Downham Market Network Improvement Strategy April 2020



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Executive Summary

The Downham Market Network Improvement Strategy (DMNIS) has been produced by Norfolk County Council (NCC), in collaboration with stakeholders, it has identified potential measures to help address existing transport network constraints.

Various activities were undertaken to gather evidence/information to compile the DMNIS including; internal meeting with officers across a range of departments, external stakeholder workshop and scoping of potential study work to identify priorities. This feedback generated a list of objectives the DMNIS would need to address these objectives were:

- Parking and the impact of charging in Downham Market Town Council owned car parks
- A junction assessment including a review of three traffic light junctions and the Clackclose Road/Lynn Road Junction
- An assessment of the current walking and cycling infrastructure and potential mitigation projects.

NCC consultants, WSP, were commissioned to undertake a series of studies to produce standalone reports to support this strategy. These reports are included as appendices to this report and relate to:

- Car parking
- Clackclose Road/Lynn Road junction
- Review of traffic signal junctions
- High level appraisal of traffic routeings through the town
- Cycle and walking route study

This work produced some key findings:

- There are a number of roads affected by long stay car parking from rail station users
- Clackclose Road/Lynn Road Junction operates at over capacity
- Greenwich Close/London Road/Wingfields junction could be altered

Based on the feedback from stakeholders and findings from the study work the action plan recommends areas where consideration should be given in the form of short, medium and long-term actions, see table 1. NCC has funding committed to the delivery of short-term schemes that can be delivered within the next two years. Given the nature of funding using NCC led proposals would allow for schemes to be delivered within the time allocation. In the medium and longer term it will be critical for NCC to work collaboratively with local partners to deliver on other opportunities.

Table 1 Implementation Plan

Time	Parking	Junction Assessment	Routeing	Walking and Cycling
Short term	Devise and implement a series of parking restrictions in the area around the railway station. Likely cost £10k			
Medium term	 Monitor DMTC proposals to implement car park charges and: devise and implement a series of parking restrictions in the remainder of the town and rationalise the waiting duration times. Likely cost £10-20k develop further a signage alteration strategy to assist these objectives, including design development and site investigation. Likely cost £10k 	Clackclose Road - If a funding source is identified for a junction improvement, likely to cost in the region of £200k, the next step would be to carry a detailed feasibility study including speed assessments, to determine the most appropriate junction form. Cannon Square - This work has shown that there are possible improvements to the junction and it is recommended that when a funding source is identified further feasibility work is carried out to determine the optimum solution. Railway Road/Bennett Street – if deemed useful further		Developed individual schemes and measures in more detail for implementation as funding becomes available. A possible source of funding is via Section 106 agreements for the individual planning applications for the housing allocations.

	detailed feasibility could be carried out into removing these traffic signals		
	Greenwich Close/London Road/Wingfields – if deemed useful, further detailed feasibility could be carried out into removing these traffic signals		
Long term		Seek funding sources and develop traffic routeing, pedestrianisation and junction alteration measures	

Chapter 1: Introduction

Norfolk has a population of around 891,000 people. The majority live in Norwich, the urban areas of Great Yarmouth and King's Lynn, and the 21 market towns. Market towns act as service centres to their surrounding rural populations within the rural county. Norfolk's market towns are also employment centres, commuter towns, retirement centres and/or shopping destinations many retain a historic core and are generally supported by seasonal tourism.

Several market towns still hold regular markets however some have suffered in recent years due to online shopping and the decline of agriculture or other significant industries (e.g. fishing and textiles). The environment the town provides for people to live, work, shop and move about in is fundamental to how a town functions for those who use it.

NCC is undertaking a series of transport network improvement strategies in the market towns to examine current and future issues within the town and understand the role that transport infrastructure can have in ensuring that towns continue to thrive. These network improvement strategies will look at short, medium and long-term interventions and provide evidence to inform longer term planning policy making.

Downham Market is a market town situated in the Borough Council of King's Lynn and West Norfolk (BCKLWN), on the edge of the Fens. The town is accessible via the A10 and A1122 and is served by regular rail services to King's Lynn, Cambridge and London. Centred around the old Town Hall is a modern landscaped town square. The market town has a wide selection of shops ranging from small local businesses to supermarkets. The town centre has a mixture of attractions including the clock tower, historic buildings a marketplace with a regular Friday and Saturday market. The Norfolk Market Town Centre Report 2019 found that Downham Market has 140 town centre retail and business units. Most town centre units are comparison retailers, at 26%, which include clothing shops, charity shop and a department store. Vacant units have reduced in the town centre by 6 units since 2018 to 8 vacant units in 2019, a vacancy rate of 5.7% which is below the Norfolk average.

Chapter 2: Strategy and Policy Context

The following policies and strategies have been identified as setting the context and baseline for this Network Improvement Strategy.

National Policy

The National Planning Policy Framework (NPPF) February 2019 sets out the purpose of the planning system is to contribute to the achievement of sustainable development, meeting the needs of the present without compromising the ability of future generations to meet their own needs.

Section 9 of the NPPF directly refers to promoting sustainable transport and Para 102. Sets out the various transport issues that should be considered as a part of plan making and development proposals, so that:

- The impact of development on transport networks being addressed
- Opportunities from existing or proposed transport infrastructure, and changing transport technology and usage, are realised
- Opportunities to promote walking, cycling and public transport use are identified and pursued
- The environmental impacts of traffic and transport infrastructure can be identified, assessed and considered
- Patterns of movement, streets, parking and other transport considerations are integral to the design of schemes and contribute to making high quality places.

There is also a chapter dedicated to ensuring town centre vitality stating that "Planning policies and decisions should support the role that town centres play at the heart of local communities, by taking a positive approach to their growth, management and adaptation". A range of considerations are set out in paragraph 85 with some being of relevance to this strategy:

- Promote their long-term vitality and viability
- Centres can grow and diversify in a way that can respond to rapid changes
- Town centres are accessible and well connected.

National policy recognises the importance of towns acting as service centres particularly in rural areas serving both the local and tourist population.

Norfolk and Suffolk Economic Strategy

The Norfolk and Suffolk Economic Strategy identifies the following sectors as being key to the Norfolk economy: energy, life sciences and biotech, ICT, tech and digital creative, advanced agriculture, food and drink, financial services and insurance, visitor economy- tourism, heritage and culture, transport, freight and logistics, construction and development, and advanced manufacturing and engineering.

Local Transport Plan 3

Norfolk's 3rd Local Transport Plan, Connecting Norfolk, sets out the strategy and policy framework for transport up to 2026. This will be used as a guide for transport investment in Norfolk as well as considered by other agencies when determining planning or delivery decisions. The strategy is accompanied by an implementation plan, setting out the measures to be delivered over the short term. Connecting Norfolk is driven by the views of local people and stakeholders and addresses the challenges we face in Norfolk. Our transport vision is:

"A transport system that allows residents and visitors a range of low carbon options to meet their transport needs and attracts and retains business investment in the county".

Six strategic aims underpin the vision, they are: maintaining and managing the highway network; delivering sustainable growth; enhancing strategic connections; reducing emissions; improving road safety; and improving accessibility.

Intelligent Transport Systems

The Norfolk and Suffolk Integrated Transport Strategy has developed a long-term vision considering economic and technological changes including digital connectivity, autonomous vehicles and new forms of public and shared transport. The strategy will focus on the A47 between Lowestoft and King's Lynn to ensure the ongoing growth ambitions of the region are supported. The strategy sets out what transport could look like by 2030, 2040 and beyond:

2030:

- Digitally connected transport networks underway and digital connectivity improved across the region allowing people to access opportunities from home including reliable home and remote working
- Key pinch points addressed, network capacity improved and better operational regimes will boost network capacity and make journeys more reliable and resilient
- Agile transport solutions in our Priority Places and better access to information will lead to 'peak' travel spread and allow people to make informed and personal travel choices with more certainty.

2040:

- Connected and autonomous cars, trucks and buses will be the norm, improving safety and contributing to the smooth running of the network
- Traditional bus service provision will have reduced but will be supplemented by on demand, responsive services that offer efficiencies
- The move away from fossil fuels will be largely complete supported by alternative generation and storage solutions with communities benefitting from associated air quality improvements

Beyond:

- Digital access to services (including health and social care) and opportunities (including education and training) will help people be more productive on the move
- Direct rail access between key centres with faster journey times and higher capacity, and local lines will have benefitted from more reliable rolling stock and improved customer experience
- New service models will reduce costs and provide new services for hard to reach communities and on-account, seamless, barrier-less payment technologies will facilitate Mobility as a Service (MaaS).

The Borough Council of King's Lynn and West Norfolk Local Plan The Borough Council's adopted Local Plan currently comprises the Core Strategy (CS) (2011) and the Site Allocations & Development Management Policies Plan (SADMP) (2016). The Local Plan allocates two housing sites (F1.3 & F1.4) for at least 390 new homes. Additionally, 15 hectares of land for employment uses is allocated (F1.2). See figure 2.1.

Policy CS04 Downham Market in the CS states a requirement to:

- Pedestrian and cycling links will be improved throughout the urban area to enhance accessibility to the town centre, the railway station and employment areas.
- In addition to an over-arching approach to seek improvements to the King's Lynn/Cambridge/London rail-link and the A10, public transport links to King's Lynn, Ely

Downham Market Neighbourhood Plan

The <u>Downham Market Neighbourhood Plan</u> covers the Downham Market Town Council administrative area. The neighbourhood plan is being led by Downham Market Town Council they are currently at a data collection stage.



Figure 2.1 Borough Council of King's Lynn & West Norfolk Local Plan allocations in Downham Market





Figure 3.1 Location of Downham Market in Norfolk

Downham Market is situated in the Borough Council of King's Lynn and West Norfolk, in the west of Norfolk. Downham Market is located adjacent to the A10 and A1122, approximately 11 miles south of King's Lynn (via the A10), 35 miles north of Cambridge (via the A10) and 43 miles to the west of Norwich (via the A1122 and A47), see figure 3.1.

The Road Network

Downham Market is bypassed to the east by the A10 and to the south and west by the A1122, which are the main highway connections linking Downham Market to other towns and areas in East Anglia. The primary traffic routes through the town are the B1512 Bexwell Road (east), B1507 Lynn Road (north), B1507 London Road (south), and Railway Road (west). High Street, Priory Road and Bridge Street form a one-way circulatory system in the centre of the town.

The B1512 Bexwell Road connects with the A10 to the east of the town at a roundabout, whilst the B1507 Lynn Road links with the A10 via a priority junction to the north of Downham Market. The B1507 London Road provides a connection to the A1122 to the south of the town at a priority junction, whilst a roundabout links Railway Road with the A1122 to the west of the town. Railway Road provides access to Downham Market Railway Station.

The town centre has a historic core with narrow streets which limits the potential for high volume transport movements of any mode and limits the ability to segregate different transport modes. The constrained town centre does mean vehicle movements are typically slow moving. The market town lies on the A10 providing good road links to King's Lynn to the North and Ely and Cambridge to the south.

Public Transport

Downham Market has an extensive bus service that links the town to its hinterland and nearby towns. Additionally, the town has a strong regional rail connection, with Downham Market Railway Station situated on the Fen Line and serviced regularly by the King's Lynn and Ely to Cambridge and London services operated by Great Northern and Greater Anglia.

The strong railway connections in conjunction with the availability of parking spaces next to the station have attracted a great number of commuters, which put pressure on the parking stock in Downham Market.

Employment

Employment uses in the town are located to the west of the town centre accessed by the A1122, the employment areas are concentrated at St Johns Business Estate and the Trafalgar Industrial Estate. Residential areas are located on the periphery of the town centre.

The 2011 census showed that Downham Market has a population of over 9,994 people with the majority, the population had a mean age of 46.4. The 2011 census showed that over 78.6% of households have access to at least one car or van, the remaining 21.4% of the population using other modes of transport for travel.

The 2011 census showed that most travel to work journeys are by driving a car or van at 72.9% of journeys, 11.7% of journeys are on foot, 2.3% of journeys are by bicycle, 4.8% of journeys are as a passenger in a car or van, 6.4% of journeys are by train, and 0.7% of journeys are by bus. This data shows that there is currently a high reliance on private cars for travelling to work.

25% of usual residents in Downham Market travel less than 2km to work (less than 25 minutes walking distance) and 30% travel less than 5km (less than15 minutes cycling distance). This indicates that there is potential for at least 29.5% of usual residents to use active travel modes to get to work, in comparison to the current 14%.

Since 2001 1,817 new homes have been built in Downham Market.

Chapter 4: Programme of activity

The purpose of the network improvement strategies is to identify issues built on a strong evidence base and help to bring forward solutions that support the delivery of future housing and jobs growth. To develop the understanding of the transport issues in Downham Market, NCC held stakeholder workshops, carried out site visits and liaised with Highways colleagues to gather a range of views/feedback on which to base the strategy. The programme of activity and timeline of events is set out below.



Figure 4.1 Flow Chart of Strategy Milestones

Chapter 5: Transport in Downham Market

As set out in Chapter 1, NCC's Environment, Development and Transport Committee agreed to the market town studies in 2017. Members agreed the reports would: understand current transport problems and issues; understand the future situation – (principally growth proposals and their impacts on transport); and develop an implementation plan. The committee agreed on the scope of issues that would be looked at in the studies. This chapter provides a summary of each item set out in the scope and what the relevant issues and concerns are in Downham Market. This also includes areas where there isn't a transport issue or where further work is not proposed. It sets out the scope item ranging from casualties, parking, congestion, cycling and public transport. For each of these what work is already underway and the potential further work options.

5.1 Casualties

NCC Highways team provided information on cyclist, motor vehicle and pedestrian collisions where these resulted in an injury.

Accident Type	Slight Injury	Serious Injury
Cyclists	3	0
Vehicles	22	3
Pedestrians	14	2

Table 5.1 Accidents in Downham Market

Please Note: The police only compile records of injury collisions since there is a requirement that these are reported in law. No record is maintained for collisions where no injury resulted, e.g. minor bumps.

Table 5.1 shows that there has been a total of 3 accidents involving cyclists over a five-year period, there is no single hotspot for collisions.

As expected there are more collisions involving motor vehicles, table 5.1 displays that there have been 25 accidents involving vehicles. Whilst there is no single hotspot of collisions they are concentrated along the key transport routes in the town especially along Lynn Road, Church Road and London road.

Collisions involving pedestrians are concentrated mostly in the centre of the town. This concentration of collisions is consistent with there being a larger concentration of pedestrians in the area. Table 5.1 displays that there have been 16 accidents involving pedestrians.

In summary, the casualty data for Downham Market is typical for a market town but has identified areas where collisions have occurred more frequently.

5.3 Parking

The car parking provision in Downham Market is complex as there are several public car parks, all of which are owned by various organisations – Downham Market Town Council (DMTC), BCKLWN and NCC – and private entities. The car parks are spread throughout the town providing a total of 960 parking spaces, 37 of which are disabled spaces.

Parking is a known issue within Downham Market with numerous parking studies being carried out in the town since 2002. A detailed study of car park occupation and parking duration within the town was undertaken as a part of the Downham Market: Car Parking Management Strategy (Alpha Parking, February 2015). DMTC is currently investigating the option of charging for car parking in the town centre.

Action: Assess the potential impact of car park charging in DMTC owned car parks on the on-street parking provision in the town centre, see chapter 6.1.

5.4 Congestion

When taking a high-level overview of traffic speeds in Downham Market it is found that there are some delays experienced at the level crossing on Railway Road in the AM and PM peak, this is most likely to be due to the level crossing being in use and restricting traffic flows. Congestion also occurs at the Lynn Road crossroads with traffic queues being apparent in both the AM and PM peak with traffic queuing back along High Street and Church Road.

Action: Assess the Cannon Square signalised junction, see chapter 6.2.

5.5 Access

NCC used software analysing what areas can access the town via a bus within 30 minutes. Figure 5.1 shows the accessibility levels to Downham Market town centre and rail station by public transport.

Figure 5.1 displays that there are many areas accessible within 30 minutes of Downham Market. With the reach of public transport accessibility reaching the periphery of Wisbech, in Cambridgeshire and to King's Lynn.

Given the rural nature of Norfolk, the levels of accessibility were not seen as an issue for this strategy.



Figure 5.1 Public Transport Accessibility to Downham Market

5.6 Walking and Cycling

National Cycle Network Route 11 currently enters Downham Market off-road from the south via a footbridge across the A1122, then routes northbound and transitions to on-road at Ryston End, passes through the historic town centre, then goes to an off-road shared cycleway at the end of Snape Lane and exits the town on-road to the north-east via Lynn Road.

The existing walking and cycling infrastructure within Downham Market is of a good standard, however with 11.7% of Downham Market residents walking to work and 2.3% cycling, there is scope to increase the number of people walking and cycling within the town. Additional infrastructure is likely to help achieve a modal shift and meet the ambitions of the Norfolk Cycling and Walking Action Plan.

Pedestrian permeability is high in Downham Market. Nearly all roads have adjacent footways and several pedestrians only links are located through the town. Several crossing points exist in the town centre allow users to safely cross the road. The walking accessibility in the town shows that the railway station is accessible within a 25-minute walk from almost all of Downham Market, this also illustrates the potential for encouraging walking as a prominent mode of travel for short trips within the town.

Action: Commission a walking and cycle corridor study, which identifies key locations people want to travel to within the town. Generate three routes and identify what improvements need to be made to make these routes suitable for walking and cycling. Findings from this study can be found in Chapter 6.4.

Chapter 6: Our findings

The summary of transport issues in Downham Market, as set out in Chapter 5, was circulated to both the internal and external consultees for comment, asking given the resource and budget constraints what would be their top priorities for any transport improvements in Downham Market. The feedback from this consultation generated a list of five key objectives the Downham Market Network Improvement Strategy would need to address:

- Parking
- The Clackclose Road/Lynn Road junction
- Assess the Bennett Street/Railway Road, Greenwich Close/London Road/Wingfields junction and the operation of the Cannon Square signalised junction
- Routeing in the town centre
- Walking and Cycling

6.1 Parking Assessment

A review of parking in Downham Market has been carried out to assess the existing parking provision and signage strategy. This will help to understand the potential impacts of the introduction of parking charging, which is being investigated by DMTC.

Car parking provision in Downham Market is complex as there are several car parks (all of which are owned by various organisations and private entities) as well as a mixture of regulated and unregulated on-street parking provision controlled by NCC. The main car parks and the core area where on-street parking restrictions are in place form the focus of this parking and access assessment are shown in figure 6.1.



Figure 6.1 Parking Map of Downham Market

Table 6.1	Parking	Provision	in Downham	Market
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Car Park Name	Ownership	Capacity (Disabled)
Paradise Road	DMTC	108 (5)
Hollies		167 (8)
Bridge Street		34 (4)
Priory Road		65 (4)
Mill Lane	BCKLWN	81 (2)
Howdale Road		46 (0)

Cannon Square	NCC	7 (0)
Wales Court	Private	73 (0)
Tesco Superstore		236 (7)
Downham Market Railway Station		106 (7)

Table 6.1 displays that there is a total of 923 parking spaces in the car parks assessed these car parks provide 37 disabled parking spaces.

Findings - Car Parking

An assessment of the usage of the car parks in Downham Market was carried out it was found that there is ratio of 16.7 people per parking space, which is lower than the ratio of the surrounding settlements.

The Alpha Parking study of DMTC car parks found that a car park utilisation of 85% should be targeted. The study found that only three car parks had spare capacity, for a two-hour period between 15:00 and 17:00. Data collected in May 2019 found that DMTC car park occupancy rates were higher than the other car parks in the town which include pay and display carparks, common land and car parking further from the town centre. The Alpha Parking study also found that most cars were parked between 1-2 hours.

Previous car parking studies found that three out of four car parks owned by DMTC had spare capacity only for a two-hour period. In comparison, data collected in 2019 across all car parks in the town, demonstrated that whilst the occupancy of DMTC car parks remained high, other car parks within the town had capacity, including Wales Court, Mill Lane and Howdale Road.

On street parking

NCC is the highway authority for Downham Market and is charged with the maintenance of the roads and footways (subject to use) and to safeguard Highway Rights on these roads. Most roads in Downham Market town centre operate with waiting restrictions, these locations provide 68 parking spaces, with maximum stay restrictions of 20-minutes, 30-minutes and 60-minutes across varying locations. Figure 6.2 indicates the on-street parking provision within the town and the associated restrictions. Multiple permitted waiting times in the town centre confuses drivers and are seen to be an entrapment. According to previous parking studies carried out in Downham Market, locals indicated a preference towards greater clarity from unified restrictions.



Figure 6.2 Current On Street Parking Restriction in Downham

Findings - On-Street Parking

Whilst waiting restrictions are in place on the majority of roads in Downham Market town centre, areas of unrestricted parking are also available, where displacement currently occurs. With regard to the area surrounding Downham Market Railway Station and the narrow roads in the town centre, displaced on-street parking can cause traffic issues and congestion. By extending the waiting restrictions to areas where displacement occurs, see figure 6.3, this could provide a solution to issues related to uncontrolled on-street parking, although these vehicles would subsequently be displaced to other areas.

It is expected that the main area of parking displacement around the railway station is within a 5-minute walk or 400 metres. This area surrounding Downham Market Railway Station and the current waiting restrictions are shown in Figure 6.2, demonstrating that a large proportion of streets within the displacement zone are currently unrestricted. In order to reduce the impact of on-street parking displacement on the road network, it is recommended that waiting restrictions are at least extended to encompass the area outlined in Figure 6.3. It is estimated that to devise and implement a series of parking restrictions in the area around the station is likely to cost $\pounds 10,000$.



Figure 6.3 Proposed Parking Restrictions and the Displaced Parking from Downham Market Railway Station

The Impacts of Car Park Charging

At present, parking in the town is largely accommodated by the provision of free car parks. On-site observations of Downham Market car parks identified that parking occupancy was between 80%-100% for free parking and around 95% for those operating Pay & Display systems, demonstrating the high demand for parking in the town.

DMTC is proposing changes to the current car parking situation in the town and are looking to introduce parking tariffs to the four car parks under their ownership (Paradise Road, Hollies, Bridge Street, and Priory Road). Assessing the parking demand has identified that the market place and Downham Market Railway Station are key destinations for visiting traffic, with Railway Road, Bridge Street and Priory Road providing the key connectivity through the town.

If parking tariffs are to be implemented across the DMTC car parks, with the current waiting restrictions for on-street parking. Figure 6.4 indicates where parking is likely to be displaced to, in addition to the increased usage of other car parks. It is recommended that, where none are present, new waiting restrictions should be promoted on all streets included in the highlighted area to ensure that congestion and social impacts related to on-street parking are minimised.

To devise and implement a series of parking restrictions in the remainder of the town and rationalise the waiting duration times likely to be £10,000 to £20,000.



Figure 6.4 Main Area for Displaced Parking

Reducing the attractiveness to park on-street in the town centre for extended periods of time by introducing mechanisms to ensure a regular turnover of vehicles, such as standardising time-limited parking bays and incentives such as initial free periods followed by incremental tariffs will ensure a regular turnover of parking and make the most efficient use of the existing parking stock.

The promotion of active modes of travel (walking and cycling), encouraging initiatives such as "Park & Stride", should also reduce the demand for parking in the town centre. The committed development included within the emerging *Local Plan Review 2016-2036*, is also within suitable walking and cycling distance of the town centre and Travel Plans should be adopted which encourage the use of active travel modes to assist in reducing town centre parking demand.

Other measures including "Park & Ride" utilising the extensive bus service and "Resident & Business Permits" could be investigated to further reduce and manage car parking demand.

Signage

It is possible to manage the parking stock to discourage commuter parking whilst continuing to support commercial needs; however, this is likely to require the designation of sufficiently enforced long-term and short-term parking, with a clear and concise signage strategy which better disperses the flow of vehicles entering and exiting the town centre car parks, whilst avoiding the risk of any traffic bottlenecks and minimising negative interactions between cars and vulnerable road users.

The routing proposals outlined in figure 6.5 are indicative at this stage and would require further study and detailed traffic assessment including key junction capacity modelling. Table 6.2 displays the signage that is considered in need of improvement.



Figure 6.5 Decision-making points

Location	Change Required
Bridge Street (eastbound)	New Sign (small)
Priory Road (northbound)	New Sign Face (small)
Paradise Road (westbound)	New Sign Face (small)
	New Sign (small)
Howdale Road (westbound)	New Sign Face (small)

Priory Road (eastbound)	New Sign (small)
A10 (northbound)	New Sign Face (big)

The indicative cost for these proposed signage alterations, including design development and site investigation is £10,000.

6.2 Clackclose Road Junction

B1507 Lynn Road/Clackclose Road Junction

The B1507 Lynn Road/Clackclose Road junction is situated 400 metres to the north of the market place. This junction provides access to a large residential area to the north of the town centre and to the Nelson Academy. Figure 6.8 shows the location of the junction.

It has been reported by local users that this junction experiences congestion during busy hours, especially during the afternoon. Therefore, an



Figure 6.8 Location of B1507 Lynn Road/Clackclose Road Junction

assessment and analysis of the traffic conditions has been carried out.

Existing Conditions

A 12-hour traffic count was carried out at the junction on 2 May 2019 and this found that the queues at the junction do not exceed 10 vehicles, for the majority of the day. However, there is an observed increase in queues between 15:00 and 15:30, which coincides with the end the school day at the Nelson Academy.

According to Design Manual for Roads and Bridges (DMRB), the current form of junction is classified as simple T-junction, which according to the DMRB guidance it is not suitable when the 2-way traffic of a minor road exceeds 1,000 PCUs. The 2-way estimated traffic volumes of the major and minor road are approximately 11,300 and 4,863 vehicles, respectively, which falls out the category of simple T-junction. Therefore, the traffic levels of the minor road are excessive for the existing layout. This is confirmed by the observed queueing levels.

According to DMRB, the existing traffic levels fall in the category of the following typologies of T-junction:

- Ghost Island; and
- Single Lane Dualling.

Additionally, a mini-roundabout can be used at this location as per the current traffic levels fulfil all the requirements according to DMRB.

As mentioned above, there are three types of junction that are more appropriate for the existing traffic levels than the current layout. Table 6.5 shows a summary of the pros and cons that each of the three types of junction could have at this location, these

could help to inform the suitability of each layout. However, a detailed study should be carried out to properly assess the feasibility, the impacts and the cost of replacing the existing layout for any of the above-mentioned types of junction.

TYPE	PROS		CONS
Ghost Island		May be introduced within the existing highway boundaries. Allow to provide satisfactory pedestrian crossing points in close proximity May be cheaper to install than some other measures May reduce accidents and accident severity Noise and pollution levels may be slightly decreased Allow cyclists to negotiate the junction more safely	 May not improve the throughput of the side road May cause safety problems as it creates opportunities for overtaking
Single Lane Dualling.		Can reduce accidents and accident severity Allow to provide satisfactory pedestrian crossing points in close proximity Noise and pollution levels may be slightly decreased Allow cyclists to negotiate the junction more safely	 Cannot be introduced within the existing highway boundaries May be more expensive to install than other measures May not improve the throughput of the side road Driveways in the area of the roundabout may experience access problems
Mini-roundabout		Can be introduced within the existing highway boundaries May be cheaper to install than some other conventional measures Can be an effective traffic calming measure, reducing vehicle speeds May reduce accidents and accident severity, by reducing speeds Allow traffic to emerge more safely from the side road May reduce the dominance of the main road traffic flow	 It is not always possible to provide satisfactory pedestrian crossing points in close proximity Cyclists may experience difficulty in negotiating the mini-roundabout Noise and pollution levels may be slightly increased Driveways in the area of the roundabout may experience access problems Parking restrictions may be required to prevent obstruction. This would require a Traffic Regulation Order (TRO) May attract additional through traffic due to improved traffic flow May reduce the dominance of the main road traffic flow

Table 6.5 Summary of Pros and Cons

It has been reported that the A1507 Lynn Road/Clackclose Road junction experiences congestion during busy hours, the traffic data corroborates this as the observed queueing levels were very high just after the end of the classes at Nelson Academy. Additionally, according to DMRB guidance, the existing layout is not the most appropriate to the current traffic levels.

This study has concluded that the existing traffic levels suggest an alternative junction form would be appropriate at this junction.

Each of the three typologies of junction examined in the study would bring benefits, however, it may not be feasible to fit each type of junction within the existing highway boundary. However, the option that is deemed to have the most impact is a mini-roundabout.

If a funding source is identified for a junction improvement, likely to cost in the region of £200k, the next step would be to carry a detailed feasibility study including speed assessments, to determine the most appropriate junction form.

6.3 Junction Assessment

This assessment of junctions in Downham Market focussing on the following locations:

- The operation of the Cannon Square Lynn Road/Bexwell Road/Church Road/High Street signalised junction.
- The feasibility of removing the traffic signals of the Bennett Street/Railway Road;
- The feasibility of removing the traffic signals of the Greenwich Close/London Road/Wingfields junctions; and

These locations are displayed in figure 6.6.



Figure 6.6 Junction Locations

Traffic surveys were carried out on Thursday 2 May 2019, to assess the turning movements and queue lengths at the three junctions. There were found to be varying peak hours at each junction as shown in table 6.3.

Table 6.3 Peak	Hours at	Each	Junction
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Junction	Peak Hour	
Cannon Square	AM Peak Hour: 08:00 – 09:00	
	PM Peak Hour: 16:45 – 17:45	
Bennett Street/Railway Road	AM Peak Hour: 07:30 – 08:30	

	PM Peak Hour: 16:45 – 17:45	
Greenwich Close/London Road/Wingfields	AM Peak Hour: 08:15 – 09:15	
	PM Peak Hour: 16:00 – 17:00	

Cannon Square Junction

The Cannon Square junction connects Lynn Road, to the north, with Bexwell Road to the east, Church Road to the south and the A1512 to the west. The Junction is a four-arm signal-controlled traffic junction, with a slip road for direct access from the A1512 onto Lynn Road to the north, see figure 6.7.

Surreys found that the majority of traffic movements were from Lynn Road travelling south to Church Road, in the AM peak hour. And in the PM peak hour the most traffic movements are between High Street and Lynn Road, travelling north.

The traffic queue assessment found that the longest queues were experienced at Church Road in the AM and PM peak hours with

delays of up 157 Mean Maximum Queues (MMQ) in the AM peak hour and delays of up to 147 MMQ in the PM peak.



Figure 6.7 Cannon Square Junction

The assessment shows that, regarding the cycle time of the traffic light timings, that by the time the cycle has run not all the traffic utilising the junction has time to clear the junction. Therefore, the existing junction cannot accommodate current traffic demands.

Mitigation Options

The following mitigation options are suggested to improve the junction.

Option 1: One Way System

This option considers creating a one-way system between Bexwell Road and Howdale Road, making Bexwell Road eastbound only and Howdale Road westbound only. This option will remove all the traffic coming into the town at Bexwell Road, which should release some capacity from the Cannon Square junction.

Option 2: Realigning the High Street Approach

The second option considers removing the segregated left turn lane from High Street to Lynn Road, widening to two lanes at the High Street section at the traffic signals and dedicating the right lane for the right turns and the left lane for the left and ahead movements.

This option also brings benefits to Non-Motorised Users as it simplifies the junction and reduces the number of pelican crossings that a Non-Motorised Users needs to cross.

Option 3: Roundabout

The third option considers replacing the current signalised junction by a four-arm roundabout. For the purpose of this study, a 20m ICD roundabout has been considered with two circulatory lanes and one lane at the east, south and west approaches and two lanes at the northern approach (Lynn Road).

The interaction between the pelican crossings and the roundabout has not been modelled. In case this option is moved forward, it is recommended that a feasibility study is carried out.

Table 6.4 Mitigation Impacts on Mean Maximums Queues								
Arm	Existing AM	Existing PM	Option 1 AM	Option 1 PM	Option 2	Option 2	Option 3	Option 3
					АМ	РМ	АМ	РМ
High Street	84	84	48	56	57	77	22	36
Lynn Road	74	123	52	79	66	123	3	9
Bexwell Road	42	41	-	-	42	95	15	21
Church Road	157	147	104	113	104	143	3	2

In both AM and PM peak hours, options 1 and 3 seem to show the largest reductions in queueing, whereas option 2 doesn't seem to demonstrate any benefits in terms of queueing. The models show that the roundabout (option 3) is expected to practically remove all the queues at Lynn Road and Church Road and reduce the queues at the other two approaches.

The one-way system will remove all the traffic from Bexwell Road, this should release some capacity for the rest of the arms of the junction.

The three options seem to reduce the journey times in both periods. The models show that option 1 should reduce delays considerably at the remaining three approaches to the junction, this is due to the possibility of reducing the cycle time. Option 2 is expected to slightly reduce delays. However, Option 3 shows the biggest journey time reductions.

This work has shown that there are possible improvements to the junction and it is recommended that when a funding sources is identified further feasibility work is carried out to determine the optimum solution.

Railway Road/Bennett Street

The assessment of the Railway Road/Bennett Street junction has found that in the AM and PM peak hour a maximum of 238 traffic movement occurs along Railway Road. The Railway Road/Bennett Street signalised junction operates with reserve capacity in both peak hours.

As the junction operates with reserve capacity it suggests that there may not be a need for the traffic signals.

The removal of the traffic signals is not expected to cause significant impacts in terms of traffic performance but would reduce the maintenance burden on the County Council. However, the long distance between the stop lanes and the middle of the junction and the tightness of the junction may mean that the removal of the traffic signals could have safety implications. In view of this it is recommended that, if this option is considered further, a Road Safety Audit is carried out as part of further feasibility work.

Greenwich Close/London Road/Wingfields

The model indicates that, currently, the Greenwich Close/London Road signalised junction operates with reserve capacity in both peak hours. Minimum queues and delays occur at this junction, suggesting that there may not be a need for traffic lights at this junction.

The removal of the traffic signals has been assessed in terms of capacity. The parameters introduced in the model are for a simple T-junction which only considers the removal of the traffic signals only.

The modelling outputs found that the junction will still operate within capacity after the removal of the traffic signals, with all the approaches working within 4% of its capacity. The queues are expected to be reduced on all approaches, however, delays are expected to slightly increase at every approach, as vehicles would have to give way to opposite traffic. This is because traffic right-turning off London Road will hold up traffic whilst it waits for a gap. This issue could be resolved by creating a ghost island for the turning traffic. Only the busiest peak periods have been modelled and it is worth noting that in the less busy off peak periods traffic on London Road, which is the majority of the traffic using the junction will never be delayed at a red light.

The Greenwich Close/London Road/Wingfields junction currently experiences low levels of congestion and this is expected to remain similar if the traffic signals are removed. The removal of the traffic signals would lessen the maintenance burden, but if this is carried out it would be advisable to create a ghost island for right turners on London Road. It is recommended that a feasibility study is carried out, including a Road Safety Audit that considers possible speeding issues in the absence if the signals.

Overall Conclusions

The study has shown that the existing junction layouts at the Bennett Street/Railway Road junction and the Greenwich Close/London Road/Wingfields junction operate within capacity and have spare capacity for future growth but there may not be a need for these traffic signals. However, the Cannon Square junction suffers from large delays and queues and would benefit from an improvement scheme.

6.4 Routeing Assessment

During the scoping of this study, issues of traffic routeings through the town and the idea of possible pedestrianisation of some areas were identified by Downham Market Town Council. These were summarised into the following areas of concern:

- Paradise Road converted to one-way for safety reasons
- Town centre road layout changes
- Howdale/Church Road
- Tesco Roundabout
- Possible pedestrianisation

A high-level appraisal has therefore been undertaken of these issues and including looking at the safety record to indicate possible schemes for future consideration and development. It is likely that any ideas emerging form this appraisal would be expensive to deliver and so unlikely to be progressed in the near future. However, this appraisal indicates the sort of changes that the town could aspire to.

A review of the traffic and collisions record has identified the following locations that have either traffic or road safety issues, and these are reflected in the appraisal:

- Cannon Square junction;
- Lynn Road/Clackclose junction;
- Paradise Road/High Street junction;
- High Street;
- Bridge Street;
- Railway Road level crossing;
- The Tesco roundabout; and
- Howdale Road/Church Road junction.

During the study, a dialogue was held with the DMTC working party formed to feed into the process. The following potential improvements were suggested at the abovementioned locations and these have been included in the following list of improvements:

- Make east of Paradise Road and top of the northern end of High Street oneway northbound directing traffic out of town centre;
- Make Bexwell Road out of town one way eastbound between Lynn Road to Howdale Road;
- Make Howdale Road one way westbound from Bexwell Road to Church Road;
- Make egress from Howdale left turn only;
- Change to a roundabout the junction of Church Road, Howdale Road and Priory Road;
- Make the south end of High Street between Bridge Street and Priory Road, a pedestrian zone with access for delivery vehicles only;
- Segregate vehicular traffic and pedestrians from the railway lane at Railway Road;
- Improve the junction of Lynn Road and Clackclose Road; and

• Improve the Cannon Square junction.

Figure 6.9 shows the location of these potential improvements and table 6.5 displays the pros and cons of these improvements.



Figure 6.9 Location of potential improvements

These ideas have been examined and the pros and cons are set out in the following table 6.5.

Improvement	Pros	Cons	Comments
Make east of Paradise Road and top of the northern end of High Street one way only out of town centre	Reduces the risk of collision and pedestrian injury on lengths of road that are too narrow for two-way traffic Improves the flow of traffic out of town centre Reduces delays at traffic lights Permits pavements to be widened for pedestrians	Drivers from the north will have to circumnavigate the town to access the Paradise Car Park, Clackclose Pre-School, the residential area, etc. Increasing journey time, vehicular mileage and will pressure to other junctions. Connectivity will be hindered. Potentially discourages usage of Long-Stay car park Increases traffic flows in the town centre, specially Mollies Car Park NB and the narrow one-way section of Paradise Road Puts more pressure to Church Road and Howdale /Priory Road	It will require to study in detail whether the localised improvement justify the wider impacts
Make Bexwell Road out of town one way only from Lynn Road to Howdale Road	Makes Bexwell Road safer, as it is hazardous for 2-way traffic in various locations – forcing motorists to mount the pavement to avoid oncoming vehicles on a frequent basis Simplifies the operation of Canon Square junction as Bexwell Road becomes an exit only. This reduces the number of potential conflicts	One -ways roads can encourage higher vehicular speeds which could increase the severity of collisions if they do occur The uptake of cycling will be further hindered by longer journeys owing to the one-way operation of roads. Longer journeys and more circulation/vehicle miles for drivers to	This proposal is likely to receive opposition from residents of Bexwell Road as their access will be hindered. If this proposal is put forward, the following locations are likely to need to be improved: Howdale Road, Howdale Road / Church Road

Table 6.5 Potential Routeing Improvements

	 which can improve collision rates and increase capacity. Potential to provide on-street parking in the redundant road space that can be used as residents only permit holder spots Permits pavement widening to improve safety for pedestrians Encourages the use of the car park on Howdale Road 	access to Paradise car park, Clackclose Pre-School, the residential area, etc Discourages usage of Long-Stay car park Increases traffic flows in the town centre, specially Mollies Car Park NB Puts more pressure to Church Road and Howdale /Priory Road Bus routes will require rerouting and result in a circular bus route which is not ideal with longer journeys for bus passengers	junction, and Bexwell Road / Howdale Road junction
Improvement	Pros	Cons	Comments
	1100		
Make Howdale Road one way only from Bexwell Road all the way to Church Road	Makes the lower end of Howdale safer, as it is hazardous for 2-way traffic Removes one traffic movement and conflict point at the Lynn Road junction where there have been a number of collisions and near misses reported. Provides additional parking potential	Increases traffic at the right turn from Church Road to Bexwell Road One -ways roads can encourage higher vehicular speeds which could increase the severity of collisions if they do occur The uptake of cycling will be further hindered by longer journeys owing to the one-way operation of roads.	It is likely that to accommodate this improvement the Howdale Road / Church Road junction will need to be redesigned It's expected to find opposition from properties with access to Howdale Road

		Increases traffic over the two puffin crossings and therefore delays	
Improvement	Pros	Cons	Comments
Change to a roundabout junction at Church Road, Howdale Road and Priory Road	Makes junction at end of Howdale safer, as it prevents traffic turning right against the flow of traffic Reduces the risk of accidents at Lynn Road junction where there have been numerous collisions and frequent near misses weekly If there is no opportunity for traffic to turn left or right into Howdale this improves traffic flow If no traffic leaving Priory Road this	Could remove parking spaces on High Street Could increase traffic at the junction	The interaction between the roundabout and the zebra crossing should be analysed
Make the south end of High Street pedestrian zone with access for delivery vehicles only	Improves traffic flowMakes area safer for pedestriansMakes the top of Bridge Road saferby removing the option to turn leftout of townImproves traffic flow on Priory RoadProvides zone that can be used forstreet entertainment or market stallsMay improve trading for localretailersReduces traffic volume at thejunction of London Road and ChurchRoad	Increases general traffic onto Cannon Square Junction Forces all traffic leaving the centre of town to use the same route Should remove parking spaces on High Street Reduces natural surveillance of the High Street at quieter times which could reduce the feeling of personnel safety Reduces resilience of the road network as less route choices for traffic to diverge	It's expected to find opposition from shop owners on High Street The re-routing effects of the pedestrianization should be studied

Improvement	Pros	Cons	Comments
Segregate vehicular traffic and pedestrians from the railway crossing lane of at Railway Road	Makes area safer for both Non- Motorised Users (NMUs) and motorised vehicles Improves traffic flow on Railway Road Reduces delays at the level crossing	May be prohibitively expensive May increase traffic on Railway Road	An economic appraisal should be carried out
Upgrade the junction of Lynn Road and Clackclose Road	Reduces delays and queues at the junction Makes junction safer for both NMUs and motorised vehicles	May add delay to traffic on Lynn Road May require amending the waiting and loading restrictions at the junction	More details in Appendix 2
Improve the Cannon Square junction	Reduces delays and queues at the junction Makes junction safer for both NMUs and motorised vehicles	May require removing parking spaces at Cannon Square May attract more traffic to the junction	More details in Appendix 3

Although there are currently no identified funding sources for the measures investigated, and further scheme development work is required, this analysis represents a direction of travel for improvements to Downham Market.

Recently some locations in Norfolk have benefited from government funding such as the Future High Streets Fund and the new Towns Fund. It is proposed that when such funding opportunities arise in the future, these ideas can form the basis of a strong bid to improve Downham Market to make it a safer, more attractive and more prosperous place to live in and visit.

6.5 Walking and Cycling

The purpose of the review of the existing walking and cycling network for Downham Market is to identify three key walking and cycling corridors for the town and select a selected preferred corridor.

The existing walking and cycling infrastructure within Downham Market is of a good standard, however with 11.7% of Downham Market residents walking to work and 2.3% cycling, there is scope to increase the number of people walking and cycling within the town. Additional infrastructure is likely to help achieve a modal shift and meet the ambitions of the Norfolk Cycling and Walking Action Plan.

Pedestrian permeability is high in Downham Market. Nearly all roads have adjacent footways and a number of pedestrian only links are located through the town. A number of crossing points exist in the town centre that allows users to safely cross the road, these include:

- Two zebra crossings along the B1512 Priory Road;
- Staggered zebra crossing on Church Road;
- Zebra crossing on the B1507 Lynn Road;
- Zebra crossing on the B1512 Bexwell Road; and
- Puffin crossings at the Cannon Square signalised junction.

The walking isochrone in Figure 6.10 shows the walking accessibility at five-minute intervals up to 25 minutes from Downham Market railway station, at an average speed of 3mph. This shows that the railway station is accessible within a 25-minute walk from almost all of Downham Market, this also illustrates the potential for encouraging walking as a prominent mode of travel for short trips within the town.



Figure 6.10 Walking Isochrone

Figure 6.11 Cycling Isochrone

The isochrone, figure 6.11, shows that Downham Market railway station is strategically located to be within a 10-minute cycle of all of Downham Market's urban area and emphasises the need to improve the existing connections to encourage an increase in active travel.

Cycle Storage

The provision of cycle storage facilities within Downham Market are concentrated in the town centre and the railway station, see figure 6.12. The bicycle parking racks are situated next to the main points of interest in the town, i.e. the railway station, the supermarkets, the library and the market place, etc. Cycle storage is provided in the form of Sheffield Cycle **F** Stands throughout the town, wall brackets at



Figure 6.12 Location of Bicycle Storage in Downham Market

Downham Heritage Museum and a two-tiered sheltered stand at the railway station.

Travel to Work

The majority of commutes to work are carried out by car, there is an option to make travel via active travel means are a more desirable option.

Walking and Cycling Corridor Improvements

By using historical walking and cycling data three walking and cycling corridors were decided upon. Further analysis was carried out and the exercise found that corridor 1 was the most suitable route to enhance. Route 1 links new development to the north



Figure 6.11 Walking and Cycling Corridor 1

of Downham Market with the rail station, table 6.6 displays the indicative costs.

This work has set out the likely interventions on three key walking and cycling corridors linking the key growth areas of the town to the facilities in the centre and the railway station. These measures are set out in more detail in appendix 5.

No funding source has currently been identified for implementing any of these measures. It is proposed that they are developed in more detail for implementation as funding becomes available. A possible source of funding is via Section 106 agreements for the individual planning applications for the housing all locations.

14	Unit	Corri	dor 1	Corri	dor 2	Corrie	dor 3
Item	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost
Zebra Crossing	£20,000	1	£20,000				
Uncontrolled crossing / tactile paving	£5,000	1	£5,000	1	£5,000		
Uncontrolled crossing with refuge island	£10,000			1	£10,000		
Shared footway / cycleway	£252			150	£37,800		
Speed Humps	£4,250			6	£25,500		
Spot Lighting*	£1,000 / 100m					500	£50,000
Improved surfacing	£40					500	£20,000
Widened roundabout splitter island / refuge	£50,000	1	£50,000				
White lining / parking buffer	£10/ 1m	2010	£20,100				
Waiting restrictions	£15,000	1	£15,000				
Contraflow cycle lane	£2,390	1	£2,390	1	£2,390		

Table 6.6 Indicative Walking and Cycling Corridor Costs

Erect sign	£390					2	£780
Narrowing of junction	£36,000	3	£108,000	1	£36,000		
Advanced Stop Lines (ASL)**	£10,000	1	£10,000	1	£10,000	1	£10,000
Dropped Kerb	£950	2	£1,900			1	£950
Total	-	-	£232,390	-	£126,690	-	£81,730

Chapter 7: Action Plan

Table 7.1 Ac	tion Plan			
Time	Parking	Junction Assessment	Routeing	Walking and Cycling
period				Corridors
Short term	Devise and implement a series of parking restrictions in the area around the railway station. Likely cost £10k			
Medium term	 Monitor DMTC proposals to implement car park charges and: devise and implement a series of parking restrictions in the remainder of the town and rationalise the waiting duration times. Likely cost £10-20k develop further a signage alteration strategy to assist these objectives, including design development and site investigation. Likely cost £10k 	Clackclose Road - If a funding source is identified for a junction improvement, likely to cost in the region of £200k, the next step would be to carry a detailed feasibility study including speed assessments, to determine the most appropriate junction form. Cannon Square - This work has shown that there are possible improvements to the junction and it is recommended that when a funding source is identified further feasibility work is carried out to determine the optimum solution.		Developed individual schemes and measures in more detail for implementation as funding becomes available. A possible source of funding is via Section 106 agreements for the individual planning applications for the housing allocations.

	Railway Road/Bennett Street – if deemed useful further detailed feasibility could be carried out into removing these traffic signals		
	Greenwich Close/London Road/Wingfields – if deemed useful, further detailed feasibility could be carried out into removing these traffic signals		
Long term		Seek funding sources and develop traffic routeing, pedestrianisation and junction alteration measures	

Based on the feedback from stakeholders and findings from the study work the action plan recommends areas where consideration should be given in the form of short, medium and long-term actions. NCC has funding committed to the delivery of short-term schemes that can be delivered within the next two years. Given the nature of funding using NCC led proposals would allow for schemes to be delivered within the time allocation. In the medium and longer term it will be critical for NCC to work collaboratively with local partners to deliver on other opportunities.