PROJECT NEWTON SCIENCE & TECHNOLOGY PARK, BURGESS HILL

GLENBEIGH DEVELOPMENTS LIMITED AND
WORTLEFORD TRADING COMPANY LIMITED

MOBILITY STRATEGY

November 2020

PROJECT NEWTON SCIENCE & TECHNOLOGY PARK: MOBILITY STRATEGY

PREPARED FOR THE MID SUSSEX DISTRICT COUNCIL SITE ALLOCATIONS DPD PRE-SUBMISSION (REGULATION 19) CONSULTATION

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1.0 Introduction

1.1 Connect Consultants Limited is a firm of transport planning and highway design consultants that have been instructed by Glenbeigh Developments Ltd and Wortleford Trading Company Ltd in relation to the promotion of their land to the north of the A2300 at Goddards Green, West Sussex, for a future Science & Technology Park, known as Project Newton.

1.2 In the context of the MSDC Draft Site Allocations DPD (Regulation 19) Public Consultation, MSDC has identified the Project Newton site as site SA9 – the preferred location for a Science & Technology Park (S&TP).

2.0 Background

2.1 At the Regulation 18 stage, Connect Consultants produced a Technical Note (TN), dated 14th November 2019, which was submitted in response to the highways and transport evidence base published by MSDC alongside the Draft DPD, and which referred to strategic traffic modelling undertaken on behalf of MSDC by SYSTRA (the Mid Sussex Strategic Traffic Study model [MSTS]).

2.2 Additional strategic traffic modelling was undertaken by SYSTRA on behalf of Project Newton, to further inform the Regulation 18 consultation representation.

2.3 Since the Regulation 18 stage, further work has been undertaken to develop the sustainable access strategy, including further work with SYSTRA's strategic traffic modelling, and continued dialogue with MSDC, West Sussex County Council (WSCC), Highways England (HE), the local bus operators Metrobus and Compass, and the Northern Arc development.

2.4 In order to further develop our transport strategy and work in partnership with WSCC, MSDC, and Highways England. Regular meetings have been undertaken to support our Regulation 19 work and technical evidence base.

2.5 For the September 28th deadline a transport statement, aligning the work undertaken as a wider project team, was agreed between our clients, the project Newton deign team, and WSCC and MSDC and HE. This acknowledges the form and outputs of the work being undertaken

2.6 The strategy is now known as the Project Newton Mobility Strategy, to reflect its focus on all users and all travel modes.

3.0 Context

3.1 The MSDC Submission Draft Site Allocations DPD sets out the specific requirements of site SA9: Science and Technology Park; an excerpt is provided below at Figure 1, showing the requirements for specific topics of Sustainability and Highways and Access.

Figure 1 – Excerpt from Submission Draft Site Allocations DPD: Site SA9

Sustainability
• Provision of electric vehicle charging points in accordance with the Council's adopted standards. • Ensure the design would make the development future-ready for improvements in technology and sustainability such as (but not limited to) green technology, artificial intelligence and automation.
Highways and Access
• Provision of sustainable transport measures and other infrastructure requirements, including measures to mitigate impacts on the local and Strategic Road Network. • The first priority is to mitigate development impacts by maximising sustainable transport interventions. Remaining impacts must be addressed through physical highway mitigation measures in consultation with the local Highways Authority and Highways England. • Demonstrate that the development would not adversely affect the safe and efficient operation of the A23 and the A23/A2300 junction to the satisfaction of the local Highways Authority and Highways England. • Demonstrate that access can be achieved to the satisfaction of the Highways Authority, minimising disruption and delay on the A2300 and surrounding roads. • Provision of new bus routes or diversion of existing routes to connect with key hubs including railway and bus stations and Burgess Hill town centre. • Provision of new pedestrian and cycle links to ensure connectivity with the Northern Arc, The Hub (south of A2300), Burgess Hill and surrounding countryside. • Provision of pedestrian and cycle connectivity with Bolney Grange Business Park. • Provision of car parking and cycle storage in accordance with the Council's adopted standards.

3.2 A key element of the Project Newton S&TP has always been that it will incorporate a comprehensive sustainability strategy which will ensure that sustainable travel is at the centre of the development's ethos.

3.3 This aligns with the DPD requirement of Site SA9 that the first priority is to mitigate development impacts by maximising sustainable transport interventions.

3.4 The DPD also identifies the requirement to provide new and/or diverted bus routes, and new pedestrian and cycle links, to connect to the surrounding area.

3.5 The Project Newton Mobility Strategy is an evolving strategy, being developed with regard to the Burgess Hill Public Transport Strategy (BHPTS) (2016), and also the Public Transport Strategy of the adjacent Northern Arc strategic development site.

Burgess Hill Public Transport Strategy (BHPTS)

3.6 The BHPTS has a range of objectives to increase the use of public transport in and around Burgess Hill, with a focus on new developments in the area. Its aim is to "*provide a vision for how Burgess Hill can be best served by public transport and how the proposed developments across the town can contribute towards sustainable transportation*".

3.7 The BHPTS seeks to, "*knit together a more integrated public transport network as multiple development sites (new and existing) and destinations are connected together*", as well as, "*by introducing travel and parking demand management measures to complement and enhance an integrated public transport network*".

3.8 The BHPTS recommends that, "*New developments should be required to consider and support public transport solutions which not only considers mitigation of impacts for their individual sites but rather to provide comprehensive solutions that considers impacts on the entire network in tandem with other potential new or existing developments*."

3.9 A number of key public transport routes are identified in the BHPTS, which anticipate the delivery of the S&TP by connecting the S&TP site with the Northern Arc and other parts of Burgess Hill, including the town centre and rail station.

3.10 In the MSTS and the MSDC Regulation 19 evidence base, sustainable travel forms the basis of the future traffic mitigation envisaged by MSDC.

3.11 Within the MSTS, a package of sustainable travel measures is assumed to reduce car trips to/from the S&TP site by 3%, via three measures identified as:

- Improved PT interchange Burgess Hill
- Bus Shelters within development with RTI (Real Time Information)
- Bus Services to Burgess Hill and station

3.12 As set out in the Connect Consultants 14th November 2019 TN, the emerging Project Newton Sustainable Access Strategy is far broader and more comprehensive than the three measures assumed in the modelling, and is likely to achieve a significantly greater mode shift towards sustainable travel than the 3% assumed in the SYSTRA modelling. The target of the Mobility Strategy will be to achieve an overall mode-shift of 10% which is likely to be realised as an average across the whole site, with specific focus on greater mode-shift from the key origin areas of Burgess Hill, Brighton and Hove, and Crawley.

3.13 In order to provide evidence for the target scale of travel mode shift, Connect Consultants has referred to Census data and MSTS traffic data to understand more about the likely travel patterns that will be associated with Project Newton, and subsequently to identify the potential for travel mode shift. This is outlined in the following section.

4.0 Evidence

4.1 In order to maximise the potential travel mode shift to sustainable transport modes, the Mobility Strategy will focus on the likely home locations of the future workforce of the Project Newton S&TP. The following section sets out the analysis of the available relevant travel data, drawing on the same principles used in the strategic traffic modelling which forms the evidence base for the MSDC Site Allocations DPD, to identify the key origins and destinations of travel associated with the S&TP.

Likely Home Locations of Future Workforce

4.2 The MSTS uses 2011 Census data to inform the origins and destinations of commuting trips to and from the S&TP site, based on the home locations of members of the population who work in locations similar to the S&TP.

4.3 Using the same principles as for the MSTS, Connect Consultants has referred to Census data associated with people whose usual workplace is within Burgess Hill's Victoria Business Park; a large employment zone located at the southwestern side of Burgess Hill, which can be used as an analogue site to the Project Newton site.

4.4 Census 2011 dataset *WF01BEW - Location of usual residence and place of work* provides information about the origins and destinations of commuting journeys. For the purposes of this analysis, the workplace destination is taken to be an amalgamation of the three Census Output Areas which cover the Victoria Business Park employment zone (Mid Sussex 012D, Mid Sussex 014F, and Mid Sussex 015D).

4.5 The Census dataset has been analysed to identify the home locations, in the form of Census Output Areas, of all people who work within this amalgamated Victoria Business Park 'destination zone'.

4.6 The most common home locations of people working at Victoria Business Park are shown in Table 1, by absolute number and percentage of the total number working within the destination zone.

Table 1 – Origins of population working within Burgess Hill's southwest employment zone (Census)

Origin / home location	Number of people	Percentage of total population employed within the destination zone (5,351)
Burgess Hill	1519	28%
Brighton and Hove	695	13%
Elsewhere in Mid Sussex	465	9%
Haywards Heath	398	7%
Lewes	292	5%
Horsham	276	5%
Crawley	225	4%
Wealden	188	4%
Worthing	171	3%
Adur	170	3%
Arun	71	1%
Eastbourne	52	1%
Reigate and Banstead	51	1%

4.7 As would be expected, there are distinct clusters of home locations in the surrounding towns, notably; 28% from Burgess Hill, 13% from Brighton and Hove, 7% from Haywards Heath, 5% from Lewes, 5% from Horsham, and 4% from Crawley.

4.8 The proportions of Victoria Business Park employees living in these key geographical areas can be used to indicate the potential geographical spread of the future Project Newton site workforce. This can then be quantified by applying these proportions (percentages) to the number of AM and PM peak vehicle trips associated with the S&TP as assumed in the MSTS.

4.9 This is shown in Table 2, in which the total S&TP AM and PM peak hour vehicle trips have been extracted from the MSTS 'Sites DPD 2031' scenario as 'AM arrivals', 'AM departures', 'PM arrivals', and 'PM departures'.

Table 2 – Potential origins of future workforce at Project Newton (Census)

Workforce Origins (Census data)		**S&TP Peak Hour Vehicle Trips (MSTS Sites DPD Scenario)**			
Percentage of total workforce		**AM Arr: 1,247**	**AM Dep: 557**	**PM Arr: 179**	**PM Dep: 1,409**
Burgess Hill	28%	354	158	51	400
Brighton and Hove	13%	162	72	23	183
Elsewhere in Mid Sussex	9%	108	48	16	122
Haywards Heath	7%	93	41	13	105
Lewes	5%	68	30	10	77
Horsham	5%	64	29	9	73
Crawley	4%	52	23	8	59
Wealden	4%	44	20	6	50
Worthing	3%	40	18	6	45
Adur	3%	40	18	6	45
Arun	1%	17	7	2	19
Eastbourne	1%	12	5	2	14
Reigate and Banstead	1%	12	5	2	13

4.10 Table 2 shows that potentially 354 vehicles will travel from Burgess Hill in the AM peak, 162 from Brighton and Hove, 93 from Haywards Heath, and 52 from Crawley.

Northern Arc

4.11 The MSTS 2031 Sites DPD scenario takes into account future developments and population growth, and therefore in areas with planned significant growth the origins/destinations of S&TP trips in the MSTS model differ from the 2011 Census data.

4.12 This is particularly relevant to the Northern Arc development to the north of Burgess Hill, which will deliver significant housing growth adjacent to the S&TP park site, spanning both Census output areas 'Mid Sussex 016' and 'Mid Sussex 011'.

4.13 The 2011 Census data indicates that 4% of the workforce might live in 'Mid Sussex 016' and 'Mid Sussex 011', equating to 50 AM peak arrivals, 22 AM peak departures, 7 PM peak arrivals, and 57 PM peak departures.

4.14 From the same Census output areas, the MSTS 2031 Sites DPD scenario has a total of 276 AM peak arrivals, 165 AM peak departures, 74 PM peak arrivals, and 251 PM peak departures.

4.15 The difference in number between each of the respective movements is shown in Table 3. It is probable that the significant increase in trips from 'Mid Sussex 016' and 'Mid Sussex 011' originate from the residential areas of the Northern Arc development adjacent to the S&TP site.

Table 3 – Project Newton Workforce Originating in Northern Arc.

Workforce Origins in 'Mid Sussex 016' and 'Mid Sussex 011'	S&TP Peak Hour Vehicle Trips			
	AM Arr	AM Dep	PM Arr	PM Dep
2011 Census Data	50	22	7	57
Data from MSTS 2031 Sites DPD	276	165	74	251
Increase (assumed to be from Northern Arc)	226	142	66	194

4.16 As shown in Table 3, it is likely that there will be in the region of 368 vehicle trips between the S&TP and the Northern Arc development in the AM peak hour, and in the region of 260 vehicle trips in the PM peak hour.

4.17 Table 4 below indicates the number of S&TP vehicle trips that there could potentially be to/from Burgess Hill and the Northern Arc, by combining the relevant data from both Table 2 and Table 3.

Table 4 – Project Newton Workforce from Burgess Hill / Northern Arc.

Home Location	AM arrivals	AM departures	PM arrivals	PM departures
Burgess Hill	354	158	51	400
Northern Arc	226	142	66	194

4.18 Given the proximity of the Northern Arc development to the Project Newton site, a priority of the Mobility Strategy must be to focus on modal shift of these short-distance trips, as well as those originating elsewhere in Burgess Hill.

Brighton and Hove

4.19 The MSTS modelling has predicted future capacity issues for traffic turning south on to the A23 at the A23 / A2300 Hickstead junction in the PM peak hour.

4.20 Table 2 indicates that there could be potentially 183 S&TP vehicle trips bound for Brighton and Hove from the S&TP in the PM peak, which would make the southbound turn at the Hickstead junction. This figure is broadly consistent with traffic flow data extracted from the MSTS Sites DPD model scenario, which shows 181 S&TP vehicles in the PM peak hour travelling southbound on the A23 at the A23 / Mill Lane junction, south of the Hickstead junction.

4.21 Given the sensitivity of the A23 / A2300 Hickstead junction which has been identified in the MSTS modelling, in particular the southbound movement on to the A23 in the PM peak hour, a priority must also be to focus on modal shift of trips to/from the Brighton and Hove area on the south coast.

MSTS S&TP Origins and Destinations

4.22 As an additional check, the origins and destinations of all S&TP traffic have been extracted from the MSTS Sites DPD scenario; these are summarised in Table 5, showing data for the same locations as shown in Table 2 as well as the two Northern Arc origin areas, for comparison.

Table 5 – MSTS origins and destinations of Project Newton vehicle trips

Trip Origins	S&TP Peak Hour Vehicle Trips (MSTS Sites DPD Scenario)			
	AM Arr	AM Dep	PM Arr	PM Dep
Burgess Hill	289	161	30	355
Haywards Heath S (inc Northern Arc)	155	43	18	196
Burgess Hill W (inc Northern Arc)	122	122	56	56
Brighton and Hove	10	19	1	177
Elsewhere in Mid Sussex	155	39	16	100
Haywards Heath	113	48	25	50
Lewes	23	35	5	42
Horsham	196	7	6	57
Crawley	113	29	16	89
Wealden	5	11	1	36
Worthing	15	0	0	9
Adur	15	0	0	13
Arun	12	1	0	4
Eastbourne	0	0	0	3
Reigate and Banstead	1	12	4	7

4.23 The MSTS origin-destination data shown in Table 5 contains some differences from the equivalent data in Table 2.

4.24 Of particular note are the number of AM peak trips to/from Brighton and Hove, which are predicted in the MSTS model to be only 10 arrivals and 19 departures, whereas the Census-based data in Table 2 suggests 162 arrivals and 72 departures.

4.25 The PM peak departures to Brighton and Hove shown in Table 5 and Table 2 are a closer match, at 177 and 183 respectively.

4.26 Advice from SYSTRA is that the MSTS model, while based originally on Census commuting data, includes a number of additional factors which affect the way that vehicle journeys are modelled, and that it is likely that the AM peak trips from Brighton and Hove should more closely match the corresponding PM departures as 'tidal flows', but that the trips are made outside of the modelled peak hour of 08:00-09:00.

5.0 Mobility Strategy

5.1 The Project Newton Mobility Strategy will provide a wide range of benefits to both the site itself and to the wider population which would achieve a wider-reaching regional mode-shift than just the S&TP users.

5.2 As such, on the basis of the emerging Mobility Strategy, and the sustainable ethos throughout the Project Newton masterplan, there is good evidence to indicate that an overall average 10% mode shift away from the motorcar will be achieved.

Walking and Cycling Strategy

5.3 The western parts of the adjacent Northern Arc development site, in particular its residential area, are within walking distance of the Project Newton site, and the Project Newton masterplan includes numerous links and connections, which means that a significant area of residential land, as well as bus stops within the Northern Arc development, will be within walking distance.

5.4 There are also links to the adjoining Bolney Grange Business Park, providing additional non-car permeability with the surrounding land uses, helping to reduce the overall number of vehicle trips.

5.5 As part of the A2300 Corridor Improvement Scheme, a footway / cycleway will be provided along the route's northern side between the A2300 / A23 interchange and Burgess Hill. The route passes the Project Newton site's southern boundary, thereby providing the site with a good quality, attractive, local and longer-distance pedestrian/cycle route.

5.6 The Project Newton site is located within walking distance of the nearby Hub employment development and its associated sustainable transport links, including a pedestrian and cycle route to Burgess Hill via Gatehouse Lane, and the provision of a signal-controlled pedestrian and cycle crossing over Jane Murray Way in Burgess Hill, where it intersects with Gate House Lane.

5.7 The Project Newton Mobility Strategy incorporates pedestrian and cycle crossings over Cuckfield Road and the A2300, thereby providing a safe and attractive connection between the Project Newton site and the existing residential areas of Burgess Hill via a low-trafficked route.

5.8 Furthermore, the residential parcels of the Northern Arc development lie on the northern side of the A2300, meaning that future Northern Arc residents will be able to walk to the Project Newton site without the need to cross the A2300 dual carriageway.

5.9 Discussions are taking place with Southern Water, Homes England, MSDC, relating to the potential provision of an additional non-car route through their land east of Cuckfield Road to link the Project Newton site with the western end of the Northern Arc.

5.10 There is a significant local population located within cycling distance of the site including most of Burgess Hill, Hurstpierpoint, Sayers Common, Ansty, and Goddards Green. The entire Northern Arc site is also within cycling distance, and its residential areas are on the same side of the A2300 as the Project Newton site, meaning that future Northern Arc residents will be able to cycle to the Project Newton site without the need to cross the A2300.

Measures to encourage cycling

5.11 The development will include a number of measures to promote and encourage cycling among its visitors and users. These will include the following:

- Provision of an arterial network of segregated cycle routes within the site;
- Provision of fixed, public-use cycle pumps at key locations on site;
- Charging facilities for electric bike and scooters;
- On-site cycle shop with bike parts/spares and bike mechanic;
- Provision of cycle route maps/boards at key locations around the site;
- Provision of covered cycle shelters adjacent to the key buildings and destinations within the site, accommodating more than 1,000 cycles;
- Provision of showers, changing rooms and drying rooms in all employment units;
- On-site bicycle user group (BUG).

On-site bike-hire scheme

5.12 The intention is to provide a scheme of pool-bike hire, by which occupants and users of the development can rent bicycles to travel either within the site, off-site, or for commuting. This could be provided, maintained and managed by the site management company itself, or it could be provided via partnership with a third-party organisation such as Green Bike Pool Initiative or YoBike.

5.13 Discussions between Project Newton and Enterprise Cars have identified the opportunity to provide an electric bike hire scheme on the site.

Green Commute Initiative Bike Scheme

5.14 Occupants and users of the site can sign-up to the 'Green Commute Initiative' which offers a no-cost employee benefit for cycle-for-work purposes. Employees can save up to 47% through a salary sacrifice scheme.

5.15 The scheme does not have the £1,000 limit that the traditional government-based cycle-to-work schemes had, which makes it more suitable for purchasing electric bikes, thereby opening up cycling as an option to perhaps more people than would otherwise consider cycling.

On site Car Share

5.16 While there are a number of car-share schemes available, through which people can arrange car-sharing journeys between common origins and destinations, there is the potential for a bespoke Project Newton car-share scheme to be set up, through which all employees, users, and visitors of the site can seek opportunities to share their journeys to/from the site.

Electric car club

5.17 There is the potential for a bespoke Project Newton car club scheme to be set up, through a partnership with one of a number of scheme operators, the most likely of which would be Enterprise Cars with whom the adjacent Northern Arc development is planning to provide 10 cars.

5.18 This would include the installation of a number of electric vehicles and charging points at strategic locations within the site, for use as a sustainable short-term travel option for people who commute to the site by non-car mode, and may therefore act as an incentive to commute sustainably for those who need to travel on- or off-site for work.

5.19 Enterprise Cars has been consulted with regard to the opportunities at Project Newton, and has offered their support to work with Project Newton as the development progresses.

Site Wide Travel Plan

5.20 The Project Newton site will promote sustainable travel through a site-wide Travel Plan, supported by individual user/occupier travel plans.

5.21 As well as actively promoting the numerous sustainable travel measures and initiatives set out within this Mobility Strategy, the Travel Plan/s will incorporate additional incentives to travel by public transport, walking, and cycling, on a more bespoke level focussed on individual businesses/occupiers' requirements and operations.

Public Transport Strategy

5.22 Connect Consultants is engaged in ongoing discussions with Metrobus and Compass, the local bus operators, as well as WSCC, to explore opportunities to expand on the BHPTS and to provide an exemplar 'superhub' immediately adjacent to the Project Newton site's junction with the A2300, which would include bus facilities along with flexible working space, a café/restaurant, cycle shop/repair facility, taxi pickup/drop off point etc.

5.23 The Project Newton site also has the benefit of being adjacent to the Northern Arc strategic development site. The 'superhub' would be close enough to the Northern Arc development for there to be a synergy between the public transport strategies for the two developments, thereby satisfying one of the key objectives of the BHPTS.

5.24 As part of the emerging Mobility Strategy, and in accordance with the BHPTS, there is the potential to improve and enhance the existing bus services in the vicinity of the site, as well as the opportunity to introduce new bus services.

5.25 Based on the origin-destination data in the previous section, the strategy will focus on the key origin areas of Burgess Hill (+ Northern Arc), Brighton and Hove, and Crawley.

5.26 A viability study has been undertaken by public transport specialists Sterling Transport Consultancy to identify the estimated commercial viability of a number of potential bus service enhancements to inform the strategy. The Bus Viability Study Report is provided at Appendix 1.

5.27 The viability study revenue calculations are based upon upon the predicted trip numbers from/to the specific origin areas of Burgess Hill, Brighton and Hove, and Crawley, which are identified in the previous section, summarised in Table 6 below.

Table 6 – Predicted Trip Numbers

	AM	PM	Average
Burgess Hill	512	451	482
Northern Arc	368	260	314
Brighton	234	206	220
Crawley	76	67	71

5.28 In the context of the overall Mobility Strategy and the proposed non-car travel strategies, measures and incentives, the viability study considers two revenue scenarios, based on the potential bus mode share;

50% mode share – assumes that 50% of the predicted trips from a specific area are within range of a bus service and will switch to bus travel;

10% mode share – assumes that 10% of the predicted trips are within range of a bus service and will switch to bus travel.

5.29 It is not possible to accurately predict what the future bus mode share will be; in reality the uptake of bus travel will likely fall within the range of the two scenarios considered in the viability study.

5.30 The total number of S&TP trips predicted by the MSDC modelling is an average of 1,696 trips in each of the AM and PM peak hours.

Burgess Hill + Northern Arc

5.31 Burgess Hill (and the Northern Arc) is predicted to generate the greatest number of S&TP trips at an average of 796 trips in each of the two peak hours, and targeting these will have the greatest impact on the overall S&TP trip numbers. It is possible that a high proportion of the Burgess Hill trip origins could be within range of a bus service and will switch from car to bus.

5.32 With effective use of demand management options, coupled with employee incentives, a target of 50% modal shift from Burgess Hill is considered realistic (398 trips).

Brighton and Hove

5.33 Brighton and Hove are predicted to generate 220 peak hour trips, and the 273 bus service is the obvious bus connection, either via a short diversion off the A23 into the Project Newton site, or via a shuttle service to/from the Hickstead bus stops. However, because of the linear corridor route of the 273 bus through the relatively wide-spread urban area, it is likely that the modal shift to bus will be relatively low compared to Burgess Hill. However, rail travel is likely to attract more of a modal shift.

5.34 A target 10% of the Brighton trips could switch to bus, and 15% could switch to rail travel to Burgess Hill if a fast/direct shuttle service between the station and Project Newton is provided. Connecting Project Newton to Burgess Hill train station via a shuttle service might take as little as 10 minutes, and the rail journey from Brighton is approximately 10 minutes. This is likely to be a more popular option than the c.35 minutes it would take via the 273 bus.

5.35 Therefore, a target of 25% of the Brighton trips switching to bus/rail (55 trips) is considered realistic.

Crawley

5.36 Crawley is predicted to generate only 71 peak hour trips, and it is again likely that the modal shift to bus will be relatively low; perhaps 10% of Crawley trips will switch to bus (7 trips) if the 273 service is diverted into the site.

Haywards Heath

5.37 Haywards heath is predicted to generate an average of 126 trips in each of the two peak hours, and it is likely that modal shift to rail will be an attractive option. If a fast/direct shuttle service between the station and Project Newton is provided, it is considered realistic that up to 25% of Haywards Heath trips could switch to rail (31 trips).

Public Transport Strategy Targets

5.38 Based on the target mode shift proportions set out above, the target trip numbers are as follows:

Burgess Hill @ 50% = 398 trips from car to bus

Brighton @ 25% = 55 trips from car to bus/rail

Haywards Heath @ 25% = 31 trips from car to rail

Crawley @ 10% = 7 trips from car to bus/rail

Total = 491 peak-hour trips shifted from car = 29% of the total S&TP peak-hour trips (average 1,696 peak-hour trips).

5.39 These are optimistic but realistic upper targets for the future travel modes to Project Newton, and the potential bus service improvements that could be delivered via the Project Newton S&TP to facilitate reaching the targets are set out below, with reference to the outcomes of the viability study.

Burgess Hill: 100 Service

5.40 This service is operated by Compass, and is funded by subsidy from WSCC. There are currently three buses from Burgess Hill in the AM peak and three buses to Burgess Hill in the PM peak, passing the Project Newton site. This service could be diverted into the Project Newton site to call at the 'superhub'.

5.41 This minor diversion of the existing service would be an immediate opportunity and would come at effectively nil cost.

5.42 If it is assumed that there is capacity for 30 S&TP passengers on each of the existing three peak-hour buses, plus capacity for 60 passengers on an additional service in each peak, there is potentially the ability to accommodate 150 S&TP passengers from/to Burgess Hill and the Northern Arc in each peak.

Burgess Hill: Service 35A/C circular

5.43 This is currently an hourly service in each direction (clockwise and anticlockwise). The routes could potentially be extended to serve the Project Newton 'superhub', thereby connecting the site with Burgess Hill and the train station, and parts of the Northern Arc development.

5.44 If it is assumed that there is capacity for 30 S&TP passengers on each directional service, there is potentially the ability to accommodate 60 S&TP passengers from/to Burgess Hill in each peak.

5.45 The viability study indicates that in the 50% mode-share scenario based on Burgess Hill trips alone (excluding the Northern Arc trips), extending the route 35 buses (two buses per hour) during the AM and PM peak periods will operate with surplus revenue from the outset.

5.46 In the 10% mode-share scenario, the extension of the 35 service will operate with surplus revenue from 2029 (Project Newton phase 4).

Burgess Hill: New Shuttle Service: Project Newton – town centre and train station

5.47 This would be a new shuttle service specifically serving the Project Newton site from Burgess Hill town centre and train station. The viability study is based on there being four buses per hour during the AM and PM peaks.

5.48 The viability study shows that at four buses per hour in the 50% mode-share scenario, and based on Burgess Hill trips alone, the shuttle service will operate with surplus revenue by 2025 (Project Newton phase 2).

5.49 In the 10% mode-share scenario, the shuttle service is predicted to not break-even before the assumed Project Newton completion in 2031, and would therefore require subsidy.

5.50 A direct/fast shuttle will also attract rail travellers who will increase the patronage and income of the shuttle service, improving its viability.

Burgess Hill: Northern Arc

5.51 The Northern Arc Public Transport Strategy includes new bus services connecting the Northern Arc development with Burgess Hill town and train station, which will be delivered in phases alongside those of the Northern Arc development.

5.52 The Northern Arc Phase 2 bus service extends through the employment areas in the western extent of the Northern Arc, south of the A2300. There would be 2 buses servicing this route, running on a 30-minute frequency on a clockwise loop, with an additional third service during the peak periods (07:00-10:00 and 16:00-19:00).

5.53 Through discussions between Project Newton and Homes England, the promotors of the Northern Arc, the potential has been identified to extend this Phase 2 service to connect with both The Hub development and the Project Newton 'superhub', routing via the A2300 and/or a potential new bus connection between The Hub and the Northern Arc employment area.

5.54 The Northern Arc Phase 3 and Phase 4 bus service will extend through the Northern Arc site via the new Northern Arc Avenue spine road. It will operate on a 15-minute frequency in Phase 3, and a 12-minute frequency in Phase 4, running east-west across the Northern Arc, in both directions, serving the Northern Arc, Burgess Hill Town Centre and Burgess Hill Railway Station.

5.55 Discussions with Homes England have identified that this could also be extended to serve the Project Newton 'superhub' via a new link through The Hub and/or via the A2300.

5.56 The viability study has identified that an extension of the future Northern Arc bus service to call at the Project Newton 'superhub' will require one additional bus for either a two-buses-per-hour or four-buses-per-hour frequency during the peak periods. It also notes that the fixed costs of the additional bus could potentially be shared with other activities outside of the peak periods.

5.57 On this basis, accounting for the predicted trips from the Northern Arc alone (314 peak-hour trips), extending the future Northern Arc bus route to serve the S&TP with 2bph (which will require one additional bus) will operate with surplus income from 2025 (Project Newton phase 2) if uptake is 50%, or from 2027 (phase 3) if uptake is 25%. If uptake is only 10%, the extended route is predicted to not break-even before the assumed Project Newton completion in 2031, and would therefore require subsidy.

Brighton: Service 273

5.58 There is currently one bus in each of the AM and PM peak periods between Brighton and Hickstead. This service could potentially be diverted the short distance from its existing stop at Hickstead to travel along the A2300 to call at the Project Newton 'superhub'.

5.59 The viability study predicts that the diversion of the existing 273 service will require subsidy until 2029 (Project Newton phase 4) in the 10% mode-share scenario, based on the predicted trip numbers from/to Brighton and Hove.

5.60 An alternative to diverting the 273 could be to extend the Project Newton Burgess Hill station shuttle service westwards to meet the 273 bus at the Hickstead stops.

Brighton: New 'Fastway' Service

5.61 This would be a new service between Brighton and the Project Newton site. The viability study has assumed two options; four buses per hour in the peak periods and three buses per hour in the peak periods.

5.62 The option with four buses per hour, at 10% mode share, is predicted to require subsidy throughout the Project Newton build-out phases and beyond 2031.

5.63 An option with three buses per hour is considered in the viability study in conjunction with the diversion of the existing 273 service. In the 10% mode-share scenario this combination is predicted to require subsidy beyond 2031.

Crawley: Service 273

5.64 There is currently one bus in each of the AM and PM peak periods between Crawley and Hickstead. This service could be diverted the short distance from its existing stop at Hickstead to travel along the A2300 to call at the Project Newton 'superhub'.

5.65 In the scenario of 10% mode-share, the diversion is predicted to not break-even before the assumed Project Newton completion in 2031, and would therefore require subsidy.

Crawley: New 'Fastway' Service

5.66 This would be a new service between Crawley and the Project Newton site. The viability study has assumed two options; four buses per hour in the peak periods and three buses per hour in the peak periods.

5.67 In the 10% mode-share scenario, the option with four buses per hour is predicted to require subsidy throughout the Project Newton build-out phases and beyond its completion in 2031.

5.68 Similarly, the option with three buses per hour in conjunction with the diversion of the existing 273 service is predicted to require subsidy throughout the Project Newton build-out phases and beyond 2031.

Public Transport Strategy Summary

5.69 The immediate need will be to provide bus services from the outset, in coordination with the first occupation of Project Newton. The diversion of the existing 100 service provides such an immediate opportunity at no cost, which will provide a good opportunity for trips from Burgess Hill to be made by bus.

5.70 The viability study recommends that as soon as possible, the existing 35A/C routes should be extended and/or a new shuttle service is provided, to bolster the provision between Project Newton and Burgess Hill and the train station.

5.71 While a new shuttle service at four buses per hour will take a few years to become commercially viable, it is possible that a combination of two buses per hour plus the extension of the 35 services could be a preferable option in the early phases. The provision of a shuttle service from the outset will provide an attractive opportunity for Haywards Heath, Brighton and Crawley trips, as well as other longer-distance trips, to be made by a train-and-bus combination.

5.72 Similarly, as both Project Newton and the Northern Arc come forward, the extension of the Northern Arc bus route will provide a connection between Project Newton, the Northern Arc, Burgess Hill and the train station.

5.73 The diversion of the 273 service is the most viable bus option to target trips from both Brighton and Crawley. It is understood from discussions with Metrobus that there are plans to increase the frequency of this service, which will further increase the attractiveness and viability of this service to/from Project Newton. An alternative to diverting the 273 could be to extend the Project Newton Burgess Hill station shuttle service westwards to meet the 273 bus at the Hickstead stops.

5.74 Connecting Project Newton to Burgess Hill train station via a shuttle service might take as little as 10 minutes, and the rail journey from Brighton is approximately 10 minutes. This is likely to be a more popular option than the c.35 minutes it would take via the 273 bus, and therefore the provision of a shuttle service should be a priority.

5.75 Suggested strategy at opening:

- Divert the 100 service – no cost to divert.
- Extend the 35A/C – will yield surplus revenue at 50% and at 25% uptake, but if only 10% uptake is achieved it will require subsidy for the first two years before breaking even.
- Provide a new station shuttle – if 25% uptake is achieved from Burgess Hill and 15% of the Brighton trips switch to train + shuttle, it will require subsidy until 2029 (Project Newton phase 4), before breaking even.
- Divert the 273 – if 10% uptake from Brighton is achieved, this will require subsidy until it breaks even in 2029 – or extend the new station shuttle to meet the 273 at its existing Hickstead stops.

5.76 Suggested strategy in later phases (subject to Northern Arc build-out):

- Extend Northern Arc route – to be coordinated / triggered by the build-out of the Northern Arc development.

6.0 Conclusions

6.1 The assumption made by MSDC and SYSTRA in the DPD evidence base is that a specific package of sustainable travel measures will reduce car trips to/from the S&TP site by 3%. That 3% is assumed to be achieved via the following three measures:

- Improved PT interchange Burgess Hill
- Bus Shelters within development with RTI (Real Time Information)
- Bus Services to Burgess Hill and station

6.2 The target of the Mobility Strategy will be to achieve an overall mode-shift of 10%, which is likely to be realised as an average across the whole site, with specific focus on greater mode-shift from the key origin areas of Burgess Hill, Brighton and Hove, and Crawley.

6.3 This is demonstrated in this document through analysis of Census data and strategic traffic modelling data to focus the Strategy on the key origins and destinations of commuting trips associated with the Project Newton site.

6.4 The Mobility Strategy includes a wide range of walking and cycling measures and infrastructure, providing attractive and realistic incentives and opportunities for non-car travel from the surrounding Burgess Hill area.

6.5 An on-site car club scheme will provide a sustainable travel option for people who commute to the site by non-car modes, and may therefore act as an incentive to commute sustainably for those who need to travel on- or off-site for work.

6.6 This document identifies potential bus service improvements which could be delivered via the Mobility Strategy and the Burgess Hill Public Transport Strategy, in partnership with Metrobus, Compass, and West Sussex County Council, which focus on commuting journeys to/from the south coast, Burgess Hill (and the Northern Arc), and Crawley.

6.7 The potential bus service improvements and target modal shift for specific origin areas are assessed in a bus viability study which identifies the viability of the various options and the levels of subsidy which may be required to support them.

6.8 If the target modal shifts from Burgess Hill, Brighton and Crawley are achieved, the overall development trip numbers will be reduced by a significant proportion.

6.9 As MSDC believes that a 3% modal-shift can be achieved by the three measures listed above, an additional 7% mode shift is wholly realistic in view of the Project Newton Mobility Strategy, the proximity of Project Newton to the Northern Arc and Bolney Grange Business Park, and the associated synergies between the respective public transport strategies.

6.10 It is therefore entirely feasible that an overall average 10% mode shift away from the motorcar will be achieved.

APPENDIX 1
BUS VIABILITY STUDY

Project Newton: Bus Service Analysis

Context

Sterling Transport Consultancy have been instructed by Connect Consultants Limited in September 2020 to review and cost the bus service proposals advanced to support the proposed Project Newton development.

Project Newton is a substantial development of a new science and technology park located north west of Burgess Hill in West Sussex. This site is described as"Lland North of the A2300, at Goddards Green Burgess Hill West Sussex". The site is being promoted through the emerging Mid Sussex Site Allocations DPD which is at Regulation 19 stage having been subject to consultation in August and September 2020.

The development comprises 122,353 m2 of employment development in use classes B1a office, B1b R&D and B1c light industrial use. Also present on site will be a series of supporting uses including, at the time of writing, a hotel, a cheche and a pavilion for "coffee shop" type retail. Given the nature of the development we have assumed that the development arrives in 5 broadly equal phases as proposed by a draft 'position statement' prepared by the developer in September 2020.

Engagement with the local planning and local transport authorities, Mid Sussex District Council and West Sussex County Council, has taken place though the site promotion process. Through this engagement, Connect Consultants identified a potential overall bus mode share of 10% of development trips. The local transport authority has requested further analysis of the bus service proposals, in particular in terms of costings, for the route options developed by Connect as part of their earlier transport analysis for the site.

Bus Service Proposals

The current bus network in the areas comprises the following services:

100 – operated by Compass Buses. Hourly service from Burgess Hill to Horsham. This serves the Goddards Green A2300 roundabout. Service 100 is funded by subsidy from West Sussex County Council.

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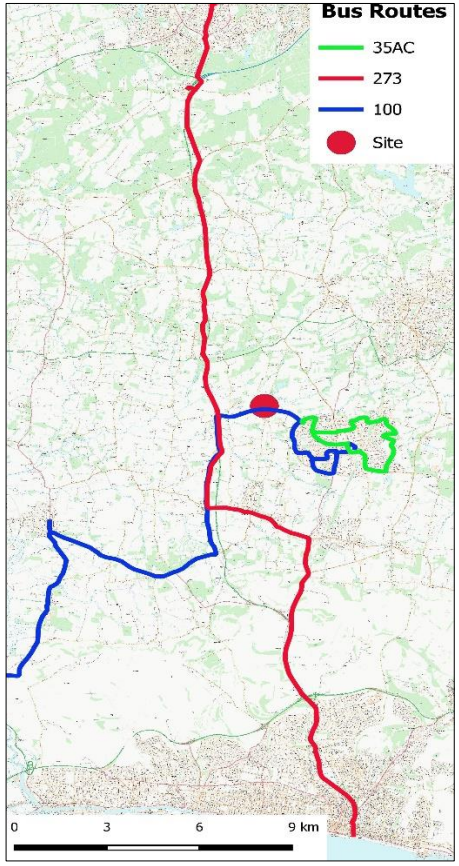
35A/C – operated by Compass Buses. Approximately half hourly local town service for Burgess Hill

273 – operated by the Go-Ahead Group's subsidiary Brighton and Hove

A plan setting out these routes and the location of the site is shown below.

Figure 1. Current Bus Routes



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The Regulation 18 assessment of the site by Connect Consultants identified three potential options for bus service provision.

1. Delivery of a service from Brighton

2. Delivery of a service from Crawley

3. Delivery of an extension of the existing town service in the Burgess Hill area to the development site.

We have refined these into the following proposals to cover the range of circumstances that would occur as the development proceeds to build out.

1. Delivery of a service from Brighton

1a Delivery of new service from Brighton in conjunction with the existing service 273

2. Delivery of a service from Crawley

2a Delivery of new service from Crawley in conjunction with existing service 273

3. Delivery of an extension of the existing town service in the Burgess Hill area to the development site.

4. Delivery of a new shuttle service from Burgess Hill town centre and railway station to the development site.

Discussions with the relevant operators have been held against the backdrop of the current Covid19 situation. Given this situation, plans for future development of the existing are 'on hold' and the network is likely to remain reliant on central government subsidy in the short term.

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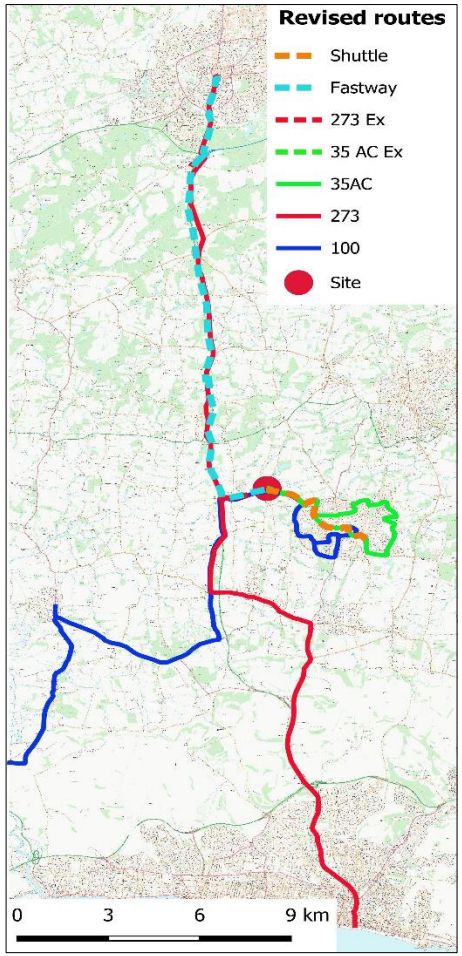
Figure 2. Future Potential Bus Routes



Approach

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Costings

A bespoke costing model has been used to determine the cost of each route option.

Route details

- Route length - as per measurement (both directions)
- Days and hours of operation (Monday to Friday AM and PM peak periods)
- Service frequency by day and time (route specific)
- Journey time, including estimate of boarding and alighting times along the route (based on distance and stopping patterns)

Fixed costs

- Vehicle purchase or leasing (lease, based on type)
- Vehicle refurbishment costs (every 5 years)
- Vehicle depreciation (based on straight line and residual value)
- Vehicle tax / insurance / operator's license fees (based on numbers)
- Contribution to depot costs (assumed to be part of an existing operation)
- Contribution to management and engineering costs (assumed to be part of an existing operation)

Variable costs

- Drivers wages and 'on costs' (£12.00 per hour + 'on costs')
- Fuel (assumed to be diesel at this point in time)
- Consumables – oil / tyres (at cost)
- Mileage based grants – e.g. BSOG (based on current rates)

Operator specific

- Operator profit margin (based on pre-covid19 averages)

Inflation

- General (CPI)

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- Bus (Confederation of Passenger Transport – CPT indices)

Income

The income analysis has been derived using the transport assessment information developed by Connect Consultants to inform consideration of mode share and residual traffic impacts.

- Journey numbers (taken from Connect Consultants analysis)
- Mode share (taken from Connect Consultants analysis)
- Development phasing (taken from the indicative masterplan)
- Fares (per single trip, taken from operator information and based on the lowest return journey price)

The mode share assessment presented by Connect Consultants have considered the fact that not all journeys to the development site would be 'in range' of a bus route. An estimate of a 50% mode share for journeys by bus has been seen to be feasible where the journey origin is in range of the planned bus routes. Overall, this would produce a circa 10% overall mode share by bus.

Analysis Outcomes

Costs

The costs information presented below sets out the costs of operation year by year until 2031 when the final phase of development is likely to occur. Bus operating inflation has been set 3% based on the CPT index. As service 100 passes the site already no incurred cost has been assumed. As noted above, the costs solely relate to the AM and PM peak periods and make no assessment of the cost of any additional work that the buses may operate.

Table 1. Bus Operating Costs

	Service level	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Crawley	4 bph	£257,903	£260,768	£263,864	£266,860	£270,087	£273,314	£276,442	£279,800	£283,224	£286,715	£292,899	£293,383
Crawley	3 bph	£193,428	£195,576	£197,898	£200,145	£202,565	£204,986	£207,331	£209,850	£212,418	£215,036	£219,674	£220,038

Brighton	4 bph	£265,914	£268,860	£272,053	£275,131	£278,455	£281,780	£284,989	£288,445	£291,967	£295,555	£301,837	£302,338
Brighton	3 bph	£199,435	£201,645	£204,040	£206,348	£208,842	£211,335	£213,742	£216,334	£218,975	£221,666	£226,378	£226,753
Shuttle	4 bph	£118,626	£120,032	£121,549	£123,020	£124,603	£126,185	£127,723	£129,371	£131,051	£132,765	£135,826	£136,063
35A/C Extension	2 bph	£29,205	£29,801	£30,432	£31,062	£31,726	£32,390	£33,053	£33,749	£34,462	£35,192	£36,595	£36,692
273 Extension	1 bph	£32,555	£33,187	£33,860	£34,525	£35,231	£35,937	£36,635	£37,374	£38,129	£38,901	£40,346	£40,450

Income

The income information set out below has been derived using the data set out in the table below.

Table 2. Income Data

Site Details		
Site Area	1,317,000	sq ft
= m2	122,353	m2
Per phase	24,471	m2
Mode share		
Burgess Hill	50.0%	
Brighton	50.0%	
Crawley	50.0%	
Annualization		
Burgess Hill	252	days
Brighton	252	days
Crawley	252	days
Single Fares (calculated)		

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Burgess Hill	£1.73	
Brighton	£3.25	
Crawley	£3.85	
Inflation	2.0%	

The basis of the journey numbers is the Connect Consultants analysis of information drawn from the Systra transport modelling for the development.

Table 3. Trip Numbers

	AM	PM	Average
Burgess Hill	880	712	796
Brighton	234	206	220
Crawley	76	67	71

The income information shows the predicted income from each of the three travel markets that bus will have a presence in. For clarity, this has been calculated at the 50% mode share for each of the specific origins identified as being 'in range' of the proposed bus services. As a sensitivity test, we have also run a similar income analysis at the overall 10% bus mode share identified by Connect Consultants as possibly being acceptable to the Councils. We consider the 10% assessment to be a worst-case scenario as would lead to an overall bus mode for the development of circa 2-3% which given the very specific circumstances of this case (and the specific target locations identified for bus use) would appear to be a significant underestimate of the likely bus demand.

At this stage, based on the Connect Consultants information demand for bus services from the 'Northern Arc' site allocation has been included in the assessment for the Burgess Hill bus service options. The Northern Arc development is a major urban extension the north and west of Burgess Hill which is transport terms will have strong synergy with the Project Newton site. It is highly likely that the public transport offer at the Northern Arc sites will provide opportunities to develop links to the Project Newton site by the additional routes created through the Northern Arc sites to the town centre. As such, the figures are quoted on a 'joint' basis given the strong probability of interworking of the resulting bus services.

Table 4. Income at 50% mode share on key bus corridors

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Inflation	1.00	1.02	1.04	1.06	1.08	1.10	1.12	1.14	1.16	1.18	1.20	1.22
				Phase 1		**Phase 2**		**Phase 3**		**Phase 4**		**Phase 5**
Development quantum m2				24,471	24,471	48,941	48,941	73,412	73,412	97,883	97,883	122,353
Total trips - daily				**217**	**217**	**434**	**434**	**651**	**651**	**868**	**868**	**1087**
Trips Burgess Hill - daily				159	159	318	318	477	477	636	636	796
Trips Brighton - daily				44	44	88	88	132	132	176	176	220
Trips Crawley - daily				14	14	28	28	42	42	56	56	71
Bus Trips Daily				**108**	**108**	**217**	**217**	**325**	**325**	**434**	**434**	**543**
Bus trips Burgess Hill - daily				79	79	159	159	238	238	318	318	398
Bus trips Brighton -daily				22	22	44	44	66	66	88	88	110
Bus trips Crawley -daily				7	7	14	14	21	21	28	28	35
Bus Trips Annual				**27,216**	**27,216**	**54,684**	**54,684**	**81,900**	**81,900**	**109,368**	**109,368**	**136,836**
Bus trips Burgess Hill - annual				19,908	19,908	40,068	40,068	59,976	59,976	80,136	80,136	100,296
Bus trips Brighton - annual				5,544	5,544	11,088	11,088	16,632	16,632	22,176	22,176	27,720
Bus trips Crawley - annual				1,764	1,764	3,528	3,528	5,292	5,292	7,056	7,056	8,820
Revenue Daily (Real)				**£519**	**£529**	**£1,082**	**£1,101**	**£1,679**	**£1,709**	**£2,321**	**£2,360**	**£3,001**
Burgess Hill				£289	£295	£604	£615	£937	£954	£1,296	£1,318	£1,677
Brighton				£180	£183	£373	£379	£579	£590	£800	£813	£1,033
Crawley				£50	£51	£105	£107	£163	£166	£225	£228	£290
Revenue Annual (Real)				**£138,716**	**£144,000**	**£299,820**	**£310,821**	**£482,466**	**£499,543**	**£690,031**	**£713,620**	**£922,655**

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Burgess Hill				£77,273	£80,217	£167,484	£173,630	£269,264	£278,795	£385,463	£398,640	£515,697
Brighton				£47,965	£49,792	£103,307	£107,098	£166,435	£172,326	£237,760	£245,887	£317,690
Crawley				£13,478	£13,991	£29,028	£30,094	£46,767	£48,422	£66,808	£69,092	£89,268

Table 5. Income at 10% mode share on key bus corridors

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Inflation	1.00	1.02	1.04	1.06	1.08	1.10	1.12	1.14	1.16	1.18	1.20	1.22
				Phase 1		**Phase 2**		**Phase 3**		**Phase 4**		**Phase 5**
Development quantum m2				24,471	24,471	48,941	48,941	73,412	73,412	97,883	97,883	122,353
Total trips - daily				**217**	**217**	**434**	**434**	**651**	**651**	**868**	**868**	**1087**
Trips Burgess Hill - daily				159	159	318	318	477	477	636	636	796
Trips Brighton - daily				44	44	88	88	132	132	176	176	220
Trips Crawley - daily				14	14	28	28	42	42	56	56	71
Bus Trips Daily				**20**	**20**	**41**	**41**	**64**	**64**	**85**	**85**	**108**
Bus trips Burgess Hill - daily				15	15	31	31	47	47	63	63	79
Bus trips Brighton -daily				4	4	8	8	13	13	17	17	22
Bus trips Crawley -daily				1	1	2	2	4	4	5	5	7
Bus Trips Annual				**5,040**	**5,040**	**10,332**	**10,332**	**16,128**	**16,128**	**21,420**	**21,420**	**27,216**
Bus trips Burgess Hill - annual				3,780	3,780	7,812	7,812	11,844	11,844	15,876	15,876	19,908
Bus trips Brighton - annual				1,008	1,008	2,016	2,016	3,276	3,276	4,284	4,284	5,544
Bus trips Crawley - annual				252	252	504	504	1,008	1,008	1,260	1,260	1,764

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Revenue Daily (Real)				**£95**	**£97**	**£201**	**£204**	**£330**	**£336**	**£451**	**£459**	**£598**
Burgess Hill				£55	£56	£118	£120	£185	£188	£257	£261	£333
Brighton				£33	£33	£68	£69	£114	£116	£154	£157	£207
Crawley				£7	£7	£15	£15	£31	£32	£40	£41	£58
Revenue Annual (Real)				**£25,319**	**£26,283**	**£55,584**	**£57,624**	**£94,865**	**£98,222**	**£134,226**	**£138,815**	**£183,754**
Burgess Hill				£14,672	£15,231	£32,654	£33,852	£53,174	£55,056	£76,365	£78,976	£102,362
Brighton				£8,721	£9,053	£18,783	£19,472	£32,783	£33,943	£45,931	£47,501	£63,538
Crawley				£1,925	£1,999	£4,147	£4,299	£8,908	£9,223	£11,930	£12,338	£17,854

The Northern Arc

The Northern Arc development in Burgess Hill will have a significant effect on the public transport provision in Burgess Hill. The masterplan indicates that up to 3,500 dwellings could come forward for development along with associated development and infrastructure.

The bus services that could emerge as the development progresses were assessed by AECOM in heir 2016 report “Burgess Hill Public Transport Strategy”. This proposed the following routes:

Route A : leaving the town centre in a northwards direction, serving the majority of the site and then to the employment land adjacent to the A2300.
Route B : an east – west link passing north of the
Route C : a route that broadly mirrors the existing 35A/C service to the west of the town centre.

The diagram below, taken from the AECOM 2016 report, illustrates the proposed routes.

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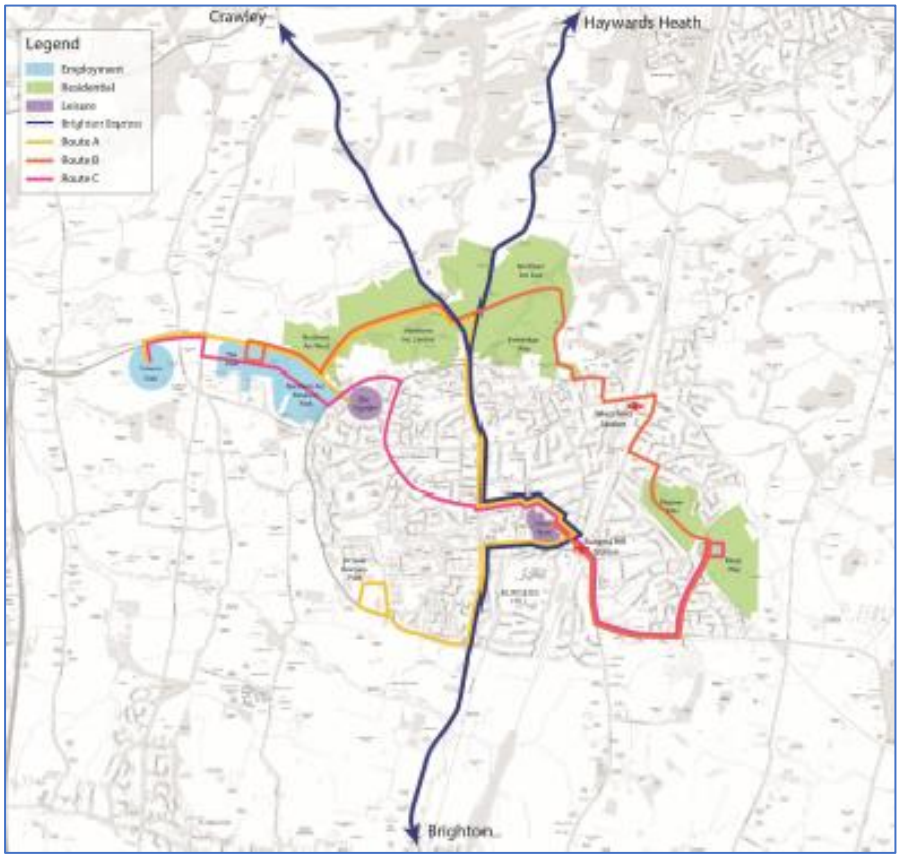
Figure 3. Burgess Hill Bus Strategy Routes (2016)



Source: AECOM

In the case of the Local links within Burgess Hill and in particular the Northern Arc, Connect Consultants in their earlier work identified the following trips as being attributable to the Northern Arc and wider Burgess Hill area.

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Table 6. Burgess Hill and Northern Arc trips

Home Location	AM arrivals	AM departures	PM arrivals	PM departures
Burgess Hill	354	158	51	400
Northern Arc	226	142	66	194
Total	580	300	117	594
Total	880		711	

This equates to a daily average of 795 trips to/from the Northern Arc and the Burgess Hill area. To assess the likely bus service income accruing to the Project Newton development we have followed the same approach as used above to calculate the revenue income at mode shares of 10% and 50%.

Table 7. Northern Arc Revenue – 10% mode share

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Inflation	1.00	1.02	1.04	1.06	1.08	1.10	1.12	1.14	1.16	1.18	1.20	1.22
				Phase 1		**Phase 2**		**Phase 3**		**Phase 4**		**Phase 5**
Development quantum m2				24,471	24,471	48,941	48,941	73,412	73,412	97,883	97,883	122,353
Total trips - daily				**159**	**159**	**318**	**318**	**477**	**477**	**636**	**636**	**795**
Bus Trips Daily				**15**	**15**	**31**	**31**	**47**	**47**	**63**	**63**	**79**
Bus trips Burgess Hill +NA daily				15	15	31	31	47	47	63	63	79
Bus Trips Annual				3,780	3,780	7,812	7,812	11,844	11,844	15,876	15,876	19,908
Bus trips Burgess Hill - annual				3,780	3,780	7,812	7,812	11,844	11,844	15,876	15,876	19,908
Revenue Daily (Real)				£55	£56	£118	£120	£185	£188	£257	£261	£333
Burgess Hill				£55	£56	£118	£120	£185	£188	£257	£261	£333
Revenue Annual (Real)				**£14,672**	**£15,231**	**£32,654**	**£33,852**	**£53,174**	**£55,056**	**£76,365**	**£78,976**	**£102,362**

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Burgess Hill				£14,672	£15,231	£32,654	£33,852	£53,174	£55,056	£76,365	£78,976	£102,362

Table 8. Northern Arc Revenue – 50% mode share

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Inflation	1.00	1.02	1.04	1.06	1.08	1.10	1.12	1.14	1.16	1.18	1.20	1.22
				Phase 1		**Phase 2**		**Phase 3**		**Phase 4**		**Phase 5**
Development quantum m2				24,471	24,471	48,941	48,941	73,412	73,412	97,883	97,883	122,353
Total trips - daily				**159**	**159**	**318**	**318**	**477**	**477**	**636**	**636**	**795**
Bus Trips Daily				**79**	**79**	**159**	**159**	**238**	**238**	**318**	**318**	**397**
Bus trips Burgess Hill +NA daily				79	79	159	159	238	238	318	318	397
Bus Trips Annual				19,908	19,908	40,068	40,068	59,976	59,976	80,136	80,136	100,296
Bus trips Burgess Hill - annual				19,908	19,908	40,068	40,068	59,976	59,976	80,136	80,136	100,296
Revenue Daily (Real)				£289	£295	£604	£615	£937	£954	£1,296	£1,318	£1,677
Burgess Hill				£289	£295	£604	£615	£937	£954	£1,296	£1,318	£1,677
Revenue Annual (Real)				£77,273	£80,217	£167,484	£173,630	£269,264	£278,795	£385,463	£398,640	£515,697
Burgess Hill				£77,273	£80,217	£167,484	£173,630	£269,264	£278,795	£385,463	£398,640	£515,697

In terms of bus costings, a review of the AECOM 2016 strategy indicates that route A is the most likely to be extended to the Project Newton site and which also covers both the northern arc and the town centre. Unlike the 35A/C extension that was considered above, the nature of the route is such that additional buses will be required to cater for an extension to the Project Newton site. The AECOM report @ table 17 implies a maximum 15 minute frequency with 4 buses running at peak time and 3 buses off peak. For a peak hour extension of Route A to the Project Newton site 1x additional vehicle

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for either a 2bph frequency or a 4bph frequency would be required. This additional vehicle if the fixed costs of this one bus are shared with other activities outside of peak time the following (marginal) costs emerge:

Table 9. Route A: Additional Vehicle (Marginal Costs)

		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Route A Arc extension marginal cost	2 bph	£47,553	£48,097	£48,665	£49,242	£49,842	£50,443	£51,053	£51,686	£52,336	£53,002	£54,342	£54,428
Route A Arc extension marginal cost	4 bph	£50,986	£51,565	£52,174	£52,786	£53,429	£54,071	£54,716	£55,391	£56,083	£56,791	£58,173	£58,266

If it is found that the peak hour operation of this extension would need to bear its full costs the following substantially higher costs emerge.

Table 10. Route A: Additional Vehicle (Full Costs)

		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Route A Arc extension full costs	2 bph	£109,740	£111,712	£113,768	£115,860	£118,036	£120,211	£122,423	£124,718	£127,073	£129,488	£134,357	£134,670
Route A Arc extension full costs	4 bph	£121,252	£123,341	£125,537	£127,746	£130,062	£132,378	£134,707	£137,142	£139,638	£142,193	£147,202	£147,538

Choices for Funders

At this stage of the development's promotion clarity is still to be reached on detail of planning conditions and obligations that will flow from the future planning application. We have considered that the following funding delivery mechanisms could be deployed.

1. Use of s106 obligations and payments

This would follow the standard approach of committed payments to the local transport authority who would secure the necessary service(s). The local transport authority could have the opportunity to use the payments in conjunction with similar payments from the Northern Arc development to provide a

network of greater coverage. Revenue risk would lie with the local transport authority or the bus operator(s) as per the normal approach in West Sussex for supported bus services.

2. Use of s106 obligations only

This would place an obligation on the developer to provide the bus service to a set specification directly or through an operator agreement. Revenue risk would lie with the developer or the bus operator(s) dependant on the contractual arrangements agreed. The prospect of links to the Northern Arc development would be more difficult to achieve than in option 1.

3. Use of planning conditions

The use of the planning conditions may be also be considered. In reality should the long-term plan be to split the site into a number of individual sites the use of conditions may be difficult to enforce on a long-term initiative such as bus service delivery.

Phasing

The immediate need will be to provide bus services on the site's opening to establish presence on site. The diversion of service 100 provides such an immediate opportunity at no cost. As soon as possible we also recommend the extension of the 35A/C routes to the site or the implementation of a shuttle service to/ from Burgess Hill rail station and the town centre. As the Northern Arc development site comes forward the current 35A/C route is likely to replaced by Route C from the 2016 Burgess Hill public transport strategy; we suggest that a similar extension of Route C is continued a that time. It would also appear appropriate to divert the inter-urban service 273 into the site at the earliest opportunity to provide longer-distance links to site. We would expect rail to bus interchange to be critical given the longer distance links created by rail and the specialist nature of the development attracting employees from a wide catchment area. We would also propose that Route A of the Northern Arc proposals be extended to the Project Newton site to ensure that the access from the Northern Arc is provided in the most sustainable way possible.

The demand anticipated from each phase and for each location would not outstrip the bus capacity to be provided in the options set out.

Future developments could include:

1. Greater penetration of bus services into the site using the internal estate roads.

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2. Development of dedicated services from strategic locations. Although we have costed these on the basis of fixed routes, it would be possible to provide a bespoke route within the target urban areas by use of standard booking app software when employee locations are known through the travel plan process.

Examples of good practice

Warwick Business Park is in a geographically similar location to that of Project Newton. The major occupier, National Grid, provided a series of bus routes to the site from nearby towns as part of a site consolidation exercise, secured by planning condition for a period of 10 years after occupation. A shuttle service to/from the local rail station and town centre (at lunchtime) was also provided. At the end of the planning requirements, the future of the service was reviewed. The approach was to widen the service to include other occupiers and to introduce a 'refund' based funding mode where users paid a commercial bus fare at the point of boarding with employers subsequently 'valuing' their attendance by way of salary refunds. To drive a positive choice for bus travel, this was coupled to proactive parking management and service promotion.

Shrewsbury Business Park is also located in a geographically similar situation to that of Project Newton. In this case the local bus network operated close by but did not serve the development. By using buses running against the peak flow of demand a series of simple route revisions have allowed a service to the business park to be developed on a commercial basis.

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