventing normal use of the taxi rank. Delays are limited with peaks occurring at weekend evenings at taxis serve busier ranks including Back Wynd. Passenger delays average 1 minute across all time periods, with mean waiting times rising to just under two minutes at weekend evenings. A maximum wait time of eight and a half minutes was observed at the rank, see chart 26.

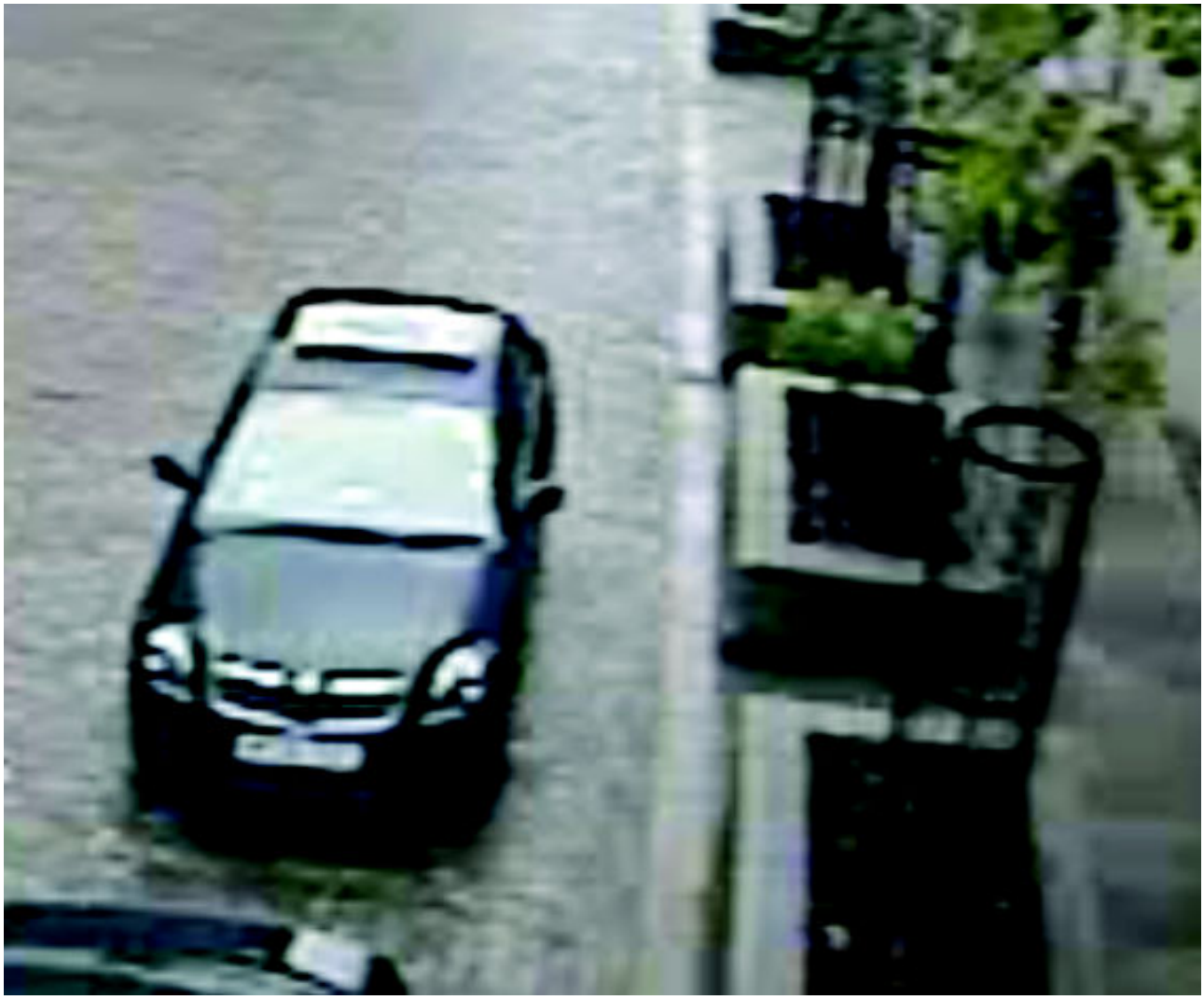
Chart 26 Demand Profile, Hadden Street



Streetscape

The waiting area for taxis has been provided with large concrete tree planters along the length of the rank, and these have a mixed impact. Although the appearance of the street is enhanced by this provision, actual access to taxis is reduced as the plants block easy access to all, and eliminate accessible taxi access. Figure 26 illustrates the extent to which access is diminished and consequential behaviour by taxis to ensure door opening without catching the planters.

Figure 26 Hadden Street rank showing impact of planters



Whilst it is desirable to maintain the presence of planters it would be appropriate to extent marked pavement beyond these to such an extent as to allow for wheelchair access and door openings.

4.4.9 Justice Mill Lane

Rank Characteristics:

Allocated Spaces:	3 Vehicles
Operational Hours:	5am to Midnight
Markings	Very limited markings. Rank designator sign provided, no street markings.
Marshals:	No
Location specific factors:	None
Street Furniture:	None specific to rank
Overall performance:	Rank appears unused.

The signed rank location on Justice Mill Lane appears to be unused as a taxi rank, and should be considered for removal.

Map 13 Justice Mill Lane Rank location

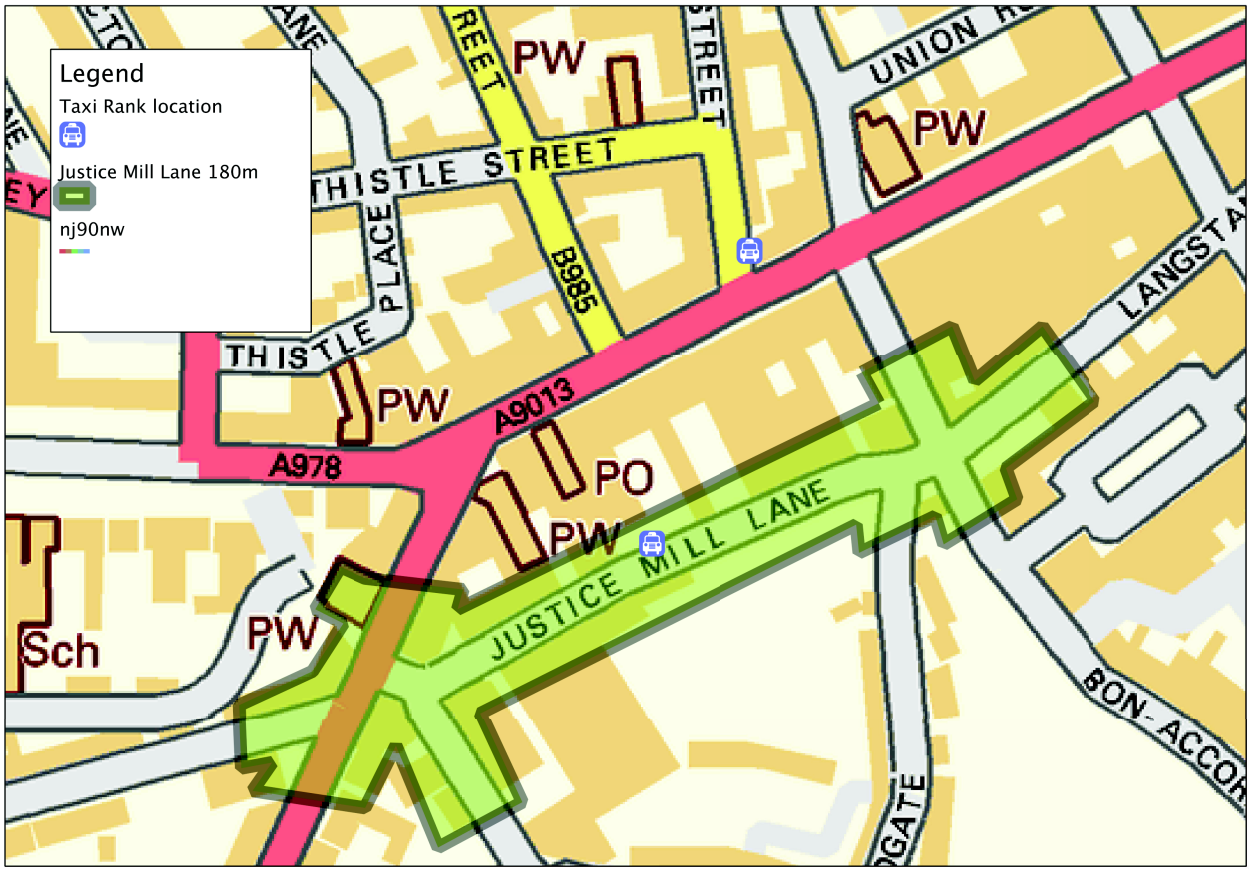


Figure 27 Justice Mill Lane rank showing use as private car parking

4.4.10 Little Chapel Street

Rank Characteristics:	
Allocated Spaces:	2 Vehicles
Operational Hours:	5am to Midnight
Markings:	Rank designation. No further markings
Marshals:	No
Location specific factors:	None
Street Furniture:	None specific to rank
Overall performance:	Appears unused

Little chapel Street appears to be unused and should be considered for removal.

Map 14 Location of Little Chapel Street Rank

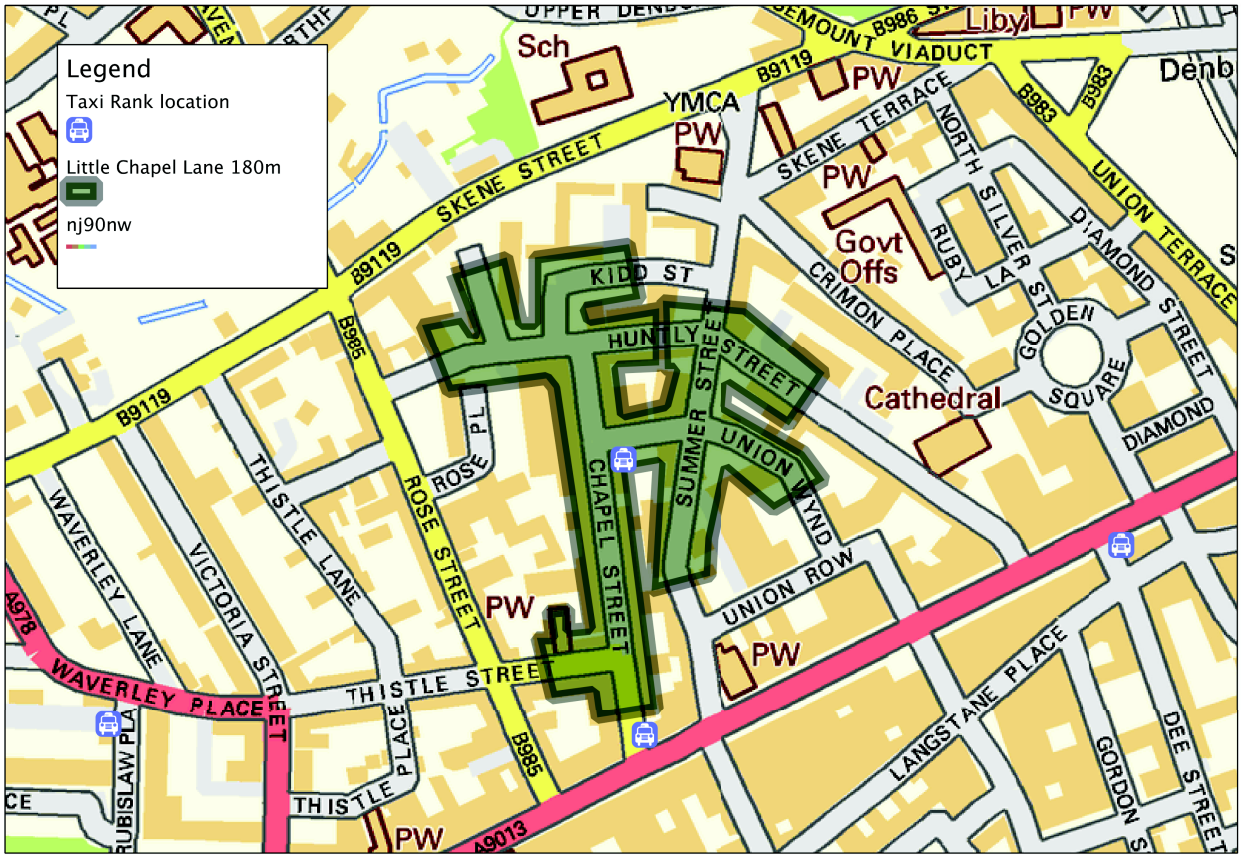


Figure 28 Little Chapel Street Rank

4.4.11 Rubislaw Place

Rank Characteristics:

Markings:	Rank designation. Street markings
Marshals:	No
Location specific factors:	None
Street Furniture:	None specific to rank
Overall performance:	Appears unused

The rank at Rubislaw Place does not appear to operate, although we have observed a very small number of taxis parked at this location. It should be considered for removal.

Map 15 Rubislaw Place rank location

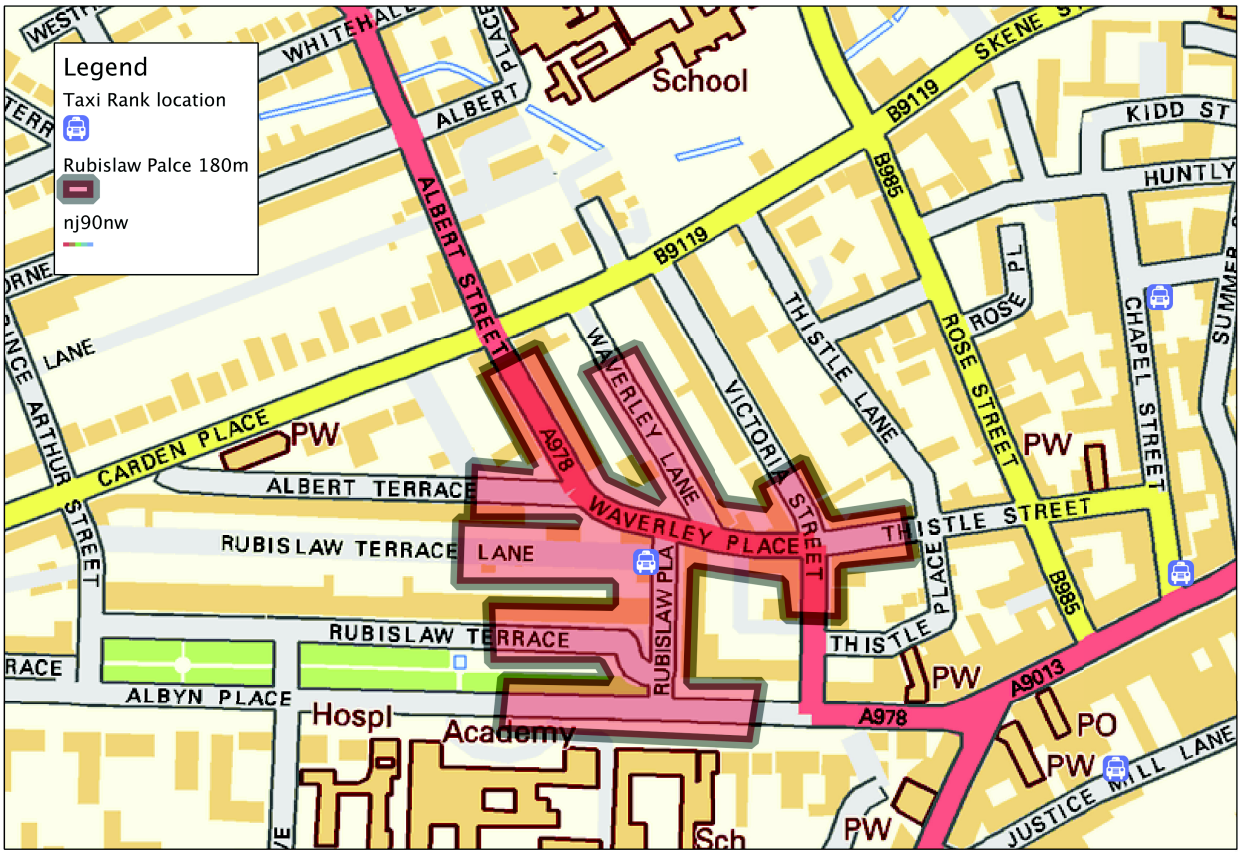


Figure 29 Rubislaw Rank showing road markings

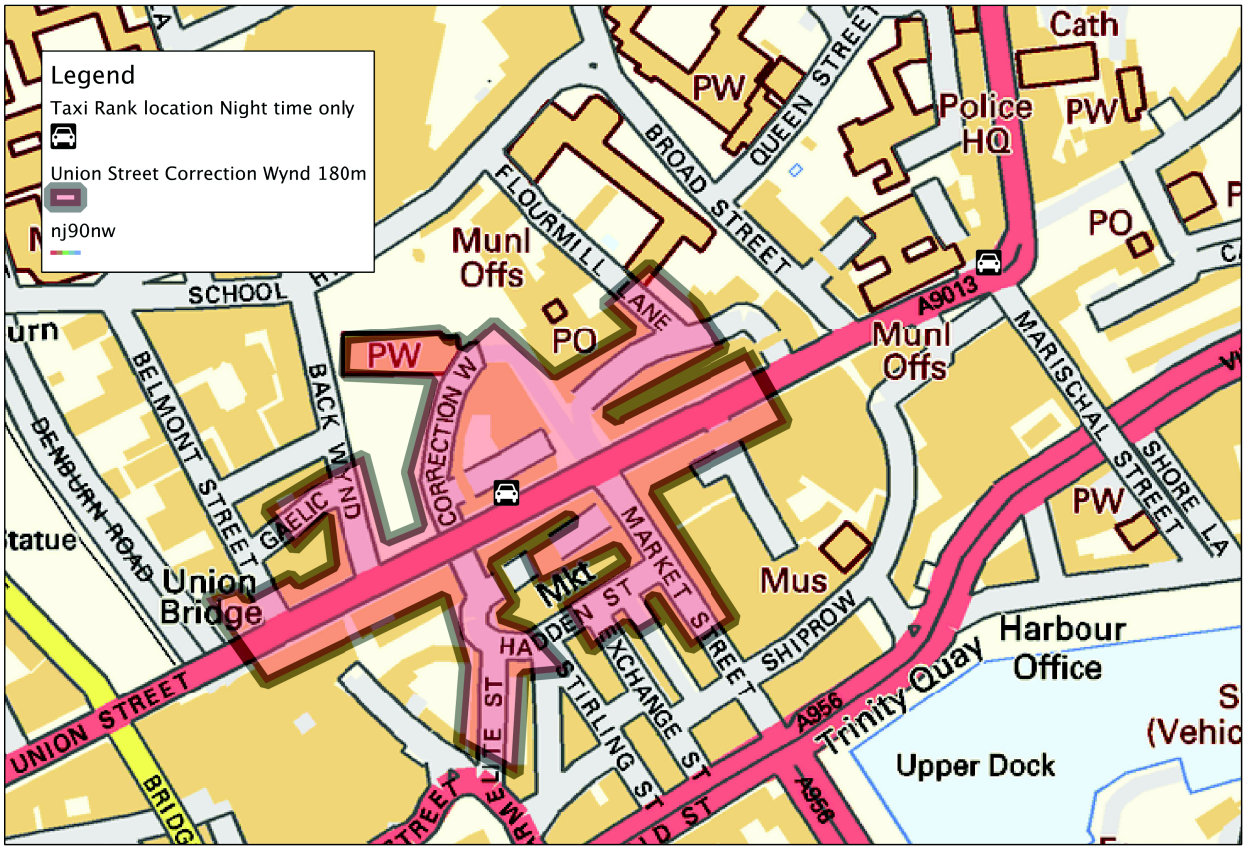
4.4.12 Union Street at Correction Wynd

Rank Characteristics:

Markings:	Illuminated “Night Taxi” pole, street markings
Marshals:	Yes
Location specific factors:	Rank collocated in bus lane
Street Furniture:	Illuminated sign
Overall performance:	Appears well used and effective

The rank on Union Street at Correction Wynd is one of a series of night time “Super Ranks” located on Union Street. The rank operates from midnight to 5am seven days a week, and appears very popular. Movements are efficient and well organised.

Map 16 Union Street at Correction Wynd location



Rank Design

The rank occupies a section of bus lane at the Eastern end of Union Street, and is well located for a wide range of nighttime activities. In common with other super ranks the location is illuminated and observed. A balance is drawn between daytime needs for the site, when the rank is not operational, and those at night. The rank is thus marked on the carriageway, and provided with an illuminated sign that is lit only during rank hours. There is no further rank specific furniture. Figure 30, below, illustrates the night time rank sign.

Taxi Behaviour

Taxis appear to operate very well from the rank and regularly serve the location during nighttime hours. The rank is particularly busy at weekends with taxi marshals directing and assisting passengers. Our observations have identified an issue of night buses over the weekend blocking line of site for arriving taxis. This is illustrated in figure 31, which illustrates a parked bus, and taxi marshals calling taxis around the bus.

Peak demand occurs between 1am and 3am, with a constant flow of traffic using the rank, see chart 26.

Chart 26 Demand Profile, Union Street at Correction Wynd

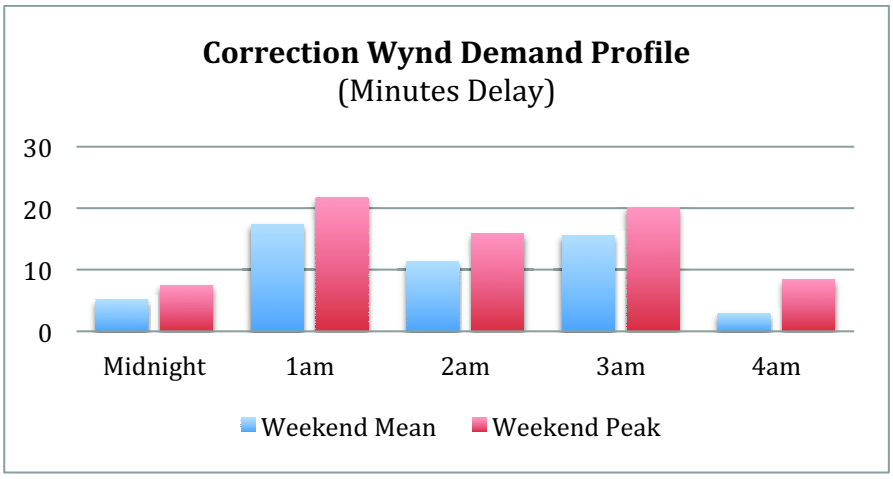
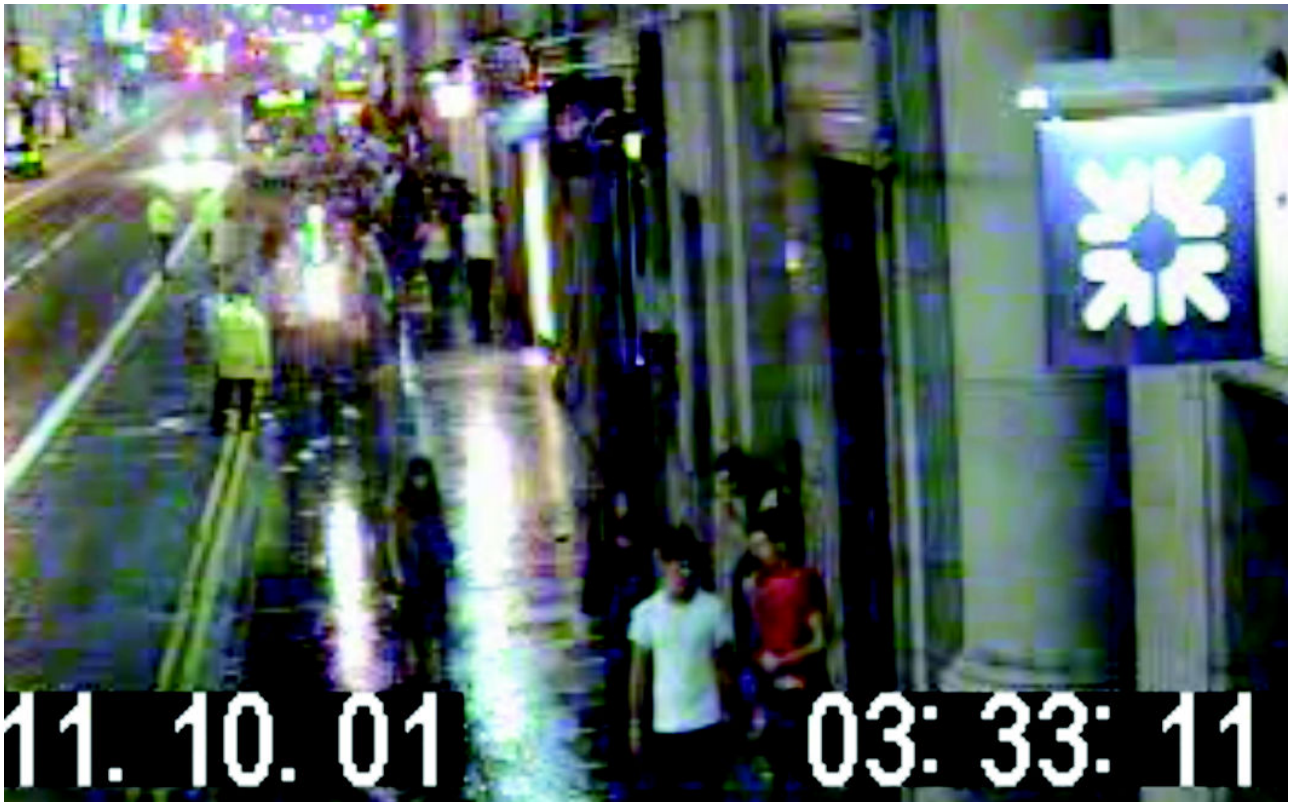


Figure 30 Rank sign and markings, Union Street at Correction Wynd

Figure 31 Union Street at Correction Wynd, showing parked bus blocking taxi line of site



Rank Use by Pedestrians

The rank is used throughout the week with a heavy peak at the weekend, see chart 26, above. Weekend nighttime taxi use represents a challenge in many cities and this has been addressed in Aberdeen by the provision of marshals, safety cameras and additional illumination. Passenger delay peaks at 22 minutes in our observation, though many members of the public report this to be a longer wait. Mean delays are also high, peaking at 17 minutes, which suggests a high use with constant queue. As the Aberdeen taxi market is currently derestricted it is appropriate to possible this is a market equilibrium point for supply. Additional measures taken by the council to allow airport plated taxis to serve the nighttime weekend peak is also acknowledged, but appears seldom used.

Passenger Mobility Issues

The rank design appears appropriate to all passengers, and we would anticipate no specific issues to arise for mobility impaired passengers. No wheelchair movements were observed at the rank.

Traffic Issues

The predominant issue observed at the rank relates to the interaction between taxis and buses. A bus stop situated at the rear of the rank is occasionally occupied by waiting night buses (at weekends), and this creates a line of site issue for arriving taxis. A local solution appears to be taxi marshals and, on one occasion, the police directing taxis around stationary buses. There appear few direct alternatives and we would not recommend any repositioning of the rank or bus stop. Some technical call on measures are available but would appear excessive in relation to the issue observed.

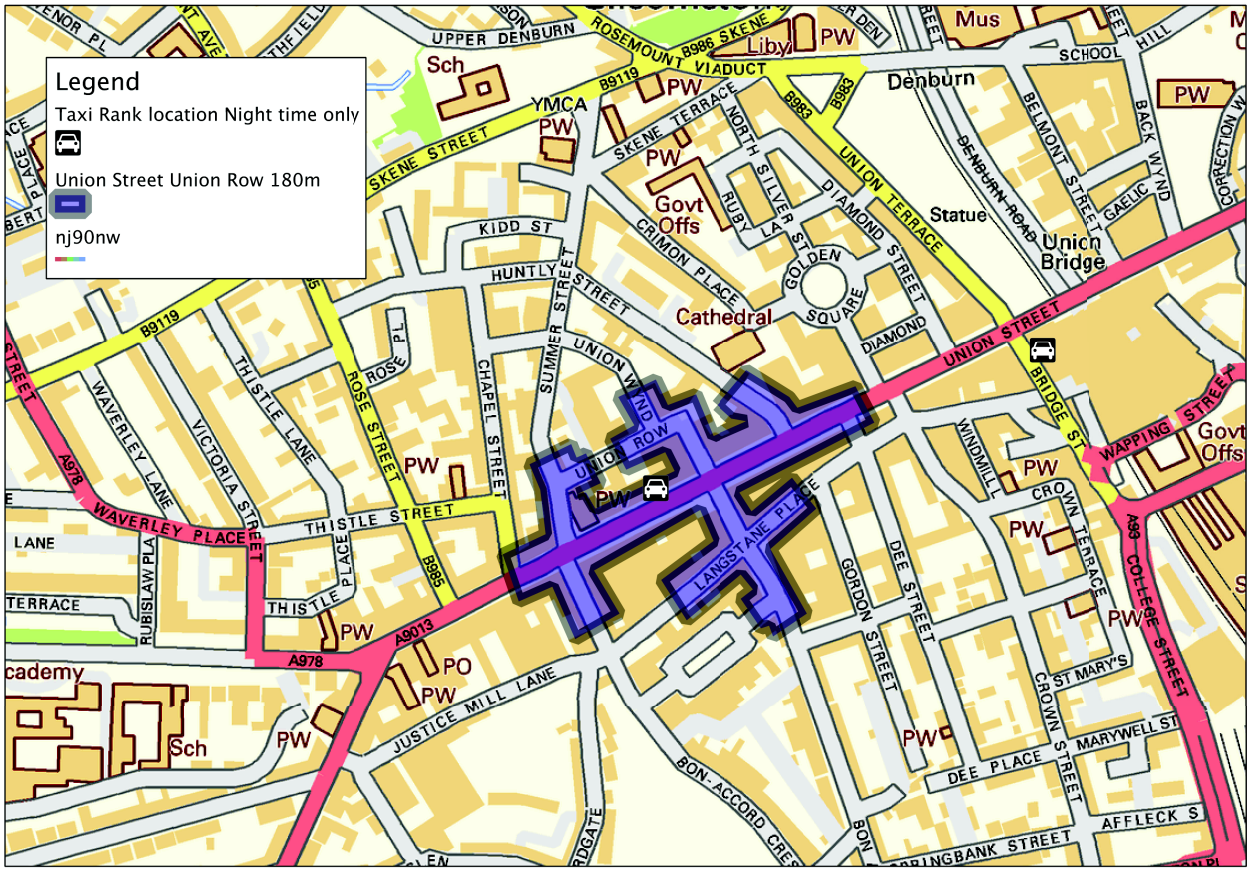
4.4.13 Union Street at Union Row / Bon Accord Street

Rank Characteristics:

Markings:	Illuminated “Night Taxi” pole, street markings
Marshals:	Yes
Location specific factors:	Rank collocated in bus lane
Street Furniture:	Illuminated sign
Overall performance:	Appears well used and effective

The rank on Union Street at Bon Accord Street is one of a series of night time “Super Ranks” located on Union Street. The rank operates from midnight to 5am seven days a week, and appears very popular. The rank is located between Bon Accord Street and Summer Street, in parallel with Union Row.

Map 17 Union Street at Bon Accord Street location



Rank Design

The rank shares common design with other “super ranks”. The rank is illuminated at night and is marked appropriately. The rank is collocated in a bus lane, although this has not impacted on its use to the extent as similar colocation at Correction Wynd and Castlegate, see figure 32.

Figure 32 Nighttime rank location, Union Street at Bon Accord Street / Union Row

The rank is popular and well used at weekend nights, and displays some peaking, see chart 27.

Taxi Behaviour

The rank appears to be served by a constant supply of taxis. Despite the colocation of the rank in an active bus lane, a night service operating at the weekend, we have observed far less conflict at this rank than at the Correction Wynd night time rank. This is likely to be a result of lower bus dwell times at this rank.

Rank Use by Pedestrians

The demand profile, chart 27, demonstrates some queue delay particularly between 1am and 2am, though the extent of delay is lower at this rank than at Correction Wynd. A maximum wait of 16 minutes was observed.

The marshal was present at the rank during our weekend observation, but appeared less proactive than the marshals serving the Correction Wynd location. An instance of "excited" passenger behaviour was observed at the rank, and this had a knock on effect on the efficiency of taxi movements during the disturbance.

Chart 27 Union Street at Bon Accord Street Demand Profile

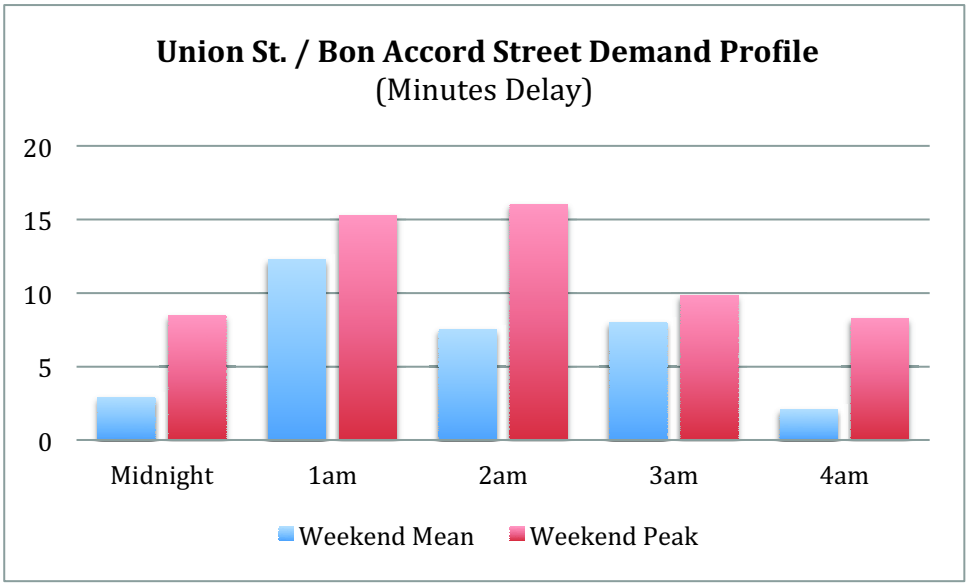


Figure 28 Union Street at Bon Accord Street, showing nighttime use

Mobility Issues at rank

The rank appears well located with sufficient pavement width to allow for wheelchair access. We observed no wheelchair use in our observations.

Traffic Issues

The rank appears appropriate to night time use, and we observed no traffic issues in our observations.

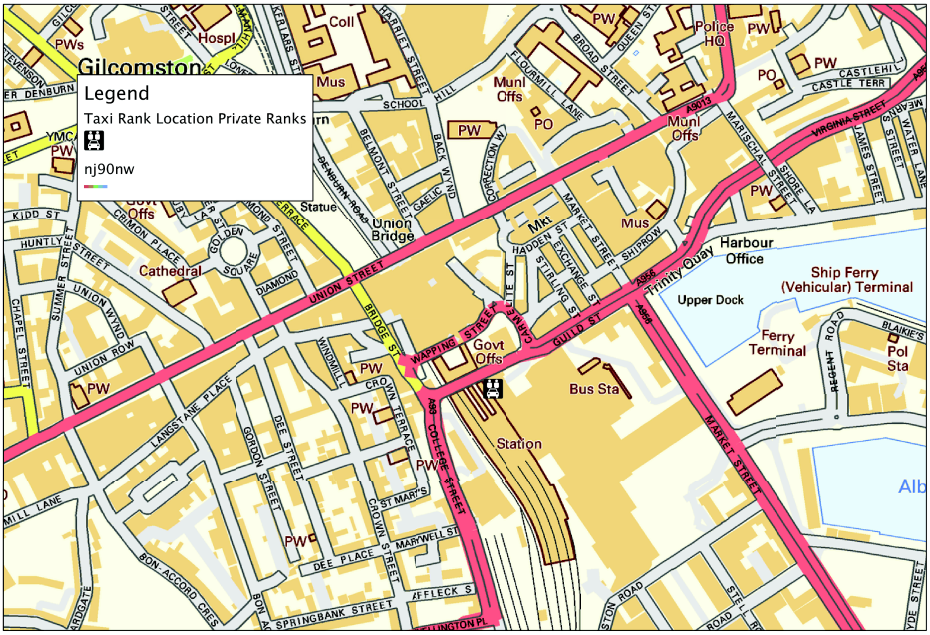
4.4.14 Aberdeen Railway Station

Rank Characteristics:

Markings:	Private rank markings, Scotrail corporate style
Marshals:	No
Location specific factors:	Rank located in enclosed area of railway station
Street Furniture:	None specific to rank
Overall performance:	Serves railway market with some “pull through” from adjacent property.

The Railway Station taxi rank is a private rank located on Network Rail property. Private ranks differ from public ranks insofar as they generally serve a specific use and location, and can apply additional conditions to use, such as supplementary fees and permit controls. Map 18 illustrates the location of the railway station rank. The rank serves the demand for taxis arising from the railway itself, but will also serve intending passengers from Union Square and the Aberdeen bus station. Access to the rank from both Union Square and the bus station is through the railway station itself, and this has the potential to confuse and reduce demand.

Map 18 Location of taxi rank at Aberdeen Railway Station

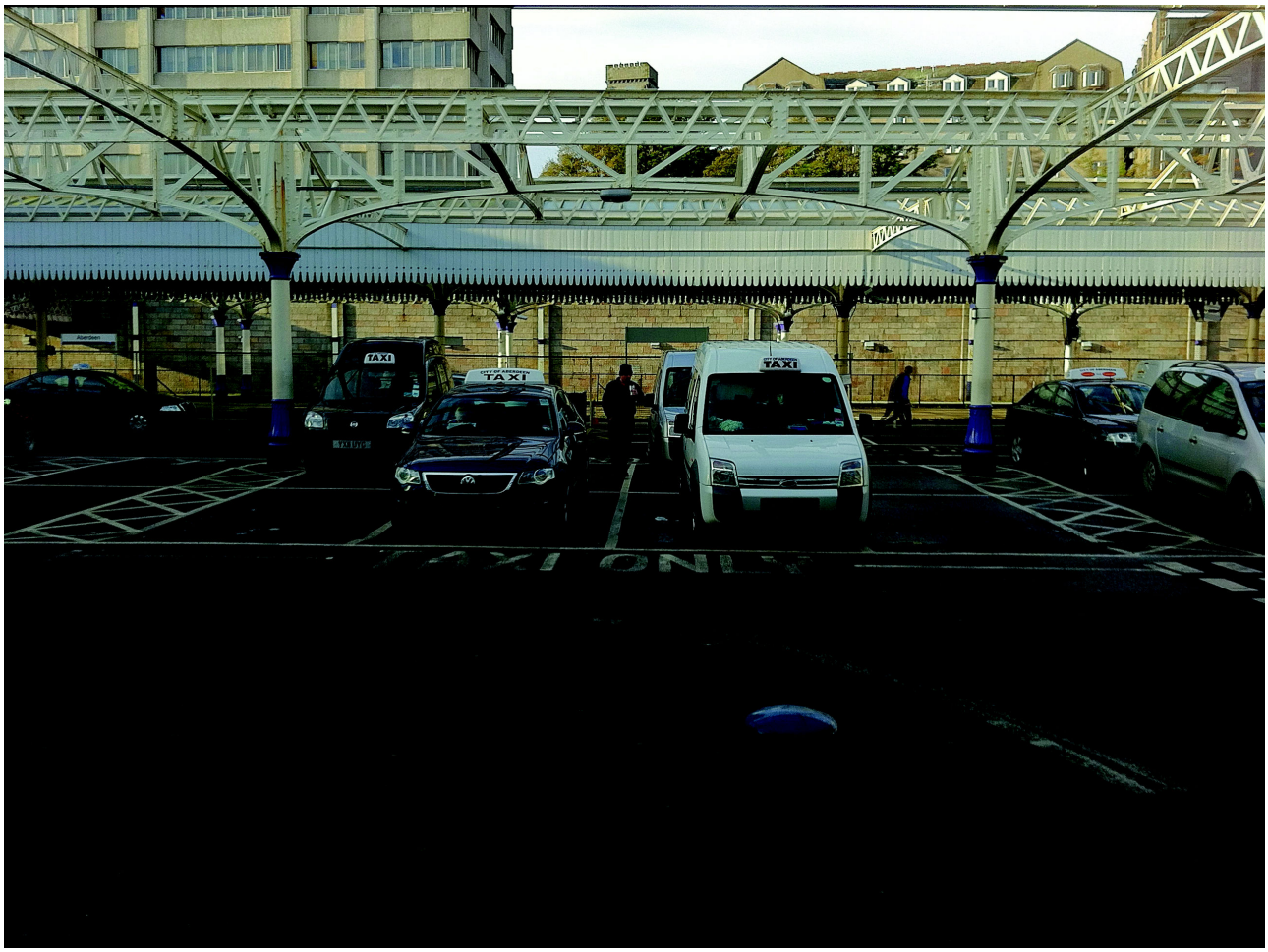


The full impacts of control policies within a city may limited at private rank locations, and might not reflect the full impacts, or benefits accrued elsewhere in the city. Figure 33 illustrates typical use of the rank.

Figure 33 Taxi ranking at Aberdeen Railway Station

The station area is also provided with a number of waiting bays, see figure 34, the design of which require a manual call on (last in call) between drivers. This system appear to work appropriately.

Figure 34 Taxi waiting area, Aberdeen Railway station



Supplementary Licences

Aberdeen railway station applies a supplementary permit at cost to taxi driver, and this changes the market dynamics of the location. Similar permitted fleet issues arise at Aberdeen Airport, and these are discussed in subsequent sections.

Railway permits are a national policy applied by Network Rail and offered, at a cost, to local taxis. Taxis thus permitted are not exempt from the licensing conditions of the city, but receive exclusive pick up rights at the station. In some instances supplementary permits are used to enforce further terms of supply, such as appearance or vehicle age, but this is not the case at Aberdeen station.

The relationship between city policies and local supply at the station is complicated, and particularly so in the instance of a restrictive permit issued at the station. This is best

illustrated in terms of impacts of a change in quantity control in the city. As the railway effectively applies a restriction on the number of taxis serving its rank, the impact of a change in number control across the wider city will only indirectly affect the railway station. Increases in the numbers of Licences across the city will not directly impact on the numbers of vehicles able to serve the station, as this number is separately restrained. It would, however, impact on the numbers of vehicle wishing to serve the station, and may result in an increased availability of permitted taxis choosing to return more quickly to the station rather than seeking engagement within the city.

The presence of supplementary permits also affects the possible measurement of unmet demand. As the station has a derived supply from the city fleet it would not benefit from changes in Licence numbers to the same effect as other parts of the city. Equally any measurement at the station is not reflective of the supply of taxis within the city, and would act to overstate ISUD values where restriction is in force.

Rank Design

The taxi rank is located within the station buildings of Aberdeen Railway station, and occupies the area to the north of the main station concourse. The taxi waiting and loading areas are collocated with disabled parking bays, and bays reserved for use by the British Transport Police. The area is sheltered and well lit. Figure 35 shows the loading area and accessibility of the rank.

The rank has vehicular access through two long arches, which are closed to pedestrian access, see figure 36, with pedestrians required to access the rank through the railway station, see figure 37.

Figure 35 Taxi Loading Area, Aberdeen Railway Station

Figure 36 Vehicular access to taxi loading area.

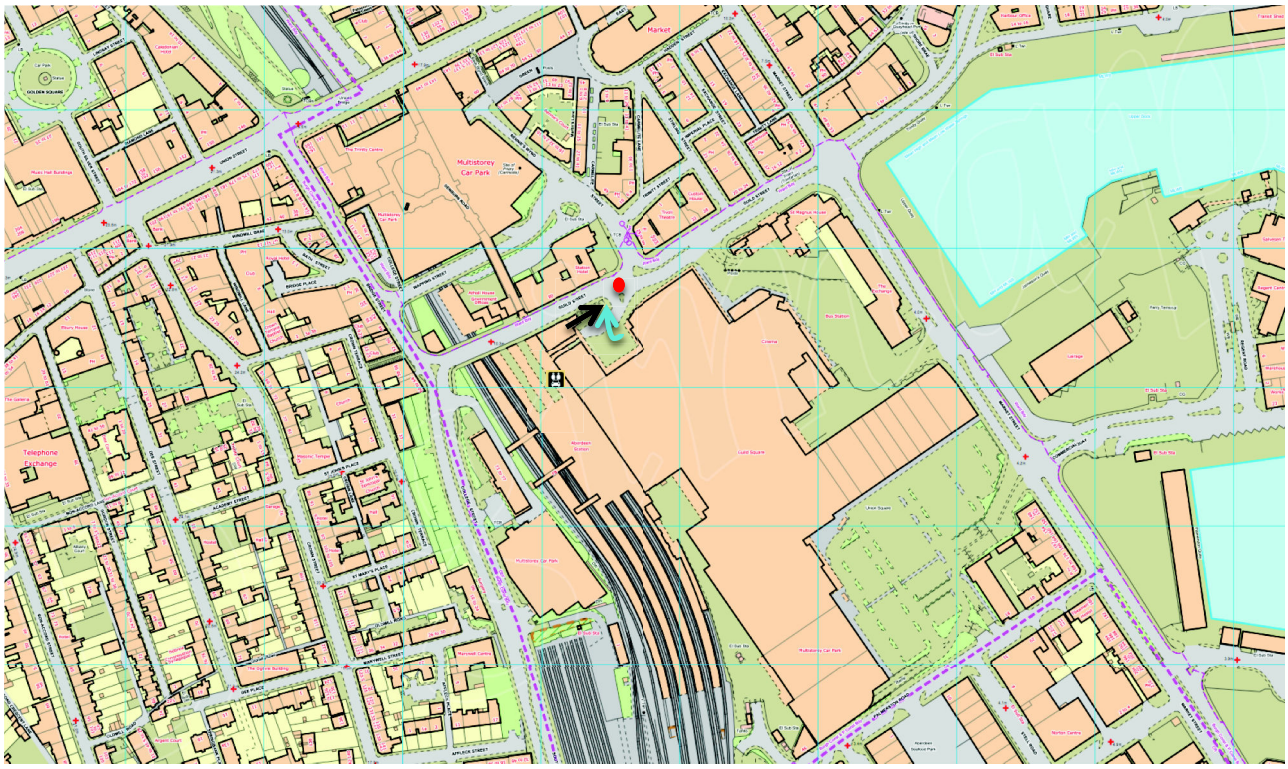
Figure 37 Station frontage showing taxi access to right, and pedestrian access to rank via station entrance, far left.

A specific issue is presented at the railway station in relation to delays encountered in exiting the station forecourt, see figure 38, at the traffic signals located at the junction with Guild Street, see map 19.

As taxis depart the station taxi rank they immediately enter the queue for the traffic signals on to Guild Street. Signal phasing at this junction can cause delay to taxis, with a peak delay to a taxi noted at 4 minutes. The delay being incurred by the vehicle and passenger who will incur charges for the taxi waiting time at the traffic lights.

Figure 38 Traffic signals causing delay to exiting taxis

Map 19 Railway station taxi delay location



- Head of rank location
- Point of conflict
- Taxis exit from station
- U-Turn from drop off

The delay incurred at the junction with Guild Street can be further exacerbated by vehicles making a u-turn having dropped off at the layby immediately adjacent, see map 19, above.

Taxi Behaviour

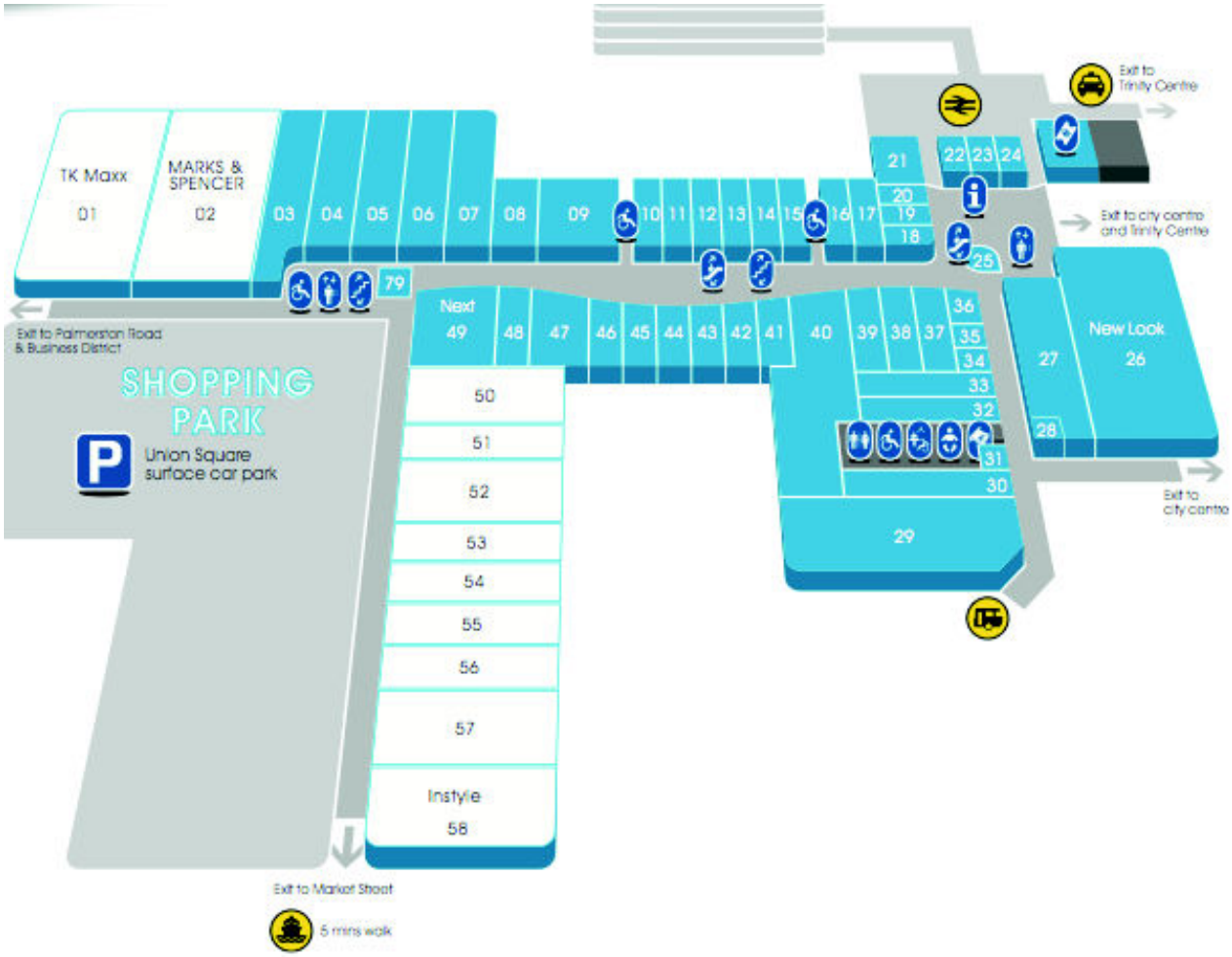
The operation of the station rank appears appropriate, and we did not observe any instances that would cause concern. The delayed departure from the rank, described above, is integral to the infrastructure serving the rank, and we consider it appropriate to consider a retiming of the traffic signals to better accommodate taxi departures from the railway station rank. Options possible within the most typical signal controls might include a presence detector loop located in the departure arch identifying and giving preference to

departures from the station. A detailed signal engineering study would be required in our opinion.

Rank Use by Pedestrians

The rank appears well designed and appropriate for use by railway passengers, and it is noted that this is the primary purpose of the rank. The rank does serve other markets, however, most notably Union Square and some passengers from the Bus Station. The location of the taxi rank in relation to its secondary markets is shown in figure 39.

Figure 39 Union Square ground floor location map



Insofar as the primary market for the railway station rank are train passengers the access to the rank is via the station itself. Union Square indicates alternative taxi facilities in

Hadden Street, and it is noted that many of the facilities are at a significant distance from either location.

Figure 40, Union Square main entry facing station building. Access to the railway station taxi rank is via the station building facing camera.

Rank Delay minimisation

A model element has been developed in previous analysis to identify the impacts of changes in rank specific factors on supply at those ranks. We have identified this as a Time Savings At Stance model (TSAS).

Changes in supply can be identified as a result of engineering enhancements, in this case rephrasing at the Guild Street traffic lights. Each change in infrastructure offers a potential for time savings at the location itself, and across the wider fleet as the availability of vehicles in general increases. The exact savings require detailed assessment of what is possible and appropriate in light phasing.

Using traditional notation the initial calculation may be defined as:

TSAS = (CAD – TSE)

Where:

TSAS = Times Savings at Stance
CAD = Current delay
TSE = Vehicle time savings resulting from change

As a vehicle departs more quickly from the rank, a benefit is experienced by users of the rank, and across the wider fleet as the availability of vehicles is increased. Time savings at rank run in parallel to the traditional simulation models (Taxisym) and may be input to the calculation of extra arrivals using the formula:

CEA = ((TP/(AJT-TSAS))*NVF) – ((TP/AJT)*NVF)

Where
CEA = Conversion to extra arrivals
TP = Time period
AJT = Average Journey Time
TSAS = Time Savings at Stance
NVF = Number of vehicles in fleet

An additional calculation is also possible to account for the specific behaviours at traffic lights. In the original TSAS formula the model includes the value TSE, identifying Time Savings arising from specific engineering improvements. This value is unique to each location and, in the case of the Aberdeen Railway station, is dictated by the phasing of traffic lights at Guild Street.

A value for traffic signal delay can be derived (Webster et al, 1966) from the formula:

TSE = (CAD * EGT) / (EGT + IP)

Where:
TSE = Vehicle time savings resulting from change in signal phasing
CAD = Current delay
EGT = Effective Green Time

IGP = Increase applied to green phase

A detailed assessment of traffic signal delays is contained in Guberinic, Senborn and Lazic (2008), Optimal Traffic Control at urban intersections, Taylor Francis, Boca Raton.

4.4.15 BAA Aberdeen Airport

Rank Characteristics:

Markings: Private rank markings

Marshals: Yes

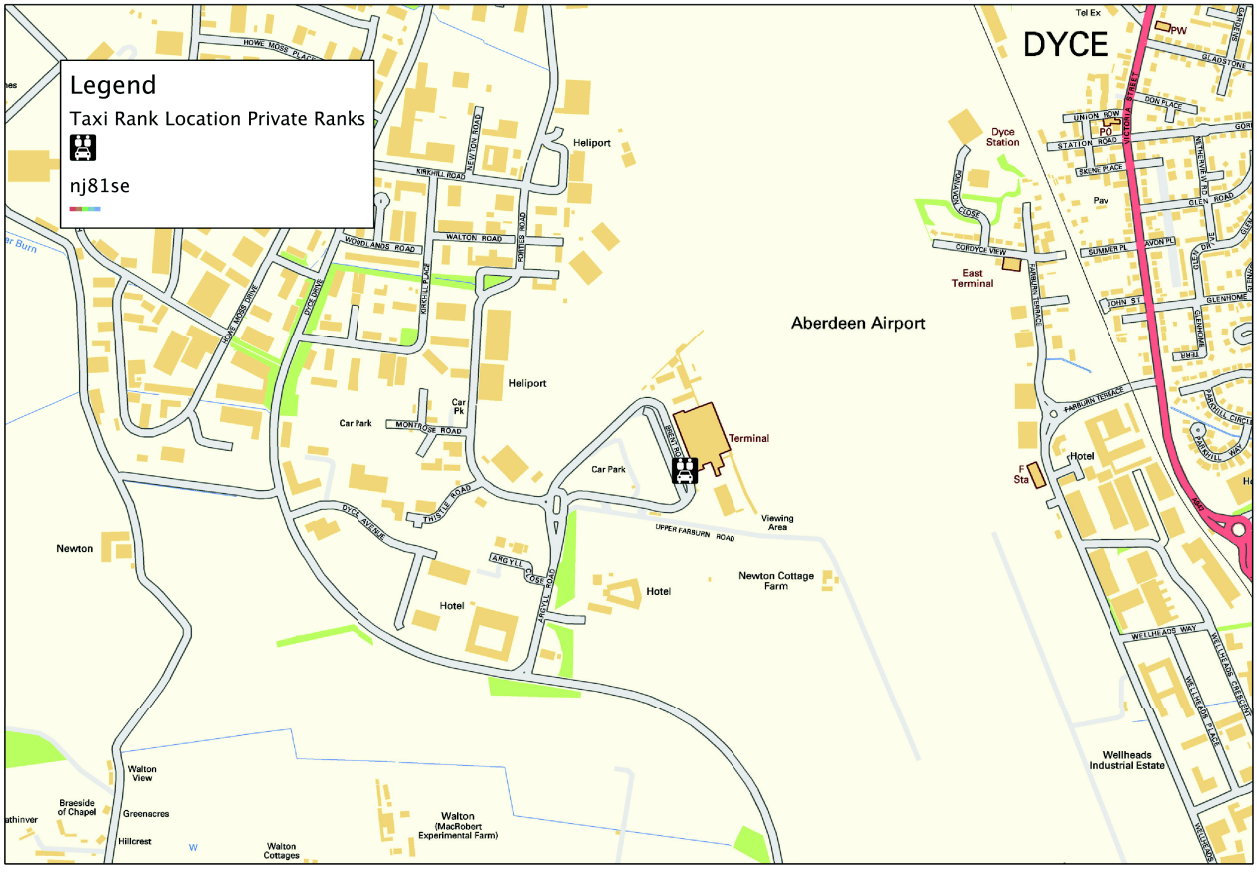
Location specific factors: Rank located on airport forecourt, an area called the "front door" with additional waiting areas for taxis

Street Furniture: None specific to rank

Overall performance: Serves airport market

As in the case of the railway station, the rank at Aberdeen airport is located on private ground and operates differently when compared to city centre public ranks. A distinction is drawn between the licensing policies at the station, which allow city fleet operating with a supplementary railway permit; to the airport, which operates a separate Licence type, known as airport plate. The airport plate is issued by the city council, with an additional contract arrangement with supplier defined and applied by the airport.

Map 19 Location of airport rank



Supplementary Licensing and airport plates

BAA Aberdeen airport operate a franchise system for the supply of taxis to the airport, issuing a single permit to an operating company on the basis of a Service Level Agreement (SLA) setting out minimum levels of taxi supply. The contract does not remove the need for a taxi to be licenced, the city issuing an airport specific plate.

The airport contract is let commercially by BAA and is currently held by Comcabs, who also operate a taxi fleet in the city of Aberdeen. The Comcabs city and airport fleets are treated as separate entities. A “backup valve” system is applied, known locally as the “green light” reflecting the nature of the manual call in system in use at the airport.

BAA defines the minimum level of service as no individual passenger waiting over 15 minutes to board a taxi. There is a degree of confusion as to this minimum in the stated views of some city based taxi drivers.

The city also applies a separate Licence to the airport fleet that prevents the fleet from operating for hire and reward within the city. An exception to this does apply to allow airport licensed vehicles to operate in the city late night weekends, but there appears to be little take up of this derogation.

The primary market for taxi services is the airport itself, which include both passengers and staff. Given the isolation of the airport site there are few other generators in the catchment of the rank.

Rank Design

The rank is located at the southern end of the terminal building located on a protected roadway shared with buses. The rank has a covered walkway, illustrated in figure 41, allowing for queuing passengers to wait under shelter, figure 42. Holding areas exist to the northwest for queuing taxis to wait outwith the taxi rank, and city taxis are able to observe the rank from the car parking areas to the west. Waiting city fleet taxis are invited to join the airport fleet rank at times of high demand, through the use of a manual green light call

on system. There are some concerns expressed amongst city fleet drivers as to the use made of the green light system.

Figure 41 Aberdeen Airport taxi rank

Figure 42 Waiting area for Aberdeen Airport taxi rank showing queuing passengers

Green Light System

The main airport issue raised by trade and in discussion with operators has been the effectiveness and use of the green light system. A green light located on the marshal's office is illuminated when individual passenger delay exceeds 15 minutes to call forward city fleet vehicles that may be waiting in the adjacent car park area, see figure 43. The airport fleet operators have a service level agreement with BAA Aberdeen Airport to ensure that passengers do not wait more than 15 minutes for a taxi.

The most common concern expressed amongst the city fleet drivers responding to our survey has been that the light is not illuminated as appropriate to the queue in peak times. This is accompanied in some discussion by an apparent misunderstanding that the green light need be illuminated if a queue were present for more than 15 minutes, which is frequently the case.

Figure 43 City fleet pick up / drop off area, Aberdeen Airport

The study team sampled traffic flows at Aberdeen airport and passenger queues on three occasions. Passenger delays on each occasion remained below 15 minutes, see chart 28, although on a number of occasions the queue remained visible for significantly longer.

A maximum passenger wait of 14.34 minutes was observed, with mean waiting times of 8.2 minutes at peak times. This appears within the SLA levels set out by the airport. On the basis of our observation it appears that the green light system is being appropriately applied.

5. Review

In developing our work we have sought to review the market for taxi services across the City of Aberdeen. Taxi services operate in a variety of markets serving a full cross section of the public both directly through taxi engagement, and indirectly through contracted journeys. Taxis may be directly engaged at taxi rank, the ranking market, but may also be engaged by hailing and pre-booking.

The underlying question for the City of Aberdeen is posed, whether it is currently appropriate to introduce a Licence restriction Aberdeen. This may be further related to question as to whether the supply of taxis can be positively influenced by other measures, which include the application of physical changes at specific rank locations and whether the lack of a Licence cap itself has a negative impact on the supply and use of taxis. The definition of specific individual questions does not preclude the adoption of a variety of policy measures, which we conclude work in tandem with each other.

The Civic Government (Scotland) Act, 1982, sets out specific wording in relation to the application of a Licence restriction, and this is complemented by current Best Practice Guidance sets out guidance as to how this may be tested. Review guidance from the Department for Transport (2004) also contributes by recommending a number of steps in determining policy for controlling Licence numbers.

Local Authorities are able to apply control measure to the supply of taxis on the basis that such controls protect the interests of the consumer. Controls may also influence and protect the industry itself, as discussed below. Regulation thus applied to the taxi industry may exist in three areas, Quantity Control, Quality Regulation, and Economic Controls – typically applied to fares. The three “domains” are interrelated, as indicated in section 3.3 of this document, and we feel it important that any review undertaken is aware of and takes account of these relationships.

Controls applied to the taxi industry exist within the legislative structures applied to the nations of the UK, being the Civic Government (Scotland) Act 1982 as applying to

Aberdeen. The consistent focus in legislation relates to the interests of the consumer of taxi services, and this is repeated both at Scottish and UK levels.

The BPG does not set a precise methodology, though a standard approach has emerged, relating to the measurement of an index of demand (ISUD). As BPG has developed, so the application of an ISUD measurement has responded, and we have adopted thus fully as described in section 2.

The combination of Scottish Best Practice Guidance, guidelines issued by the Department for transport, and consideration of the wider market influences in Aberdeen have allowed us to develop a framework of analysis, described below and illustrated in section 6.4. Individual measures are also described, our approach to ISUD measurement summarised in section 6.1, and impacts across the Aberdeen market in section 6.2.

5.1 Measurement of Significant Unmet Demand

The most commonly applied measurement in determining Licence number policy relates to the measurement of Significant Unmet Demand. The majority of reports follow a standard approach to its calculation, and we have applied these in our study.

The measurement itself provides an indicator of the relative performance of a city's taxi fleet against demand, and the index value is compared between locations. A threshold value of ISUD = 80 is commonly applied as an indicator that demand is both unmet and significant, though no direct definition of significance is available. Cities with an ISUD value below 80 are considered NOT to demonstrate significant unmet demand, those above this value DO demonstrate an issue where lack of taxi supply is having a negative impact on users and intending users. On the basis of this measurement alone it is possible to conclude that Aberdeen does NOT display Significant Unmet Demand.

Although the results of this measurement do not, in themselves, justify introducing a limit to the numbers of Licences issued for Hackney Carriages (Yellow Plates), they do indicate that imposing a limit at the current number of Licences would not result in a significant detrimental effect on the quality of service available to the public.

5.2 Wider Market Influences

Given the relatively complex nature of taxi markets and interaction between regulatory domains, we would not recommend that decisions around licensing are made on the basis of an ISUD assessment alone.

In its BPG, and previous advice from the Department for Transport (Letter of the 16th June 2004), the Scottish Government set out a number of key issues that would be appropriate for analysis. These include:

- Waiting Times,
- Peaked Demand,
- Consultation, and
- Publication.

Whilst the majority of these factors can, and have, been incorporated into current ISUD measurement, they also relate to a wider market analysis. Moreover, as the City of Aberdeen is approaching their review of taxi Licence controls from a position of an open market, rather than the most common approach to consider the retention of a closed market, we feel it highly desirable to address the full range of market issues.

Market definition is split between the three engagement types, Ranking, Hail and Pre-booked, and we have observed supply and response rates in each of these. We further split the market between passenger types, including passengers with specialist needs, the disabled, and nighttime taxi use; the latter being significant to all taxi markets as it represents a major peak in the use of taxis in most cities. In Aberdeen night time use has a particular significance as it affects the design and supply of part time ranks located along the length of Union Street. The team undertook extensive consultation with the trade, public and representatives of disabled taxi users, and with a wider range of stakeholders including hoteliers, commercial and retail premises, and Grampian Police.

Two factors emerged more than any others, the (lack of) value for money in using Aberdeen taxis, and concerns of extended waiting times for taxis at night. Other significant issues included provision of wheelchair accessible vehicles, and a need for drivers to be

appropriately trained and able to assist disabled passengers. Whilst the cost of taxi use is generally considered separately and in isolation from demand reviews it is clear that price does impact on demand. We would suggest that an appropriate question to raise would be whether or not a restriction in Licence numbers would impact negatively on the cost of taxi use.

We also undertook a review of individual taxi ranks, considering the suitability of each to the demand for taxi use; design issues and potential enhancements, set out in detail in section 5. Resolving design issues at taxi ranks, an example of which would be traffic light phasing at the railway forecourt exit to Guild Street, can have a significant impact in the efficiencies of vehicles across the city, and contribute to the effective levels of supply, and thus passenger service. In previous studies (Glasgow; Cooper, 2007), we have referred to such measures as non-Licence based supply enhancement, and would further include the positive impact that taxi marshals control of peak queues have in this definition.

5.3 Consultation

The study team have undertaken a series of consultation exercises across the city. Consultation and data collected from pedestrian surveys contributes to the understanding of the use of taxis in the city and highlights a number of operational issues in the use of taxis in Aberdeen.

Primary concerns in addition to waiting times at night relate to the provision of night time services along Union Street, and an underlying confusion as to which ranks are operational and when. A lack of signing contributes to this confusion. The standard rank designation sign is often overlooked or not immediately visible, and this contributes to intending passengers waiting in the wrong place for taxis. A number of illegal pick ups at closed ranks have been observed, though this is the exception rather than the rule.

Consultation highlighted specific needs within the wheelchair and disabled communities for taxi services, and the issue of a mixed fleet was raised by many. The impact of any change in licensing policy must be considered against the impacts such a change would have on the users of wheelchairs.

Table 99, below sets out a review framework that allows for consideration of policy choices across taxi users. This is applied to the question whether the City of Aberdeen should restrict taxi Licence issuance. It is very important to stress that the introduction of a Licence cap does not prohibit the issuance of new Licences, but rather provides a consistent method for its testing. Ay council operating a Licence constraint is required to undertake regular reviews of that constraint.

6.4 Analytical Framework

The combination of guidance and specific market issues has allowed the study team to develop a review framework, illustrated below. The framework measures the impact of a change in licensing policy to allow limitation of Licence numbers on the indicators suggested in the BPG, and further effects on the Aberdeen market for taxis.

Review Framework, City of Aberdeen

Domain	Review Question	Analysis
Waiting Times	Would the introduction of a Licence cap impact negatively on waiting times	Evidence suggests that current supply levels would not be influenced by the introduction of a Licence cap. Current levels of supply indicate the performance of the fleet in an open market, and these should be considered as base lines for supply. It is unlikely that a market facing very slow economic growth would be negatively affected in the short run. Currently measured ISUD levels do not indicate an undersupply across the market for taxis.

Latent Demand	Would the introduction of a Licence cap impact negatively on latent demand	Latent demand is present in the market for taxis in Aberdeen, and this is highlighted in consumer responses, most particularly in relation to fares. This differs from the most common expectation that market demand is supressed by a lack of supply. A further consideration relates to the availability of services to disabled and wheelchair users, and we note that this is presented as an issue in focus group discussion. The introduction of a Licence cap would not impact on the levels of latent demand as this would not materially affect the numbers of vehicles currently available on the street in the short run. Medium and longer term fluctuations are accommodated within the requirement to undertake regular surveys, and we would recommend that the frequency of reviews be carefully considered to ensure the impact remains neutral. A variety of arguments are presented in relation to costs of operation, and these are explored in the sections below.
Peaked and Seasonal Demand	Would the introduction of a Licence cap impact on peaked demand	Evidence suggests that peaked demand is a challenge for the city of Aberdeen at specific times of day. The base ISUD measurement, which allows for the

		consideration of peaked demand suggests that the presence of peaking is not indicative of significant demand across the city. Its presence, however, should be considered appropriate for further assessment, see recommendations. It is noted that the current peaking occurs in a derestricted market.
Taxi Numbers	Would the policy of Licence controls negatively impact on the availability of taxis	The application of a Licence restriction has the effect of capping the numbers of Licences at a current rate. There is no mechanism for reducing the Licences as a result of the constraint. Any reduction in Licence numbers would therefore occur as a result of attrition, individuals choosing to leave the market. It is likely that in the short run the policy would have no impact on taxi availability. Medium and longer term analysis is necessary to ensure that any attrition does not materially impact on taxi availability, and this is the proper role of the ISUD and associated tests. It is appropriate and necessary to undertake these tests on a regular basis, and we believe that the review of the taxi market offers greater benefits to the city related to knowledge of and ability to develop the market

		and infrastructure for taxi services.
Customer choice	Would the policy of Licence controls negatively impact on customer choice?	Evidence presented in the analysis suggests two anticipate impacts of establishing Licence constraint. These being the movement of new entrants from Hackney Carriages to Private Hire, and a more focused supply within the Hackney trade. In the instance of choice we must also consider the nature of choices, and by whom. Choice of taxi company is a choice fundamentally restricted to the pre-booked market, and it is contended that the introduction of Licence limitations would actually increase supply in this sector. Effects on rank are likely to remain limited to any loss through attrition. We consider that this would be appropriately addressed through the renewed use of taxi surveys.
Taxi Costs, tariffs and driver incomes	Will the policy of Licence controls affect fare paid by passengers	Tariff levels are set in Aberdeen as maxima. This being the maximum level that a taxi driver may charge for transport. The application of a maximum is intended to protect the consumer from unscrupulous trade, and allow for price competition below that level. In reality the extent to which taxi fares are negotiable is questionable, with the least price competition occurring at rank and by hailing. Price competition does occur in the

		pre-booked market, however, and it is this are that should be considered in detail. In this respect the move to a Licence restriction is unlikely to impact as the pre-booked market can operate equally as Hackney Carriage or Private Hire taxis. There is no impact arising from the introduction of Licence controls.
	Will the policy of Licence controls affect driver income	One of the main reasons forwarded by advocates of Licence controls appears to be positive income benefits to drivers. We would suggest that this benefit is less likely to be achieved than may be anticipated. Current operating taxi numbers appear to reflect a market equilibrium in current supply and demand. This is a natural consequence of an open and competitive market. Issues at specific point of demand, notably weekend nights reflect a market response and the nighttime peak is visible across a number of similar cities. As the market is currently not capped it may be suggested that this is the “market level” at these points in time. Restraining market entry at current levels does not reduce the extent of supply at these peaks nor will it unless demand for taxis increases significantly. At best the

		introduction of Licence restrictions will remain cost neutral, and may actually impact on reducing income as private hire companies respond competitively with new entrants entering the pre-booked market.
	Will the introduction of Licence controls have an impact on Licence transfer values	A potentially negative impact arises in a closed market whereby the Licence plate can accrue a resale value. Excess market values indicate a failing in the market to protect the consumer as any resale for profit indicates an additional and unintended cost applied to the industry and, ultimately, paid by the consumer. A static or declining market is unlikely to result in excess Licence transfer values, but the longer term values need be reviewed to ensure that no negative impacts arise.
Market Control	Will the introduction of Licence controls have a wider impact on the market for taxis	A positive impact of Licence control may in fact relate to the requirement for ongoing surveys, though this will, in itself, have an impact on the costs of operating a taxi. As the Civic Government act mandates the undertaking of market reviews in response to a licensing policy, the city would be required to assess elements of taxi operation quantitatively on an on-going basis. This effectively contributes to the review and development of the industry.

5.5 Combinations of measures

In preceding text we have set out the primary arguments in relation to Licence constraint policies. These are significant and have a potential impact in the market for taxis. They are not, however, the full extent to which the taxi market may be controlled, nor its operation improved. Indeed we feel that many positive benefits may be accrued from a combination of measures including the adoption of rank specific engineering and consideration of a technical enhancement to call forward patters including at Aberdeen Airport.

Rank Specific Engineering – Aberdeen Railway Station

Section 4 sets out an issue experienced by vehicles exiting Aberdeen station caused by a limited green phase set at the traffic lights on the junction with Guild Street. It is significant to note that although delay is occurred at these signals, the overall levels of ISUD would not in themselves require detailed consideration of this delay. It is however appropriate to suggest that signal phasing be addressed. A methodology is developed, described in section 4, that would allow for the impacts of such a change to be assessed, and is based in a Time Savings at Stance model (TSAS), see Cooper 2007.

As a vehicle arrives and departs more quickly from a rank, a benefit is experienced by users of the rank, and across the wider fleet, as the availability of vehicles is increased. Time savings run in parallel to any other improvements in the network, and will impact positively on the wider operation across the city as more journeys can be achieved by the same fleet.

Rank Specific Engineering – Back Wynd

As the cities busiest central rank Back Wynd operates efficiently and well for the vast majority of journeys. A major issue is identified, however, in relation to offside loading. Offside loading is felt to be less than ideal, and presents a genuine difficulty to wheelchair users, as the majority of accessible taxis are equipped with a ramp on the nearside alone.

Whilst it is considered impractical to re-engineer the street for nearside loading, a more limited engineering solution may be considered. This might include the marking of one wheelchair accessible bay at the southern end of Back Wynd located on the current, short, eastern paved area. The engineering practicalities of this are not considered in detail, and would require a more significant analysis.

Rank Specific Engineering – Bridge Street

The rank located at Bridge Street, immediately to the south of Union Street is currently rarely used. The rank is signed for use from midnight to 6am seven days a week and is at odds with other night time locations along the main drag of Union Street. This said, the rank occupies a central location, and it is likely that confusion both amongst drivers, specific to the Bridge Street rank, and a wider confusion regarding night time operations exists amongst the public.

The relocation of the Bridge Street rank to a location directly around the corner, on the southern pavement of Union Street departing west, would ensure the continued serving of the catchment area of the original rank, and remove confusion most particularly in terms of the etiquette of night time rank use.

Night Time Rank Use and Rank Signage

The issue of night time rank use along Union Street, and the associate issue of rank signs were expressed as a concern in the course of our work. Night time ranks, which are also referred to as “Super Ranks” are in operation along the length of Union Street from midnight to 5am, seven days a week. Three marshalled ranks and one un-marshalled rank are located on Union Street itself, with a further nighttime rank located on Bridge Street, The rank on Bridge Street is little used and discussed above.

Common issues exists in relation to the hand over between daytime, ie: ranks operating up to midnight, and night time ranks, and this has been expressed by user groups, trade and other stakeholders. A further issue exists in relation to the days of operation. A cause for confusion lies with the lack of knowledge amongst the travelling public of the exact

times and appropriate etiquette at change over, and this is exacerbated by limited signage. A move to reinforce signs with other information would assist, as would a consideration of the need to allow grace periods between stated change over and actual closure of side street ranks. This should allow the normal clearance of waiting passengers, not clearance of all vehicles.

Underused and unused ranks

Based on observation it is noticeable that a number of Aberdeen ranks are underused. This appears due to one of two circumstances, the lack of adequate signage at those locations; and a lack of demand for their provision. Taxi rank signage appears as something of an issue across a number of ranks, including those which are well known, and we recommend that this is reviewed with an aim of better signs and road markings. In locations where demand does not materialise, however, we would recommend the removal of taxi ranks. The following locations appear to have very limited demand for taxi supply:

- Diamond Street,
- Frederick Street,
- Justice Mill Lane, and
- Little Chapel Street

The rank located on Bridge Street also displays low patronage, but we consider this to arise as a result of confusion in rank times, rather than an absence of demand altogether. As a result we recommend the Bridge Street rank be brought in to line with other Union Street Night Time ranks.

It is generally observed that ranks without adequate signage cause confusion amongst the public. Equally ranks which are marked but not served, also contribute to perception (and reality) of poor service at that location, with a wider implication on perceptions of the taxi fleet in general.

Locations without sufficient ranking space

Two separate issues are considered in relation to rank space. The first being the need for sufficient ranking to be available to serve the needs of the public (demand), and the second, the numbers of rank spaces appropriate to accommodate the trade (supply). The calculation of demand based spaces follows from the likely throughput of a rank and results in a lower number of spaces than that required to accommodate waiting vehicles. This is reflective of the twin purposes of taxi ranks, to provide certainty to the passenger, and to hold waiting taxis (a garaging effect). Locations with demand but no rank should also be considered.

In Aberdeen consistent calls are made for ranking facilities to serve Union Square, with a majority of respondents suggesting that a new rank should be located at the rear of the complex. This would serve a high demand for “big box” shoppers, those using Union Square facilities and returning with shopping.

Similar gaps appear in areas of Gilcomston, at the eastern end of School Hill, and at the northern end of George Street, though the latter locations relate to local and corner shop activities which typically produce less taxi trips.

Calls amongst trade respondents were also made for further ranking spaces to be made available at existing taxi ranks. Of particular note those located at Back Wynd and Chapel Street were considered, by the trade, to be too short. The call reflects the second role of the taxi rank, to provide garaging for vehicles awaiting passengers. The need for garaging is exacerbated in instances of excess supply as there are effectively too many vehicles for the passing trade. This should not detract, however, fro the benefits of garaging over excessive cruising, seen as a direct alternative. Cruising taxis, those driving round empty in search of business, contribute to pollution and congestion, and this is reduced by the provision of adequate ranking alternatives. It is our view that opportunity for additional ranking at either Chapel Street or Back Wynd is limited, although an additional space at Back Wynd is available this would come at the cost of loss of Green Badge accessible parking. It is our view that the potential for additional space at Back Wynd only be considered if adequate and equally appropriate green badge parking can be identified in close proximity.

Additional ranking space may be possible on Chapel Street north of Thistle Street, but this would also impact on local access, and we would suggest this is not appropriate for further rank development.

Technical Call on

Call on, a method of identifying need for taxis at taxi ranks, was discussed at a number of occasions, and most significantly in relation to Aberdeen Airport. The taxi services at Aberdeen Airport are provided under a system of closed contract with BAA, and this is currently held by a dedicated Comcabs fleet. The airport sets a minimum service level which Comcabs serve in the main from their dedicated fleet. An agreement is in place for other taxis, effectively city taxis on site, to serve the rank at times of peak demand, using a system known locally as the green light, being the light indicating a need for city taxis, effectively a manual call forward.

The airport system raises a number of complaints from the non-airport fleet as the operation of the green light is considered, by some, to be unfairly applied. The main concern being that the light is under the control of the comcabs marshal and not fully applied. Whilst this is an understandable concern the actual circumstance of application appears misunderstood by some. The trigger being a fifteen minute delay for an individual waiting in the queue not, as some quote, the presence of a queue for fifteen minutes.

Whilst the delay of 15 minutes does appear unnecessarily long, ie: could be solved by a more open use of city fleet, this is an issue that lies properly in the commercial arrangements between BAA Aberdeen Airport and their contractor.

The potential to alter perceptions of unfairness is also limited, but may be achieved through a neutral party controlling the call on or the application of a technical (automated) system that would not allow for any bias to be shown in call on.

6. Recommendations

Our work has focused on the demand for taxi services in Aberdeen, and is predicated on the identification of optimal market conditions for taxi supply. It is noted that services appear to operate well across the city at most points, and results in a low level of unmet demand where assessed using a standard ISUD methodology.

We have identified a number of issues that we consider appropriate for recommendation, set out below. As the market for taxis is comprised of inter-related factors we have included recommendations specific to each. We strongly advise these be considered as a part of a "package" of measures that, in combination, enhance the supply of taxis in Aberdeen.

6.1 Taxi Licence Cap (Quantity Control)

The case for quantity control is very finely balanced, and strong views were expressed to us both for and against quantity control in the course of our work.

On balance we consider there to be benefit from quantity control. Benefits arise specifically in relation to subsequent market reviews, a requirement currently defined in the Civic Government (Scotland) Act. As regular reviews provide detailed quantifiable market information to the city, so the city is better placed to respond to issues arising in the supply and optimisation of the taxi fleet. On this basis we consider the application to result in benefits to the travelling public, and consequently recommend that a Licence cap is considered, to be set at the current numbers of Hackney Carriage Licences.

We would underline the need to review the market regularly, and to ensure that no negative impacts arise in the future. We feel this also relates to ensuring no additional value accrues to the ownership or transfer of plates.

We recommend that the application of a taxi licence cap is accompanied by, and conditional upon, regular and frequent reviews of the operation of the taxi market. We recommend that market reviews associated with the application of a Licence cap be undertaken in full knowledge of fare reviews and, wherever possible, undertaken together.

We recommend that Hackney Carriage licences remain restricted to Wheelchair Accessible Vehicles (WAV), and that the Authority reviews its definition of WAVs to ensure they are fully accessible and appropriate to use.

6.2 Rank Optimisation

We recommend that the Authority address a number of rank specific issues, both in terms of current provision, rank design and enhancement. These are detailed by rank below:

- *Union Square*

We recommend the provision of a new rank at the rear exit (Union Square Market) to serve the market for taxis at Union Square.

- *Back Wynd*

We recommend the provision of clearer signage and carriageway markings at Back Wynd, in common with other ranks across the city. We recommend that signs be considered to set out closure hours and alternative night time ranks. Signs should be visible along the length of the ranking area of Back Wynd. We recommend the provision of one marked disabled bay at the head of the Back Wynd rank, located on the nearside (eastern pavement) at the junction of Union Street. We recommend signage indicating that the disabled bay be used to pick up and drop off, and agreement be reached with the trade that the bay be served by the next available Wheelchair Accessible Vehicle from the body of the rank when such a taxi is required.

- Bridge Street

We recommend the relocation of the Bridge Street night time rank to a new location on Union Street, to be located on the southern carriageway directly to the east of Bridge Street (ie: vehicles departing in a westerly direction).

- *Union Street at Castlegate*

We recommend that apparently contradictory blue finger signs are adjusted to reflect actual position of the rank. Blue taxi rank signs should include detail of operating hours. We recommend use of the wording “Night Time Taxi Rank” where this is appropriate.

• *Hadden Street*

We recommend the provision of additional pavement space on the northern pavement between Market Street and Exchange Street to mitigate the negative impacts of tree planters.

* *Aberdeen Railway Station*

We recommend that traffic signals located at the junction of the railway station roadway and Guild Street be retimed to extend the departure time available to taxis from the station. We recommend the Authority consider the use of timing and induction loops in combination at this site.

• *Citywide*

We recommend that a common standard of signage and street markings be applied to all city taxi ranks. Ranks need be visible and identifiable in all locations with sufficient visible information to inform users and potential users of operating hours and, where appropriate, alternatives. Standard signage should be extended, with agreement, to private rank locations.

We recommend that ranks that are unused be removed.

6.3 Taxi Tariffs

Whilst generally addressed outwith demand reviews, there is a clear link between taxi tariffs and the demand for taxi use in the city. A consistent view has been expressed that taxi fares are high, and very high in the city of Aberdeen. We recommend that these be fully reviewed.

Taxi tariff reviews can fall into two camps, those which compare changes in costs year on year – comparative or top down reviews; and those which reconstruct the actual costs of operation on the basis of all production costs to create an Industrial Price Index – actual cost or bottom up reviews. As tariff applications may actually vary from recommended or measured changes in price the comparative review has a potential to vary from actual costs and this, over time, will result in application of an inaccurate cost.

We strongly recommend that Aberdeen undertake a bottom up review of the actual costs of operating a taxi in the city and amend tariffs appropriate to detailed production costs. As change in tariff will actually impact on demand we also recommend that this review be undertaken as an integral part of a demand review should a policy of Licence constraint be applied.

This page is intentionally left blank