TECHNICAL NOTE 2

DATE:	06 March 2023	**CONFIDENTIALITY:**	Confidential
SUBJECT:	Car Park Usage Analysis		
PROJECT:	Town Centre Car Park Study	**AUTHOR:**	MT
CHECKED:	RP	**APPROVED:**	OM

EXECUTIVE SUMMARY

Central Bedfordshire Council (CBC) is considering developing the Duncombe Drive car park located in Leighton Buzzard. This will mean a reduction in the number of available off-street parking spaces the council is able to offer in the town centre. In order to ensure there remains sufficient capacity to accommodate vehicles in the remaining car parks a study was undertaken to determine current use of all the CBC operated car parks in Leighton Buzzard.

In tandem with the parking data analysis exercise, a weeklong, snapshot parking survey was undertaken at each car park location using Automatic Number Plate Recognition Cameras (A.N.P.R.). The cameras recorded the vehicle registration upon entry to the car park and recorded the length of stay until the vehicle registration was recorded leaving the car park. This data was used to compare with the findings of the ticket sales analysis.

The primary focus of the study was to analyse car park ticket sales and mobile phone payment data from the previous three full financial years, April to March inclusive:

- 2019/20
- 2020/21
- 2021/22

The purpose of this exercise was to identify car park usage prior to the COVID-19 pandemic, car park usage during the proceeding months of lock down and extended social distancing and the car park usage following the end of the pandemic restrictions.

The ticket sales data analysis concentrated on the three car parks where parking charges are in operation: Duncombe Drive, Hockcliffe Street and West Street Multi Storey Car Park. Duncombe Drive and Hockcliffe Street operate as Pay & Display car parks whilst West Street operates as a pay on foot car park.

CBC supplied all ticket sales data for the three years which were analysed for duration of stay, for the pay and display car parks the length of stay was determined by the paid for amount of the transaction, whilst for the West Street car park the data indicated the specific length of stay for each transaction.

The ticket sales data was also input into an accumulation table which totalled the number of vehicles arriving in the car park in a period with those remaining from preceding periods, based upon the tariff paid for, this exercise helped to determine the number of transactions registered over a day, week, month and year.

Using the various data sets the following outcomes and findings have been identified.

Conclusions and Recommendations

The ticket sales data indicates that demand for spaces in Leighton Buzzard's car parking sites has not returned to pre-pandemic levels, with a sustained reduction in the usage of the West Street Multi-Storey car park.

Of the three car parks, Duncombe Drive has recovered the most towards pre-pandemic usage levels, as well as recording the greatest turnover of spaces. This presents a situation where, were those purchasing tickets to stay for the full duration allowed demand for spaces at the site would exceed capacity for several days each year. However, due to the reduction in demand at West Street (and to a lesser extent Hockliffe Street) 2021-2022 shows a degree of capacity being available across all three car parks even when Duncombe Drive would potentially be fully occupied. This is supported by the ANPR snapshot where the peak in vehicle accumulation is circa 80% of total capacity.

Review of the ANPR data and the long-term ticket sale trends between 2019 and 2022 shows that, whilst parking demand has been recovering since the Pandemic, there is a degree of reserve capacity available, with the ANPR showing circa 20% of all spaces available even in the busy December period.

Figure A on the following page shows the relationship between car park occupancy recorded in the 2022 ANPR survey and the proposed parking allocation on the Duncombe Drive site.

CBC propose to reduce parking on the site by 97 spaces, the data analysis supports this proposal, based on the peak occupancy levels identified through the ticket sales analysis and ANPR camera surveys this will leave circa 24 spaces available in the car parks at the busiest periods.

Whilst the ANPR survey was just a one-week snapshot, it took place during a busy period (immediately pre-Christmas). The demand recorded also compared well against the demand recorded over a similar period in the ticket survey data review. As such, it makes a robust basis for this appraisal.

Eliminating capacity at Duncombe Drive entirely may put the remaining facilities at just over full occupancy for short periods on the busiest day of the week (Tuesday). However, the town centre's car parks would still operate largely without issue throughout the week. If some provision remained within Duncombe Drive car park, that would assist the overall capacity within the town centre and increase confidence levels of managing peaks in demand that may occasionally arise, but it would not necessarily be required.

To facilitate a smooth reduction in parking capacity in the Duncombe Drive car park of any volume, the Council would benefit from considering parallel measures to better enable alternative modes of travel to the town centre to reduce the demand for parking while continuing to support the town centre economy as set out in the **Local Plan.**

Strategic Objective 09 ("SO09") (CBC Local Plan 2015-2035) – *Reduce the reliance on the use of the car by improving facilities at bus and train stations, delivering transport interchanges and by promoting safe and sustainable forms of transport, such as improved walking and cycling routes.*

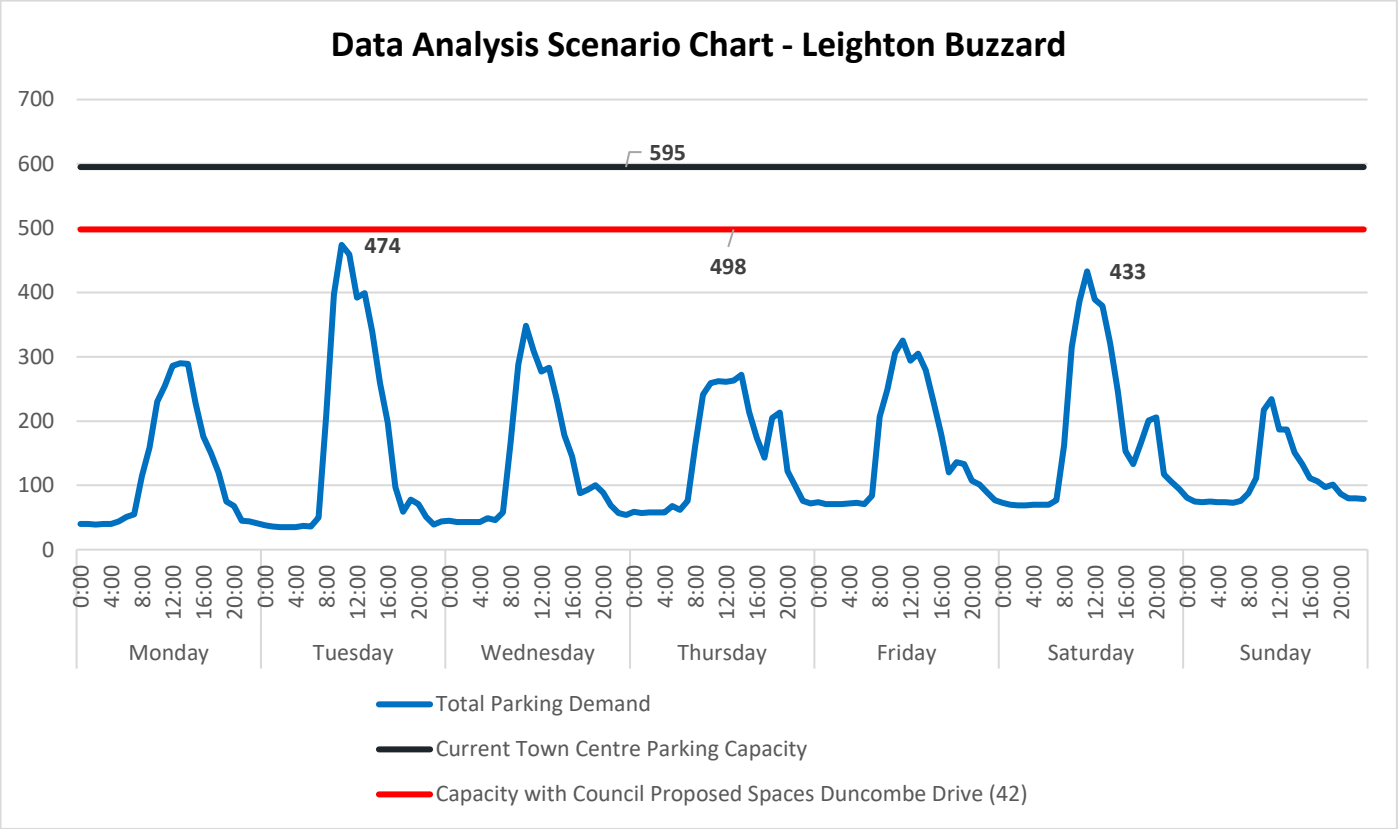


Figure A: Parking Accumulation Against Space Provision Under Duncombe Drive Scenarios

Ticket Sales Data

Of the three car parks in the study, West Street MSCP has been the most impacted by the pandemic, with ticket sales 44% less in 2021-2022 than they were in 2019-2020. January 2022 was the closest to pre-pandemic usage levels at -28% occupancy rate against that of 2020.

Duncombe Drive shows a stronger recovery from the pandemic than the West Street MSCP. Ticket sales are 14% less than the 2019-2020 in 2021-2022. In some periods, particularly September – November 2021, the number of tickets sold were between 1 and 7% of those for 2019, with the annual figure likely impacted by the 'firebreak' that took place in December 2021.

Ticket sales at Hockliffe Street in 2021/22 generally remain below the level recorded for the equivalent period in 2019/2022, with annual sales being 14% less (the same as Duncombe Drive). However, in October 2021 sales were 2% greater than October 19, whilst November 2021 sales were within 4% of their pre pandemic levels.

The majority of ticket sales in the West Street car park are for up to 1 hour, making 45-48% of annual sales. Up to 2 Hours makes up 22-27% of annual sales, whilst up to 3 Hours makes up 17-18%. Whole day tickets are least common, making 3% of sales, or 4% if the reduced tariff Sunday whole day tickets are included.

Most tickets sold in Duncombe Drive are for periods of Up to 2 Hours, making 76-77% of sales in 2019-2020 and 2021-2022, with 3-hour tickets making up 11-14%. In the same periods, Day Tickets made 2% of sales, whilst week tickets made up 1%.

Hockcliffe Street ticket sales data for 2019-2020 and 2021-2022 the majority of tickets sold are for periods up to one hour (39-44%), then up to two hours (23-25%). Day and Week tickets are slightly more prevalent at Hockliffe Street than Duncombe Drive, forming 4% and 1-2% of sales respectively.

Turnover of Parking Spaces

Turnover was calculated by dividing hourly ticket purchases against the number of spaces present in each car park. In periods where this was over 1, each space at a given car park would have, on average, been used more than once.

Of the three car parks, Duncombe Drive is the only one where this occurs, with 138 instances in 2019-2020 and 66 in 2021-2022. This most commonly occurs on Saturdays, then Tuesday, which are both market days.

The high turnover recorded here, in conjunction with most tickets prior to 2022 being in the one-two hour ranges, makes a case that the majority of those using the sites are staying for less than the full period. This makes it significant that the April 2022 tariff review introduced a 30 minute tariff which could cater for this demand.

Duncombe Drive records the largest number of periods where potential accumulation exceeds the number of spaces available, both pre and post pandemic. Hockliffe Street also records a significant number of periods where accumulation theoretically could have exceeded capacity, however there was a marked reduction in such instances between 2019-2020 (1,585 periods over capacity) and 2021-2022 (387 periods over capacity).

ANPR Camera Survey

For Duncombe Drive, the survey indicated that the busiest day of the week is Saturday, where the number of vehicles present on site reach 92% of the total vehicle capacity[1], whilst exceeding the capacity of the general spaces (65). The busiest period on Saturday is between 10:00-14:00. There is also a secondary peak in demand on Saturday evening, likely catering to evening activities. This sees vehicles present reach 60% of the overall capacity available.

This is followed by Tuesday and Friday, where demand reaches 74-75% of total capacity between 13:00-14:00.

Hockliffe Street shows a different demand pattern to Duncombe Drive. On Weekdays, most vehicles arrive before 09:00, with the number of vehicles present falling away slowly across the day. This suggests a mixture of employment related trips and leisure trips, with the former arriving earlier and staying longer whilst the latter turn over. The demand peak in the evening of maximum Weekday demand occurs on Friday. This is similar to the Saturday evening peak observed at Duncombe Drive and likely reflects evening trips out for leisure purposes.

There is also a similar Saturday evening peak shown at Hockliffe Street. It is notable that the accumulation of vehicles exceeds the general car parking capacity in this period, as it would be reasonable to think most of the leisure demand would be associated with general parking spaces, rather than commuter permits. Saturday's primary accumulation period is longer than during the week, with 70-80% of spaces occupied from 09:00-15:00. In conjunction with the duration of stay information and the ticket sales, this likely represents a rapid turnover of cars, rather than vehicles parking for a prolonged period.

Demand at West Street during the week peaks between 10:00 and 12:00, with Tuesday being the busiest weekday and recording 85% occupancy of all spaces.

Saturday is considerably quieter at this site compared to the Pay & Display car parks sites, with occupancy peaking at 60% of total spaces.

[1] Including Market Trader, Disabled and Permit Bays.

Baker Street allows vehicles to park for no charge, but for a maximum of two hours. This will encourage a high level of turnover across the day, reflected in the duration of stay data.

Despite this, the site's occupancy exceeded 75% of spaces between 09:00-11:00 and 14:00-16:00 on most weekdays, as well as 09:00-16:00 inclusive on Friday. Tuesday and Friday are the busiest weekdays at this site.

Of the weekend, Saturday and Sunday also record high levels of occupancy in certain periods; 09:00-13:00 on Saturday and 14:00-17:00 on Sunday.

New Road is a small car park with only 10 spaces, the data shows 80% regularly throughout the survey, with Tuesday being the busiest day. This site is unusual in that most high occupancy periods are later in the day, from 17:00-00:00, particularly Monday-Wednesday.

Demand reduces at the weekend, moving to 60% of total spaces available at most.

Parking Income

To support the transactional data a review of the car park income was also undertaken, the income review details the pre, during and post pandemic periods.

The findings indicate the Revenue generated by the car parks has declined 26% between 2019-2020 and 2021-2022, with the largest drop being recorded at West Street. As in 2019-2020 the MSCP was the largest revenue generator, this has had a disproportionate impact on the overall revenue.

The shifts in revenue broadly follow the ticket sales in quantity, the analysis does show that Hockliffe Street generates more Revenue per ticket sold as, despite lower ticket sales than Duncombe Drive, the revenues are broadly similar. One possible reason for this is that, during the study period, Duncombe Drive charged £1 for up to 2 hours, whilst Hockliffe Street charged £1 for up to 1 hour and £1.50 for up to 2 hours. As the up to 2 Hour Tariff forms a large portion of sales, this makes for a significant shift. This might change after the April 2022 tariff review which standardised a £1.50 tariff for 1 hour and £2 for 2 hours, across all sites.

Further analysis of the income data, reflecting the high turnover of spaces recorded there, Duncombe Drive consistently reports the greatest revenue per parking space, despite most tickets sold being the lower price up to 2-hour tickets. In line with the 40% reduction in usage between 2019-2020 and 2021-2022, the revenue returned per space at the MSCP decreased markedly over the period.

INTRODUCTION

The Study

In November 2022 WSP were commissioned to support Central Bedfordshire Council (CBC) in appraising the utilisation of off-street car parking spaces in Leighton Buzzard's town centre.

The study considers two sets of data. Firstly, there is ticket purchase data covering the following three periods:

- April 2019 – March 2020
- April 2020 – March 2021
- April 2021 – March 2022

These periods overlap with the Covid-19 Pandemic and associated "Lockdowns" which were implemented to varying degrees between March 2020 and March 2022, with March 2020 – March 2021 being the most restricted period and April 2021-March 2022 showing a recovery in demand[2] for parking as people incrementally returned to work and leisure in the town centre.

Secondly, there is ANPR data obtained for the period 5th December 2022 to 11th December 2022. Whilst only a 'snapshot', the ANPR data provides duration of stay data and occupancy figures which supplements the ticket data which only allows *estimation* of those values based upon tickets purchased.

The information on the parking's utilisation is intended for use in identifying where space consolidation or reallocation could be undertaken, enabling alternative land use and development.

The purpose of this note is to set out how the utilisation analysis was undertaken.

[2] With the exception of a 'Firebreak' lockdown in December 2021, the impact of which is clearly shown on ticket sales.

CAR PARK LOCATIONS, PROVISION & TARIFFS

CURRENT PARKING PROVISION

For context, **Figure 1** shows the location of the car parks.

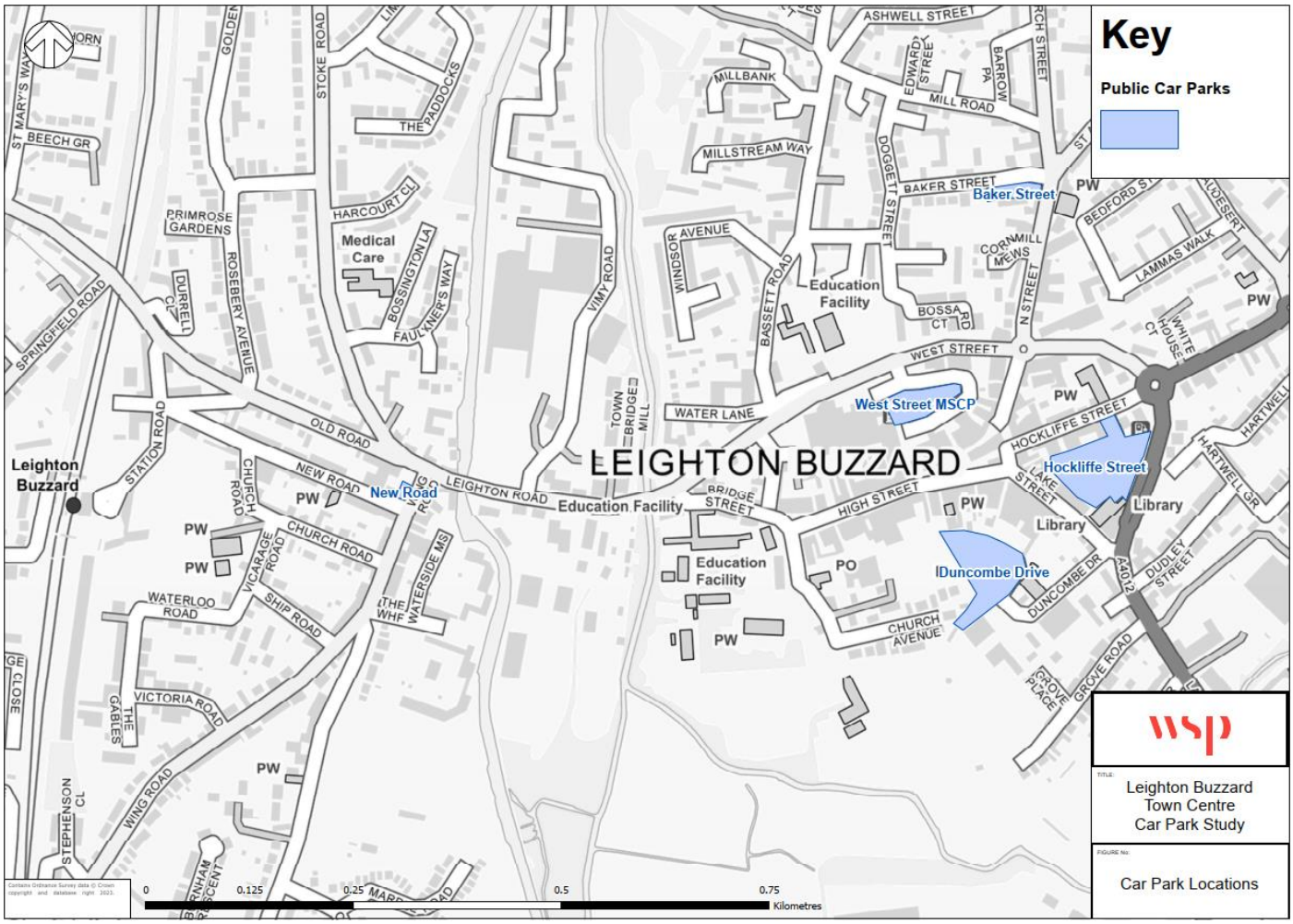


Figure 1: Car Park Locations

There are five car parks in the town centre of Leighton Buzzard. The three closest to the centre offer a range of tariffs from one hour to one week, as well as longer-term permits.

Table 1 sets out the nature of the three car parks and the number of spaces available at each.

Car Park Name	Nature	Total Spaces	Standard (General Public)	Permit Bays	Market Trader Bays	Disabled
Duncombe Drive	Surface	139	65	29	42	3
Hockliffe Street	Surface	126	83	40	0	2
West Street	Multi-storey	266	252		0	14

Table 1: Parking Space Provision

Permit bays refer to spaces reserved for those with Permits acquired from CBC. These permits generally last for a year but can be extended.

In addition to the preceding three car parks, two further surface car parks are available. Rather than a range of tariffs, these car parks are free to use for up to two hours, with an exception for Permit Holders.

Car Park Name	Nature	Total Spaces	Standard (General Public)	Permit Bays	Market Traders	Disabled
Baker Street	Surface	54	48	6	N/A	N/A
New Road	Surface	10	8	2	N/A	N/A

Table 2: Free to Use / Permit Only Car Parks

Duncombe Drive also provides designated spaces for Market Traders. As shown in **Table 3** on the following page, Market Traders pay a flat £3.50 for parking. Market Days are primarily on Tuesdays and Saturdays and the market trader bays are reserved for them on those days. The public can park in the market trader bays when they are not reserved.

Tariffs

To support the analysis of the Ticket Sales data, CBC provided information on the tariff structure applied to the study car parks between 2018 and 2022. These Tariffs apply to the **Cashless** and **Pay & Display** sales (more details are provided in the next Chapter), with **Permits** being handled separately.

The Tariffs during the study period are set out in **Table 3 - Table 5**, below. Values are in pounds (£).

Car Park	Up to 1 Hour	Up to 2 Hours	Up to 3 Hours	Up to 5 Hours	up to 10 hours	Weekly Ticket	Market Traders (Day)
Duncombe Drive	1	1	2	3.5	6.5	15	3.5

Table 3: Duncombe Drive Tariff Structure

Car Park	Up to 1 Hour	Up to 2 Hours	Up to 3 Hours	Up to 5 Hours	up to 10 hours	Weekly Ticket
Hockliffe Street	1	1.5	2	3.5	6.5	15

Table 4: Hockliffe Street Tariff Structure

Car Park	Up to 1 Hour	Up to 2 Hours	Up to 3 Hours	Up to 5 Hours	up to 12 hours	Sunday
West Street	1	1.5	2	3.5	6.5	2

Table 5: West Street Tariff Structure

The Tariffs were revised in April 2022, after the study period. As part of the revision, charges standardised across all three sites[3]. For reference, this is provided in **Table 6** below.

Car Park	Up to 30 mins	Up to 1 Hour	Up to 2 Hours	Up to 3 Hours	Up to 5 Hours	all day	Weekly Ticket	Market Traders (Duncombe Drive)	Sunday (MSCP Only)
Tariff	1	1.5	2	3.5	6.5	2	17.5	3.5	2

Table 6: Standardised Charge Regime (Post April 2022)

As can be observed, the main shift is the introduction of a 30-minute tariff for £1 at all three sites, whereas the previous minimum period was £1 for 1 hour (or 2 hours at Duncombe Drive).

[3] Exceptions include Duncombe Drive retaining the dedicated Market Trader Fees, whilst the barrier equipped MSCP has a £2 Sunday tariff which isn't present at the other sites.

INPUTS & ASSUMPTIONS

Introduction

The primary source of data for this study was a record of tickets and passes sold across Leighton Buzzard's car parks between April 2019 and March 2022. The ticket information received was set out in three groups:

- **Pay & Display:** Purchased from machine at site and located on the car dashboard.
- **Cashless:** Purchased via mobile phone/app, then logged on revenue enforcement's checking system; and
- **Permit:** Purchased in advance from the Council.

The second set of data for this study was a 'snapshot' **ANPR** survey undertaken in December 2022. This provided accurate occupancy data for the seven study days, as well as duration of stay data at each car park.

This Chapter of the report sets out how each data set was analysed.

Pay & Display and Cashless

GENERAL PUBLIC

Methodology

Pay & Display and Cashless tariff purchases were provided as a table containing each tariff purchased with associated date and time. As these share the same tariff structure and don't have dedicated spaces in the same way as Market Traders or Permit Holders, they're considered together here.

Two adjustments were made to the data to facilitate analysis.

Firstly, purchase times were grouped into one-hour periods (between 00:00-01:00 to 23:00-00:00). This enabled easy presentation of ticket sales across the day and supported the ticket accumulation methodology detailed below.

Secondly, the duration of stay for was identified based upon the tariff paid, in line with the values set out in **Tables 3** to **5**. In some instances, ticket values were recorded which did not align with the values in the tariff structure. Where this was recorded, the tariff was rounded down to the next tariff in the structure. For example, if a tariff of £4.50 (between the 5 hour and 1-day tariffs) was recorded, it would be rounded down to £3.50 (5 hours). Due to a lack of exit data to clarify whether a vehicle stayed for less or more than the duration of the tariff purchased, it was assumed that each vehicle stayed for the duration of the tariff purchased. This provides a degree of robustness to the occupancy estimation as it assumes a 'worst case scenario'.

Once each Tariff had a standardised arrival period and stay period identified, they were input into an accumulation table which totalled the number of vehicles arriving in the car park in a period with those remaining from preceding periods, based upon the tariff paid. For example, if, in the first hour, two one-hour tickets and a two-hour ticket were recorded, then the accumulation table would record three vehicles. In the second hour, it would count the two-hour ticket from the preceding hour and any new arrivals. The estimated number of vehicles present could then be compared against the number of spaces available.

Due to the assumption that each vehicle stayed for the duration of their tariff paid, there are some periods in which the estimated accumulation of vehicles exceeds the number of spaces present in the car park. Whilst this can't happen, it enables identification of peak demand where one or more of the sites is approaching capacity. This is supported by the turnover data, calculated by dividing the arrivals per hour by the number

of spaces available. This shows some hours in which the number of vehicles arriving exceeds the number of spaces available, meaning that each space must turn over or be reused more than once in the period.

In addition to the accumulation and turnover appraisal, the grouping of tickets by period purchased and tariff type enabled the following analysis:

- Distribution of ticket purchases by month or year;
- Turnover of spaces per hour or day, by dividing the total tickets purchased in the period by the number of spaces; and

Assumptions & Exclusions

- Due to the data being driven by ticket *sales*, any vehicles using the car parks outside of the charging periods aren't included. Charging Periods Are:
  - 08:00-18:00 Monday, Wednesday, Thursday and Friday
  - 08:00-13:00 Tuesday and Saturday
  - Sunday is free all day.

  Due to the site's barriers requiring a ticket, West Street still requires a reduced charge to use in periods other car parks are free. For example, there's a £2 all day tariff in place on Sunday.
- Due to the ticket information not including car park exit times, it is assumed that drivers stayed for the entire period allowed by their ticket. This forms a robust assumption of the number of vehicles present.
- New Road and Baker Street Car Parks aren't considered here, as they don't have tariffs aside from Permits (which are considered separately, below).

MARKET TRADERS

Market Trader tariffs were provided as part of the Cashless tariff dataset. Due to their unique tariff structure and access to designated bays at Duncombe Drive, they were considered separately.

As the tariffs cover single day periods, total tickets sold per day were calculated and compared against the number of bays available.

Permits

METHODOLOGY

Due to their longer duration, permit purchases were grouped by Month and Duration of Purchase. A monthly accumulation was then calculated by the same approach as the hourly accumulation used for other ticket types.

Automatic Number Plate Recognition (ANPR)

METHODOLOGY

ANPR surveys were undertaken between the Monday the 5th of December and Sunday the 11th of December. These surveys provide a snapshot of the arrivals and departures from each car park. This gives observed accumulation data which can then be compared against the estimates made based upon ticket sales.

Additionally, the ANPR data provides average stay durations at the town's car parks. This provides additional context to the estimations made regarding the ticket sales data.

OUTCOMES

Introduction

This chapter sets out the findings produced through the application of the preceding methodology. Tickets are broken down into three categories as discussed previously.

- Pay & Display and Cashless
- Market Traders
- Permits

Pay & Display and Cashless

DURATION OF STAY

From Ticket Data

Figure 2 shows annual ticket sales at West Street MSCP by nature of ticket, whilst **Figure 3** shows monthly ticket sales at West Street MSCP by nature of ticket.

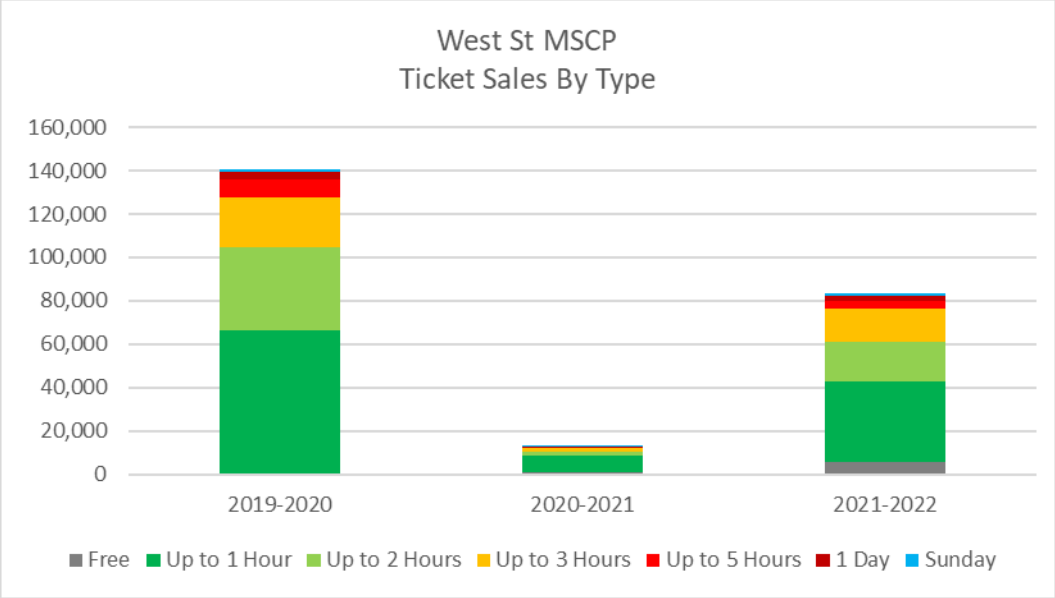


Figure 2: West St MSCP Annual Ticket Sales by Nature of Ticket

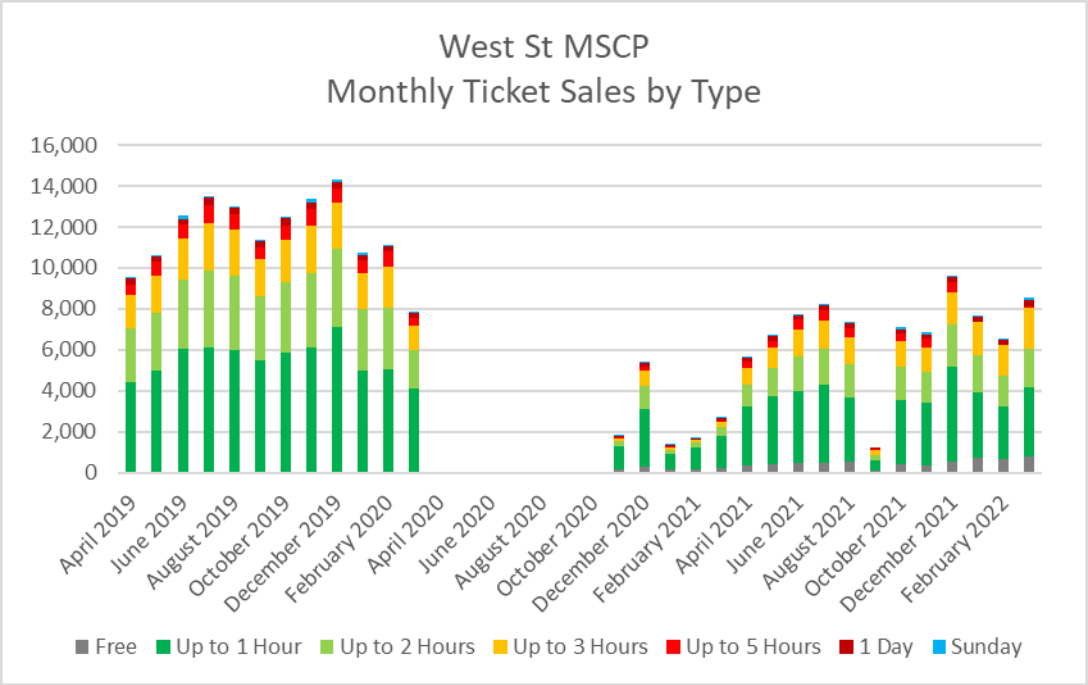


Figure 3: West St MSCP Monthly Ticket Sales by Nature of Ticket

Of the three car parks in the study, West Street MSCP has been the most impacted by the pandemic, with ticket sales 44% less in 2021-2022 than they were in 2019-2020. January 2022 was the closest to pre-pandemic usage levels at -28% occupancy against 2020.

Most ticket sales are for up to 1 hour, making 45-48% of annual sales, up to 2 hours makes up 22-27% of annual sales, whilst up to 3 hours makes up 17-18%. Whole day tickets are least common, making 3% of sales, or 4% if the reduced tariff Sunday whole day tickets are included.

Figure 4 shows annual ticket sales at Duncombe Drive by nature of ticket, whilst **Figure 5** shows monthly ticket sales at Duncombe Drive by nature of ticket.

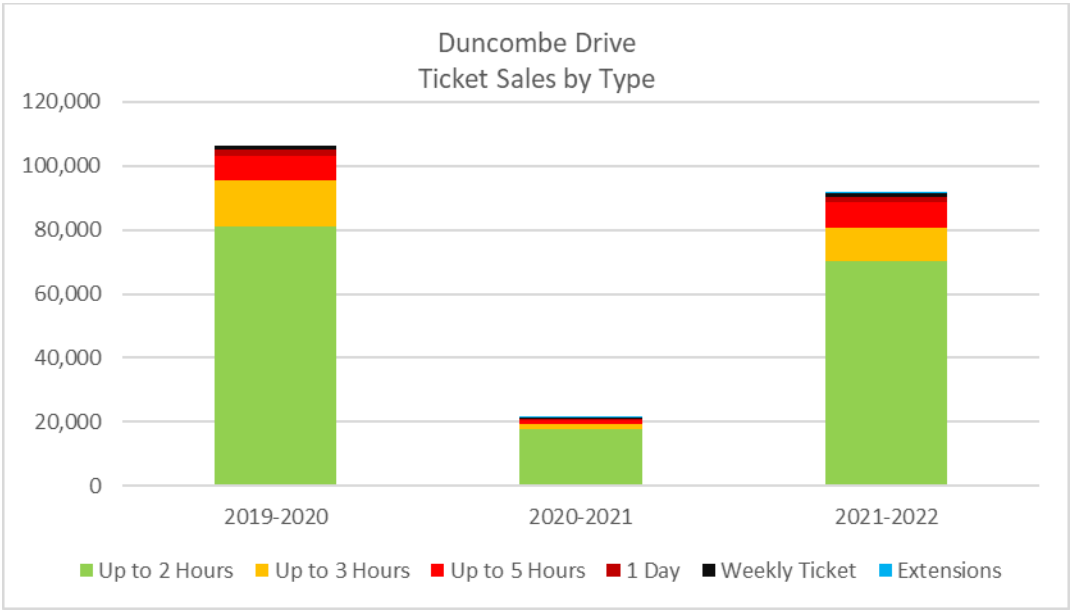


Figure 4: Duncombe Drive Annual Ticket Sales by Nature of Ticket

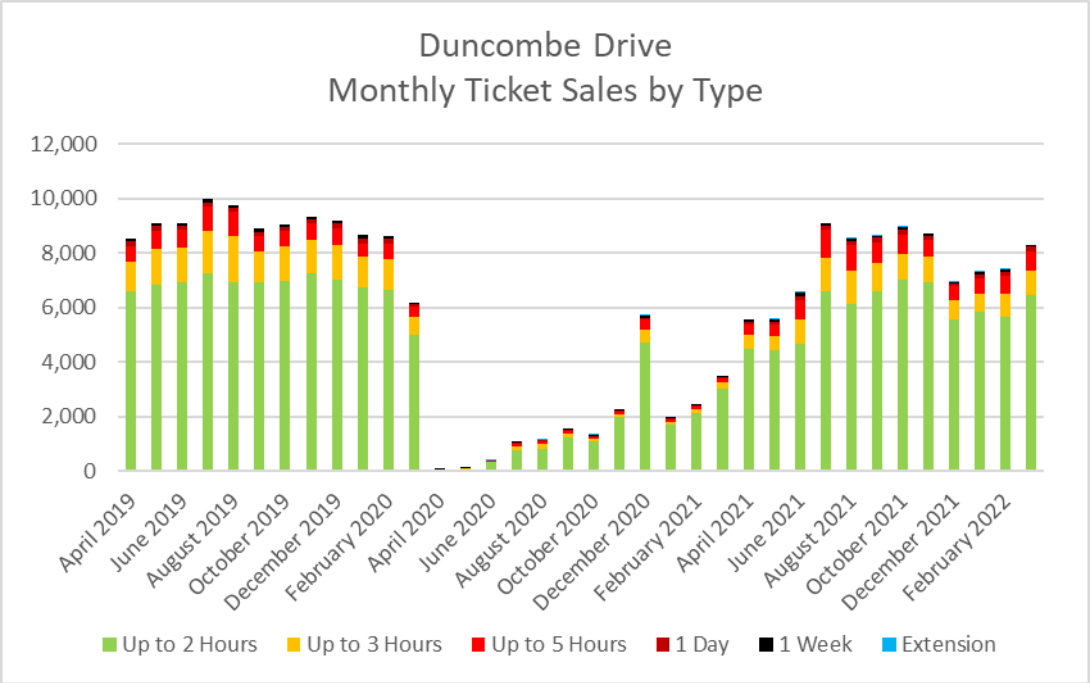


Figure 5: Duncombe Drive Monthly Ticket Sales by Nature of Ticket

Duncombe Drive shows a stronger recovery from the pandemic than the West Street MSCP. Ticket sales are 14% less than the 2019-2020 in 2021-2022. In some periods, particularly September – November 2021, the number of tickets sold were between 1 and 7% of those for 2019, with the annual figure likely impacted by the 'firebreak' that took place in December 2021.

Similar to West St MSCP, the majority of tickets sold are for periods of up to 2 hours, making 76-77% of sales in 2019-2020 and 2021-2022[4], with 3-hour tickets making up 11-14%. In the same periods, Day Tickets made 2% of sales, whilst week tickets made up 1%.

Extension tickets are possible via the Cashless app and represent the extension of a previously purchased ticket by the addition of a further period, for example extending a one-week ticket for a second week. The ticket data provided these tickets as one final price for both purchases. As can be observed, these make a small minority of sales.

[4] Sales in 2020-2021 are atypical and thus not considered further.

Figure 6 shows annual ticket sales at Hockliffe Street by nature of ticket, whilst **Figure 7** shows monthly ticket sales at Hockliffe Street by nature of ticket.

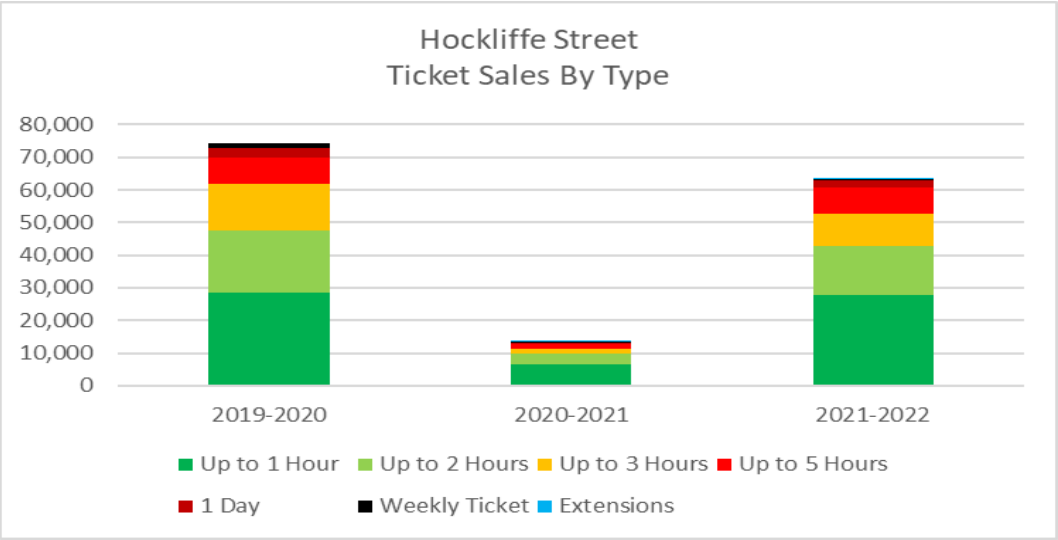


Figure 6: Hockliffe Street Annual Ticket Sales by Nature of Ticket

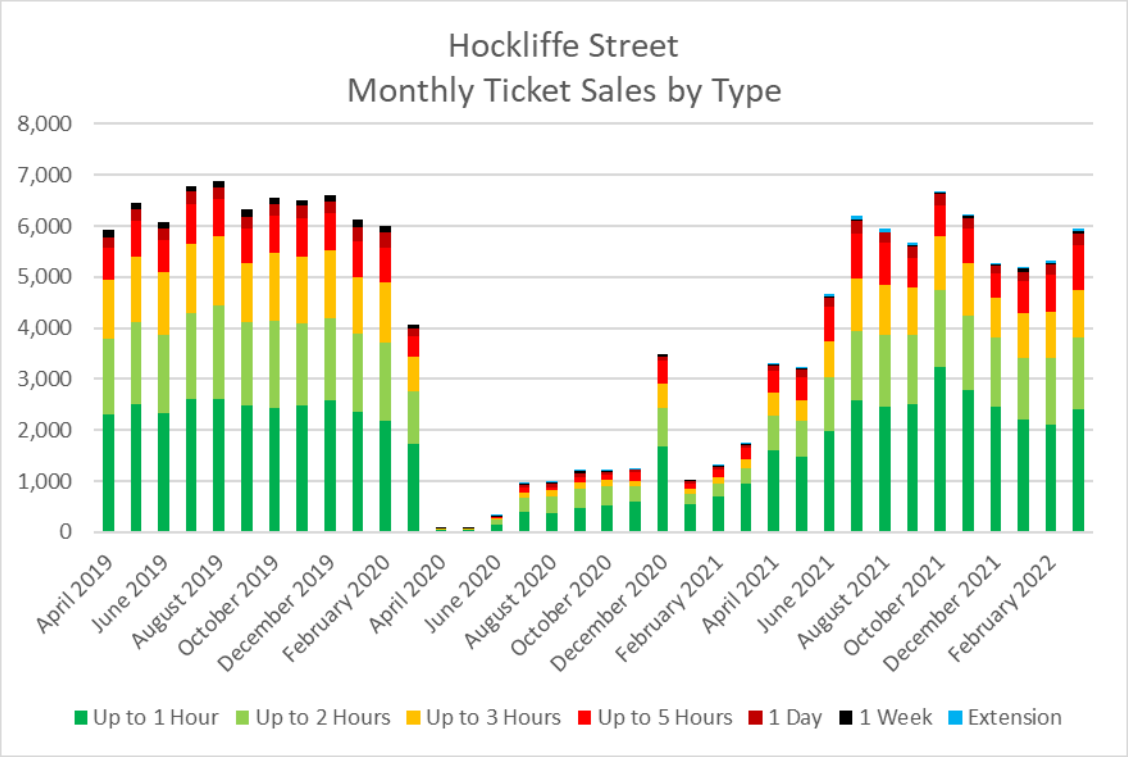


Figure 7: Hockliffe Street Monthly Ticket Sales by Nature of Ticket

Both preceding Figures show that ticket sales at Hockliffe Street in 2021/22 generally remain below the level recorded for the equivalent period in 2019/2022, with annual sales being 14% less (the same as Duncombe Drive). However, in October 2021 sales were 2% greater than October 19, whilst November 2021 sales were within 4% of their pre pandemic levels.

In 2019-2020 and 2021-2022[5] the majority of tickets sold are for periods up to one hour (39-44%), then up to two hours (23-25%). Day and Week tickets are slightly more prevalent at Hockliffe Street than Duncombe Drive, forming 4% and 1-2% of sales respectively.

Similar to Duncombe Drive, extension tickets form a small minority of ticket sales, however a slight increase in their use from 2019-202 to 2020-2021.

From ANPR

Figure 8, Figure 9 and **Figure 10** compares the stay durations calculated from the ticket sale data in 2019-2020, 2020-2021, 2021-2022 against the stay durations recorded by the ANPR during the 2022 survey.

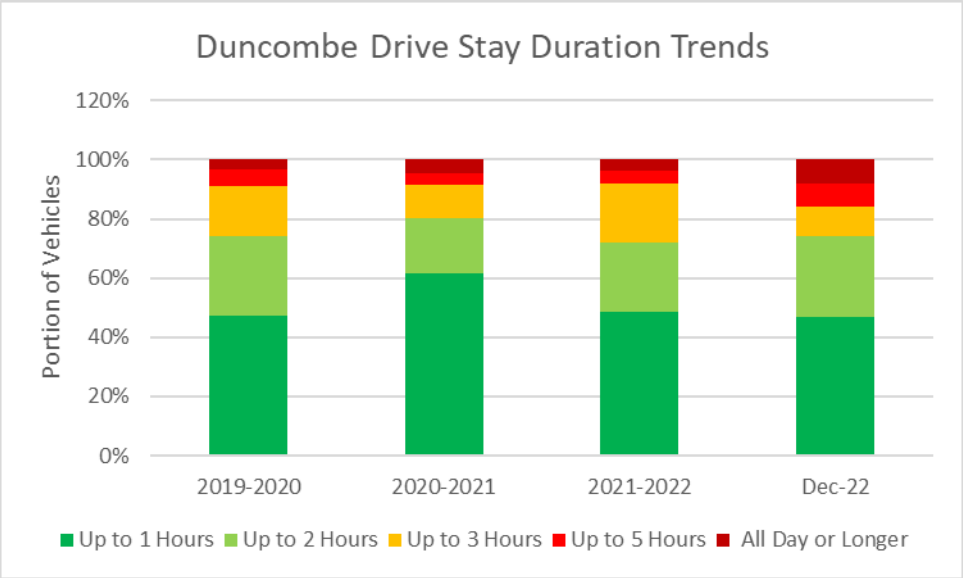


Figure 8: Stay Duration Trends- Duncombe Drive

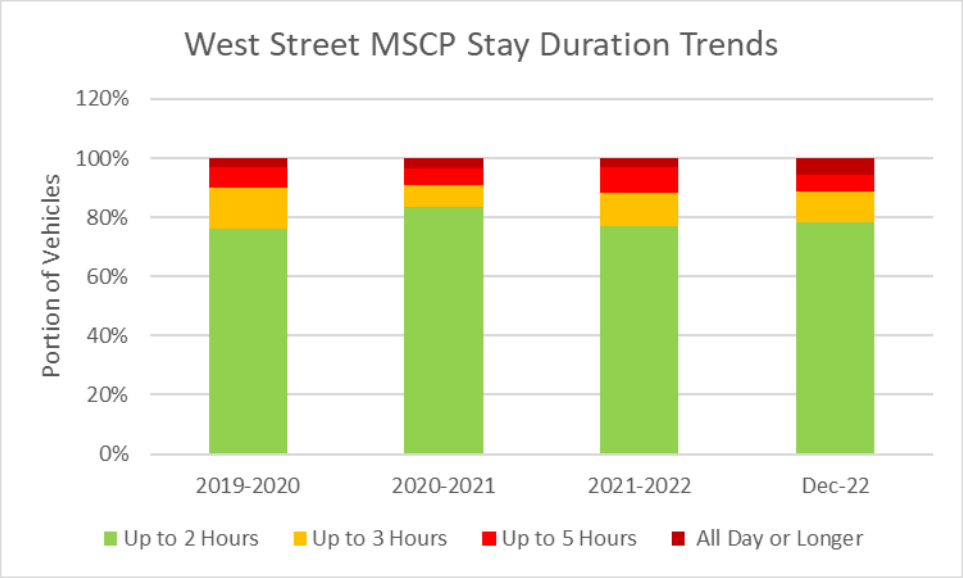


Figure 9: Stay Duration Trends- West Street MSCP

[5] As stated in regard to Duncombe Drive, sales in 2020-2021 are atypical and thus not considered further.

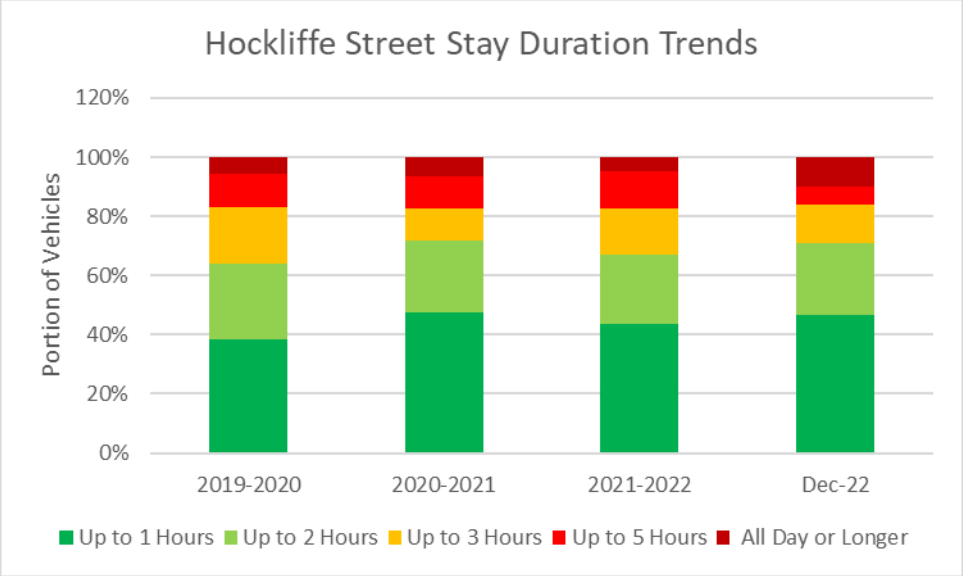


Figure 10: Stay Duration Trends- Hockliffe Street

The preceding figures show a strong correlation between the stay duration calculated from the ticket sales data and the stay durations recorded in the ANPR. One exception to this is the “All Day or Longer” bracket, which is more prevalent in the ANPR than from the ticket data.

The reason for this is that there is no charge after certain periods each day. Therefore, if a vehicle arrives just before the charge period ends then the tariff could be less than would be paid for the duration of stay if it was entirely in charged period. For example, a vehicle arriving at Duncombe Drive at 18:00 on a weekday could pay for a 2-hour ticket which would over-run the end of the charge period and remain valid until the start of the next charge period at 07:00, allowing the vehicle to remain up to 13 hours if desired.

Aside from the ANPR showing a portion (3-10% depending on car park) utilising the uncharged periods to stay longer into the evening, it is apparent that the primary ticket sale and stay duration is 1-2 hours, depending on car park.

MONTHLY AND ANNUAL TICKETSALES[6]

Figure 11 shows annual ticket sales at the three car parks, whilst **Figure 12** shows sales by month and year.

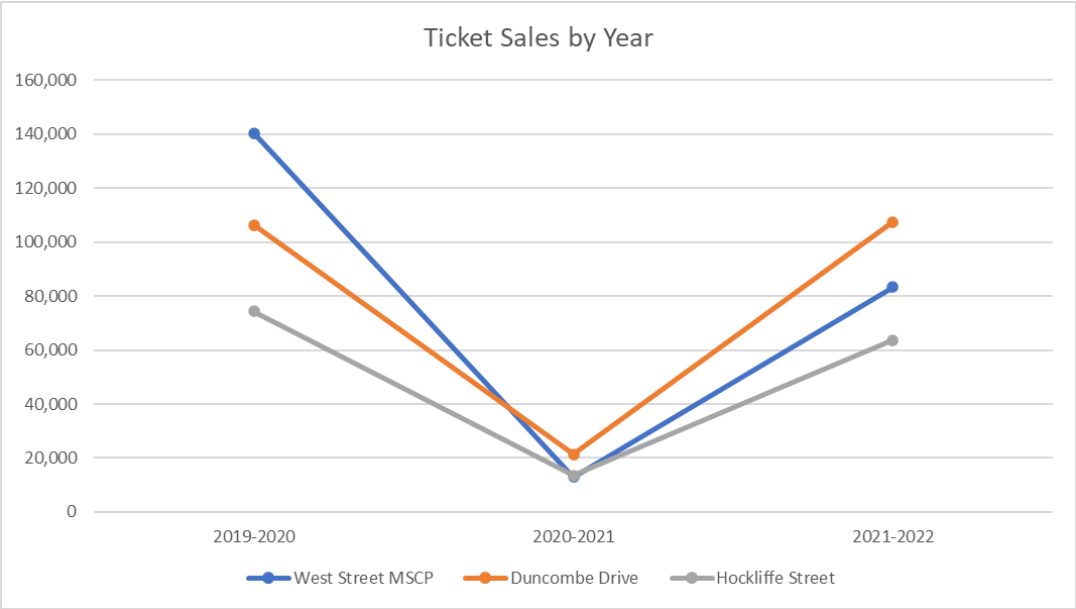


Figure 11: Total Ticket Sales by Year

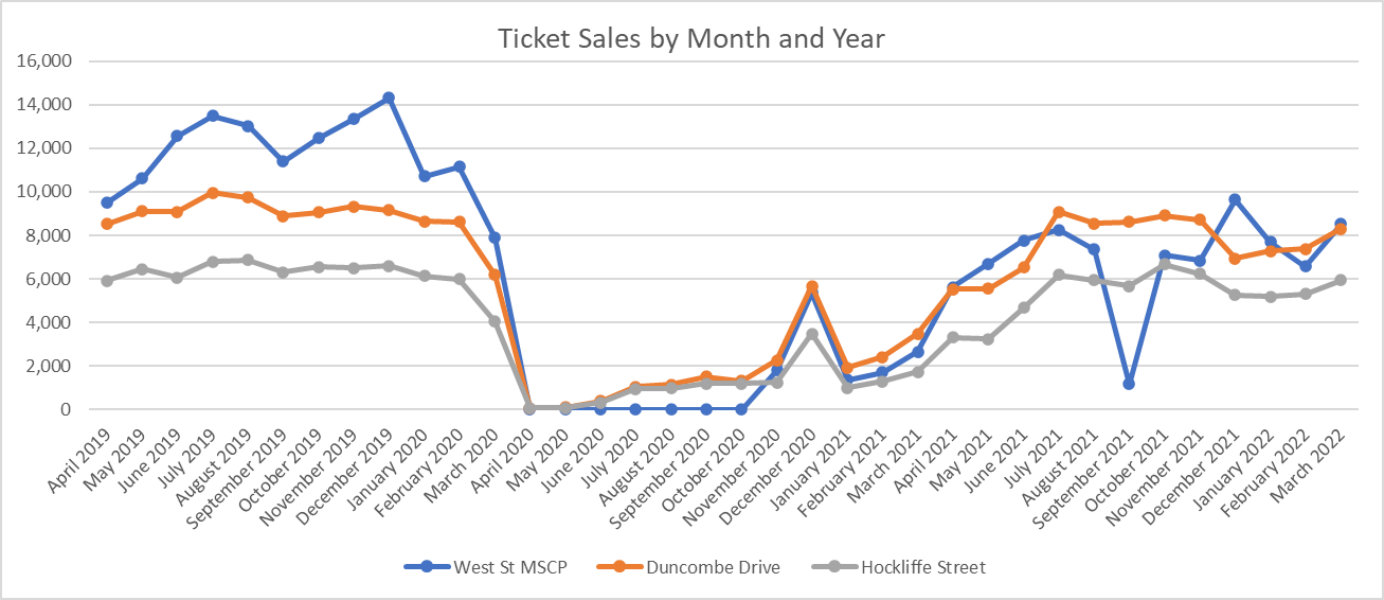


Figure 12: Total Ticket Sales by Month and Year

Figure 11 shows that, as detailed in the preceding charts, the number of vehicles using West Street MSCP are recovering more slowly than at Duncombe Drive or Hockliffe Street, with ticket sales in 2021-2022 less at West Street than Duncombe Drive. **Figure 12** shows that part of this might be due to a September Barrier failure which removed a portion of West Street's revenue, however in other months the larger Multi Storey facility's occupancy remains similar to or below Duncombe Drive. Ticket sales at the three car parks combined are 21% less in the 2021-2022 period than in 2019-2020 period, with October 2021-February 2022 between 19 and 27% less than the equivalent October 2019-February 2020 period, discounting a March 2020-March 2022 comparison as the former saw the beginning of lockdowns mid-month, skewing the day.

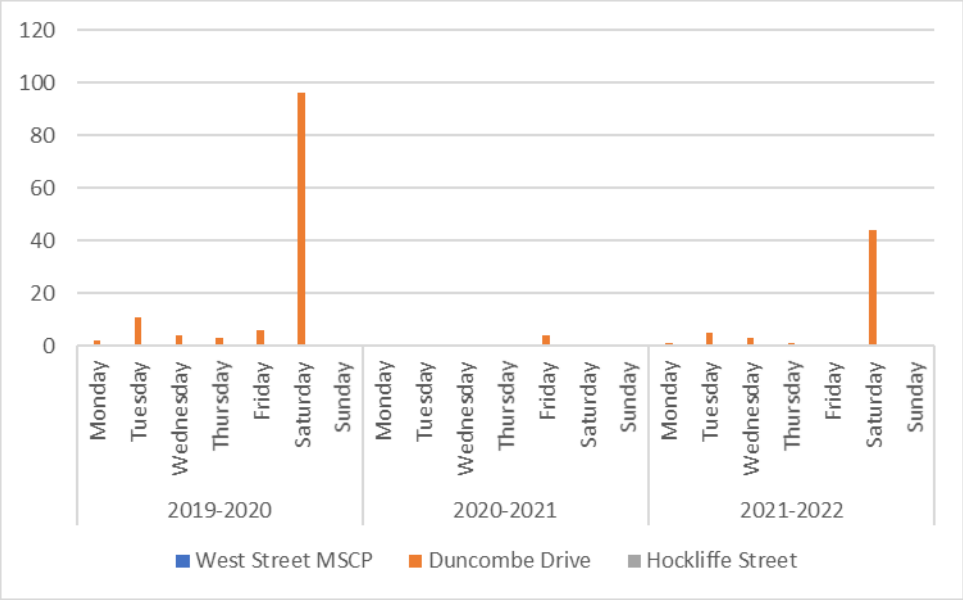
[6] From Ticket Sales Only, due to duration of study period.

TURNOVER

Of the three car parks, Duncombe Drive is the only one where this occurs, with 138 instances in 2019-2020 and 66 in 2021-2022. As shown in **Figure 13,** this most commonly occurs on Saturdays, then Tuesday, which are both market days. Albeit Saturday is generally the busiest day by a considerable margin.

Turnover was calculated by dividing hourly ticket purchases against the number of spaces present in each car park. In periods where this was over 1, each space at a given car park would have, on average, been used more than once.

Figure 13 shows periods in which demand in one hour is greater than the number of spaces available.



Periods where turnover exceeds one correlate with the overcapacity periods identified in the subsequent accumulation chart.

The high turnover recorded here, in conjunction with the majority of tickets prior to 2022 being in the one-two hour ranges, makes a case that the majority of those using the sites are staying for less than the full period. This makes it significant that the April 2022 tariff review introduced a 30 minute which could cater for this demand[7].

[7] Unfortunately, the ANPR survey data split duration of stay into 1 hour intervals. As such, it isn't possible to infer what portion of stays are 30 minute duration and what portion are 1 hour duration.

From ANPR

Figure 14 shows the number of 1-hour periods where arriving vehicles exceeded the total car park capacity during the seven days of the ANPR survey. Due to the ANPR not differentiating between General Users / Permit Holders / ANPR (etc) the calculation was based upon all hourly arrivals against all spaces available at the car park.

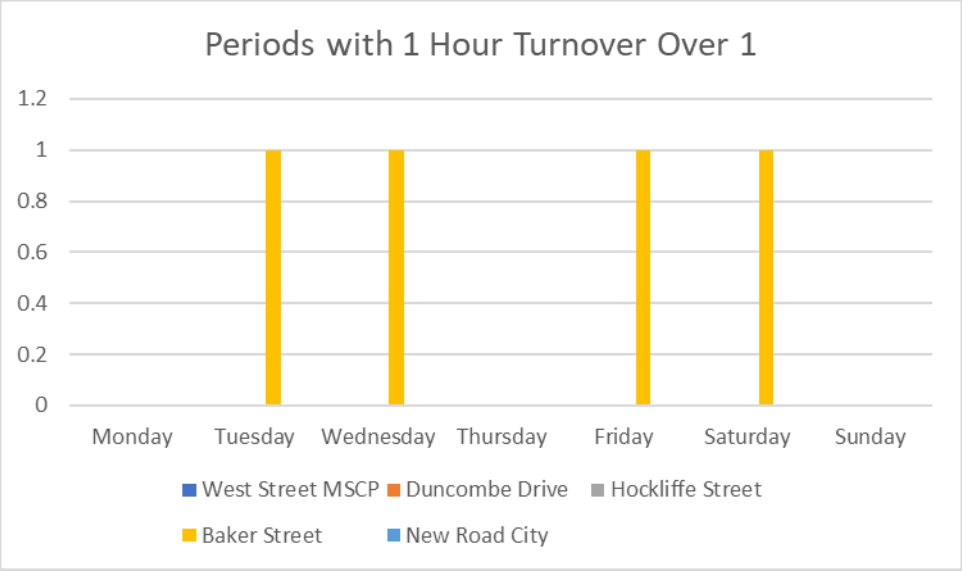


Figure 14: Periods Across ANPR Study where Hourly Turnover Exceeds 1

With the parameters set out in the preceding paragraph, the only one of the town's five car park where demand exceeds overall capacity is Baker Street, in four instances. This lack of high turnover periods possibly reflects that demand is still reduced after Covid, or that the addition of specialist spaces, such as Permit and Market (which are shown in the ticket data to be less used) mitigates the consideration of all demand in one group. It is notable that Tuesday and Saturday are among the busiest days, as per the previous observations.

ACCUMULATION

Inputs & Assumptions, the assumption that vehicles stayed for the duration of their tariff resulted in periods where vehicle accumulation exceeded car park capacity.

Figure 15 shows the number of 1-hour periods per year in which the number of vehicles potentially using the car parks exceeded capacity, whilst **Figure 16** shows occurrences monthly. The *Overall* value combines the capacity and the calculated accumulation of all three car parks.

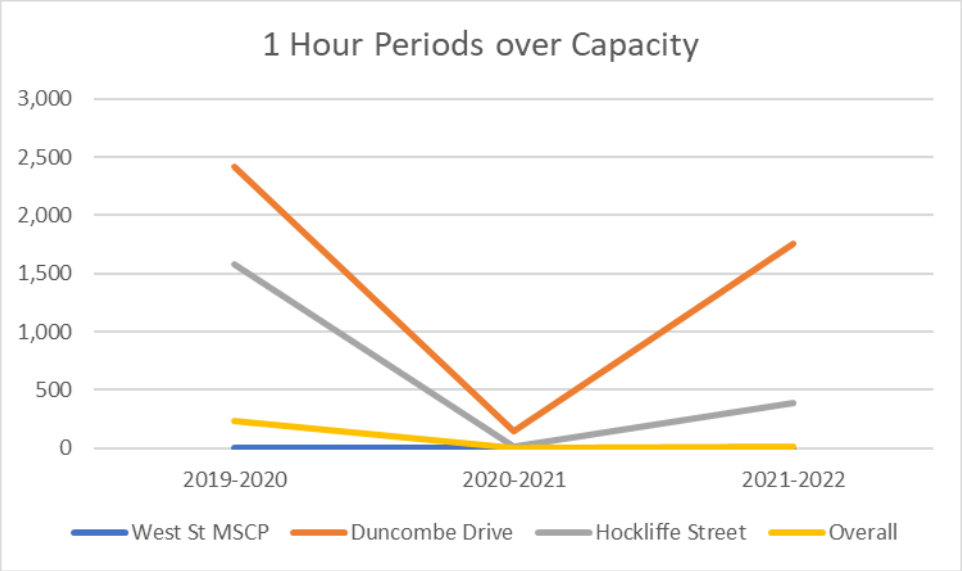


Figure 15: Periods where Accumulation Exceeds Parking Capacity – Annual

Figure 15 indicates that in 2019-2020, there were 138 one-hour periods in which vehicle accumulation across all three car parks could have exceeded their combined capacity. In comparison, there are only 12 such periods in 2021-2022. Both pre and post pandemic, most of these occurrences are recorded on Saturdays.

Of the three car parks, Duncombe Drive records the largest number of periods where potential accumulation exceeds the number of spaces available, both pre and post pandemic. Hockliffe Street also records a significant number of periods where accumulation theoretically could have exceeded capacity, however there was a marked reduction in such instances between 2019-2020 (1,585 periods over capacity) and 2021-2022 (387 periods over capacity).

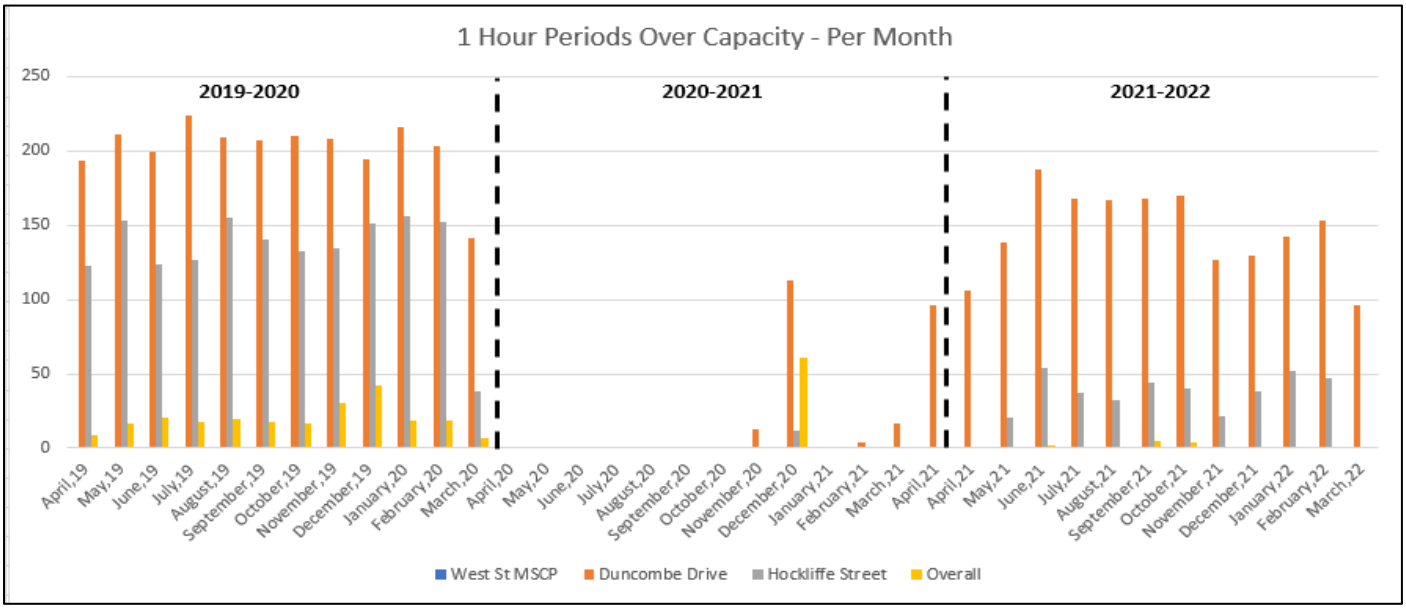


Figure 16: Periods where Accumulation Exceeds Parking Capacity – Monthly

Figure 16 shows that the distribution of periods where accumulation could theoretically exceed capacity are relatively evenly distributed across the year, though June/July and November/December show small peaks, particularly in 2019-2020[8].

This also indicates that peak demand for the three car parks is broadly aligned, with 'busy' periods occurring simultaneously across the three sites. Due to the lack of ticket data, it isn't possible to compare usage at Baker Street or New Road.

[8] As previously mentioned, December 2021 demand was impacted by a mini-lockdown over the period.

From ANPR Data

Figure 17 shows the vehicle accumulation recorded by the December 2022 ANPR survey at Duncombe Drive.

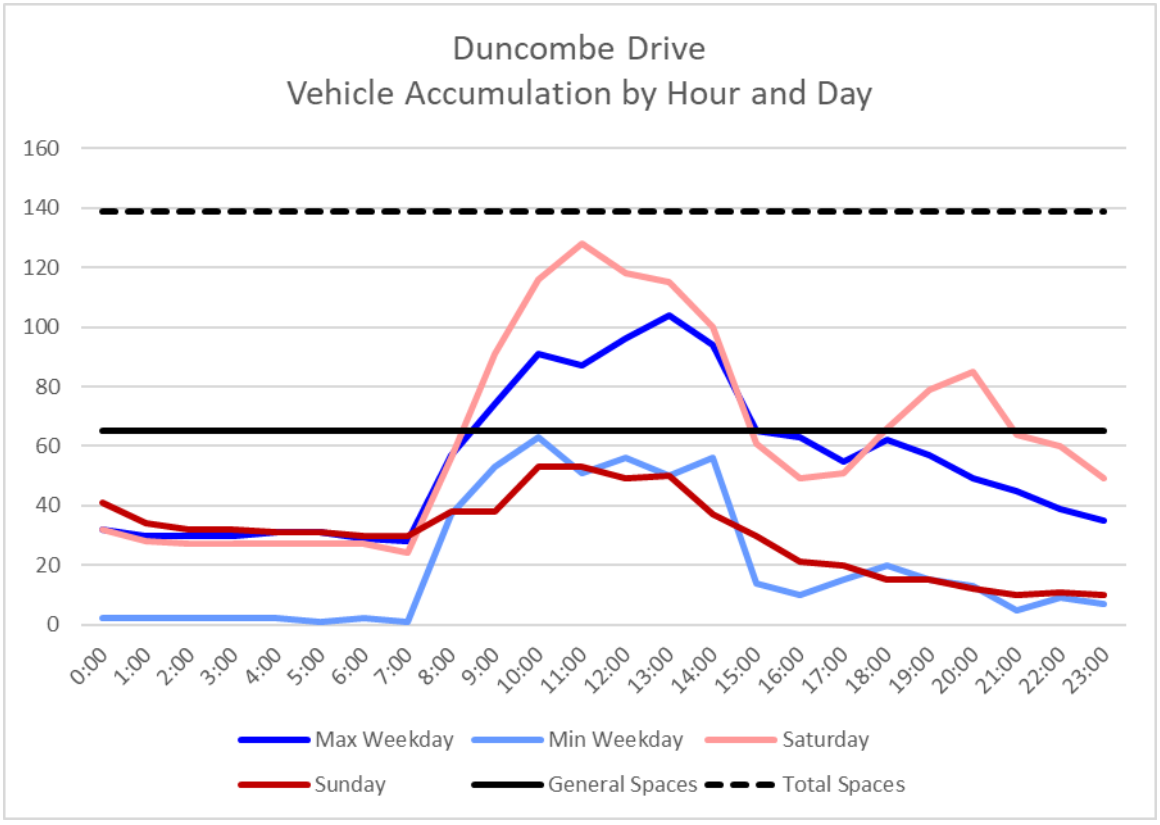


Figure 17: Duncombe Drive Vehicle Accumulation Observed During ANPR survey

This shows that the busiest day of the week is Saturday, where the number of vehicles present on site reach 92% of the total vehicle capacity[9], whilst exceeding the capacity of the general spaces. The busiest period on Saturday is between 10:00-14:00. There is also a secondary peak in demand on Saturday evening, likely catering to evening activities. This sees vehicles present reach 60% of the overall capacity available.

This is followed by Tuesday and Friday, where demand reaches 74-75% of total capacity between 13:00-14:00.

In conjunction with the high turnover of spaces identified both from the ticket data and supported by the dominance of 1-2 hour stay periods observed in the ANPR, this would suggest there is some potential to reduce space provision at Duncombe Drive, though care must be taken to ensure that vehicles seeking a space don't lead to delays in movement within or approaching the car park.

[9] Including Market Trader, Disabled and Permit Bays.

Figure 18 shows the vehicle accumulation recorded by the December 2022 ANPR survey Hockliffe Street.

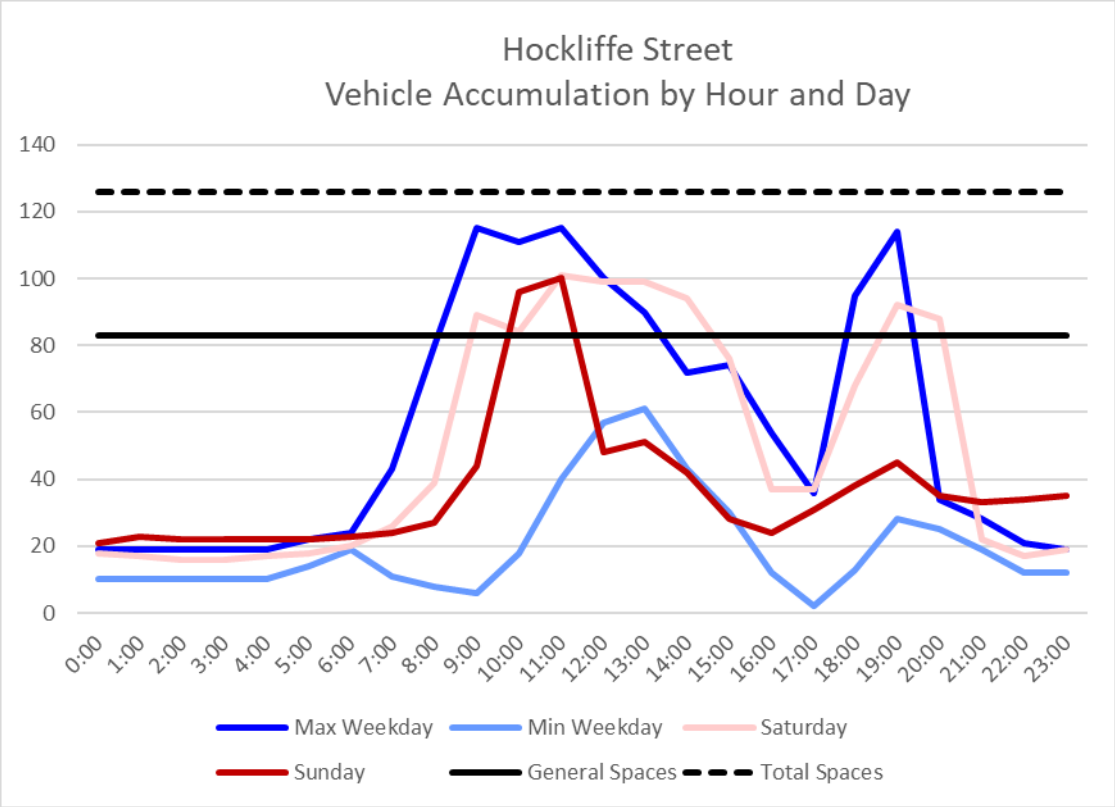


Figure 18: Hockliffe Street Vehicle Accumulation Observed During ANPR survey

Hockliffe Street shows a different demand pattern to Duncombe Drive. On Weekdays, most vehicles arrive before 09:00, with the number of vehicles present falling away slowly across the day. This suggests a mixture of employment related trips and leisure trips, with the former arriving earlier and staying longer whilst the latter turn over. The demand peak in the evening of Max Weekday demand occurs on Friday. This is similar to the Saturday evening peak observed at Duncombe drive and likely reflects evening trips out for leisure purposes.

There is also a similar Saturday evening peak shown at Hockliffe Street. It is notable that the accumulation of vehicles exceeds the general car parking capacity in this period, as it would be reasonable to think most of the leisure demand would be associated with general parking spaces, rather than commuter permits. Saturday's primary accumulation period is longer than during the week, with 70-80% of spaces occupied from 09:00-15:00. In conjunction with the duration of stay information and the ticket sales, this likely represents a rapid turnover of cars, rather than vehicles parking for a prolonged period.

Overall, it seems that there is little reserve capacity available at Hockliffe Drive, particularly on Fridays and Saturdays. It also seems that the users of this site diverge from Duncombe Drive in having more commuter trips arriving in the traditional AM peak.

Figure 19 shows the vehicle accumulation recorded by the December 2022 ANPR survey Hockliffe Street.

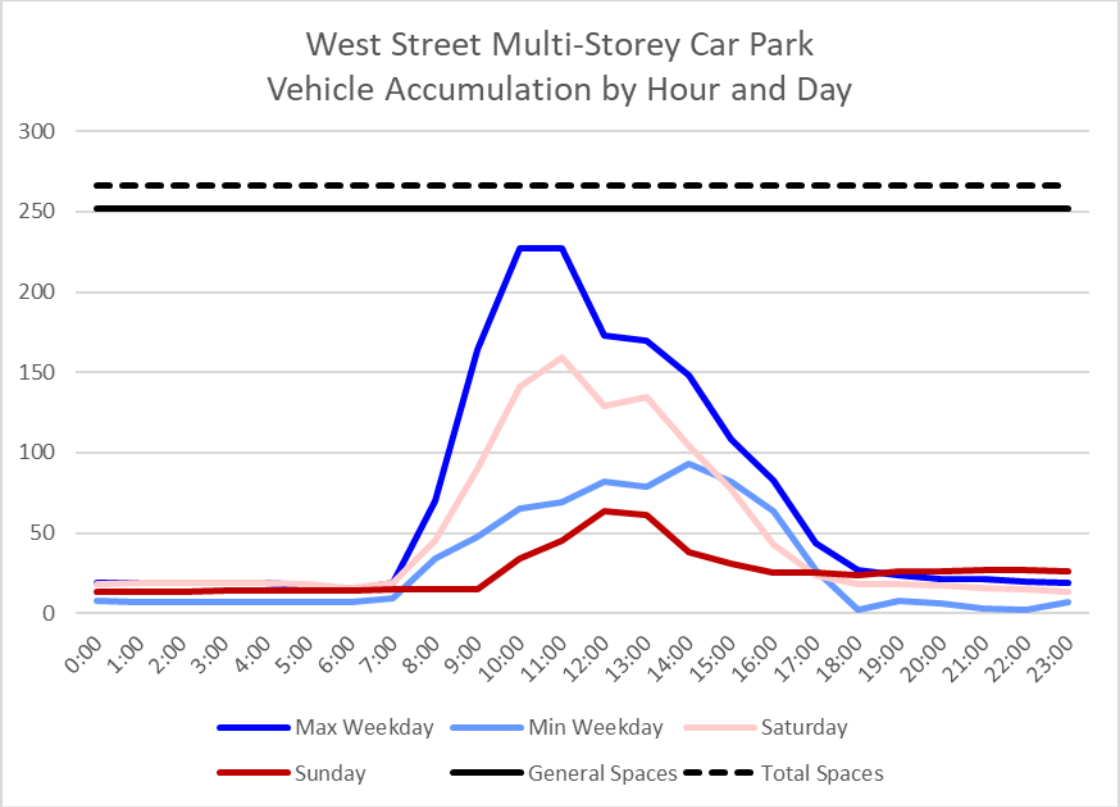


Figure 19: West Street MSCP Vehicle Accumulation Observed During ANPR survey

Demand at West Street during the week peaks between 10:00 and 12:00, with Tuesday being the busiest weekday and recording 85% occupancy of all spaces. The 'shoulders' of the peak extend to 15:00, with demand remaining above 50% of those available.

Saturday is considerably quieter at this site compared to the preceding turn up and go sites, with occupancy peaking at 60% of total spaces. This reserve capacity could, potentially, allow spaces to be consolidated from other car parks currently showing high Saturday demand (e.g., Duncombe Drive).

Figure 20 shows the vehicle accumulation recorded by the December 2022 ANPR survey at Baker Street.

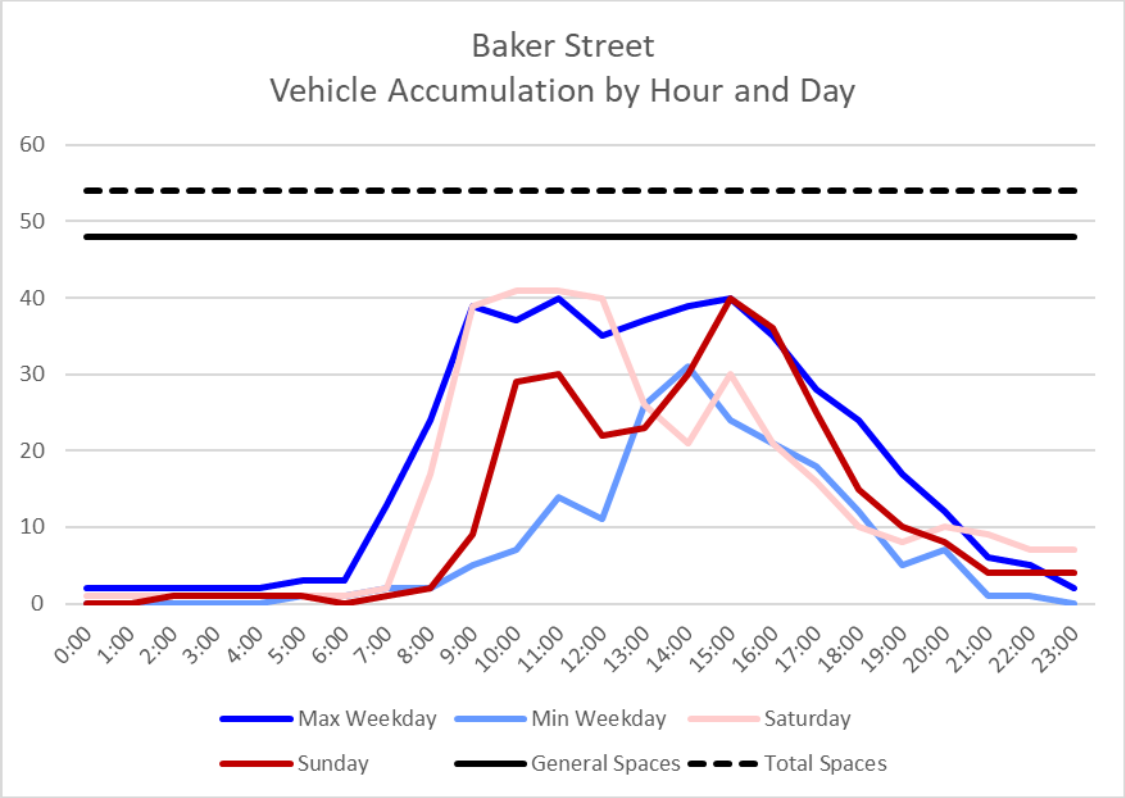


Figure 20: Baker Street Vehicle Accumulation Observed During ANPR survey

As discussed elsewhere, Baker Street allows vehicles to park for no charge, but for a maximum of two hours. This will encourage a high level of turnover across the day, reflected in the duration of stay data. Despite this, the site's occupancy exceeded ¾ of spaces between 09:00-11:00 and 14:00-16:00 on most weekdays, as well as 09:00-16:00 inclusive on Friday. Tuesday and Friday are the busiest weekdays at this site.

Of the weekend, Saturday and Sunday also record high levels of occupancy in certain periods; 09:00-13:00 on Saturday and 14:00-17:00 on Sunday.

Figure 21 shows the vehicle accumulation recorded by the December 2022 ANPR survey at New Road.

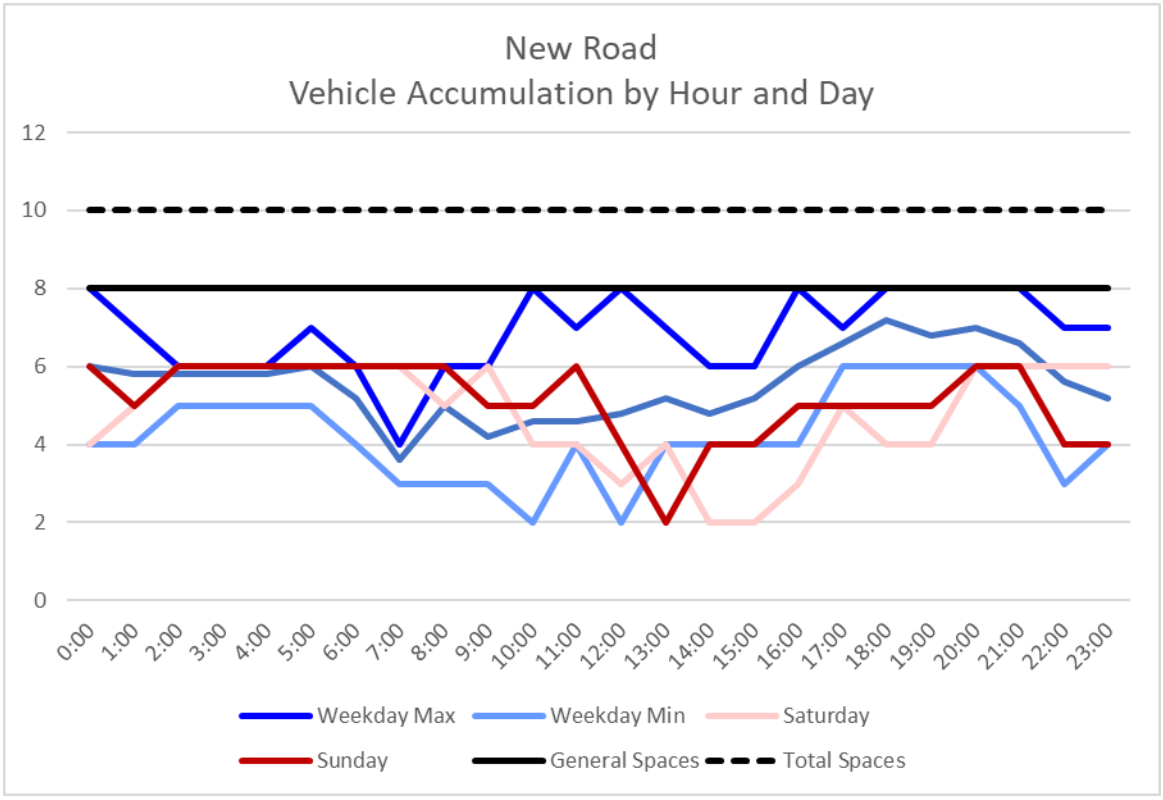


Figure 21: New Road Vehicle Accumulation Observed During ANPR survey

This relatively small car park shows 80% occupancy a considerable number of times, with Tuesday being the busiest day. Monday and Wednesday are also busy, mostly in the evening. This site is unusual in that most high occupancy periods are later in the day, from 17:00-00:00, particularly Monday-Wednesday.

Demand reduces at the weekend, moving to 60% of total spaces available at most. This likely reflects the reduced weekend tariffs at the town centre sites making the smaller, edge of centre site less desirable.

Figure 22 shows the total number of vehicles present as a percentage of the total number of spaces of all classes.

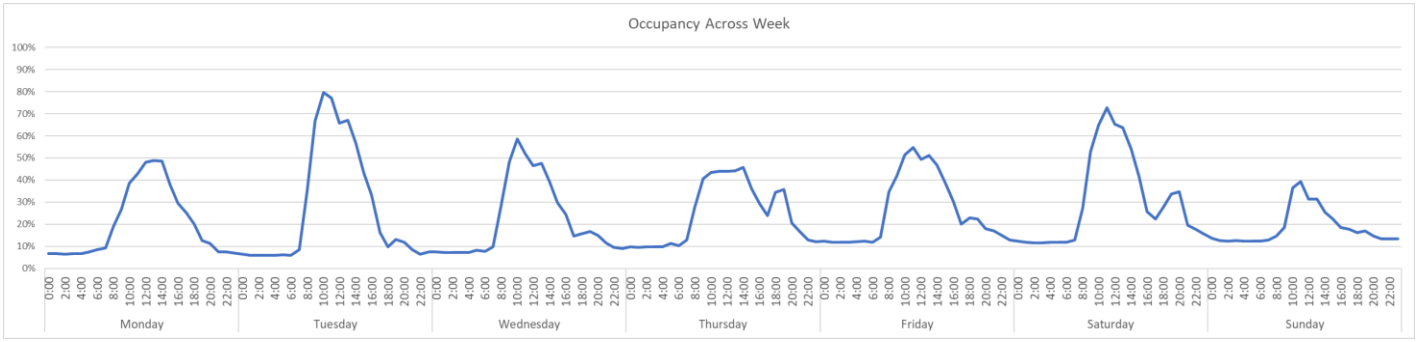


Figure 22: Overall Car Parks Occupancy

Figure 22 reflects the ticket sales data in that the busiest days are Tuesday and Saturday, where Occupancy reaches 77% of all spaces available and 73%, respectively. In conjunction with the duration of stay data, this evidences that the accumulation estimates made from the ticket data (assuming people stay the duration of their ticket) are likely quite conservative for those with 1-3 hour tickets, resulting in higher accumulation than observed in reality, particularly as a review of duration of stay shows most visits being less than an hour.

The peak periods for accumulation each day are 11:00-13:00, which is when both shoppers and commuters are present at each site. There are also evening peaks on Thursday, Friday and Saturday, supporting the town's night life, though these never exceed 40% of total capacity.

Permits

The following Figures show the number of Permits active in any month against the number of dedicated permit bays available. Please note that this doesn't include Permits acquired prior to the study period (i.e. pre March 2019).

Figure 23 shows the number of permits active, as well as monthly sales, for Duncombe Drive. It also shows the number of dedicated Permit Bays available.

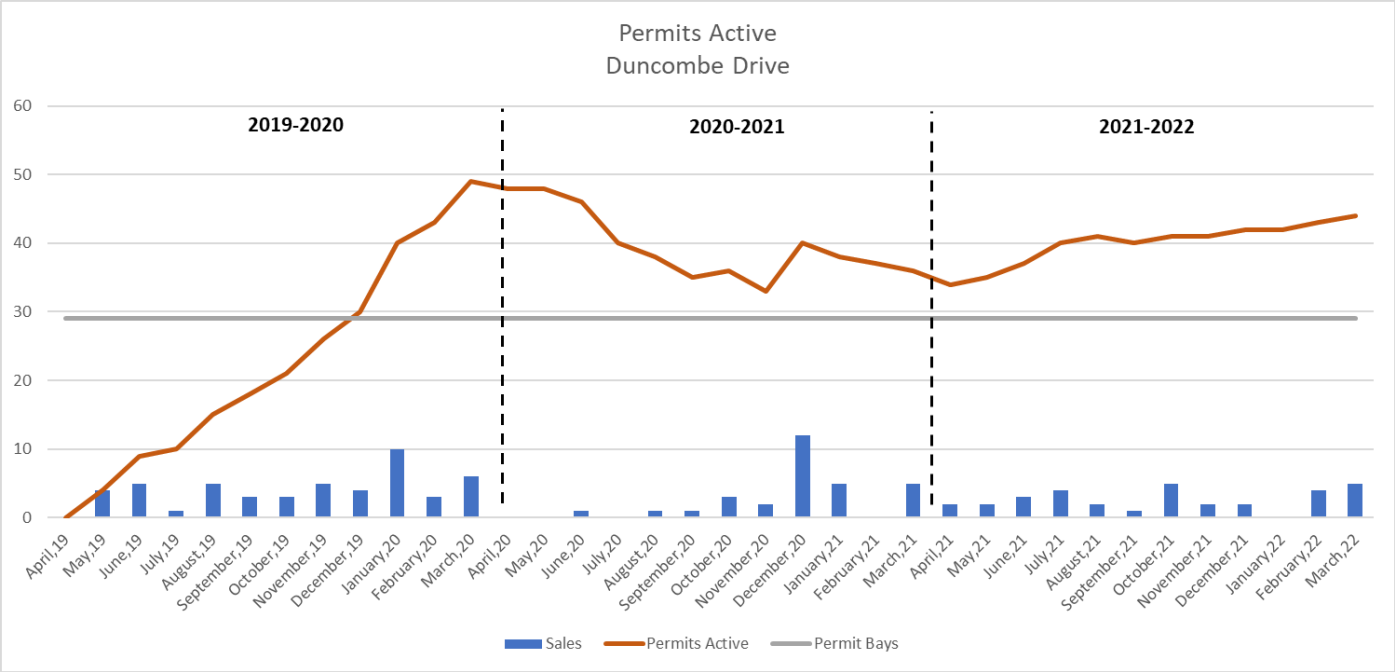


Figure 23: Duncombe Drive Permits Active

As can be observed, should all drivers holding valid permits wish to use Duncombe Drive on the same day, the demand would exceed the supply of dedicated bays available, potentially exacerbating the capacity challenges indicated previously.

The Permit Sales data shows that the majority are renewed in January or December, around the start of the year. The uptake of Permits in 2021-2022 is lower than the equivalent 2019-2020 period, however the trend is toward increased / recovering Permit sales.

Figure 24 shows the number of permits active, as well as monthly sales, for Hockliffe Street. It also shows the number of dedicated Permit Bays available for context.

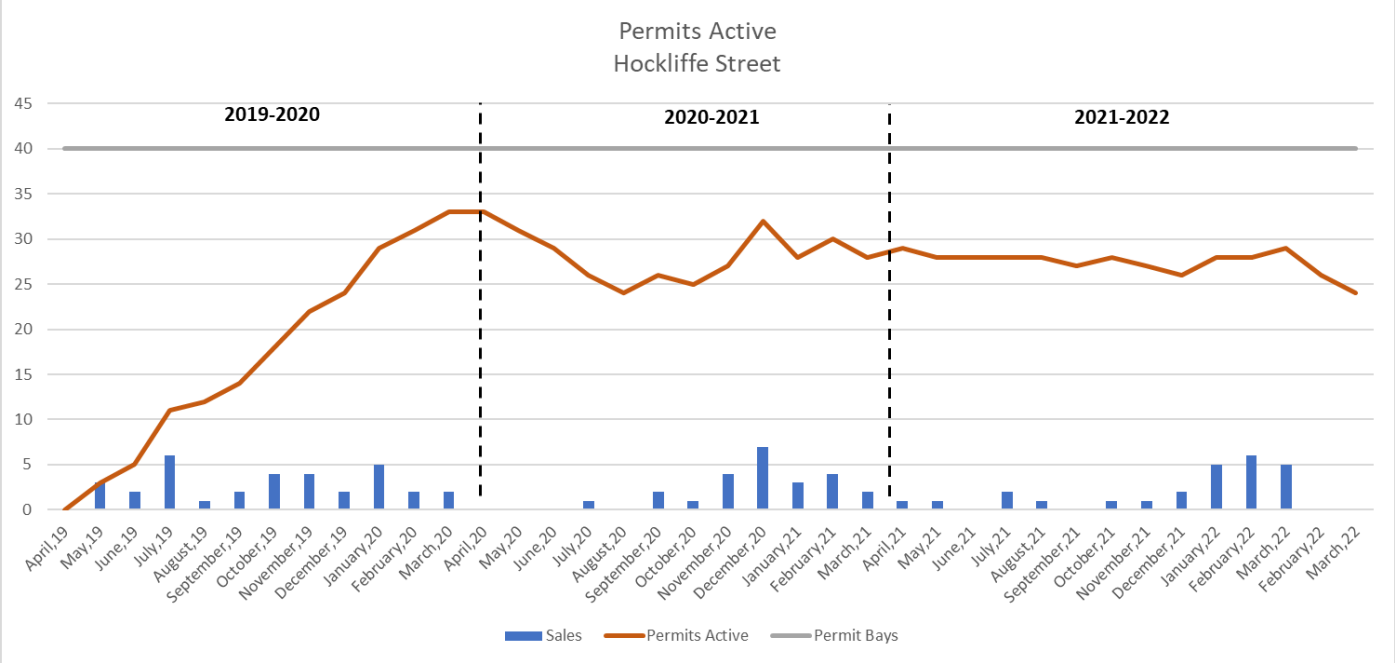


Figure 24: Hockliffe Street Permits Active

Unlike Duncombe Drive, the number of Permit's active remains below the number of Permit Bays present. As such, should all the permit holders arrive at the same time, there would still be capacity remaining at the site. The trend of Permit Sales at this site seems relatively stable, with only a slight decrease in 2021-2022 compared to 2019-2020.

Figure 25 shows the number of permits active, as well as monthly sales, for the West Street MSCP. Unlike the preceding carparks, West Street doesn't have dedicated bays for Permit Holders.

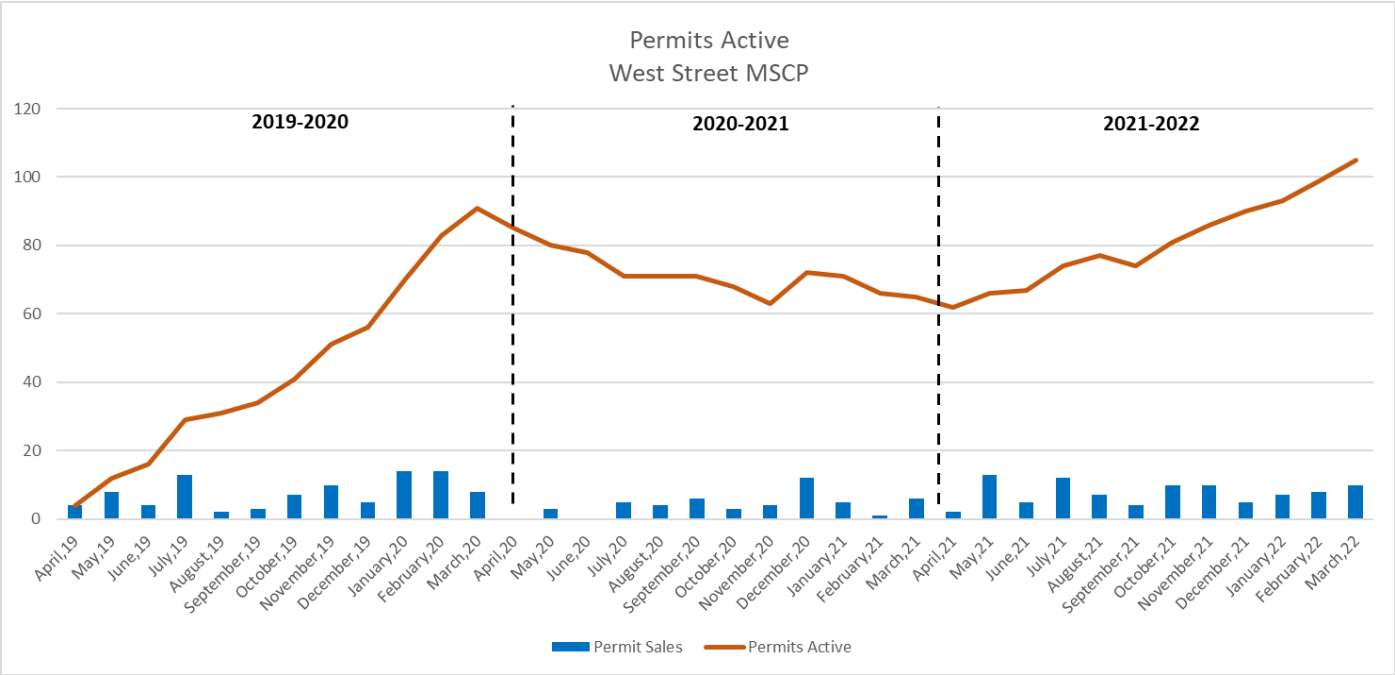


Figure 25: West Street Permits Active

As shown in Figure 25, there is considerable demand for Permits at West Street MSCP despite there being not dedicated bays for this demand. This could impact the number of spaces available for general users of the site.

Figure 26 shows the number of permits active at New Road.

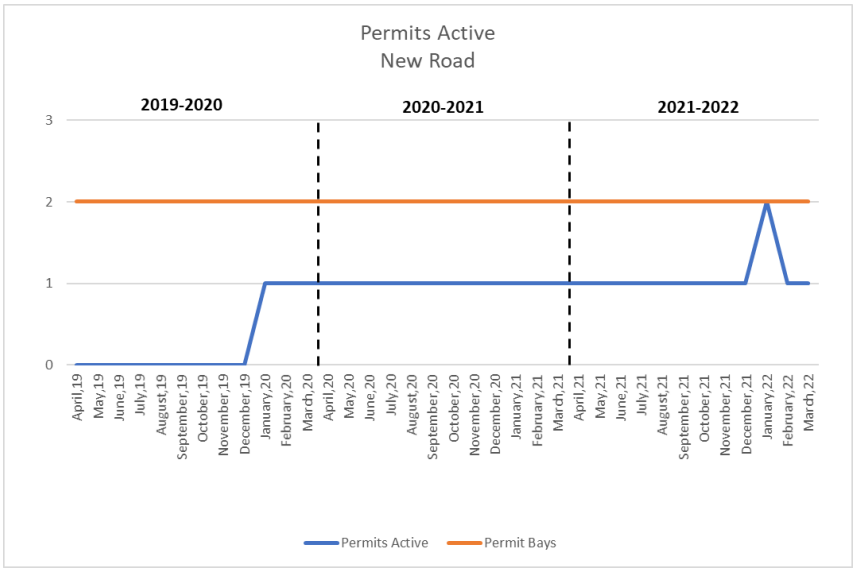


Figure 26: New Road Permits Active

Figure 26 shows that the there was, on average, one permit held for the two spaces present at the New Road car park. Whilst two permits are recorded as active in January 2022, detailed review of the permit data shows that the first permit expired on January 12th and the second permit became active on the 13th. This suggests that the same user renewed their permit, rather than two separate users.

Figure 27 shows the number of permits active at Baker Street in relation to the number of Permit Bays available.

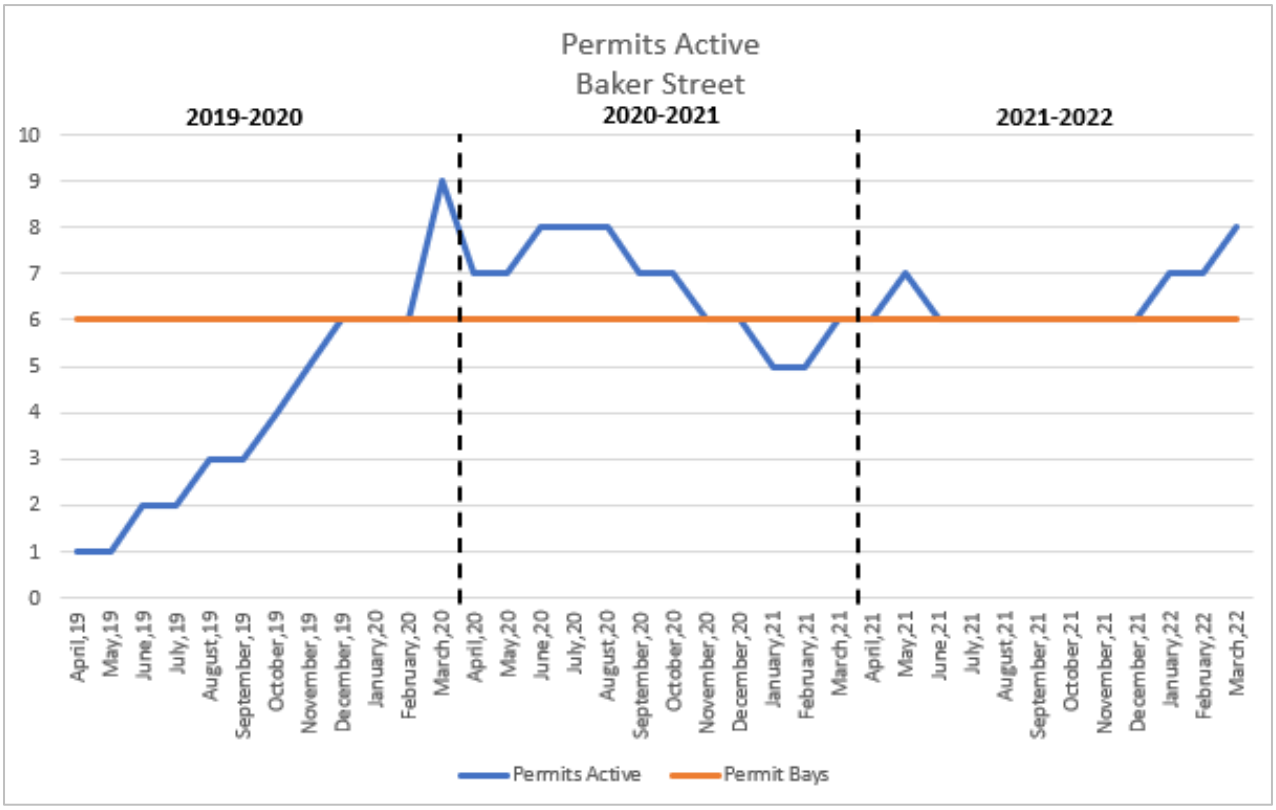


Figure 27: Baker Street Permits Active

Figure 27 shows the number of Permits active at Baker Street during the study period. For most of the period between February and 2020 and March 2022, 1-2 more permits were active than spaces available, which could potentially impact the availability of the Up to 2-hour spaces for use.

Market Traders

Figure 28 shows the monthly sales of Market Trader Day Tickets at Duncombe Drive.

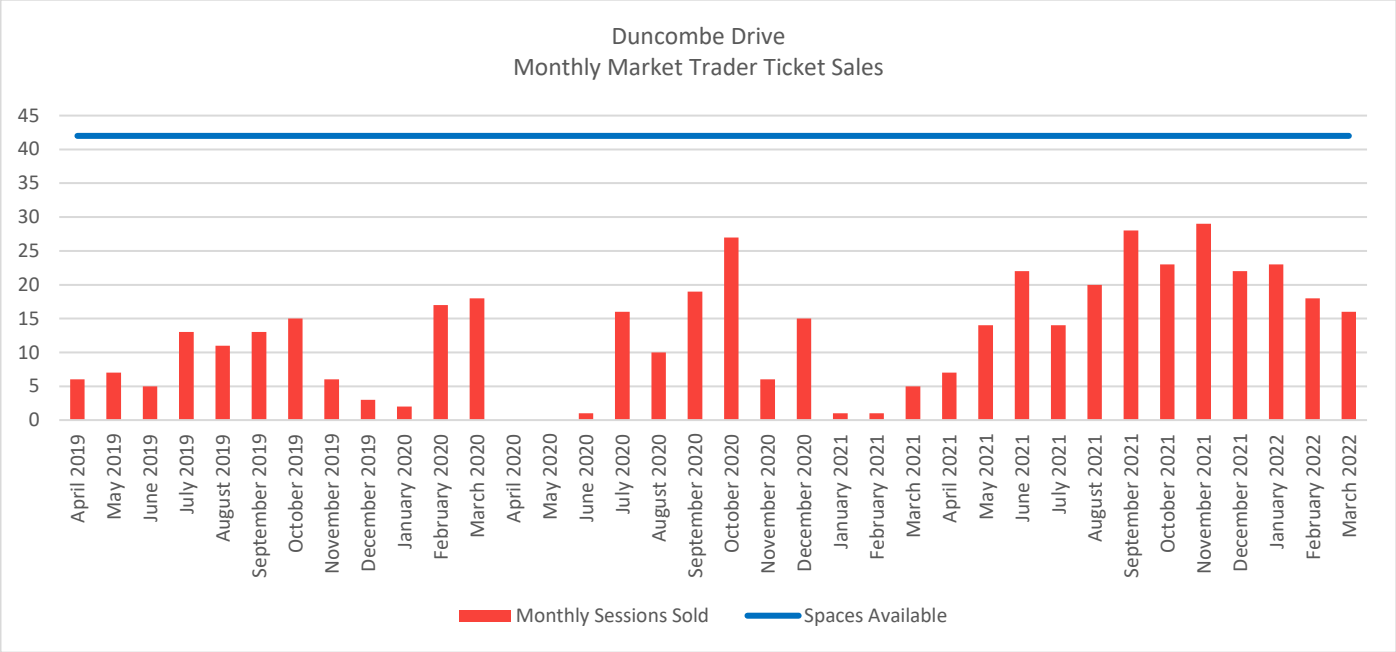


Figure 28: Market Trader Ticket Sales

As can be observed, even if all market trader permits are present in the car park at the same time, this would not exceed the number of spaces available for them. This seems to suggest that there's an oversupply of spaces, though the uptake of Market Trader permits seems to have increased in the 2021-2022 compared to previous periods.

Revenue

Table 7 shows the annual revenue raised by the three car parks where Pay & Display and/or Cashless ticketing is present.

Period	West Street MSCP	Duncombe Drive	Hockliffe Street	Total
2019-2020	£219,398.45	£167,575.21	£155,356.55	£542,330.21
2020-2021	£18,405.40	£32,904.35	£28,696.55	£80,006.30
2021-2022	£128,551.40	£146,800.85	£127,035.85	£402,388.10
Change from 2019-2020 to 2021-2022	-41%	-12%	-18%	-26%

Table 7: Annual Revenue by Car Park

Table 7 shows that the Revenue generated by the car parks has declined 26% between 2019-2020 and 2021-2022, with the largest drop being recorded at West Street. As in 2019-2020 the MSCP was the largest revenue generator, this has a disproportionate impact on the overall revenue.

The reduction in revenue is in line with the reduction of ticket sales seen at each car park over the same period. This reflects the previous observation that the ticket sales are generally the same distribution between durations, just at a reduced total number of tickets.

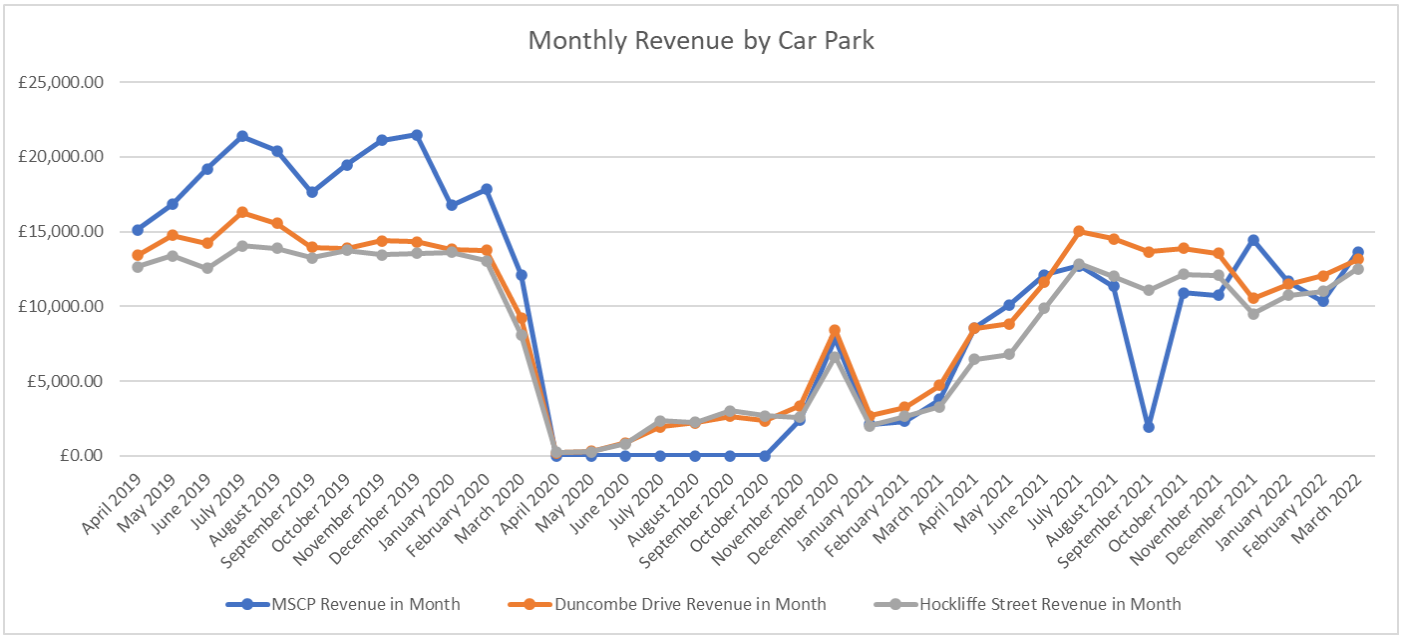


Figure 29: Monthly Car Park Revenue

As observed in relation to the annual figures, the shifts in revenue broadly follow the ticket sales in quantity. **Figure 29** does show that Hockliffe Street generates more Revenue per ticket sold as, despite lower ticket sales than Duncombe Drive, the revenues are broadly similar. One possible reason for this is that, during the study period, Duncombe Drive charged £1 for up to 2 hours, whilst Hockliffe Road charged £1 for up to 1

Hour and £1.50 for up to 2 hours. As the up to 2 hour Tariff forms a large portion of sales, this makes for a significant shift. This might change after the April 2022 tariff review which standardised a £1.50 tariff for 1 hour and £2 for 2 hours, across all sites.

Figure 30 shows the revenue earned per general parking space, discounting spaces dedicated to Permit Holders, Market Traders and People with Disabilities.

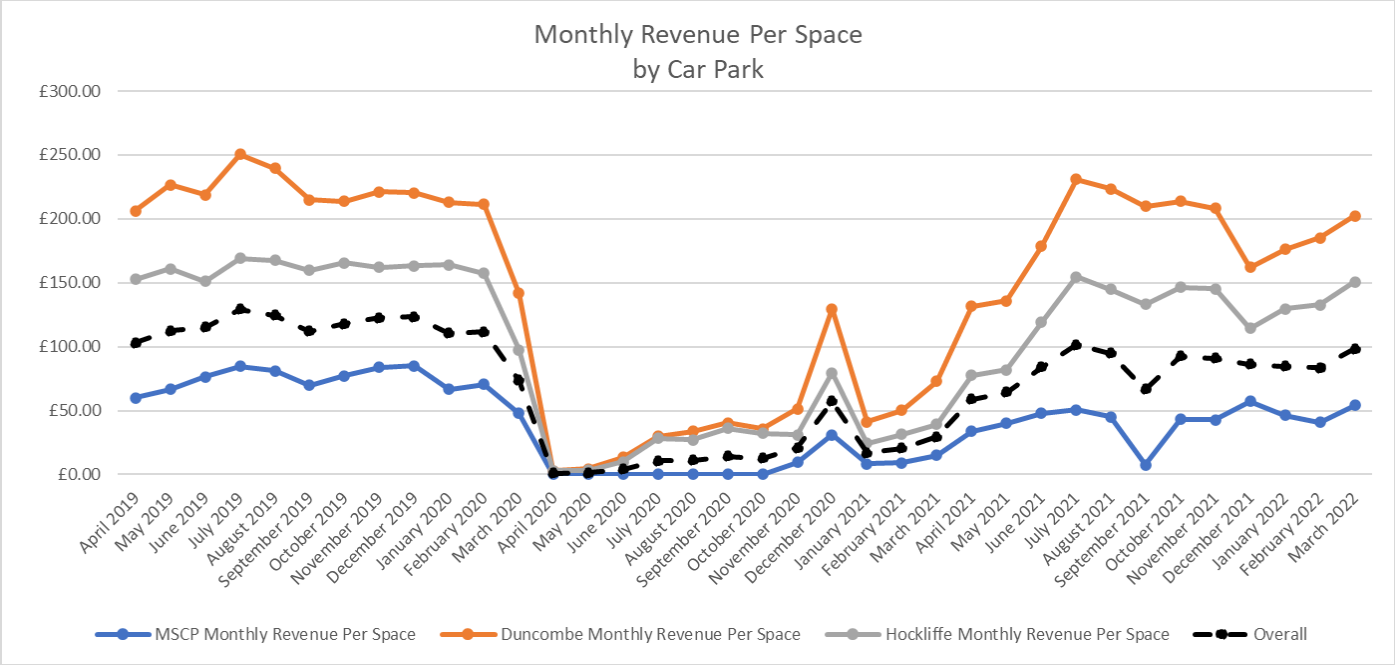


Figure 30: Monthly Car Park Revenue (by Space)

Reflecting the high turnover of spaces recorded there, Duncombe Drive consistently reports the greatest revenue per parking space, despite most tickets sold being the lower price up to 2 hour tickets. In line with the 40% reduction in usage between 2019-2020 and 2021-2022, the revenue returned per space at the MSCP decreased markedly over the period.

Planning and Development

To further support the findings of this study a review of any future proposed or planned developments within the Leighton Buzzard area was undertaken to determine if any were planned, under consideration for this part of the study were the size and purpose of the developments and the timescales in which the planned work was to be completed.

All planning applications would be subject to CBC Planning Policy:

Policy T1: Mitigation of Transport Impacts on the Network (CBC Local Plan 2015-2035)

It should be demonstrated how the proposal will seek to reduce the need to travel and secure a modal shift towards sustainable forms of transport. This should be through an approach which first considers the ability to cater for walking and cycling, provide suitable public transport services, and make better use of existing highway capacity before considering the provision of additional roads.

The results of this exercise did not identify any agreed or proposed developments in the area that would have a significant impact on the road network and parking provision within Leighton Buzzard.

Encouraging the use of sustainable modes of transport will also help to reduce parking demand throughout Leighton Buzzard, whilst also improving the health of the residents through cycling and walking initiatives.

KEY FINDINGS

It is evident from analysis of the ticket sales data that demand for spaces at Leighton Buzzard's car parking sites has not returned to pre-pandemic levels, with a particular reduction in the usage of the West Street Multi-Storey car park.

Of the three car parks, Duncombe Drive has recovered the most towards pre-pandemic usage levels, as well as recording the greatest turnover of spaces. This presents a situation where, were those purchasing tickets to stay for the full duration allowed demand for spaces at the site would exceed capacity for several days each year. However, due to the reduction in demand at West Street (and to a lesser extent Hockliffe Street) 2021-2022 shows a degree of capacity being available across all three car parks even when Duncombe Drive would potentially be fully occupied. This is supported by the ANPR snapshot where the peak in vehicle accumulation is circa 80% of total capacity.

OPTIONS

INTRODUCTION

Based upon the preceding analysis, there are several potential options for consolidating car parking provision in Leighton Buzzard Town Centre, thereby enabling land space reallocation. These options are not mutually exclusive, and several could be included in a package.

REDUCE MARKET TRADER PROVISION AT DUNCOMBE DRIVE

As shown in **Figure 28** the data indicates that the Market Trader spaces are currently under-utilised, which could allow them to be re-purposed. Reviewing the data in more detail, between 2019-2022 the maximum sale of Market Trader Day tickets in a single day was 5 vehicles against a capacity of 42. This suggests that 32 spaces could be repurposed whilst still leaving double the number of spaces compared to maximum demand. Local information suggests the majority of Market Traders utilise the area know as the 'Cattle Market' to park their vehicles on Market days which would support the apparent low take up of Market Trader permits in Duncombe Drive car park.

TRANSFER LONG-STAY PARKING TO BAKER STREET

Baker Street is currently allocated as high turnover spaces with a 2 hour maximum stay. However, the site is on the edge of the town centre area, as shown in **Figure 1**. This could make it a better fit for long-stay or permit parking use, where the longer stay is less impacted by time spent walking into town.

In turn, this would allow spaces in the three central car parks (Duncombe Drive, Hockliffe Street and West Street) to be repurposed to short stay bays. As these are occupied for shorter durations, there's greater turnover and so less are needed for equivalent permit demand.

This option could also help mitigate the potential over-demand (identified in **Figure 23**) for Permit bays should more than 60% of permit holders arrive at Duncombe Drive.

CONSOLIDATING OR CLOSING DUNCOMBE DRIVE

Review of the ANPR data and the long-term ticket sale trends between 2019 and 2022 shows that, whilst parking demand has been recovering since the Pandemic, there is a degree of reserve capacity available, with the ANPR showing circa 20% of all spaces available even in the busy December period.

Figure 31 shows the relationship between car park occupancy recorded in the 2022 ANPR survey and two the proposed parking provision scenario.

CBC propose to reduce parking on the site by 97 spaces, the data analysis supports this proposal, based on the peak occupancy levels identified through the ticket sales analysis and ANPR camera surveys this will leave circa 24 spaces available in the car parks at the busiest periods.

Whilst the ANPR survey was just a one-week snapshot, it took place during a busy period (immediately pre-Christmas). The demand recorded also compared well against the demand recorded over a similar period in the ticket survey data review. As such, it makes a robust basis for this appraisal based on the occupancy data available. **Figure 31** suggests that reallocating the 97 spaces at Duncombe Drive could be undertaken with 5% reserve capacity still available even at the busiest time (mid-day Tuesday).

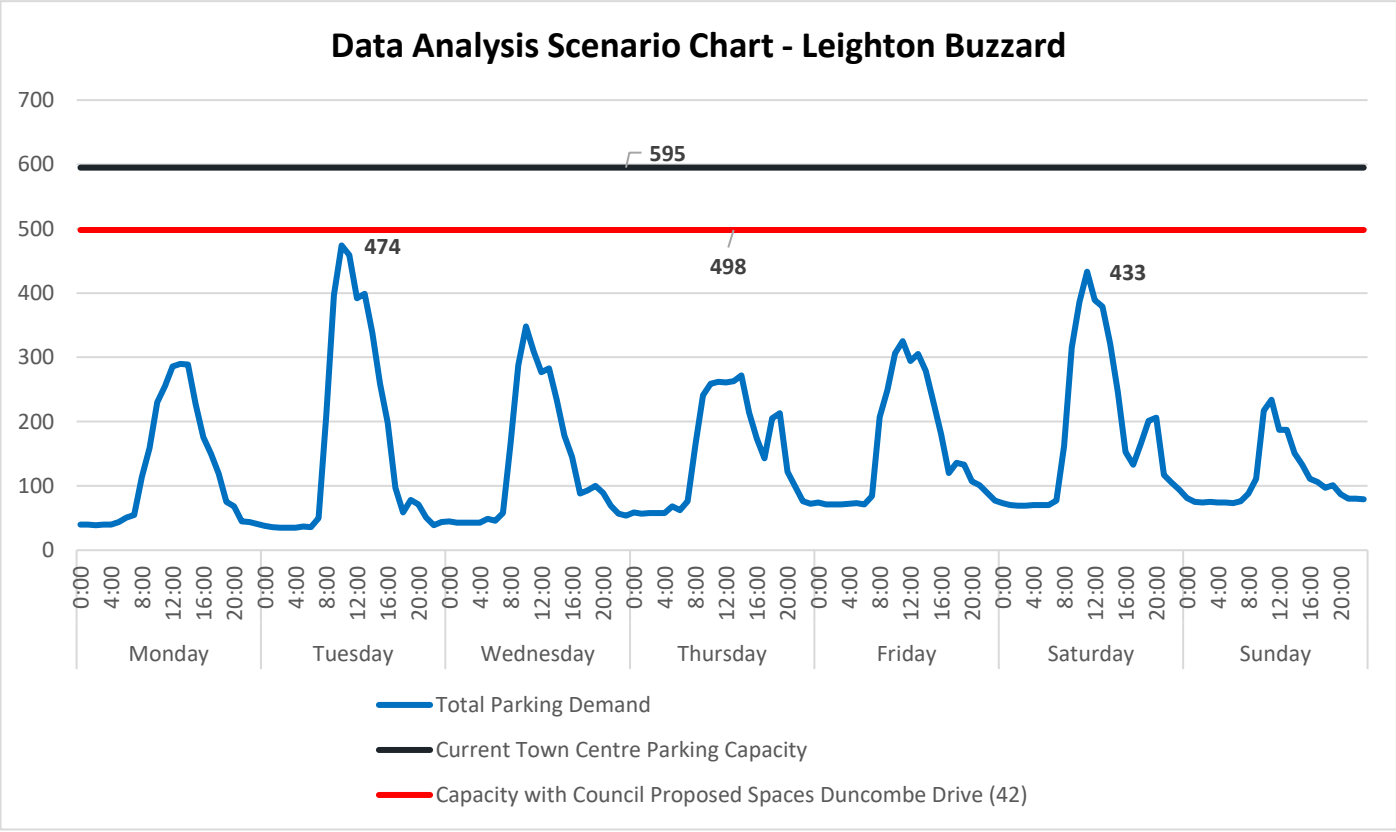


Figure 31: Parking Accumulation Against Space Provision Under Duncombe Drive Scenarios

Closing the car park outright would put the remaining facilities at 104% occupancy at the busiest 1- hour period; however, would still operate without undue issue for the remainder of the week. This option could be supported by variable message signage to indicate car park occupancy. This would identify which car parks had spaces available and reduce unnecessary trips between sites and thus traffic on the network.

Additionally, if the replacement development provides parking, this might not be such an issue; particularly if considered alongside other, wider measures to encourage modal share shift away from the private car and reducing overall parking demand.

REVISED TARIFF STRUCTURE

To reallocate demand between the busiest car parks (e.g., Duncombe Drive) and those where considerable capacity is available (e.g., West Street MSCP), one option might be revising the tariff structure to reflect distance the car park is located from the town centre. This could encourage users to reconsider their preferred parking location and reduce pressure in the more popular locations.

We acknowledge this might be difficult to implement in the short term, as April 2022 saw the unification of the tariff structure across the 3 ticketed car parks in the town centre and further changes to the parking tariff may be resisted by stakeholders.

FURTHER ANALYSIS

Discussion with Central Bedfordshire Council identified two potential extensions to the study undertaken to date.

The first would be survey of the town centre car park's users. This could, for example, provide an understanding on why people choose particular car parking sites or aid in identifying how people might react to revisions in tariffs to encourage modal shift and/or use of different facilities.

The second would be a review of April 2022- December 2022 ticket sales. Whilst the full financial year's data set won't be available until April/May this would still allow trend analysis against previous years. This would be the first dataset without any Covid-19 restrictions and as such could aid in understanding whether the repressed demand sales in 2021-2022 continued into 2022-2023.