

What are the medium to long-term rail requirements in the Bedford area?



Bedford Area Strategic Advice

July 2022

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Photo: Bedford station – Charlotte Jenkins, Network Rail

Part A Executive Summary

What are the medium to long-term rail requirements in the Bedford area?

The Bedford Area Strategic Advice has been undertaken to inform the rail strategy in the area for the next 20+ years. Formed using a long term planning process, the needs of the network are considered holistically. Insight has been provided by a range of stakeholders and industry experts, working together to build an evidence base that supports credible and impartial outputs. By understanding the complex relationship between future train service, government policy and intervention options, the Bedford Area Strategic Advice provides funders with the evidence required to make informed investment choices.

Strategic advice looks beyond just track and train. Strategic planning considers wider factors, such as decarbonisation and its relationship with power supply. It also considers safety, resilience and performance. It takes account of proposed railway projects, such as East West Rail¹ and also government policy, specifically in this case the Integrated Rail Plan for the North and Midlands (IRP)². Bedford is one of the proposed stations on the East West Rail route. East West Rail is currently proposed to use separate tracks in the Bedford area, however the approach taken by this study makes its recommendations durable should there be any changes to these plans. Although Bedford is not directly included within the geography of the IRP the proposals included within the plan have implications for Bedford and the southern end of the Midland Main Line (MML) which again have been considered.

Bedford acts as an interchange point between East Midlands Railway services, Thameslink services and London Northwestern services on the Marston Vale line. In the future, further interchange opportunity is likely to be provided to/from East West Rail services serving locations to the east and west of Bedford. In the May 2021 MML timetable change Bedford lost direct connectivity with Nottingham, Sheffield and a number of other stations to the north. This study has explored the possibility for improved connectivity and as a result increased interchange possibilities at Bedford.

The study has considered previous strategic transport work carried out in the area, as well as region-wide pieces of work such as the Eastern Region Traction Power Management Strategy and the Eastern Region Depots and Stabling Strategic Advice. In addition, newly prepared expert analysis has been used to inform development and costing work leading to the recommendations included in the study.

The key constraints identified in the Bedford area in this report are concerned with platform capacity at Bedford station. Consideration of the above points has led to recommendations focusing on the provision of additional platforms at the station. Indicative options with assessments of their deliverability and order of magnitude cost ranges have been identified and developed as a way of addressing the constraints uncovered in the report. In addition to the recommendations relating to platforms at Bedford, it is also recommended that a further study be undertaken to review the best use of capacity on the MML south of East Midlands Parkway in the light of information included in the IRP.

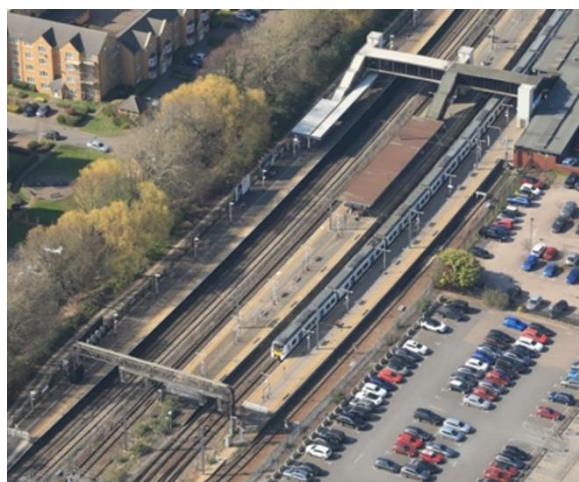


Photo: Thameslink train at Bedford station – Network Rail

¹ <https://www.networkrail.co.uk/running-the-railway/railway-upgrade-plan/key-projects/east-west-rail/>

² https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1038561/integrated-rail-plan-for-the-north-and-midlands-web-version.pdf

Part B Strategic Advice

Strategic Advice provides a rolling programme of recommendations and answers specific strategic questions defined by the rail industry. It is the mechanism which provides funders with an impartial, evidence-based strategy for the long-term future of the railway. It puts the priorities of passengers and freight-users first by identifying opportunities for rail investment to stimulate economic growth as part of the wider transport system. As a collaborative approach to strategic planning, service specifiers, train operators and local and sub-national transport bodies work with Network Rail to develop these investment recommendations. The Strategic Advice process also aims to put the government's strategic objectives for rail, as shown in Figure 1, at the heart of all considerations.

Strategic Objectives	Ambition for rail
I Meeting customers' needs	Meeting the needs of future passengers and freight customers by: a. Increasing value for money and improving the performance, reliability and convenience of rail, b. Meeting multi-modal expectations and reducing end-to-end journey time c. Maintaining a safe railway as part of a safe transport system and widening accessibility
II Delivering financial sustainability	Ensuring rail is financially sustainable, efficient and value for money by: a. Reducing costs to the government b. Ensuring a sustainable balance of fare / fee and government funding, and c. Increasing the efficiency of operations, asset management and capital investment - delivering on time and on budget
III Contributing to long-term economic growth	Catalysing long term economic growth by: a. Reducing total journey time and cost for transport users b. Connecting labour markets and realising agglomeration benefits, and c. Connecting places to markets, directly investing in skills, innovation and digital infrastructure, crowding-in foreign investment and facilitating the housebuilding and place-making agenda
IV Levelling up and connectivity	Reducing regional inequalities and bringing the union together by: a. Contributing to long-term economic growth in areas in support of levelling-up b. Contributing to social benefits, including strengthening the union, from improved connectivity
V Delivering environmental sustainability	Supporting government's environmental sustainability objectives by: a. Encouraging modal shift by increasing the attractiveness of rail, b. Delivering rail net-zero (traction and infrastructure), protecting biodiversity and addressing air pollution, and c. Protecting transport links by investing in climate adaption

Figure 1: UK Government strategic objectives for rail

Making the best use of train, track and station capacity is a key challenge for the rail industry. It is important to understand how service patterns, journey times and train performance impact on the capacity and capability of the rail network, and the Strategic Advice process is led by Network Rail to balance these factors. Furthermore, in an environment in which land-use and transport powers are increasingly devolved to local and regional decision-makers, strategic advice recommendations are rooted in the whole-system impacts of planned major investments. All Strategic Advice work is supported by a governance structure, including a steering group whose members contribute local knowledge and evidence throughout the process.



Photo: Bedford sidings – Network Rail

Part C Bedford Strategic Context

C.1 Study Context

Bedford sits on the Midland Main Line corridor and is served by East Midlands Railway (EMR) services between London St Pancras and Corby and Thameslink services to London, Gatwick Airport and Brighton which begin/end at Bedford. It is also the terminus for trains on the Marston Vale Line to and from Bletchley. Bedford St Johns station is around 1km from Bedford station and is a single platform station only served by the Marston Vale Line. Figure 2 shows an indicative layout of the Bedford stations and north and south junctions.

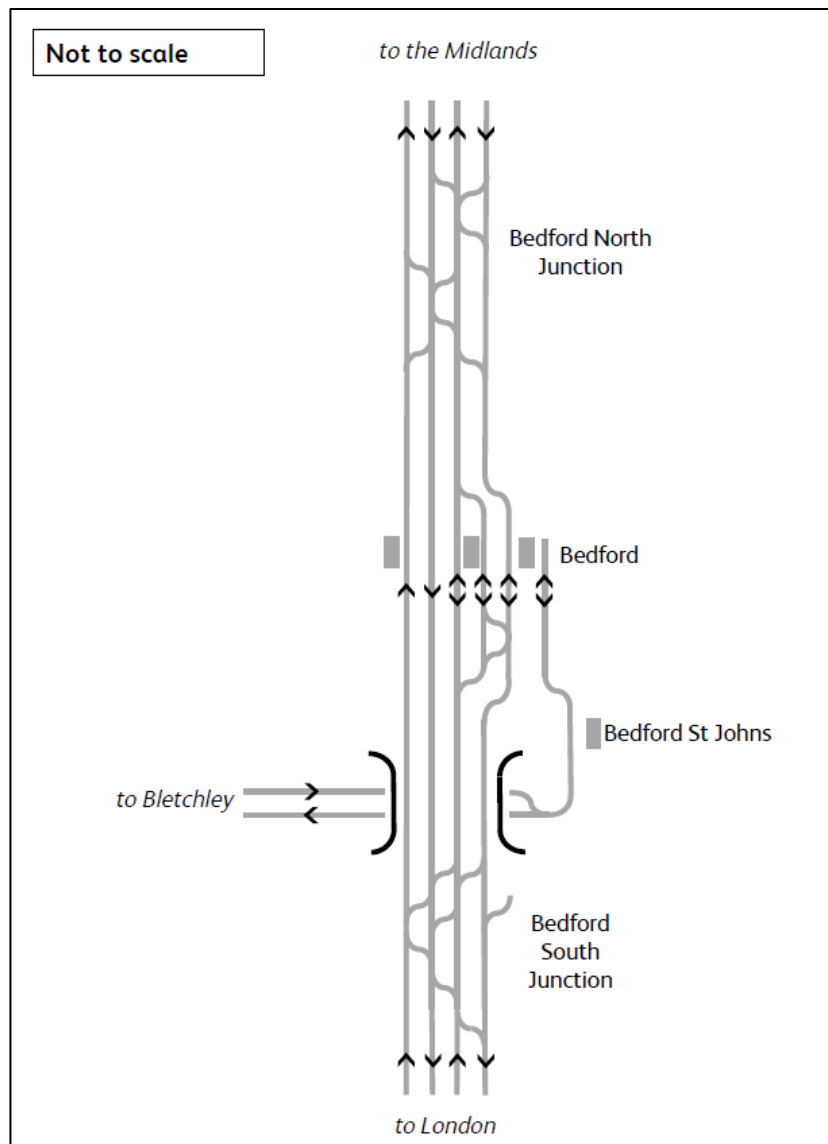


Figure 2: Bedford geographical context

The Midland Main Line (MML) is a vital corridor for rail services through the Thameslink core, long distance services to the Nottingham – Derby conurbation and into South Yorkshire along with providing rail connectivity to Luton Airport. There is a significant amount of rail freight which operates through the area. The MML between Leicester and Cricklewood was declared as Congested Infrastructure in 2014, as demand for certain freight services could not be accommodated on the line and Network Rail considered that the infrastructure was unlikely to be able to accommodate all access requests in the next timetable period.

The Marston Vale Line is a rural branch line that connects the small communities between Bletchley and Bedford. A London Northwestern hourly service calls at all stations on this line.

Figure 3 shows the platform layout for Bedford station. Platform 4 serves the northbound fast (also known as down-fast) EMR services, almost all of which are London-Corby services. A number of non-stopping services also use this line. There is no London-bound fast platform (also known as up-fast) so EMR stopping services towards London must cross to the slow lines at Bedford North junction, then call at Bedford station before crossing back to the fast lines at Bedford south junction. There are a number of non-stopping services which use the up-fast line through Bedford station.

GTR services tend to use platforms 1 and 2 (arriving at and departing from the same platform) although some services do also use platform 3. Platform 1A is used by London Northwestern services on the Bletchley line.

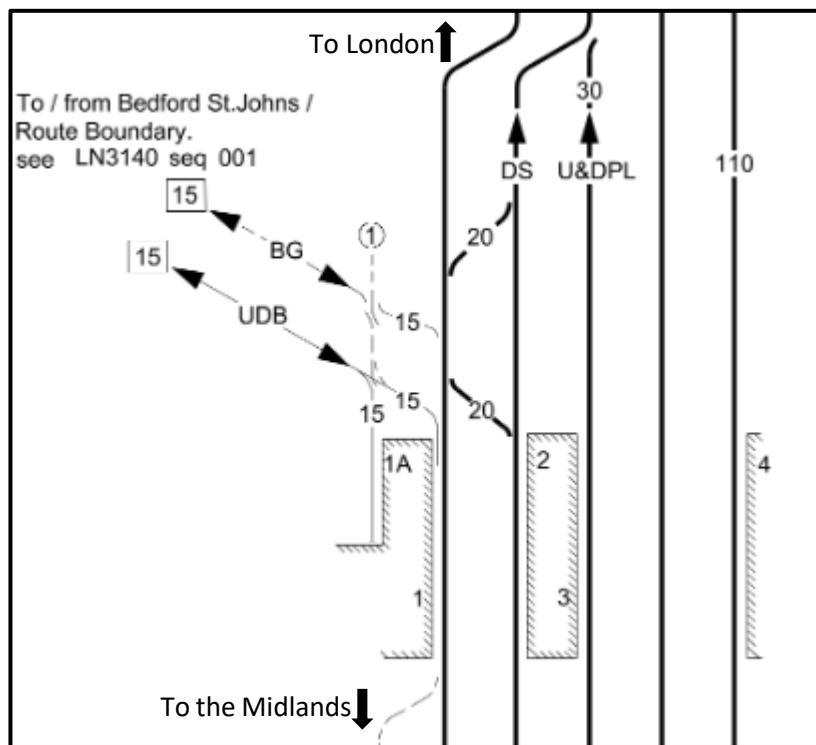


Figure 3: Bedford station existing platform layout

EMR introduced a new timetable in May 2021 which made changes to service frequencies and service patterns. It had a number of impacts on services at Bedford. These included:

- Direct services not being provided to stations north of Bedford including Market Harborough, Leicester, East Midlands Parkway, Derby, Chesterfield and Sheffield.
- Limited EMR Intercity service providing direct journeys to and from Nottingham during peak times.
- Peak time bus between Wellingborough and Bedford replaced by train services.

In general there are around two freight trains per hour in each direction that pass through Bedford station. These services generally use the slow lines through the area but can be routed onto the fast lines when required.

C.1.1 Station Pedestrian Capacity

Work carried out by the Network Rail Passenger and Station Analysis Team has identified that, based on the study of interchange provisions with other modes of transport (walking, cycling private car, taxi, and bus), around 30% of passengers at Bedford station arrive at the station from the north car park, and 70% of passengers via the main entrance. People with restricted mobility are assumed to use the step-free route.

For through trains, passengers wait on the platforms and begin to board 15 seconds after a train arrival. Services originating at the station can be boarded up to 12 minutes before the departure and passengers do not dwell on the platforms.

Dynamic modelling suggests that, prior to Covid-19, Bedford station did not provide sufficient capacity at the gateline to accommodate the baseline peak demand. There are six automatic ticket gates and one wide aisle gate and, prior to Covid-19, congestion occurred on both entry to and exit from the station in the AM and PM peaks respectively.

In the PM peak, the limited capacity of the stairs is unable to accommodate alighting loads causing queuing to extend to the edge of the platform. Congestion near the platform edge can pose a safety risk and may impact dispatch times and therefore train performance. It is recommended that improvements be made to the gateline capacity and stairway capacity as part of the planned East West Rail redevelopment of the station.

C.2 Other strategy work

C.2.1 East Midlands Route Study

The East Midlands Route Study was prepared by Network Rail in 2016. It set out the strategic vision for delivering rail growth throughout the East Midlands up to the 2040s. The Route Study identified the Bedford station area as one of its key intervention areas where enhancements were required to accommodate an Indicative Train Service Specification (ITSS) for 2043.

The potential enhancements identified included:

- investigation of a requirement for a new platform on the west side of Bedford Midland station, for the use of long-distance high-speed services calling at Bedford
- improved infrastructure (a new crossover) for the use of the existing Platform 3, and
- provision of a new turnback facility south of Bedford station, possibly at Legrave station.

However, the study also identified that these options were closely linked to the ongoing development work on the East West Rail Central Section and the nature of any potential enhancements would be dependent on requirements identified by that work.

Since the publication of Network Rail's East Midlands Route Study other strategies focusing either fully or partly on rail in the Bedford area have been produced. These included Bedford Borough Council's Bedford Rail Strategy and England's Economic Heartland's Transport Strategy.

C.2.2 Bedford Borough Council's Bedford Rail Strategy

Bedford Borough Council's Bedford Rail Strategy was published in 2019 and updated in 2022. It identified new and better connectivity and new and better stations as its two priorities.

New and better connectivity included:

- Maximising the benefits of East West Rail
- Reinstatement of intercity services to Nottingham and London
- A new Reading – Nottingham service
- Direct services to Leeds via HS2

New and better stations included:

- Bedford station as a high-quality interchange hub and gateway to the town
- A new station at Wixams, a new town located to the south of Bedford

C.2.3 England's Economic Heartland's Transport Strategy

England's Economic Heartland's Transport Strategy was submitted to the Secretary of State for Transport in 2021. Its overarching aim is to support sustainable economic growth with an ambition to achieve net zero carbon emissions from transport by 2040. With respect to Bedford it highlights:

- The need to ensure that Bedford station acts as a regionally significant transport hub based on the intersection of East West Rail and existing main lines.
- The need to improve connectivity on the London – Luton – Bedford – Wellingborough – Kettering – East Midlands corridor.
- The need to strengthen north/south connectivity between Luton – Bedford – Northamptonshire.

C.3 Travel context

The places that the most people who live in Bedford commute to are firstly, areas close to Bedford and secondly, London. Rail commuting is predominantly southwards to Luton and London, whereas bus travel is mainly to areas to the east and west of Bedford that are not well served by rail.

The bulk of commuting to Bedford tends to come from within a radius of around 20km around Bedford. As expected, rail commuting to Bedford is high from those places with good rail connections while those areas without good rail connections tend to see high levels of commuting by car.

London dominates the overall number of journeys to/from Bedford (41%) with the next most popular origins/destinations being Harlington (13%), Luton (11%) and St Albans (6%).

Part D Future Services

D.1 Critical factors affecting recommendations

There are multiple factors critical to providing recommendations for rail improvements in the medium and long-term. These include, but are not limited to:

D1.1 Capacity

Up until the Covid-19 pandemic, the railway had been growing since the 1980s with the addition of more services competing for ever-scarcer available capacity. The number of services on the network was reduced during 2020 and 2021 but has now largely returned to the levels seen before the pandemic began. In addition to this, environmental concerns, such as Britain's commitment to net-zero carbon, are expected to drive modal shift in both the passenger and freight sectors. As a result, the rail industry must be ready to react to and accommodate this future demand.

D1.2 Performance and reliability

Providing sufficient rail capacity for future services is a key concern for the rail industry, however of equal importance is maintaining a strong level of performance that passengers and freight-users can rely on. It is therefore important to not only accommodate services, but to build in sufficient resilience to allow for recovery from delays and disruptions.

D.2 Developing Indicative Train Service Specifications (ITSSs)

Indicative Train Service Specifications list potential services to be analysed. These are set out at a high-level, including origins and destinations, stopping patterns, rolling stock assumptions, train lengths and frequency. An ITSS therefore allows analysts to assess whether the services could theoretically be accommodated on the existing network. There are many further development and design stages to be worked through, including timetabling work, before any changes to the timetable would be delivered.

The scenarios to be included in the ITSSs were agreed with the steering group and included:

- Current passenger services
- Freight services, with industry forecasts used to predict uplifts
- Planned future passenger services

D2.1 Passenger Services

The steering group agreed to develop ITSSs on an iterative basis, to represent a number of possible future scenarios. The scenarios included a number of possible changes to services in the Bedford area, and these options were overlaid to provide five scenarios for testing. The options were:

- Services to/from Sheffield stopping at Bedford
- Services to/from Nottingham stopping at Bedford
- A new service running from Bedford to Leeds
- A new depot/stabling location at Sharnbrook north of Bedford
- A new station at Wixams south of Bedford (although this is at a much more advanced level of development than the other items listed – see Part E for more information)

D2.2 Freight demand

The number of freight trains is applied uniformly to each ITSS to give a representative view of the number of paths required. This is informed by industry recognised growth forecasts which were used to abstract detailed information about future flows through Bedford. As a result of the decarbonisation agenda and the sustained

resilience of freight traffic to the effects of the pandemic, it was agreed to use higher growth forecasts for this study. These freight forecasts were modelled in each of the ITSSs.

D.3 Other future impacts

D3.1 East West Rail

East West Rail is planned to expand regional connectivity with a direct connection from Bedford to Oxford via East West Rail Western Section, and later to Cambridge, via East West Rail Central Section. Alignment with the developing East West Rail programme is an important strategic consideration for rail in the Bedford area.

East West Rail published its latest round of public consultation material in early 2021. This included new information on its proposals for Bedford, although all these proposals may be subject to change at later stages of development. This material explained that the introduction of East West Rail services would mean that Bedford station and supporting infrastructure would need a range of improvements to make sure sufficient capacity was available and customers received the service they should expect.

In the non-statutory consultation East West Rail explained that it would have to relocate the station buildings and make a number of other changes to the infrastructure around the station, including to:

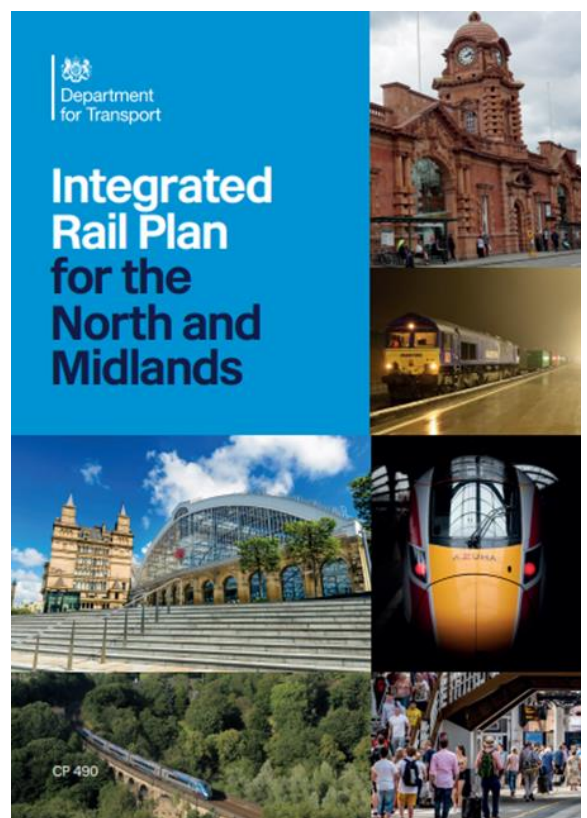
- The existing railway as it approaches Bedford station from Bedford St Johns
- The Thameslink sidings
- Bedford station Platform 1A
- Ford End Road bridge, and road access to Bedford station
- The location of the station building and access to it.

East West Rail's emerging preferred option, as presented in the consultation, would provide a new and extended station at Bedford. Trains approaching Bedford station from the south would use the existing railway bridge across the River Great Ouse. On the north side of the River Great Ouse, the railway tracks would split into three and the existing Jowett sidings used by Thameslink trains would be moved to another location. The three tracks would serve three new platforms at Bedford station, while the existing Thameslink platforms would be retained. These new platforms would be placed where the existing Bedford station building stands, meaning that the station entrance and concourse would be rebuilt to the east of its current location.

D3.2 The Integrated Rail Plan for the North and Midlands

The Integrated Rail Plan for the North and Midlands (IRP) was published in November 2021 and sets out the government's approach to rail enhancements, aiming to increase capacity and facilitate faster and more frequent journeys on key rail corridors throughout the north and midlands. This includes full electrification of the Midland Main Line. While Bedford is not directly within the area of the IRP, it is likely to be affected by new services provided by HS2 between London and Nottingham and Sheffield. The provision of these services may change the way that the MML is used and the services that are provided between Bedford and other stations on the MML.

In light of the publication of the IRP, the industry is now considering its response and will be carrying out a range of analytical work. It is recommended that a further study be undertaken to review the best use of capacity on the MML south of East Midlands Parkway in the light of information included in the IRP. The findings of this report and any others recently undertaken on the MML would form inputs to that study.



Part E The Needs of the Future Railway

E.1.1 National Rail Passenger Survey

The most recent National Rail Passengers Survey (NRPS) was conducted in Spring 2020. The survey usually takes place annually but has been restricted recently due to the coronavirus pandemic. Despite this, it is a useful source of information providing the most up to date view of what passengers value and also what they may be dissatisfied with so that the network can be planned in a way that puts passengers first.

Passengers have a relatively high level of overall satisfaction with Bedford station. 88 % of passengers travelling from Bedford declared that they were satisfied with the facilities, 96 % were happy with the provision of information, 88 % were happy with the helpfulness of staff and 87 % were happy with the ticket buying facilities. On the other hand, only 27 % were satisfied with the toilet facilities at the station, 41 % with both the car parking facilities and shops and 51 % with the connections with other modes of transport. This shows some clear scope for improvement with the station facilities. It is recommended that improvements are made to the station facilities as part of the planned East West Rail redevelopment of the station.

Passengers travelling from Bedford had low levels of satisfaction with the availability of staff on trains (38 %) and the way that delays were dealt with once on a train (21 %). This underlines how important it is to provide good communication once passengers are on trains. There was a high level of satisfaction with the level of crowding (80 %) but it is worth bearing in mind that this research was carried out in 2020 just before the lockdown associated with the coronavirus pandemic. The shift in travel patterns since then has seen reduced levels of train use but also has the potential to have changed passenger attitudes to travelling unless they feel that trains are safe and offering sufficient levels of space.

Overall, the Spring 2020 NRPS suggests that passengers travelling from Bedford are reasonably satisfied with the facilities at the station with some notable exceptions. We should also remember that the survey was carried out prior to the 2021 timetable change, when Bedford lost direct connectivity to a number of stations (see further information below), and the high satisfaction level with connections to other train services may well have declined by the next time the survey is carried out.

E.1.2 Connectivity

In May 2021 a new timetable was introduced on the Midland Main Line. This resulted in large reductions in Bedford's connectivity to stations north of it. For example, passengers from Bedford to Nottingham now need to change at Kettering while passengers from Bedford to Sheffield need to change at both Kettering and Leicester. Some of the changes to direct services can be seen in figure 4:

Between...	and...	Direct trains per day (Dec19 TT)	Direct trains per day (May21 TT)	Quantum change (%)
Bedford Midland	Derby	6	1	-83%
Bedford Midland	Sheffield	4	0	-100%
Bedford Midland	Chesterfield	4	0	-100%
Bedford Midland	Nottingham	15	2	-87%
Bedford Midland	Leicester	21	3	-86%
Bedford Midland	Leeds	1	0	-100%

Figure 4: Direct trains from Bedford

The impact of the Covid-19 pandemic makes it difficult to precisely identify the decline in rail demand between Bedford and these locations brought about by the loss of direct connectivity. However, we have been able to estimate that the quantum changes to services shown in the table above would have been likely to result in the following reduction in demand:

Between...	and...	Jny change (%)
Bedford Midland	Derby	-15%
Bedford Midland	Sheffield	-16%
Bedford Midland	Chesterfield	-15%
Bedford Midland	Nottingham	-17%
Bedford Midland	Leicester	-14%
Bedford Midland	Leeds	-17%

Figure 5: Demand changes based on reduction in services

This reduction in the number of journeys made by rail between Bedford and locations further north is likely to relate to increased journey times and the need to make additional changes to make these journeys. It is likely that, if people are still making these journeys, they are choosing to make them by car now, instead of by rail.

Generalised journey time is a way of measuring journey times by rail which takes account of the time of the journey, frequency of service and number of interchanges required. The table below shows the generalised journey time between Bedford and a number of more northern locations, compared with the journey time by car. As can be seen, the generalised journey time by train increased from 2019 to 2021 because of the introduction of additional interchanges. This meant that the generalised journey time by rail had either increased to a level where it was longer than the journey time by car when it hadn't been previously or increased so that it took even longer compared to car than it had before.

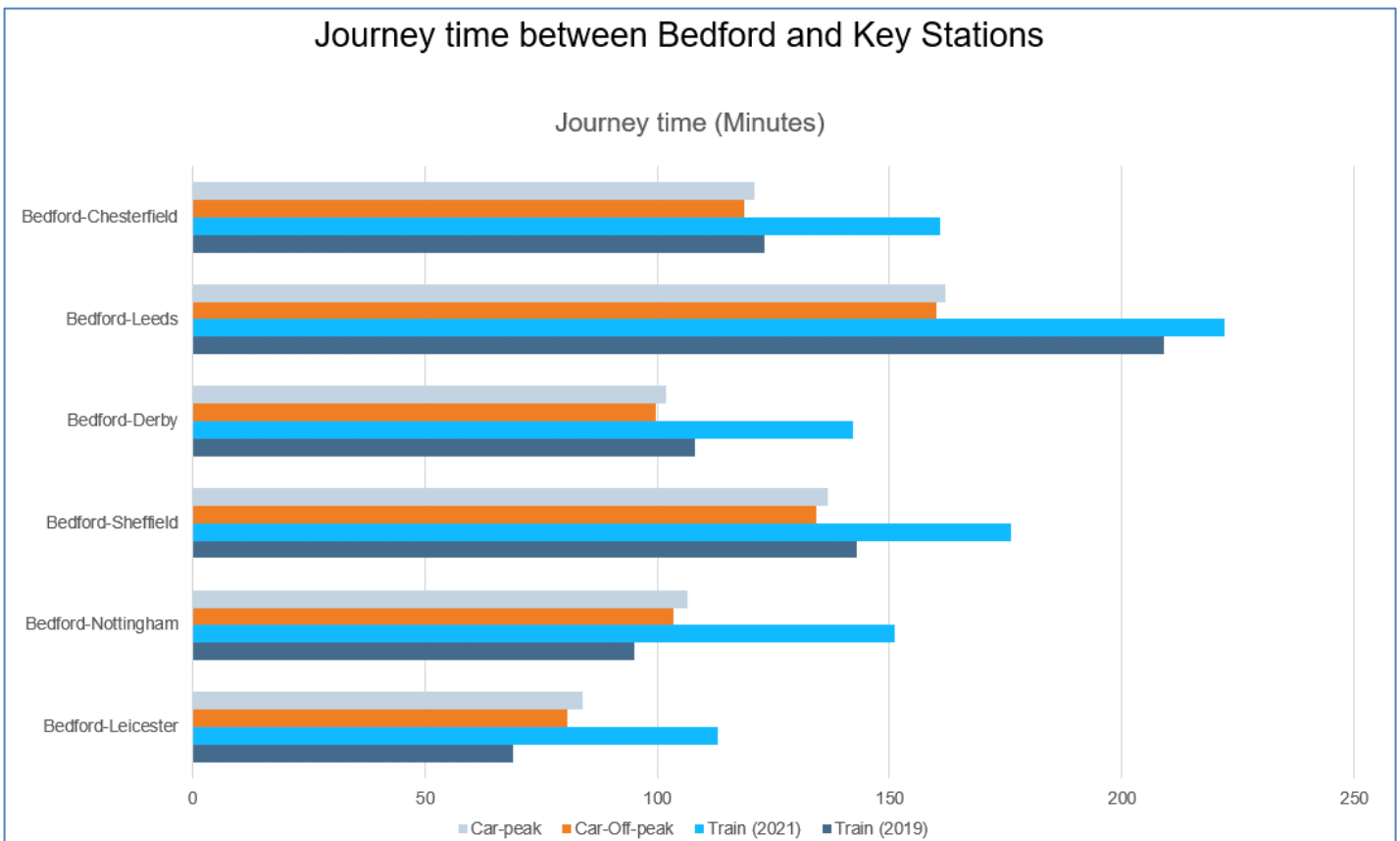


Figure 6: Journey times between Bedford and key stations

E.1.3 HS2/Integrated Rail Plan for the North and Midlands

The Integrated Rail Plan for the North and Midlands, which was published in November 2021, confirmed that HS2 services will join the Midland Main Line (MML) at East Midlands Parkway and then continue to Nottingham, Derby and Sheffield. HS2 will provide journey times from these cities to London of 57, 58, and 87 minutes compared to current typical journey times of 92, 86 and 118 minutes. This is likely to result in passengers from these stations using HS2 services to and from London instead of services on the MML.

These changes present an opportunity to review the operation of the MML. If journey times on the MML between stations such as Sheffield and Nottingham and London are no longer so important there could be opportunities to improve Bedford's connectivity with stations further north. It is recommended that a study looking at the operation of the MML in the light of HS2 proposals be undertaken. The findings of this report would input into that work.

Prior to the May 2021 timetable change, Bedford station provided an opportunity for interchange between East Midlands Rail services (serving London and locations to the north), Thameslink services (serving locations between Bedford and London, Gatwick Airport and Brighton) and London Northwestern services on the Marston Vale Line. In the future, further interchange opportunity may be provided to/from East West Rail services serving locations to the east and west of Bedford. As such, Bedford will be an important point of interchange between North-South and East-West services.

E.1.4 HS2 Leeds – Bedford

A high speed Leeds – Bedford service was one of the options included in the scenarios tested for this study. This was based on proposals for HS2 to provide a new direct route between the East Midlands and Leeds. However, the HS2 route which was published in October 2021 as part of the Integrated Rail Plan for the North and Midlands included services running to Sheffield on the MML with further work required to identify the most effective way to run HS2 trains to Leeds. The likelihood of a Leeds – Bedford service is very much dependent on which route to Leeds is taken forward. It should also be noted that given the existing platform capacity constraints, new infrastructure would be required at Bedford station to be able to accommodate these services. As a result, it is not recommended that the Leeds – Bedford service be considered further at this stage.

E.1.5 East West Rail impacts

East West Rail is a major rail project which is described further in Part D. The section of East West Rail which includes a stop at Bedford is currently in development. As the plans for East West Rail have become more developed, through the duration of this study, they have focused on the provision of segregated lines and platforms for East West Rail in Bedford. Conversely, this study has remained much more focused on the requirements in Bedford as they relate to the existing MML. In addition, the likely East West Rail impact on stabling in Bedford appears to have lessened.

However, that is not to say that there may not be synergies between the work of this study and that of East West Rail. One particular area of interest for further focus may be the opportunities afforded to East West Rail by the provision of a new London-bound fast line platform (also known as up-fast), as recommended in Part F.2.1, and subsequent removal of fast trains from the slow lines at Bedford. It is recommended that East West Rail explore this further as development work continues while bearing in mind that this section of track is defined as Congested Infrastructure (as described in Part C.1) where demand for certain freight services has previously not been able to be accommodated.

E.1.6 Wixams station

A new station at Wixams, on the Midland Main Line south of Bedford, is currently in development. Current proposals are that the station will be delivered in 2024 with platforms on the slow lines, served only by Thameslink services.

The station was included as an option within the Capacity Analysis ITSSs. This work found that Wixams station could be brought into operation without any adverse effects on Bedford station. However, Performance Modelling carried out to support the development of Wixams station, completed during the development of this study, has

identified a potential impact at Bedford station, caused by the introduction of the stop at Wixams. This analysis found that as a result of the additional time introduced to services by an additional stop at Wixams station turnarounds at Bedford would be increased from 14 minutes today to 25 – 27 minutes. However, the proposed changes to the timetable to accommodate the Wixams call would allow the arrivals and departures at Bedford to be sufficiently offset for the turnarounds to occur whilst still only requiring two platforms at the station. However, if platform 3 is utilised for Thameslink services with an extended turnaround, then the use of only two platforms may require journey time extensions of around 4 minutes.

E.1.7 Freight

As described in Part D, the Capacity Analysis scenarios all included high freight growth rates within the ITSSs that were modelled. The modelling found that the existing infrastructure allows for an increase of one freight path in the up/south direction and three freight paths in the down/north direction through Bedford station.

Freight generally uses the slow lines through the Bedford area and Bedford station. This study recommends a new London-bound fast line platform (also known as up-fast) at Bedford station (see Part F.2 for more detail) which could provide opportunities for increased freight use of the slow lines. An up-fast platform would allow those fast trains which stop at Bedford to remain on the fast line, instead of crossing to the slow lines to use platform 3. This would therefore remove some stopping traffic from the London-bound slow lines (also known as up-slow) potentially freeing these up for additional freight use. It is recommended that further work to explore this potential be carried out if the up-fast platform is taken forward for further development.

E.1.8 Stabling

One of the issues initially identified for investigation in the study was the provision of depot and stabling facilities in the Bedford area. This was driven by the likely impact of East West Rail on the stabling facilities that exist primarily to the south of Bedford station.

When the study began it wasn't known how much impact East West Rail would have on the stabling facilities. However, as the study has been developed similarly the East West Rail designs have progressed. It now appears likely that East West Rail will only have an impact on the Jowett Sidings, with it being proposed that these be relocated to a site next to the existing Cauldwell Sidings.

When a larger stabling impact was in consideration initial work was carried out as part of this study to identify potential opportunities to move all of Bedford's stabling facilities to an alternative location. Potential alternative locations were identified at Sharnbrook or Clapham, however, due to the development of East West Rail options and the likely minimised impact on stabling in Bedford, these options have not been developed further at this stage.

Part F Accommodating Future Services

F.1 Approach to Recommendations

F.1.1 Capacity analysis

Capacity analysis has been carried out for the study area. This analysis reviewed the study area to identify constrained locations and guide the identification of potential interventions. Calculations of capacity were undertaken based on the baseline infrastructure and Timetable Planning Rules, and the scenarios tested are listed in Part D.

The analysis was carried out in such a way that the impacts of certain options could be assessed both individually and also on a cumulative basis. It gives a view of the use of the line, junctions and platforms for the individual area in isolation. This gives a high-level view of capacity constraints; however different or additional areas outside the geographical scope of this study could be found to be more constrained when assessing the wider network or accounting for the timing of services. This level of analysis is of an appropriate maturity for Strategic Advice and can be followed up in more detail as investments pass through the business case lifecycle.

The analysis showed that the key constraints were within Bedford station and had an impact on the ability to provide additional stops in passenger services and also additional freight services. The recommendations included below respond to the analysis and aim to address the identified areas of constraint. As Part G highlights, the ultimate delivery of these recommendations is subject to a detailed understanding of affordability and value for money.

F.1.2 Development and cost ranges

In parallel with the capacity analysis, early-stage development has been independently undertaken for the interventions identified. Order of magnitude cost ranges were produced and validated by Network Rail for the developed options, though, as with any early-stage development work, these cost ranges should be considered indicative and subject to more detailed costing as recommendations are progressed. They are based on current prices as at quarter 2 in 2022 and do not take any account of future inflation due to the unknown delivery timescales.

The costs have been categorised utilising a low, medium, high and very high approach using the following ranges:

Indicative order of magnitude cost ranges	
Low	Less than £5m
Medium	£5m-£49m
High	£50m-£249m
Very high	>£250m

Figure 7: Indicative order of magnitude cost ranges

F.2 Bedford Station Area

The capacity analysis work that was carried out found constraints in the Bedford station area. The volume of traffic on the slow lines at Bedford required to call at, turnaround in or run through platforms 1, 2 and 3 restricts opportunities for improved connectivity to and from Bedford. The lack of a London-bound fast line platform (also known as up-fast) at Bedford results in a lack of operational flexibility at the station while having a second down-fast platform at the station could also be beneficial. Please note, throughout this section the London-bound fast line is referred to as up-fast, while the northbound fast-line is referred to as down-fast.

F2.1 New up-fast platform at Bedford station

Indicative Cost Range – Medium

There is currently no up-fast platform at Bedford station. As a result, up-fast services which stop at Bedford must cross to the slow lines at Bedford North junction to call at Bedford station, then use the down-slow line south of the station before crossing back over to the up-fast line at Bedford South junction (see diagram in Figure 2). This introduces inefficiencies to the current operation of services and also has an impact on freight, which uses the slow lines in this location. This would be exacerbated if additional stops were to be introduced at Bedford.

Based on this, it is recommended that a new up-fast platform be built at Bedford station. This proposal would realign the down-fast line through Bedford Station and extend platform 4 horizontally so that platform 4 served the up-fast line. The down-fast line would be realigned around the back of platform 4 and served by a new platform 5 to create an island platform 4/5. The existing line speed of 125mph would be maintained on the down-fast line. An indicative diagram showing the new layout is shown in Figure 8.

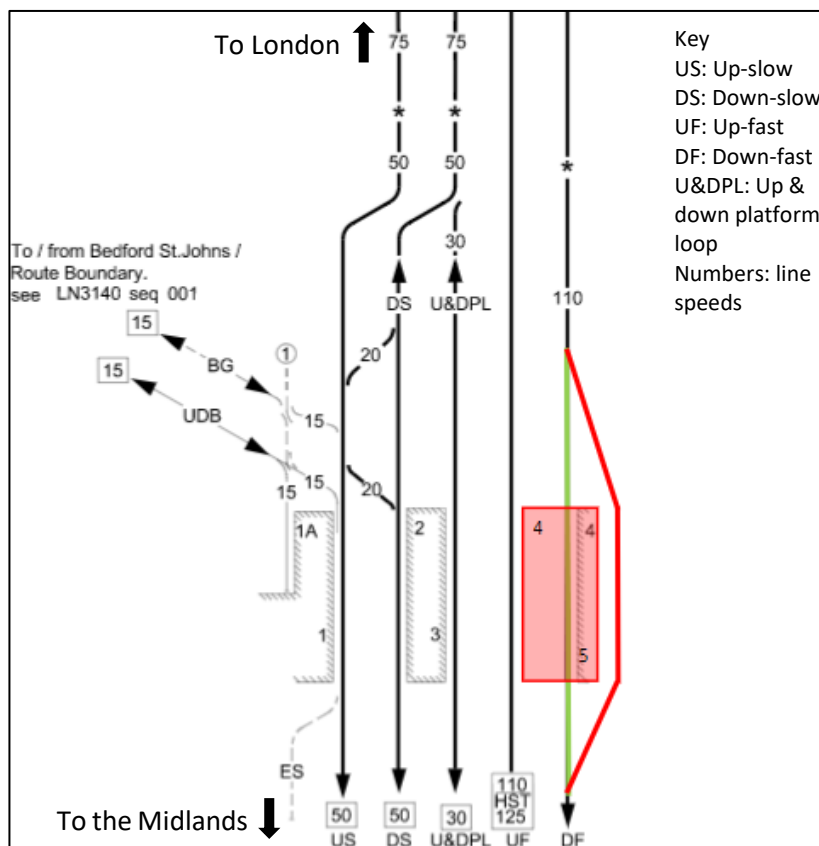


Figure 8: New up-fast platform at Bedford

F22 Additional down-fast platform at Bedford station

Indicative Cost Range – Medium

Capacity analysis found that the London–Nottingham and the London–Sheffield trains are currently flighted so that the second of these trains runs very close behind the first. As a result of this, if the decision was taken that these trains should stop at Bedford to improve connectivity, you could not currently stop both of these trains with only one down-fast platform without making significant changes to the timetable.

Based on this, options have been developed to provide an additional down-fast platform which would allow both down-fast trains to stop at Bedford even when flighted close to each other. There are different design options which could be developed either in conjunction with the additional up-fast platform or independently of it.

An indicative diagram of the option for an additional down-fast platform without a new up-fast platform can be seen in figure 9. This proposal creates an island platform for platform 4/5 which gives a second platform for stopping down-fast trains. This "down loop" is tied into the existing down-fast alignment to the north and south of Bedford Station. While this layout addresses the issues in the down-fast direction it clearly does nothing to address issues in the up-fast direction. Based on this, this option is not recommended for further development.

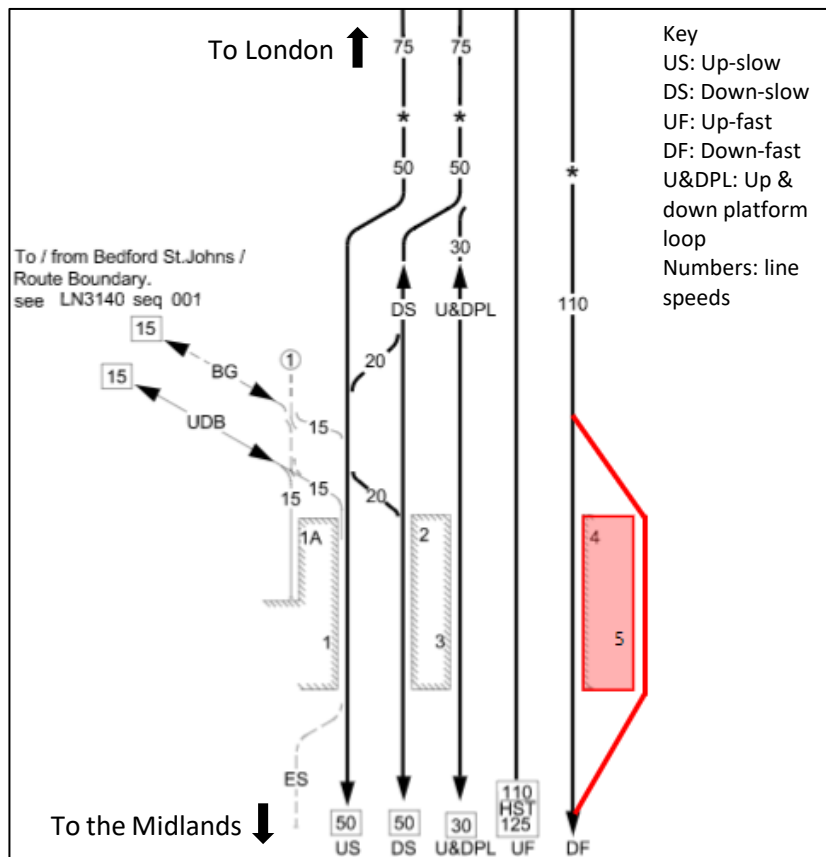


Figure 9: Additional down-fast platform at Bedford

F23 Two additional platforms at Bedford station

Indicative Cost Range – High

A further proposal has been developed which aims to address the issues in both the up-fast and down-fast directions. This proposal includes the new up-fast platform 4 as shown in F.2.1/Figure 8 along with two down-fast platforms 5 and 6 on the west side of the station. The single face platform 6 would be served by a new ‘down loop’. This proposal is shown in figure 10.

In the light of the IRP, there may be a more efficient timetable solution for the issues identified with stopping additional services on the down-fast line in Bedford. Based on this, it is not recommended that this option be taken forward for further development at this time.

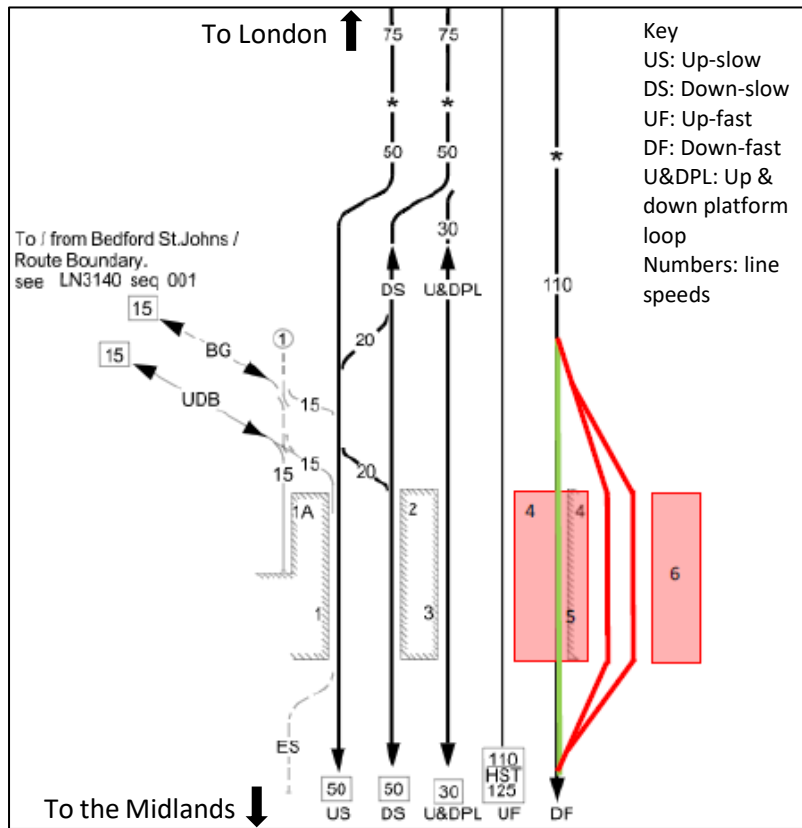


Figure 10: New up-fast and additional down-fast platform at Bedford

Part G Next Steps

G.1 Staging of Recommendations

This study has identified enhancements required to meet the medium to long-term rail needs for Bedford. The options and recommendations presented are subject to the caveats presented in part F. The focus of the recommendations is on Bedford station and in particular the platform provision within the station. The recommendations that have been identified are:

- It is recommended that a new London-bound fast line platform (also known as up-fast) be built at Bedford station
- It is recommended that a further study be undertaken to review the best use of capacity on the MML south of East Midlands Parkway in the light of information included in the IRP
- It is recommended that East West Rail explore further the opportunities afforded by the provision of a new up-fast platform and subsequent removal of fast trains from the slow lines at Bedford
- It is recommended that improvements be made to station facilities and gateline capacity as part of the planned East West Rail redevelopment of Bedford station

G.2 Rail Network Enhancements Pipeline Process

The Bedford Area Strategic Advice has identified potential enhancements to deliver connectivity improvements for the longer-term. Any further development should be mindful of further work on East West Rail and the suite of works that are due to be undertaken in response to the IRP including HS2. Where appropriate, schemes should look for synergies with identified future renewals to minimise disruption and improve value for money.

Network Rail welcomes working with funders and interested parties to progress these recommendations. If central government funding is sought, the development of the schemes should align to the Rail Network Enhancements Pipeline (RNEP) process, established to create a rolling programme of enhancements. The decision points for investment in the railway are supported by the government's Five Case Model for business cases ensuring value for money throughout the lifecycle. Figure 11 illustrates the stages of the RNEP process and identifies where the key decisions for enhancement schemes take place. The first stage of the process, a Decision to Initiate, is the establishment of the case for intervention and agreement to produce a Strategic Outline Business Case (SOBC). This would form the next stage in progressing recommendations, entering the potential interventions into the pipeline. Should the next stage, a 'Decision to Develop' be agreed, further development through the pipeline and business case cycle would be undertaken. Only when a 'Decision to Deliver' has been agreed would the enhancement be considered committed.

The recommendations from this study have been produced collaboratively with industry stakeholders to deliver a collective view on what is required in the Bedford area to support growth and wider aspirations. Network Rail will continue to work with funders to refine credible options that meet the needs of passengers and freight users; that drive social and economic benefits; and that fit with the long-term needs of a reliable railway system.

Figure 11: Illustration of the Rail Network Enhancements Pipeline process



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