

Stratford-on-Avon District Council

**Provision of a rail shuttle service
between Honeybourne Station and
Long Marston Airfield**

Rail Shuttle Study Findings

Issue | 4 May 2018

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 260396-00

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Contents

	Page	
1	Introduction	4
2	Forecasting disclaimer	4
3	Context	6
	3.1 Background	6
	3.2 Honeybourne Station	7
	3.3 Former Long Marston station site	7
	3.4 Stratford to Long Marston Greenway	8
	3.5 Long Marston Village, Depot and Meon Vale	8
	3.6 Long Marston Airfield	10
	3.7 Long Marston Airfield Garden Village (LMAGV)	11
	3.8 Communications and briefing meeting	12
4	Rail Alignment	13
	4.1 Horizontal Alignment	14
	4.2 Crossings	18
5	Capital Costs for the shuttle service	22
	5.1 Assumptions for the capital costs	22
	5.2 Estimated capital costs	23
6	Level of service	24
	6.1 Long Marston Airfield Garden Village	24
	6.2 Meon Vale and surrounding area	25
	6.3 Passenger demand from LMAGV	28
	6.4 Peak Hour	30
7	Rolling Stock	31
	7.1 Applicable Rolling Stock	31
	7.2 Rolling Stock Capital and Operational Costs	33
8	Operation of the shuttle service	37
	8.1 Stabling of units	37
	8.2 Maintenance	37
	8.3 Crew facilities	38
	8.4 Journey Times	38
	8.5 Connections at Honeybourne	39
9	Potential train operator	40
10	Other options	41

10.1	Increase car parking at Honeybourne	41
10.2	Connection via a busway	41
10.3	Flexible minibuss services	41
10.4	Tram Train	42
10.5	Additional or alternative stations	42
10.6	Improved walking and cycling links	42
10.7	Cascaded or lighter rail	42
10.8	Community based operation	43
10.9	Extension to Stratford Racecourse	43
10.10	Options Matrix	44
11	Conclusions	45
12	Recommendations	46

Tables

Table 1: Potential capital costs for the scheme

Table 2: CALA Homes completions and occupancy

Table 3: Method of Travel to Work (2011 Census).

Table 4: Typical Trip Rated for New Stations in Different Circumstances

Table 5: Indicative demand from LMAGV

Table 6: Rolling Stock Capacity Summary

Table 7: Indicative staffing costs

Table 8: Indicative Rolling Stock Lease Price Summary

Table 9: Indicative journey times

Table 10: Options Matrix

Figures

Figure 1: Context map (source: Long Marston Airfield Garden Village Bid July 2016.pdf)

Figure 2: Location of former Long Marston Station (Source: Google Maps)

Figure 3: Stratford to Long Marston Greenway

Figure 4: Long Marston village, Depot and Meon Vale

Figure 5: Long Marston Depot layout

Figure 6: Long Marston Airfield Garden Village illustrative masterplan

Figure 7: Long Marston Airfield Garden Village illustrative dwelling densities

Figure 8: Overview of proposed route with upgraded track in blue and new track in red

Figure 9: Start of route - Honeybourne Station

Figure 10: Connection to existing Long Marston Depot (crossover in green)

Figure 11: Deviation avoiding industrial estate

Figure 12: End of route at Long Marston Airfield Garden Village Station

Figure 13: Indicative station layout.

Figure 14: Station Road crossing

Figure 15: Wyre Lane and Airfield crossings

Figure 16: Farm Access

Figure 17: ONS Area

Appendices

Appendix A

ORR Railway Guidance Document RGD-2014-06

Appendix B

Current Timetable at Honeybourne (December 2017)

Appendix C

Proposed Shuttle Timetable (20mph)

Appendix D

Proposed Timetable at Honeybourne based on two trains per hour

1 Introduction

Ove Arup and Partners Ltd (Arup) were commissioned by Stratford-on-Avon District Council (SDC) to undertake a high level study into the provision of a rail shuttle service between Honeybourne station and a new Garden Village housing development at Long Marston Airfield.

The main aims of the study were as follows:

- Review options for a rail alignment, including high level capital costs;
- The operation of the shuttle service – how it will fit in with current and proposed plans for increases in services on the Cotswold Line;
- The level of service required to meet the potential demand;
- Possible rolling stock options, including high level operating costs; and
- Potential train operators.

During the inception meeting held on 14th February 2018, it was also agreed that other potential options for the route would be discussed.

This report contains the findings of the study.

2 Forecasting disclaimer

This report has been prepared specifically for and under the instructions of Stratford-on-Avon District Council under an appointment dated 14 February 2018.

This report may be provided to third parties solely to inform any such person that our report has been prepared and to make them aware of its substance but not for the purposes of reliance. No third party is entitled to rely on this report unless and until they and we sign a reliance letter. We do not in any circumstances accept any responsibility or liability to retail investors whether via bond issue or otherwise and no such party is entitled to relay on this report.

In preparing this report we have relied on information provided by others and we do not accept responsibility for the accuracy of such information.

We emphasise that the forward-looking projections, forecasts, or estimates are based upon interpretations or assessments of available information at the time of writing. The realisation of the prospective financial information is dependent upon the continued validity of the assumptions on which it is based. Actual events frequently do not occur as expected, and the differences may be material. For this reason, we accept no responsibility for the realisation of any projection, forecast, opinion or estimate.

Findings are time-sensitive and relevant only to current conditions at the time of writing. We will not be under any obligation to update the report to address changes in facts or circumstances that occur after the date of our report that might

materially affect the contents of the report or any of the conclusions set forth therein.

In preparing this report we have relied on information supplied by others. We have relied in particular on the accuracy and completeness of such information and accept no liability for any error or omission in this report to extent the same results from errors or omissions in the information supplied by others.

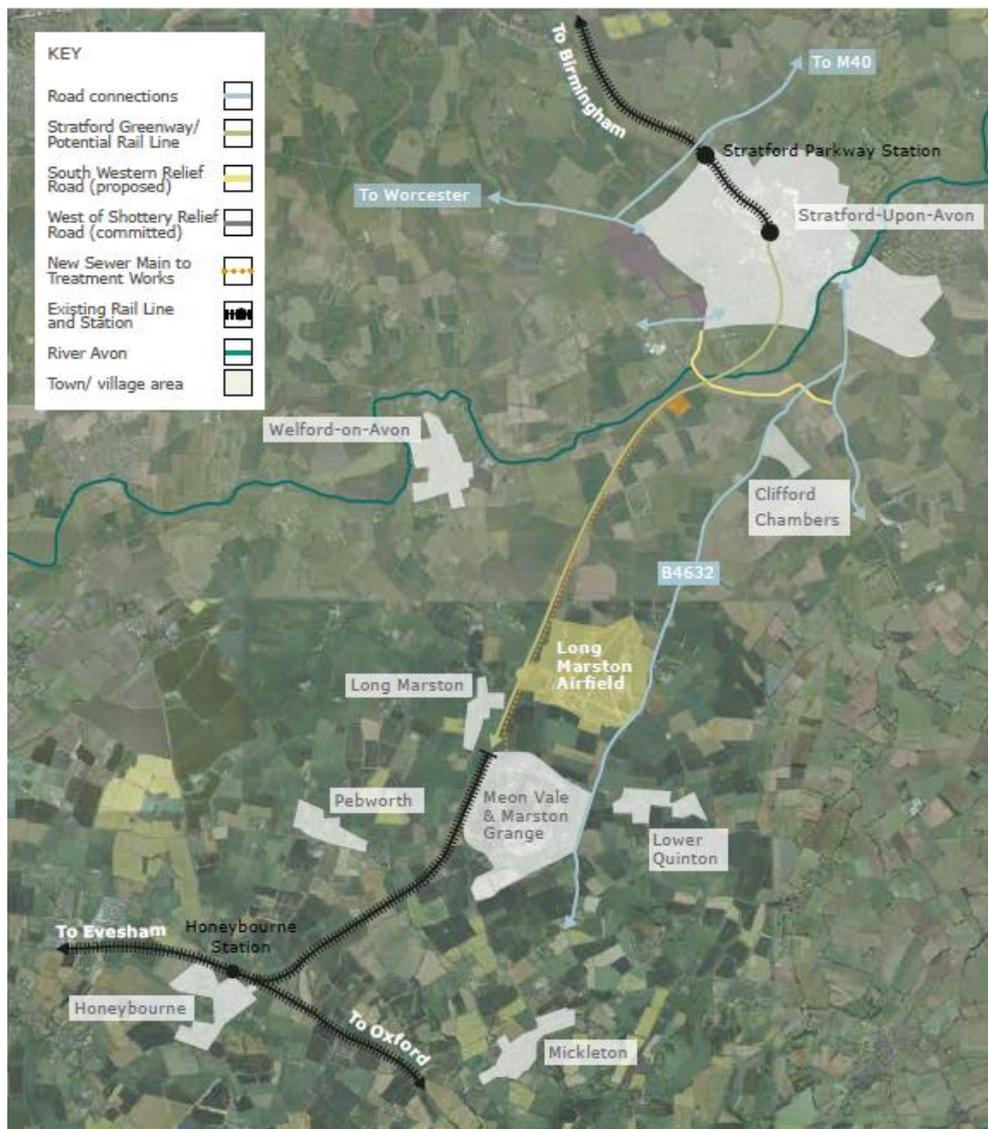
3 Context

3.1 Background

The focus of this study is the section of former railway and freight-only railway from Long Marston Airfield southwards to Honeybourne station. The route forms the southern section of the former rail line between Honeybourne and Stratford-upon-Avon town, which closed in the mid-1970s and is now a leisure route known as the ‘Stratford Greenway’ used by walkers and cyclists.

The existing freight-only branch extends approximately 4.8km northwards from Honeybourne station to a point just south of Station Road to serve the Long Marston Depot. Long Marston station itself has been redeveloped as a small business/industrial park. North of Station Road the former route is now the Stratford Greenway. Some 2km to the north is the site of the Long Marston Airfield Garden Village. Figure 1 shows the location of Long Marston Airfield.

Figure 1: Context map (source: Long Marston Airfield Garden Village Bid July 2016.pdf)



3.2 Honeybourne Station

Honeybourne Station is located 61.5km (38.2miles) from Oxford and 30.2 km (18.8miles) from Worcester Shrub Hill. The station serves the nearby village of Honeybourne in Worcestershire.

The Station was once a busy junction with five platforms which served various routes including the line between Birmingham and South Wales and the South West via Stratford-upon-Avon and Cheltenham. Since the Cotswold Line redoubling project Honeybourne station operates with two platforms. Platform 1 is used for services towards Worcester and Hereford whilst platform 2 is used for services towards Oxford and London Paddington.

3.3 Former Long Marston station site

Long Marston railway station was a station at Long Marston, Warwickshire on the Great Western Railway line between Stratford-upon-Avon and Honeybourne, which became part of the Great Western Railway's new main line between Birmingham and Cheltenham.

In 1966 British Railways withdrew passenger services from Long Marston station. Freight services through Long Marston continued until 1976, when the track between Long Marston and Stratford was lifted.

The site was located to the south of Station Road where the current industrial units are located as shown in Figure 2.

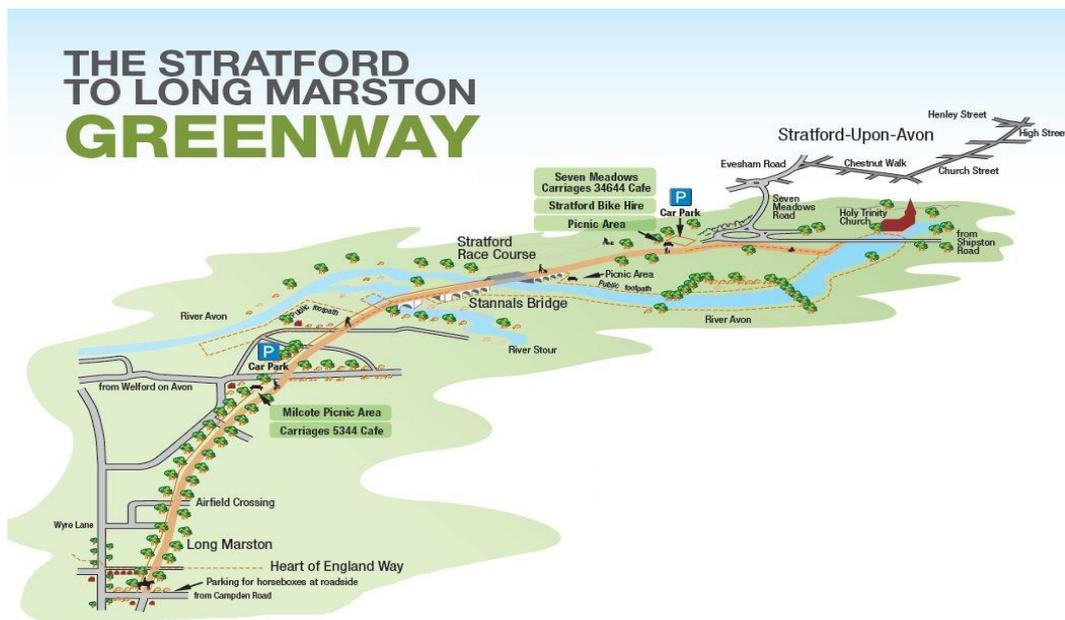
Figure 2: Location of former Long Marston Station (Source: Google Maps)



3.4 Stratford to Long Marston Greenway

The Greenway is a traffic free walking and cycling route covering a 5 miles section of the former Birmingham to Cheltenham via Stratford-upon-Avon railway. Figure 3 shows the route of the Greenway between Long Marston and Stratford-Upon-Avon Racecourse.

Figure 3: Stratford to Long Marston Greenway



Source: Warwickshire County Council

3.5 Long Marston Village, Depot and Meon Vale

Figure 4 shows the location of Long Marston village in relation Long Marston Depot and Meon Vale.

3.5.1 Long Marston Village

Long Marston Village is North West of the former airfield. The southern and western boundaries of the parish form the county boundary between Warwickshire and Worcestershire. The parish of Long Marston has a population of 436 according to the 2011 Census.

Figure 4: Long Marston village, Depot and Meon Vale

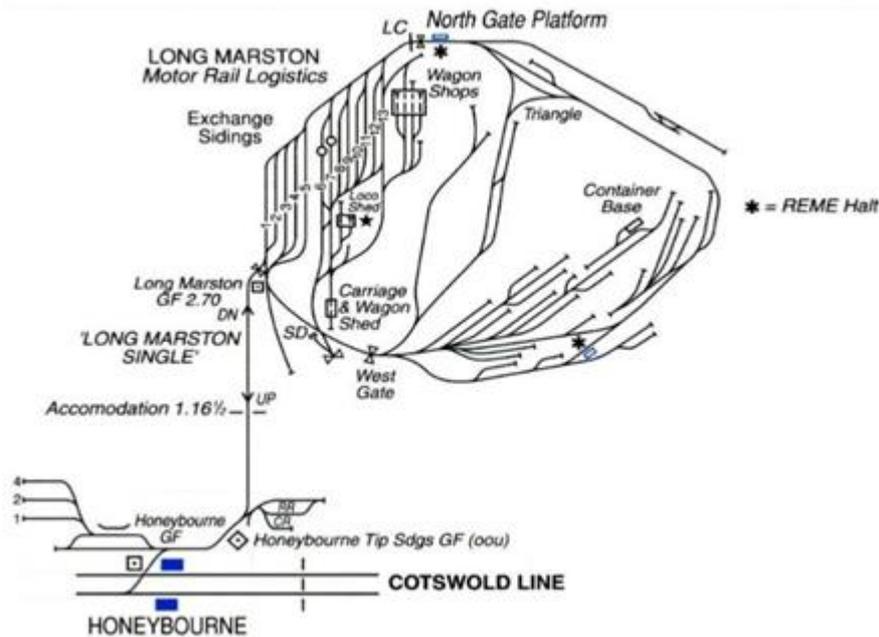


Source: Ordnance Survey Online

3.5.2 Long Marston Depot

The track between Honeybourne and Long Marston remains open for non-passenger trains to and from Long Marston Depot. The depot was built as a facility for the Ministry of Defence (MOD) and was home to the Army Engineering Corp. The site known as Long Marston Central Engineering Park was used by the MOD until the mid-1990s. Since the privatisation of British Rail in the mid-1990s the western part of the site has been used by ROSCOs (rolling stock operating companies) to store out-of-lease rolling stock.

A number of sidings are located at the depot used for storing and testing commuter units. Vivarail are based on the depot site where they produce class 230s made from London Transport tube stock. Figure 5 shows the layout of the depot.

Figure 5: Long Marston Depot layout¹

There is also a proposal to build a world class test centre for new trains on the current Long Marston Depot site. If granted planning permission, the centre would be used for new train approvals, endurance testing, commissioning, acceptance and signal integration. A high level view has been taken on the likely land take for this development and it is considered that it would not impact on the proposed rail corridor.

3.5.3 Meon Vale

Most of the MOD site has been sold to property developer St Modwen. A residential community is being created known as Meon Vale. The scheme includes a link to the Greenway footpath and cycleway to Stratford-upon-Avon. The site will provide a mix of business, leisure and community uses as well as 1,050 new dwellings.

3.6 Long Marston Airfield

Long Marston Airfield was constructed by the Air Ministry in 1939. RAF Long Marston was the closet satellite airfield of RAF Honeybourne. After the war, the airfield ceased operations with the RAF but remained the property of the Air Ministry. After many years with no flights a Care and Maintenance Order was put on the airfield and it was subsequently refurbished for training purposes.

The airfield closed for the final time in 1954 and the land returned to the previous owners. The airfield has since been the base for motor sports clubs and glider clubs.

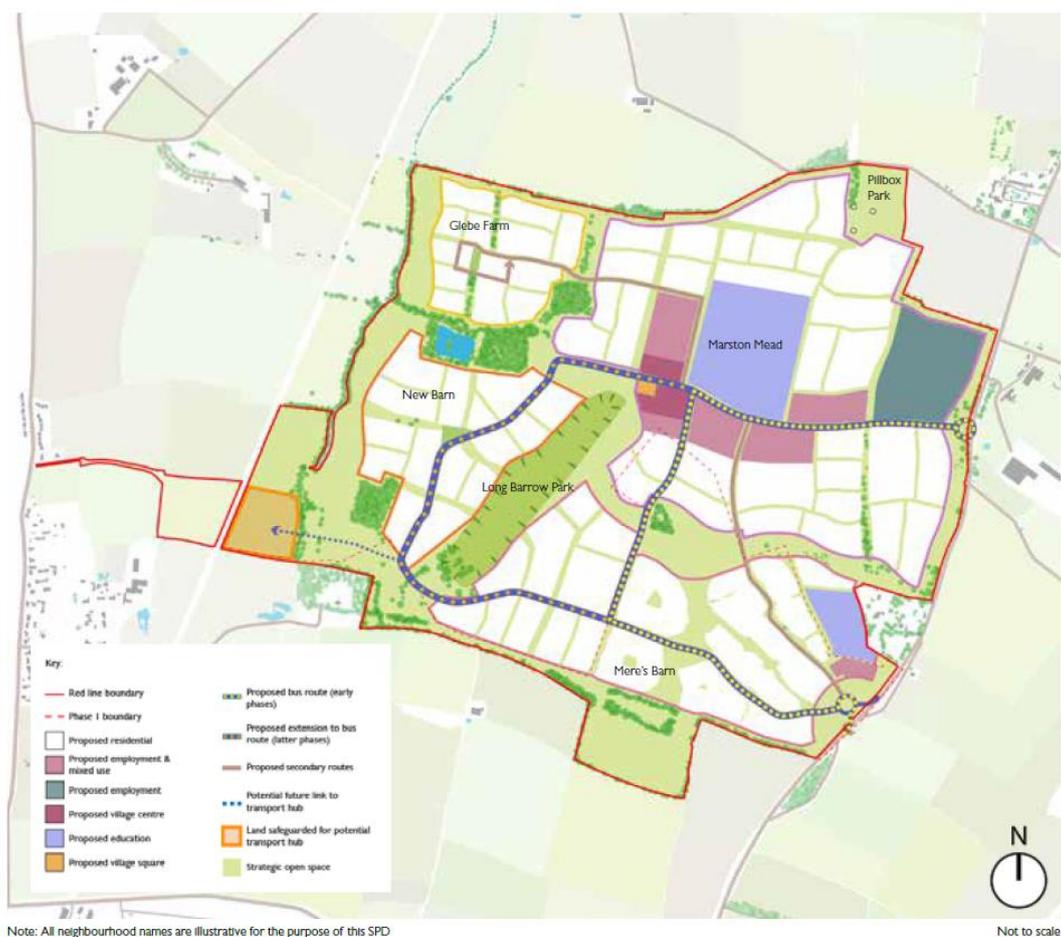
¹ The sidings to the east of the Triangle and West Gate (Container Base) no longer exist and are now part of Meon Vale.

3.7 Long Marston Airfield Garden Village (LMAGV)

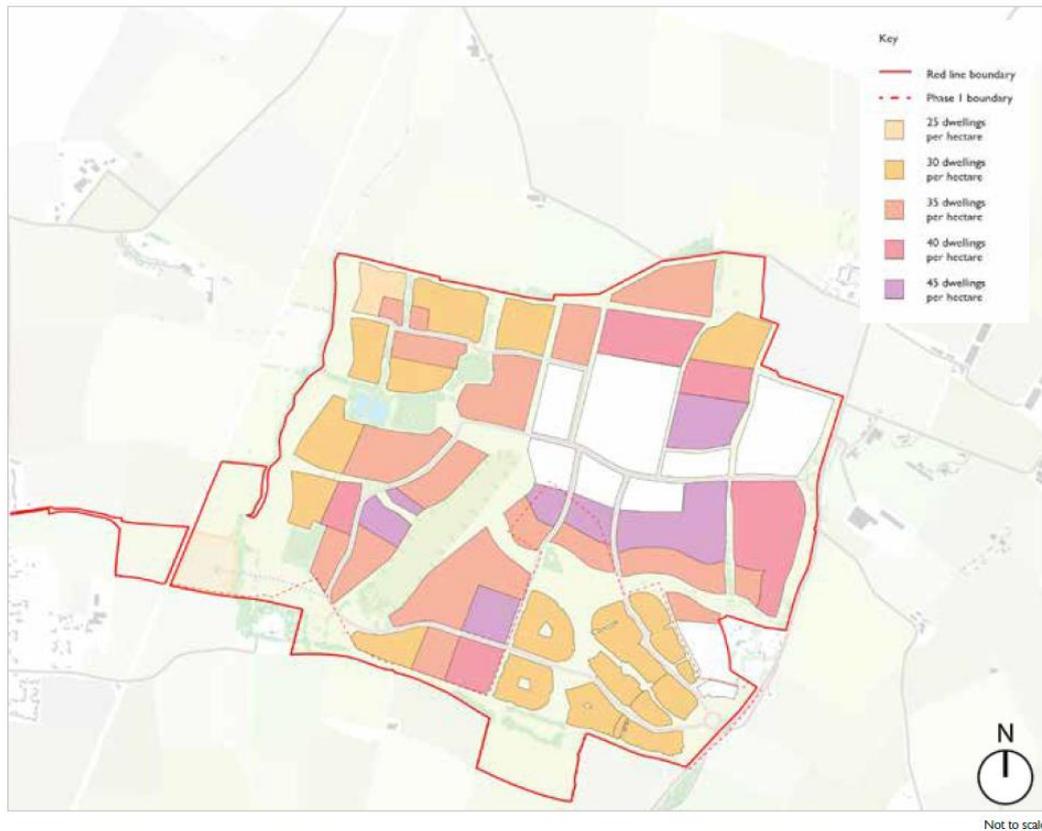
The former Long Marston Airfield site has been allocated in the District Council's Core Strategy for a new settlement. It has also been granted Garden Village status by the government. The site is being developed by CALA Homes with an initial build of 400 dwellings with their proposed development to eventually provide 3,500 dwellings, 13 hectares of employment, 3 schools and a wide range of community facilities. It will also include shops, cafes, and a GP Surgery. CALA Homes and Warwickshire County Council aim as part of the development to improve local highways and transport links. The associated sustainable transport plan would encourage environmentally friendly travel within the new settlement and provide enhanced road and public transport links, including a new South-Western Relief Road (see Figure 1) to help alleviate congestion in Stratford-upon-Avon. Land in the south-western corner of the site has been safeguarded as a potential transport hub which could take the form of a railway station, if appropriate.

The site masterplan and proposed dwelling densities are shown in Figure 6 and Figure 7 respectively.

Figure 6: Long Marston Airfield Garden Village illustrative masterplan²



² Source: Long Marston Airfield Supplementary Planning Document, February 2018

Figure 7: Long Marston Airfield Garden Village illustrative dwelling densities³

3.8 Communications and briefing meeting

During the study, a number of direct communications have been made with various organisations to discuss options for inclusion in the study. These include:

- CALA Homes;
- Great Western Railway;
- Vivarail;
- Parry People Mover; and
- Office for Rail and Road.

In addition to these communications, a briefing meeting of the initial findings was undertaken on 10th April 2018 to members of Stratford District Council and other interested parties where a number of points were raised which have (where appropriate) been included in the report.

³ Source: Long Marston Airfield Supplementary Planning Document, February 2018

4 Rail Alignment

This section of the report provides a high level review of the proposed alignment of the rail shuttle link between Honeybourne and Long Marston Airfield Garden Village (LMAGV). The suitability of reusing existing tracks as well as the requirement for new track to be constructed has been considered at an appropriate level of detail for this study. There will be impacts to road traffic and pedestrian movements upon the opening of the railway, and during the construction period when appropriate traffic control measures will be required.

Figure 8: Overview of proposed route with upgraded track in blue and new track in red

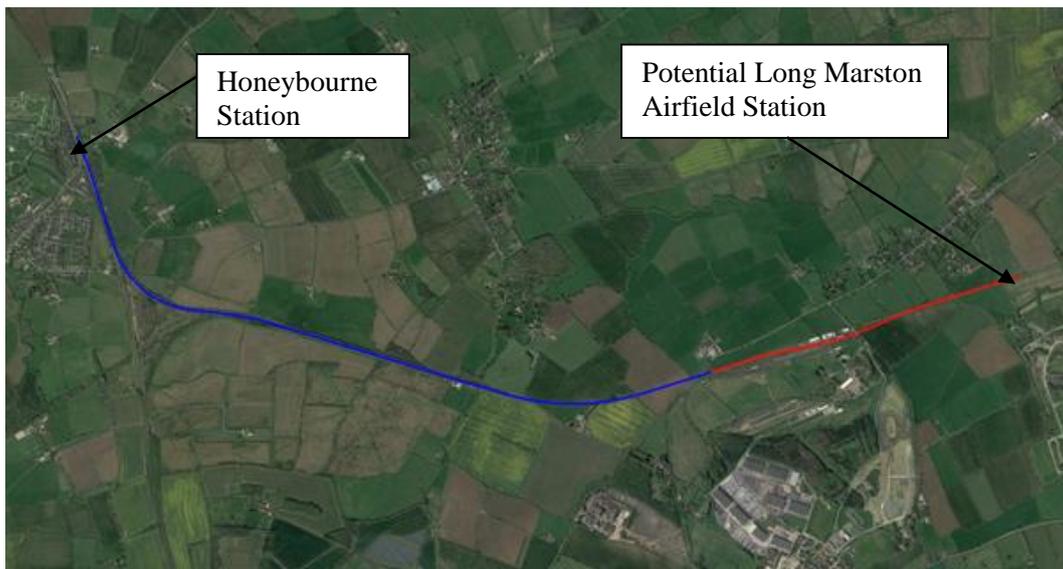


Figure 8 displays the entirety of the route with existing track in blue and the new track required in red. The length of new track required and existing track to be upgraded is 2.07km and 4.84km respectively. The existing track bed along the current freight route and alongside the Greenway can be utilised for the new alignment, however an additional 1.36km of new track bed will be required for the connection between these two points. These quantities have been reflected in the costings for the project. The required minimum width of the railway corridor is 6m for a single track railway which provides safe means of access for railway maintenance and operations staff and the use of mechanised track renewals equipment. The vertical alignment follows at grade for the entirety of the route. It should be noted that the existing track appears to run on a dual track formation, but the location of the track limits options to run alongside without major works to realign it.

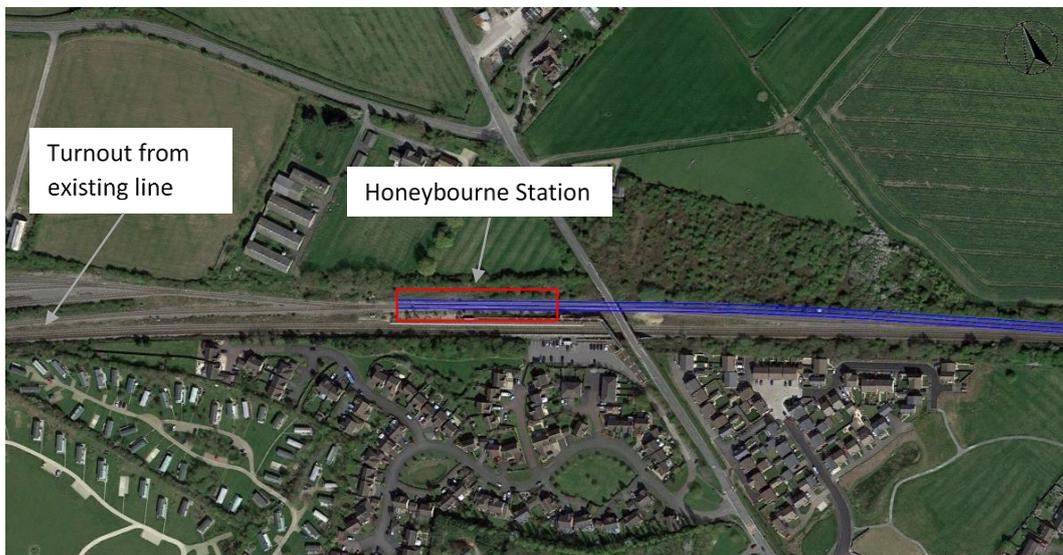
4.1 Horizontal Alignment

The horizontal alignment has been optimised throughout to accommodate a design linespeed of up to 70mph and will be fit for efficient heavy rail operations or equivalent. Whilst a design speed of 70mph has been used for the alignment design, it is expected that the operational speed will be significantly lower. However, for this level of study, the design speed will not affect the alignment or costings.

The proposed railway corridor will effectively follow the existing railway freight corridor for the majority of the route. A new railway corridor has been defined and safeguarded adjacent to the Long Marston Depot site. The alignment work undertaken in the previous Arup study on this route in 2012 has formed the basis of our evaluation of the proposed route to reinstate the railway from Honeybourne to LMAGV. We have applied current Network Rail (NR) standards and Office of Rail and Road (ORR) requirements to our design philosophy with the aim to get an optimum fit alignment throughout the route.

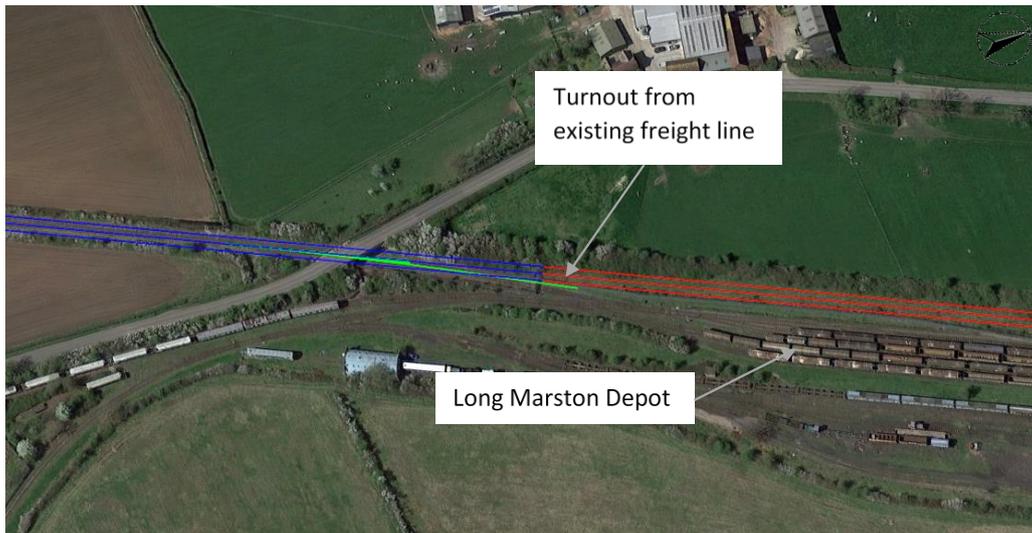
The route detailed in this study begins at Honeybourne Station after turning out from the existing Great Western mainline (Figure 9). The station will be enhanced to provide a platform to cater for the new Honeybourne to LMAGV passenger line.

Figure 9: Start of route - Honeybourne Station



Part of the route from Honeybourne Station to LMAGV currently contains a single track operational freight only railway line which the proposed railway corridor follows. Any works in this area will be to enhance the existing system to support the reintroduction of passenger trains and freight trains at the design linespeed of up to 70mph. This will likely require the renewal of the existing track and improvements to the geometry as necessary. The upgrade and/or closure/diversion of existing user worked crossings and footpath crossings will be required and is discussed below. The connection to Long Marston Depot will be maintained by the addition of a switch and crossing unit, shown by the green centreline in Figure 10.

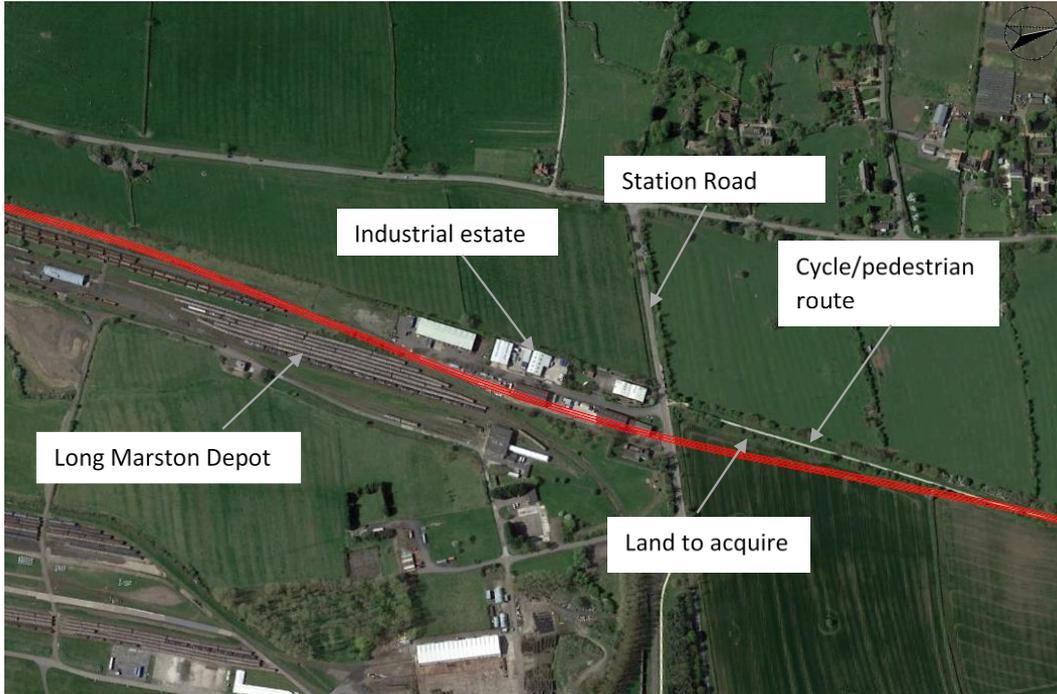
Figure 10: Connection to existing Long Marston Depot (crossover in green)



As the route approaches Long Marston Depot, a slight deviation is required to avoid an industrial estate located adjacent to Station Road. The previous Arup study in 2012 recommended a route deviation to the east which runs between the industrial estate and Long Marston Depot (see Figure 11). This requires the acquisition of approximately 400m of green field land at the corner of one field north of Station Road. The route passes through an office and adjacent yard site which would require the demolition of two buildings and the clearing of the yard prior to construction commencing. Following a further study of this section of the route utilising the current NR design standards we recommend this as still being the best option to take forward. Access to this area and the current depot may need to be realigned to take into account the requirements of the proposed railway.

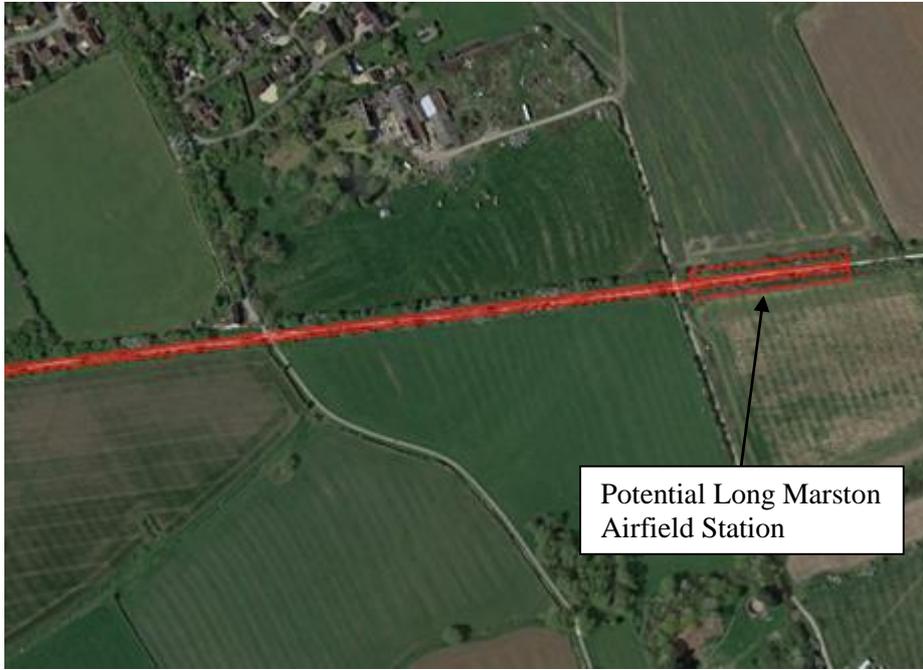
The alignment then joins the existing cycle/pedestrian Greenway to the north for the remainder of the route. The Greenway would be retained but would need to be realigned to allow for the 6m railway corridor which may require replanting of the existing trees present on either side of the route. The security fence between the railway and the Greenway would require anti-climb features and aim to be aesthetically pleasing.

Figure 11: Deviation avoiding industrial estate



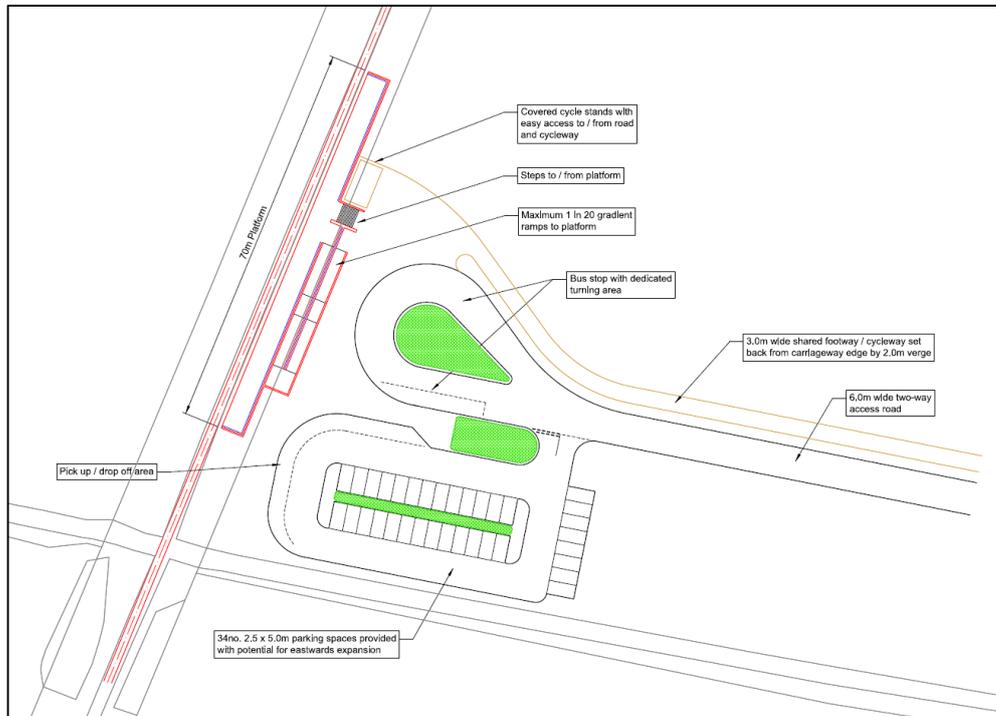
The current CALA Homes masterplan indicates a location for the potential LMAGV station as shown in Figure 12). Given this has been agreed, there is no option to move the location of the potential station to better serve the local catchment.

Figure 12: End of route at Long Marston Airfield Garden Village Station



An indicative layout of a potential station and interchange is shown in Figure 13. This layout covers an area of approximately 4,500 m². It should be noted that the proposed location for the transport hub is within a flood zone so has a high probability of flooding.⁴ The costings for this study only include the single platform and shelter element of the layout.

Figure 13: Indicative station layout.



4.2 Crossings

A number of crossings are located along the proposed route which include:

- Former road/rail level crossing between Honeybourne Station and LMAGV Station at Station Road.
- User Worked Crossings for farm access.

4.2.1 Level Crossings

It should be noted that current ORR and NR guidance is for no new level crossings, except in exceptional circumstances. ORR has previously advised Arup during the 2012 study that a fully grade separated approach is expected throughout this proposed section of the railway. Advice has again been sought from ORR regarding this with a response that; *an Act of Parliament or Transport and Works Act order may have a bearing on any move to re-instate the line but a new level crossing would only be considered in exceptional circumstances where there is no reasonably practicable alternative to a level crossing and the policy of*

⁴ Source: SPD FINAL VERSION FOR COUNCIL.pdf; Page 6 and Figure 2.3.

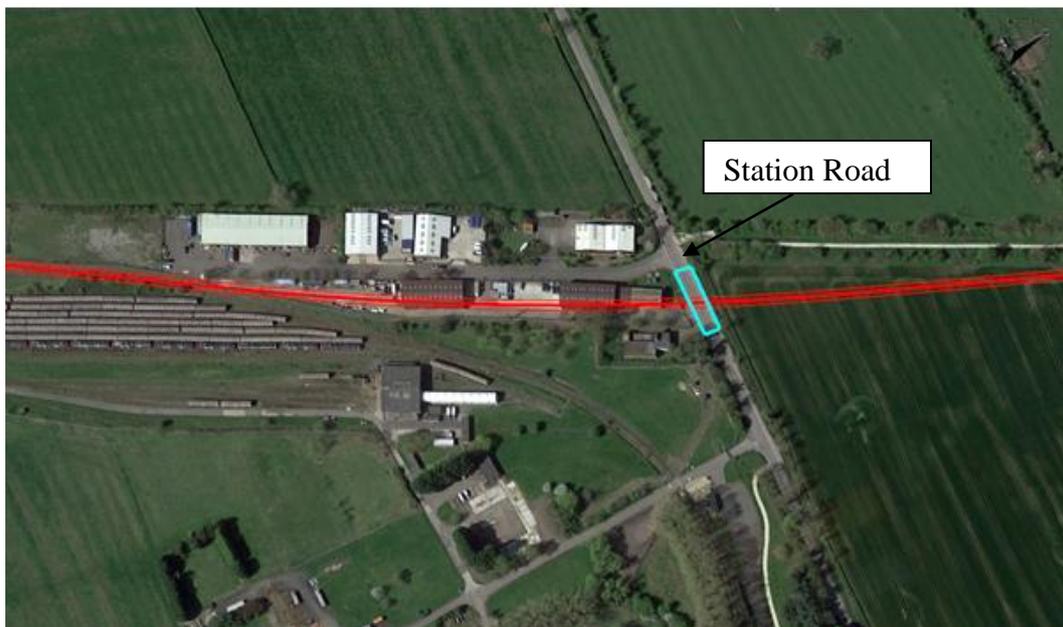
no new level crossings should be followed as set out in RGD-2014-06 (see Appendix A). This advice is also in line with Network Rail's position.

The route has therefore been developed with a fully grade-separated philosophy for the reinstated railway between Honeybourne and Long Marston Airfield that we believe will be acceptable to ORR/NR. However, it is recommended that this issue should be reassessed when a specific scheme is progressed.

4.2.2 Station Road

Station Road is located at the southern end of the Greenway and runs east-west linking the B4632 Campden Road with Long Marston Road as shown in Figure 14. The road provides access to an industrial estate and would be a suitable access road for an additional new station if required. We recommend that a fully grade separated crossing is constructed with a road over rail bridge. This option has a number of different arrangements which could be followed, some of which may require land purchase and changes to the access to businesses in the industrial estate and to the Quinton Rail Technology Centre. This option would provide an optimum solution with regards to minimising impacts on the surrounding road network, safety considerations for at-grade level crossings and take note of the ORR and NR's position on new level crossings. The option to construct a level crossing (with automatic barriers or a phone to the signal box) so that Station Road can cross the proposed railway line was considered unfeasible at this stage.

Figure 14: Station Road crossing



Wyre Lane

Wyre Lane provides access across the Greenway from Long Marston Village to a small sewage treatment works (Figure 15). This is the only access route to the

sewage treatment works. It is understood that the sewage treatment works are due to be decommissioned and so access to these would no longer be required⁵.

Airfield Crossing

The airfield crossing provides access across the Greenway from Long Marston Airfield through to Long Marston village (Figure 15). This link would be maintained as a pedestrian and cycle route between the two settlements and would be part of the detailed design of the potential new LMAGV station.

Figure 15: Wyre Lane and Airfield crossings



Long Marston Road

Long Marston Road bridge is a single span road bridge which carries a C Road over the railway line. The bridge provides adequate containment to the highway, however the approach barriers are sub-standard and the highway authority (Warwickshire County Council) may need to improve this to enable the scheme to take place. The bridge would be largely unaffected by the scheme assuming that clearances are sufficient.

Footpath Crossing/Farm access

The proposed route crosses through an existing footpath and farm access which has an existing level crossing (Figure 16). It is thought that this arrangement could be maintained if appropriate safety measures are implemented (automatic barriers or a phone to the signal box). An alternative option would be to divert this route over Long Marston Road overbridge.

⁵ <https://www.stwater.co.uk/news/news-releases/severntrenttoholdcommunitysessionsaheadofsewerworkinwarwickshire/>

Figure 16: Farm Access



5 Capital Costs for the shuttle service

Given the proposed alignment, the following high level costs have been calculated.

5.1 Assumptions for the capital costs

5.1.1 Pricing Information

- The estimate uses a multitude of in-house historic cost data to calculate generic prices built from basic principles.
- Base date of estimate is 1Q 2018.

5.1.2 Optimism Bias

- *Optimism Bias is an adjustment to an estimate of capital and operating cost to provide a better estimate of the likely capital cost – HM Treasury*
- An allowance of 66% has been included for optimism bias in line with HM Treasury Green Book Supplementary Guidance.

5.1.3 Assumptions

There are added items, as a percentage of the base construction cost, to arrive at a total construction cost that a Contractor's bid might include. These are:

- Preliminary items at 33%. These are:
 - Preliminaries at 25%
 - Assumed OHP at 8%.
- Enabling works 3%; traffic management, archaeological surveys, settlement monitoring, environmental mitigation.
- Site preparation 5%; demolition, ground investigations, site clearance. (Ancillary items)
- New bridge required, approx. 275m long, 10m wide
- Primary power is located locally; no major allowances or upgrades within this estimate.
- New track in existing corridor, existing track bed to be utilised.
- New track is not to be electrified.

5.1.4 Exclusions

- Land & Property costs;
- Rolling stock; and
- Modifications to existing roads.

5.2 Estimated capital costs

Table 1 shows the estimated capital costs appropriate for this level of study (assumed pre GRIP).

Table 1: Potential capital costs for the scheme

Description	Cost (Q1 2018)
Direct construction costs	
New track in existing corridor and clearance of vegetation	£5,003,000
New track and track bed through existing industrial estate and turnout to depot*	£2,617,000
Bridge structure at Station Road	£4,644,000
Enhancement of the existing system to bring track up to standard for passenger services	£3,098,000
New single platform and shelter at Long Marston Airfield and modifications to platform at Honeybourne Station	£400,000
Works Sub-total	£15,762,000
Indirect construction costs	
Preliminaries (25%)	£3,940,500
Design costs (6%)	£1,182,150
OHP (8%)	£1,671,000
Contractor Sub-total	£22,555,650
Project Design Costs	Excluded
Optimism Bias (at 66%)	£14,887,000
Inflation beyond 1Q 2018	Excluded
Tax & grants (excluded)	Excluded
Total	£37,442,650

*This would require agreements to be put in place with the land owners and operators of the site.

The table shows that the estimated cost of reinstating the line to LMAGV would be in the region of £22.5 million with an appropriate level of optimism bias for this level of study of £15 million giving a total of £37.5 million at Q1 2018 prices.

6 Level of service

The level of service is dependent on the North Cotswold Line improvements and the industry's emerging vision for a faster 2 trains per hour service on the line and the capacity of these services. This is the aspiration of Worcestershire County Council set out in its Rail Investment Strategy, released in January 2018.

It has been assumed that the level of service will be generated from the demand of the development at LMAGV and the frequency of service on the North Cotswold Line.

6.1 Long Marston Airfield Garden Village

The proposed CALA Homes development at LMAGV has the following completions per year from an initial start date of 2019/20. Due to the nature and scale of LMAGV, a site specific occupancy rate of 2.5 persons per dwelling was agreed with the District Council which gives the occupancy rates. The dwelling and occupancy totals are shown in Table 2.

Table 2: CALA Homes completions and occupancy

Year	Dwelling completed	Total Dwellings	Occupancy
2019-20	45	45	113
2020-21	155	200	500
2021-22	160	360	900
2022-23	160	520	1300
2023-24	180	700	1750
2024-25	200	900	2250
2025-26	200	1100	2750
2026-27	200	1300	3250
2027-28	200	1500	3750
2028-29	200	1700	4250
2029-30	200	1900	4750
2030-31	200	2100	5250
2031-32	200	2300	5750
2032-33	200	2500	6250
2033-34	200	2700	6750
2034-35	200	2900	7250
2035-36	200	3100	7750
2036-37	200	3300	8250
2037-38	200	3500	8750

6.2 Meon Vale and surrounding area

6.2.1 Meon Vale

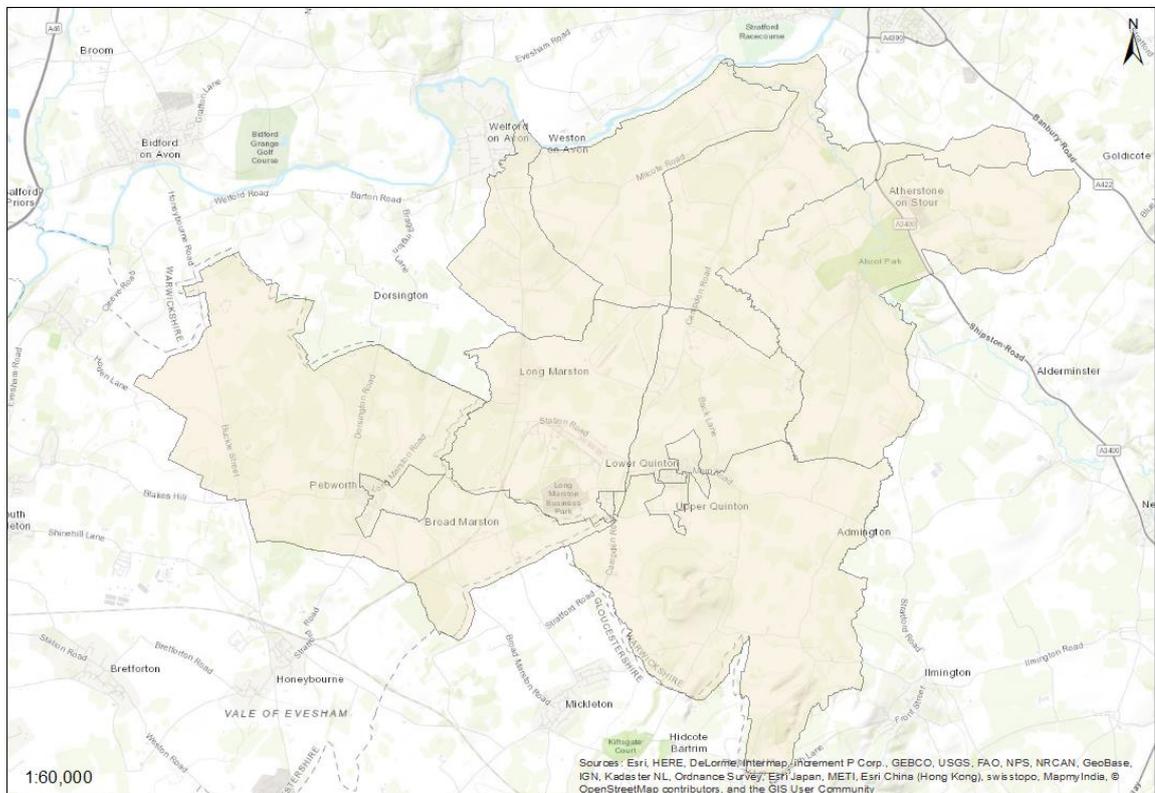
As previously mentioned, Meon Vale is another mixed use development being taken forward. However, the development is not deemed close enough to LMAGV to generate trips to this station, with the probable preference for anyone using the train to drive to Honeybourne or other local stations. Changing established travel behaviour is not easy to predict as people will often continue doing what they are used to. Therefore, it is felt that few additional trips would be generated from the development.

If a potential station was provided in the vicinity of Station Road to serve the Meon Vale development and using the same PDFH factors as for LMAGV this would give approximately 20 trips per day. This assumes the catchment is within the 800m-2km boundary.

6.2.2 Surrounding area

The 2011 Census data has been reviewed to understand the level of demand for travel to work by rail from the Office for National Statistics (ONS) areas shown in Figure 17.

Figure 17: ONS Area



This encompasses the following 2011 output areas:

- E00159124
- E00159125
- E00159126
- E00159128
- E00159129
- E00159130
- E00159325
- E00159327
- E00159331
- E00172276
- E00165206
- E00165207

The following methods of travel to work were recorded in the 2011 Census (as shown in Table 3).

Table 3: Method of Travel to Work (2011 Census).

Method of Travel to Work	E00165206	E00165207	E00159124	E00159125	E00159126	E00159128	E00159129	E00159130	E00159325	E00159327	E00159331	E00172276
Work mainly at or from home	31	57	51	39	19	8	39	25	63	53	23	66
Underground, metro, light rail, tram	0	2	0	0	0	1	0	0	0	0	0	1
Train	2	4	5	3	0	1	6	2	4	5	1	0
Bus, minibus or coach	0	1	4	0	2	7	6	4	0	1	1	5
Taxi	0	0	0	1	0	0	0	0	0	0	0	1
Motorcycle, scooter or moped	3	2	2	0	3	0	4	1	0	0	0	3
Driving a car or van	108	166	136	99	98	99	251	133	140	103	59	117
Passenger in a car or van	9	6	12	7	9	7	19	12	7	13	4	5
Bicycle	6	1	1	3	5	0	2	3	5	1	1	3
On foot	7	2	7	7	5	7	14	7	7	1	8	5
Other method of travel to work	0	1	0	0	0	0	1	2	0	0	0	1
Not in employment	104	95	99	46	63	48	72	83	90	80	28	109
All categories: Method of travel to work	270	337	317	205	204	178	414	272	316	257	125	316

These results indicate that taking into account underground, metro, light rail and tram as well as train, approximately 40 people travel to work via these methods.

Given this result, it is not expected that a large proportion of these trips would transfer to a new service given their established travel patterns. However, having said that, it should be noted that a number of developments (including Meon Vale) have only progressed since the 2011 Census so a significant degree of caution should be given to these figures. However, at this time, the 2011 Census is the best source of data available for the method of travel to work and it is therefore recommended that further investigation should be carried out (e.g. following the 2021 Census) to better understand the travel behaviour of residents of the new developments.

Whilst there are a number of committed developments within the area surrounding LMAGV (but greater than 2km away), it is not considered feasible to provide for these given the amount of car parking that would be required at LMAGV to cater for this demand. Further comments on the requirements for a park and ride site are discussed in Chapter 10.

6.3 Passenger demand from LMAGV

To calculate the potential demand for the station at LMAGV, the following table from the Passenger Demand Forecasting Handbook (PDFH) has been utilised. PDFH is accepted by DfT as the standard benchmark for measuring demand changes. This was used as the basis for forecasting the potential demand based on typical trip rates for new stations and catchment areas, overlaid with specific observations based on local conditions in the station catchment areas. These trip rates are shown in Table 4. Due to the location of LMAGV it is believed that very few trips would be generated from dwellings more than 2km away from the station. With the design of the shuttle and the requirement to change trains at Honeybourne it is believed that most demand from greater than 2km away would drive directly to Honeybourne or to other local stations depending on the destination of journeys.

Table 4: Typical Trip Rated for New Stations in Different Circumstances⁶

Location	Daily Trips per thousand population	
	0-800m	800m-2km
Prime commuter belt on outskirts of urban centre	100	10
Village areas surrounding urban centre	25	6
Built-up areas close to urban centre	12	3
Free-standing town	10	3

Using the figures shown in Table 2, and those for ‘village areas surrounding urban centre’ from Table 4 as the basis for the trip rates, the following indicative demand has been calculated (Table 5). This is based on an assumed split of 25%

⁶ Source: PDFHv5.1 Table C10.2

of dwellings being within 800m and 75% of dwellings being in the 800m – 2km range of a station at LMAGV.

Table 5: Indicative demand from LMAGV

Date	Total No. People	0-800m (25%)	800m-2km (75%)	Number of trips		
				0-800m	800m-2km	Total
2019-20	113	28	84	1	1	2
2020-21	500	125	375	1	2	3
2021-22	900	225	675	6	4	10
2022-23	1300	325	975	8	6	14
2023-24	1750	438	1313	11	8	19
2024-25	2250	563	1688	14	10	24
2025-26	2750	688	2063	17	12	30
2026-27	3250	813	2438	20	15	35
2027-28	3750	938	2813	23	17	40
2028-29	4250	1063	3188	27	19	46
2029-30	4750	1188	3563	30	21	51
2030-31	5250	1313	3938	33	24	56
2031-32	5750	1438	4313	36	26	62
2032-33	6250	1563	4688	39	28	67
2033-34	6750	1688	5063	42	30	73
2034-35	7250	1813	5438	45	33	78
2035-36	7750	1938	5813	48	35	83
2036-37	8250	2063	6188	52	37	89
2037-38	8750	2188	6563	55	39	94

As the number of dwellings increases, the demand generated also increases to a level that could potentially support a small shuttle service. From the data shown in Table 5 the development at LMAGV could generate up to 50 trips per day from 2029/30. It is not until the development is complete in 2037/38 that the site could generate approximately 100 daily trips.

Therefore, a potential station at LMAGV could generate a maximum of approximately 30,000 trips per annum (based on 312 days of operation) once full build out is completed. It is assumed that these trips on the shuttle service would be highest during the early morning and later in the evening to allow for connections from commuters travelling to and from London.

It should be noted that at this stage, this assumes that all of this potential demand has a destination on rail services that serve the Cotswold Line. Therefore, this is deemed the maximum potential and the figure may be lower if people in LMAGV choose not to travel by train to work or do not work at a destination served by rail on the Cotswold Line.

6.4 Peak Hour

It is assumed that the majority of trips generated by the LMAGV development will be passengers heading south towards Oxford and London. This has influenced the peak times the shuttle service would operate along the route.

The morning peak will be between 0500 and 0730. This allows connections to London Paddington arriving into the capital before 0900. Passengers requiring trains into London will be required to leave Honeybourne at 0534 (to arrive into London at 0727) or 0644 (to arrive into London at 0827). Passengers requiring Worcester would be required to catch the 0740 from Honeybourne to arrive into Worcester at 0815.

The evening peak is assumed to range between 1800 and 1930. This will allow connections from London and Worcester departing after 1700. Passengers returning from the capital are assumed to catch the 1722 London Paddington to Hereford service arriving at Honeybourne at 1905. Passengers from Worcester are assumed to catch the 1726 Worcester Foregate Street to London Paddington service arriving at Honeybourne at 1757.

7 Rolling Stock

7.1 Applicable Rolling Stock

This form of shuttle operation and the demand that will be generated by the development at LMAGV would benefit a small train.

At present, there are three types of rolling stock on the market that would be applicable for the operation:

Class 153 ‘Super Sprinter’ – Constructed: 1991-92 - Total Capacity: 106

The class 153 is single-coach diesel unit. The class was intended for service on rural and branch lines where passenger numbers do not justify longer trains.



⁷Both West Midlands Rail (8) and Great Western Railway (14) have class 153s within their fleet allocations, operating on lines such as Coventry to Nuneaton, which have modest demand levels.

One benefit of the class 153 is that it is suitable for longer distance services and integrating with mainline traffic.

This unit would require maintenance and refuelling off site, which drives additional operational costs.

Seating Capacity: 66

Standing Capacity: 40

Total Capacity: 106

Maximum speed: 75mph

Class 139 ‘Parry People Mover’ – Constructed: 2008 – Total Capacity: 60

Class 139 (Parry People Movers) are light weight rail cars built by Parry People Movers Ltd for use on heavy rail. They are an intermediate mode between bus and tram, built for operation on the Stourbridge Town Branch Line.

⁸The class 139 units are environmentally friendly as they utilise flywheel energy storage technology. The flywheel captures the vehicle's kinetic energy when the brakes are used, and re-uses the energy for acceleration – as such the



⁷ Source: Kian Corrie

⁸ Source: Express & Star

units are very economical to operate, achieving up to 2000 mpg per passenger.

The class 139 replaced class 153 operation on the Stourbridge Town line in 2009. While the class 139 has half the capacity of the class 153 it replaced, the reduced operating cost has allowed a more frequent service to be run – resulting in a greater level of service and capacity overall for passengers.

Whilst the class 139 is ideal for short branch lines, due to capacity and a lower top speed, it would potentially be unsuitable for distances over 10 miles.

The small size of the vehicles would enable a stabling shed to be erected on the route, reducing the cost of servicing and maintenance.

Seating Capacity: 25
Standing Capacity: 35
Total Capacity: 60
Maximum speed: 20mph

Class 230 ‘D-Train Vivarail’ – Constructed: 1978/81 Rebuilt: 2015 to present -
Total Capacity: 188



⁹Class 230 is a battery EMU being built by Vivarail, based at Long Marston Depot. These units are built from refurbished D78 former London Underground stock – but are essentially new trains bar the outer bodysell and bogies.

Class 230s are available in both 2 and 3 car formations, allowing for future growth and are full mainline certified.

The units are not yet in passenger service, however from December 2018, West Midlands Trains will operate three class 230 units on the Marston Vale Line – running between Bletchley and Bedford.

The class 230 utilises battery technology, with a range of 40 miles and would require an 8-minute charge to replenish. However, they also come with a diesel engine to increase journey length should it be required.

The class 230 units can be maintained at Vivarail’s Long Marston Depot.

Seating Capacity: 104
Standing Capacity: 84
Total Capacity: 188
Maximum speed: 60mph

⁹ Source: Vivarail

Table 6: Rolling Stock Capacity Summary

	Seating	Standing	Total Capacity
Class 153	66	40	106
Class 139	25	35	60
Class 230*	104	84	188

*Based on a 2-car formation – unit has flexibility to add additional carriage for greater capacity

Based on the level of demand expected, the class 139 ‘Parry People Mover’ would be the most appropriate rolling stock in terms of efficient use of capacity, with a proven record of successfully operating a similar style of service to that of the study area.

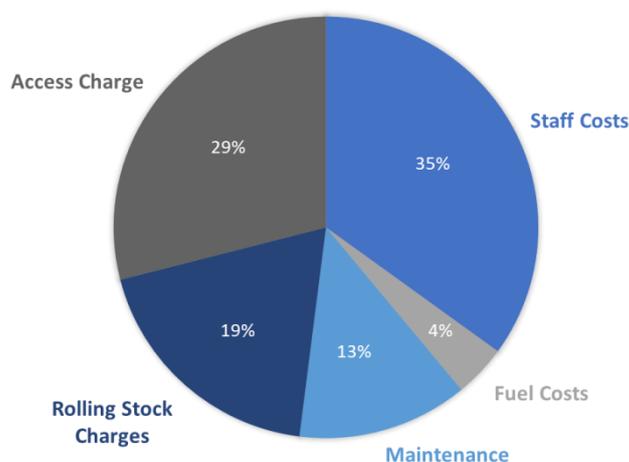
7.2 Rolling Stock Capital and Operational Costs

Rolling Stock operational costs are indicatively made up of the following elements:

- Rolling stock leases or unit capital purchase price;
- Maintenance;
- Staffing (Driver and Conductor);
- Energy consumption for traction; and
- Track access charges.

The proportion by which each cost element makes up an Operator’s total cost has been assessed against the ORR’s UK rail industry financial information 2016-17¹⁰ and Arup benchmarking.

INDICATIVE ROLLING STOCK OPERATIONAL COSTS



¹⁰ ORR - UK rail industry financial information 2016-17 - January 2018

The two main drivers of costs that fall within a Train Operating Company's (TOC) control are staffing (drivers and conductors) and rolling stock lease / maintenance.

To assist with this study, we conducted a market sounding exercise with two Rolling Stock Owning Companies (ROSCOs) and a TOC to gain a high-level view on potential leasing and operational costs, as well as providing a view on rolling stock availability.

7.2.1 Staffing Costs

The type of rolling stock chosen for this study will have a major bearing on staffing costs.

It is estimated that to operate the service 2.5 drivers would be required, alongside 2.5 conductors. This is based on a 16.5-hour operational day, with staff working an industry standard 40-hour week.

It is assumed the conductor would sell fares and that no station staff would be required.

The class 153 and class 230 units are mainline capable and as such require a fully qualified and compliant train driver. The average salary for a qualified driver is £48,000, with a conductor salary approximately £26,000. Indicatively, it would cost £185,000 to staff the service.

Class 139s, as classified as a light rail unit, enabling staff pay grades closer to tram levels due to the less demanding nature of the tasks operating a service on a simple branch line with no mixing with other rail traffic. Light Rail driver salaries range between £16,000 and £22,500 – with conductors earning approximately £12,000. Indicatively, it would cost £79,000 to staff the service.

Table 7: Indicative staffing costs

	Driver Costs	Conductor Costs	Indicative Costs for Operations (12months)
Class 153 / 230	£48,000	£26,000	£185,000
Class 139	c. £19,500	£12,000	£79,000

A 57% cost saving could be achieved by opting for a light weight rail rolling stock solution compared to that of a heavy rail unit. The capacity required to accommodate forecast demand also points towards a light weight rail solution. On that basis, the class 139 'Parry People Mover' would be the most appropriate type of unit for operations for the specific route assessed in this study.

7.2.2 Lease and Capital Costs

The second major driver of cost is the capital or lease price of the units.

The majority of heavy rolling stock on the UK network is leased, as the 30 – 40 year life of the unit exceeds that of the franchise, typically 7 years, which it is contracted to run.

Class 153

Heavy Rail rolling stock typically costs £1-1.25m per carriage. Despite its age, class 153's are still in demand, due to its efficient use of capacity on branch lines.

It is expected that ROSCOs would charge approximately £4,000 - £5,000 a month to lease a class 153 unit. Due to age, wet leases for heavy maintenance are often taken out on this unit, at a further £3,000 - £4,000 per month.

Over the course of a year, this equates to £48,000 - £60,000 lease rental with maintenance an additional £36,000 - £48,000.

Class 139

At the time of production in 2008, the class 139 was priced around £430,000.

It is expected that the lease price of the unit would be similar to that of a class 153 – £4,500 per month - which would equate to a 10-year payback period for a ROSCO to recover the cost of its investment.

Maintenance would be provided by Parry People Mover Ltd.

Class 230

Being new to the market, freshly refurbished and providing greater capacity, it is expected the lease price of a class 230 to be higher than that of the class 153 and 139.

We have estimated the lease price for a unit to be approximately £6,000 - £7,000 per month. As this is a two-carriage unit, a lease of £12,000 - £14,000 would be expected. We would recommend further engagement with Vivarail to clarify this view.

This would equate to a yearly lease price of £156,000.

7.2.3 Additional charges

In addition to these, Network Rail track access and capacity charges would also be chargeable. Based on Control Period 5 access charges, these would total around £2,200 per year for a class 139 and £4,300 for a class 153 for movements on the branch line. Additional empty coaching stock movements would result in further charges but these cannot be calculated at present. At present, there are no charges applicable to a class 230 due to it not being operational these have been priced as a class 153. The class 139 has lower additional charges due to its lighter weight.

In addition to the track access and capacity charges, there would also be cleaning, light and heavy maintenance and fuel charges.

Table 8 gives the indicative operational cost per year of the different types of rolling stock. However, it should be noted that these do not include any additional movements off the branch line.

Table 8: Indicative Rolling Stock Lease Price Summary

	Staff Cost	Lease Cost	Additional Charges	Total Operational Cost (Year) ¹¹
Class 153	£185,000	£54,000	£77,000	£316,000
Class 139	c.£79,000	£54,000	£67,000	£200,000
Class 230	£185,000	£156,000	£77,000	£418,000

7.2.4 Extension to the line

Any potential extension to the line would increase the additional charges associated with the service due to increased mileage. The lease costs may also increase if additional or alternative rolling stock is required as the suitability of a class 139 may not be adequate to cover the additional distance given its limited top speed of 20mph.

7.2.5 Revenue

For this study, no revenue forecast has been produced. The level of revenue and potential return to a TOC would be commercially sensitive and further discussions would be required with potential TOCs.

¹¹ Based on 312 days of operation

8 Operation of the shuttle service

A shuttle service between LMAGV and Honeybourne would connect with services on the Cotswold Line linking Worcester, Oxford and London Paddington. The service operating between Honeybourne and LMAGV will be self-contained and will not physically interact with the Cotswold Line services other than to provide a connection for passengers to other services.

8.1 Stabling of units

With the service being self-contained and the need for early morning trains the ideal location to stable units to operate this service would be on the branch itself.

Long Marston Depot could be used as a stabling location for the train allowing services to start early on the branch to allow passengers to connect with London services. This would make the service operated by a class 230 Vivarail unit more feasible.

The preferred location for the stock to be stabled would depend on the train operator and rolling stock used. It is assumed that the unit would operate for a period of time before going off site and being replaced by another unit to allow maintenance to take place.

Suitable stabling points for class 153 units away from the branch would include Oxford Carriage Siding and Worcester Shrub Hill where both Great Western and West Midlands Railway currently stable stock.

8.2 Maintenance

It is assumed that maintenance of the unit would be carried out off the branch, however this will depend on the operator and rolling stock chosen.

It has also been assumed that if maintenance is to be done off site, an additional unit would be required to cover while a unit is unavailable. Depending on the operator and rolling stock chosen light maintenance and basic examinations could be carried out at Long Marston Depot, however, unless facilities are available, heavy maintenance would need to be done off site.

Operations using class 230 Vivarail units could be maintained completely at the companies Long Marston base reducing the need to remove the unit off site. The Class 230 units are designed for minimum maintenance which allows quicker repairs thus reducing the amount of time the train is out of service.

Units such as class 153 super sprinters would have to be maintained off site, with current maintenance locations including Worcester Light Maintenance Depot and Tysley Depot for West Midlands Railway Operations or Reading Traction Maintenance Depot for Great Western Operations.

8.3 Crew facilities

The operation of the shuttle is based on having 2.5 drivers and conductors working an industry standard 40 hour week. This would require messing facilities for the crew to be provided to cover the level of breaks required. Full train crew facilities would therefore be required on the branch as currently there is little or no provision provided for train crew PNBs (personal needs breaks) and rest breaks.

It is assumed that the basic facilities would be provided at Honeybourne Station where a longer turnaround time is available.

8.4 Journey Times

Based on the route between Honeybourne and LMAGV being 4.29 miles (6.91km) in length journey times for the route have been calculated. The following journey times are based on the current line speed (20mph) building up to the maximum speed for a class 153 unit of 70mph. It has been assumed a turnaround time at LMAGV to be 10 minutes as this will allow adequate time for passengers to board and alight and the driver to change ends and set up the driving cab. These are shown in Table 9. It should be noted that these times do not take into consideration any additional walk/drive or wait times to/at the station.

Table 9: Indicative journey times

	Honeybourne - LMAGV	Turnaround time	LMAGV - Honeybourne	Total journey time
20mph	00:13:00	00:10:00	00:13:00	00:36:00
30mph	00:09:00	00:10:00	00:09:00	00:28:00
40mph	00:06:30	00:10:00	00:06:30	00:23:00
50mph	00:05:30	00:10:00	00:05:30	00:21:00
60mph	00:04:30	00:10:00	00:04:30	00:19:00
65mph	00:04:00	00:10:00	00:04:00	00:18:00
70mph	00:04:00	00:10:00	00:04:00	00:18:00

Any additional stops would increase journey times by approximately 2 minutes per stop, this would consider the de-acceleration, station dwell time which would be 30 seconds (time to activate the doors, allow passengers to board and alight and close and lock the doors) and acceleration back to line speed.

The maximum speed for the class 230 Vivarail stock is 60mph which would allow a journey time of 4 minutes 30 seconds between Honeybourne and LMAGV giving a total return journey time of around 19 minutes.

The class 139 Parry People Mover currently has an operational speed of 20mph. This would give a journey time of 13 minutes between Honeybourne and LMAGV, giving a total return time of around 36 minutes.

It should be noted that it is unlikely that the class 153 and class 230 would be able to operate at their maximum speed, giving a realistic journey time of around 6 minutes 30 seconds at 40 mph between Honeybourne and LMAGV.

Using the AA route planner, the journey times by road using the quickest route between Long Marston Airfield and Honeybourne Station is approximately 15 minutes. Long Marston Airfield to Stratford-upon-Avon Station is approximately 12 minutes. However, these times do not take into account congestion on the network during peak hours.

8.5 Connections at Honeybourne

To maximise the amount of people carried, services operated between LMAGV and Honeybourne need to allow connections with services on the Cotswold Line. This is only realistically possible if the timetable on the Cotswold Line becomes more clock face and regular.

There is roughly an hourly service between London Paddington and Worcester but due to the constraints of the single line sections between Norton Junction and Evesham & Charlbury and Wolvercot Junction there are some two-hour gaps on the North Cotswold Line, (Appendix B).

With the North Cotswold Line not running a clock face timetable, it is difficult to operate a service that will connect with all trains. Based on a line speed of 20mph (class 139), a timetable has been created that shows how the trains will connect with the shuttle service to LMAGV (Appendix C). If the line speed increases, then the dwell time at LMAGV would increase with arrivals and departures from Honeybourne remaining the same.

A concept shuttle service timetable for 2030 that operates on a clock face basis shows a departure every 20 minutes between 0515 and 0830 for the morning peak and between 1650 and 1930 during the evening. Throughout the day the service operates at half hour intervals to best connect with services on the North Cotswold Line.

It should be noted that the Route Improvement Strategy has suggested an increase in services on the Cotswold Line to 2 trains per hour throughout the day (in line with doubling of the track through the remaining single sections of route). This improvement was expected during Network Rail Control Period 5 (CP5 2014-2019) but has been put on hold until further notice. For the purpose of this work additional trains to meet the 2 train per hour aspiration have been added into the timetable. This timetable is a concept timetable with the additional trains operating at a clock face interval to current services (Appendix D). Great Western Railway (GWR) have yet to issue an enhanced timetable for the Cotswold Line.

Another option could potentially include two shuttle services operating from Worcester to LMAGV and from Oxford to LMAGV. These services could form part of the desired 2 trains per hour on the Cotswold Line and would benefit from calling at more station to generate additional revenue, but also be subject to higher operating costs.

9 Potential train operator

With all the services on the Cotswold Line being operated by GWR, they would be the most logical operator of the LMAGV to Honeybourne service.

We have had a high-level discussion with GWR to understand if they view the reinstatement of the line between Honeybourne and Long Marston as viable. GWR's view is that they see the restoration of the line as an opportunity with the potential ability to extend the line to Stratford-upon-Avon in the future. In terms of gaining GWR's support they indicated it will require:

- A Department for Transport (DfT) approved business case;
- Agreement on what organisation would be accountable for any commercial risks associated with the service, (to cover any potential subsidies);
- The service would be deemed as 'stand-alone' for operating purposes, however through ticketing would be offered; and
- Appropriate rolling stock, stabling and maintenance facilities can be secured.

GWR indicated they would be happy to discuss the reinstatement of the line in more detail as the project matures.

If operations are extended to Stratford-upon-Avon this would open up the route to other service providers including the West Midlands Railway (WMR) franchise and Chiltern Railways.

All could potentially operate services to and from Stratford-upon-Avon from the south to/from Oxford or Worcester thus increasing the level of service on the Cotswold Line.

10 Other options

During the inception meeting, it was agreed that other potential options would be commented on. Whilst it is acknowledge that some of these do not provide the same travel perception that a rail shuttle service would offer, they do offer flexible alternatives which may provide an enhanced overall journey if waiting and interchange times are minimised. This section of the report contains these options and some of the options raised during the briefing session.

10.1 Increase car parking at Honeybourne

Considering the level of demand is unlikely to make a shuttle service feasible until the full build out of the LMAGV site (20+ years), another option for the short term may be to improve parking at Honeybourne to cater for additional demand from this station and upgrade the road routes and bus based public transport options to the station from LMAGV.

10.2 Connection via a busway

An alternative option could be to provide a busway along the proposed rail alignment which ultimately could utilise an autonomous¹² vehicle. The pros of this would include reducing the need for a bridge over the proposed railway at Station Road thus reducing the capital costs, lower operating costs and a more flexible service to link with all trains at Honeybourne and wait if a service is delayed. The cons are that it may be subject to congestion on the highway network. The formation of the guided busway would follow the existing track bed until Station Road and could then use existing roads (potentially via Pebworth) to access Honeybourne or possibly run along the existing formation. However, this latter option would require the current track to be realigned.

10.3 Flexible minibus services

In Kent, Arriva click offers a flexible minibus service that can take multiple passenger within the local area. Arriva click is currently in operation in and around Sittingbourne and Kent Science Park. This would be an ideal option to transport passengers from multiple locations within the LMAGV development to the existing station at Honeybourne for onward travel.

A similar system operates around Ashford called 'Little and Often' operated by Stagecoach using a minibus on a scheduled route. Stagecoach and Johnson's Coaches already operate buses in the Stratford-upon-Avon area so would both make ideal operators for this type of service which could serve a greater number of people by linking Long Marston Airfield and Meon Vale to Honeybourne Station.

¹² Definition of autonomous: "Performed by a device capable of operating without direct human control".

10.4 Tram Train

A tram train option that utilises a lighter tram vehicle operating on heavy rail infrastructure would allow for possible expansion of the service through to Stratford-upon-Avon without precluding heavy rail operations into the depot and proposed rail test centre. However, the implementation of the first Tram Train scheme in the UK has yet to operate, therefore providing no positive experience for further tram train projects. The Sheffield tram train project¹³ shows that the cost of tram train operations are five times the original budget, now costing £75.1million, and the cost benefits are extremely low.

Whilst the proposed LMAGV shuttle operation would ideally suit a tram train style of operation, it is not deemed to be a feasible option at present given the increased levels of complexity of the systems and the capital costs. However, if tram train becomes more common in the United Kingdom then this may be a future option for the service given the level of demand required to operate a service will not be for approximately 10-15 years following the start of construction of the new settlement.

10.5 Additional or alternative stations

Providing a station at the site of the original Long Marston station on Station Road would potentially increase the demand on the line. There are two options here, the first would be to make this a park and ride station (and continue it to LMAGV) to attract residents from Meon Vale and other committed developments in the area.

The other option would be to provide a park and ride station but terminate the shuttle service here. This would reduce the capital costs of providing a crossing over Station Road. The Greenway could provide a suitable link to this location from LMAGV.

10.6 Improved walking and cycling links

Upgrading pedestrian and cycle links to the potential LMAGV station from other committed developments could also provide additional demand. However, this would require a significant shift in mode choice in making this an attractive option to people who currently drive to a station. The requirements for cycle parking would also have to be taken into account.

10.7 Cascaded or lighter rail

Use of cascaded or lighter rail to construct the new part of the railway could potentially reduce the capital costs. However, it is difficult to provide costs for cascaded rail as it depends on the location the material is coming from and the availability of it. Lighter rail could also be an option for a lighter weight vehicle such as the class 139. The costing for this would need to be undertaken following

¹³ <http://www.sypte.co.uk/tramtrain/>

a more detailed study of the alignment due to the requirement to transition it into the existing heavy rail alignment.

10.8 Community based operation

Operating the shuttle as a community run service is not considered as a feasible option as the cost of leasing rolling stock and track access charges would outweigh any potential benefits. To obtain an operating licence from the ORR a number of licence obligations are required to be met which could prove very costly to implement. The costs associated with the various licence conditions include the requirement to purchase third party liability insurance and the cost involved in becoming a signatory to the Claims Handling and Allocation Agreement (CHAA) and RSSB (Railway Safety and Standards Board), as well as contribute to the costs of the British Transport Police Authority (BTPA) increase the cost of setting up as an operator. Using an existing operator to operate the service would ensure that these ongoing costs are paid for by the operator.

10.9 Extension to Stratford Racecourse

Extending the shuttle to Stratford Racecourse was raised during the briefing meeting on the 10th April 2018. This would increase the catchment area for the stations along the route and the potential demand. However, with the operation of the class 139, the journey time to here may not be an attractive option along with the requirement to change trains. Also, the location of Stratford Racecourse is within 1.20 km from the main station in Stratford-upon-Avon and with direct trains to London it is unlikely that extending the shuttle to Stratford Racecourse would generate significant trips for the shuttle service.

10.10 Options Matrix

Table 10 highlights the options above which may be worth further investigation and a high level reason for doing so.

Table 10: Options Matrix

Option	Investigate Further or dismiss	Reason
Increase car parking at Honeybourne	Investigate further	This would provide a short term solution to parking issues at Honeybourne station. It is understood that discussions on extending the parking area are ongoing with a landowner.
Busway	Investigate further	Potential to serve other catchments, reduce car traffic and car parking at Honeybourne. Provide a flexible short to medium term solution until demand reaches a level which could justify a rail shuttle service.
Flexible minibus	Investigate further	Potential to serve other catchments, reduce car traffic and car parking at Honeybourne. Provide a flexible short to medium term solution until demand reaches a level which could justify a rail shuttle service.
Tram Train	Investigate further	Potential for the future when technology is proven.
Additional or alternative stations	Investigate further	An alternative station at Long Marston could reduce capital costs and potentially provide an appropriate level of car parking for users of the service.
Improved walking and cycling links	Dismiss	Whilst this is good for the local area, improved walking and cycling links would have little impact on the demand without a change in mind-set for people used to driving.
Cascaded or lighter rail	Investigate further	This would be worth further investigation if the route is developed to a more detailed design.
Community operation	Dismiss	The requirements for licenses, safety certification and reliance on volunteers would not make this feasible.
Extension to Stratford Racecourse	Dismiss	This option would be limited if a class 139 is used due to the lower operational speed of this vehicle.

11 Conclusions

In concluding this high-level study, the current level of demand on full completion of the LMAGV development could potentially support a rail shuttle service with approximately 30,000 passengers per year with a class 139 Parry People Mover. However, this demand would rely heavily on people wanting to travel to/from London/Oxford/Worcester and until there is further understanding of travel patterns and work places for the people living in LMAGV, it is possible that this level of demand might not arise. Due to the nature of the shuttle being a terminus with only a southern connection, this will limit the demand it may generate.

The capital costs associated with providing the infrastructure to support the shuttle would also not seem to present good value for money given the need to construct a road over rail bridge and associated highway works along Station Road to provide access to the industrial units and the current rail depot.

From a rolling stock perspective, there is interest in the scheme from Vivarail given their location currently at Long Marston Depot and Parry People Mover who are based in the West Midlands. Vivarail indicated that they would be open to a visit to their headquarters to discuss the potential use of their rolling stock.

In terms of an operator, high level discussions with GWR suggest that they would be happy to discuss the project in more detail if it matures, but have indicated that it would have to pass the following tests for them to come on board:

- A Department for Transport (DfT) approved business case;
- Agreement on what organisation would be accountable for any commercial risks associated with the service;
- The service would be deemed as ‘stand-alone’ for operating purposes (i.e. solely operate from Honeybourne to LMAGV) but with through ticketing available; and
- Appropriate rolling stock, stabling and maintenance facilities can be secured.

The provision of enhanced bus services associated with the development of LMAGV are expected to link Stratford-upon-Avon and Honeybourne as well as a number of other communities such as Meon Vale which may not benefit from the operation of a rail shuttle service. This would provide a viable alternative to the rail shuttle until such times that enough demand is generated to provide the shuttle service or the route extension to Stratford-upon-Avon becomes feasible.

12 Recommendations

Our recommendations for the rail shuttle project to progress, are as follows:

- Further work is undertaken on the potential demand for such a service once the 2021 Census has been undertaken to better understand the travel patterns in the area given the amount of development around this area since the 2011 Census.
- Refinement of the design and costs involved, especially in the area around Station Road to understand the possible layout options for accessing the industrial units and Long Marston Depot with a road over rail bridge in place.
- Evaluate the potential for a park and ride station to the south of Station Road.
- Contact the Office of Rail and Road to initiate an assessment of whether a level crossing at Station Road would be acceptable.
- Liaise with potential operators to gain a better understanding of their requirements, such as in relation to revenue and return.

Appendix A

ORR Railway Guidance Document RGD-2014-06

Policy and approach to handling requests for new or re-instated crossings on mainline or heritage networks.

	Railway Guidance Document	RGD-2014-06	
<p align="center">New level crossings</p> <p align="center">ORR's policy and approach to handling requests for new or re-instated crossings on the mainline or heritage networks</p>			
Date of issue/ last review	December 2014	Date of next review	December 2016
RGD postholder/owner		Tracy Phillips : Manager, Railway Safety Policy	
RGD cleared by		John Gillespie : Head of Safety Policy and Central Regulation Division	
RGD type		Policy_____ <input checked="" type="checkbox"/> Information_____ <input checked="" type="checkbox"/> Procedure_____ <input checked="" type="checkbox"/>	
Target audience	RSD_____ <input checked="" type="checkbox"/> RPP_____ <input type="checkbox"/>	Policy_____ <input checked="" type="checkbox"/> Inspectors_____ <input checked="" type="checkbox"/> Admin_____ <input checked="" type="checkbox"/>	
Keywords	Level crossings, new, exceptional circumstances, policy, process		
Summary	Guidance on interpreting and applying ORR's long established policy of "no new crossings unless there are exceptional circumstances", including how requests and cases for new crossings should be managed within ORR to ensure a consistent approach by its Safety Directorate and across the mainline and heritage networks.		
Original consultation	Members of the level crossings co-ordination group – John Gillespie, David Keay, Michelle Travers, Tracy Phillips, Ian Maxwell and Simon Smith – and Giles Buckenham (legal)		
Subsequent consultation (reviews only)			

Introduction

1. This RGD provides guidance on how to interpret and apply ORR's high level "no new level crossings" policy and sets out the process that ORR inspectors should follow if they receive information concerning a proposed new crossing. It covers mainline and heritage networks but does not apply to new crossings on tramways as such intersections are governed by road traffic signals.
2. In summary **inspectors** should:
 - familiarise themselves with ORR's policy and approach to new or re-instated crossings as set out in this document;
 - alert ORR's expert panel to any discussions they may have regarding new or re-instated level crossings and pass on all relevant information, including that concerning the right of way (for the railway) and whether any Transport and Works Act procedures have commenced;
 - pass on to the panel any relevant previous knowledge of the crossing site or applicant;
 - refrain from giving any opinion, advice or making decisions relating to proposed crossings so that the case can be managed by the expert panel.

ORR's expert panel will:

- convene to review and consider all cases as needed;
- assess the information provided by the applicant (the requirements for which are set out in this document), including why the applicant believes their case is "exceptional";
- consult anybody else the panel considers appropriate to help in informing its decision;
- work to the timescales set out in this document and impart its decision as soon as possible;
- publish its decision on the ORR website.

Background to existing policy

3. ORR has, for some time, had an established policy line on new crossings i.e. to only consider the creation of new level crossings in very exceptional circumstances. This was set out in a 2007 level crossings policy statement (now removed from the ORR website) and more recently in Chapter 4 of ORR's *Strategy for regulation of health and safety risks* - <http://orr.gov.uk/publications/corporate-publications/health-and-safety-strategy>
4. This should always remain ORR's starting position as it is consistent with our drive to reduce crossing risk and our support for closure and removal programmes; removing or eliminating a hazard is the priority in a hierarchy or risk control.

5. Network Rail also has a general “no new crossings” policy and the heritage sector is encouraged to publish details of crossings on its network and any planned closures. The Highways Agency has a policy of no new accesses on the strategic road network except in exceptional circumstances where it can be sufficiently demonstrated that there is a net benefit to the network.
6. Precedents for ORR agreeing to new crossings have been very limited to date but it is recognised that inspectors are increasingly facing enquiries or requests in this area and that a consistent interpretation of ORR’s policy and a common approach to managing any cases is required. This RGD therefore sets out an “expert panel” approach to managing such cases – see paragraphs 21 onwards.

What is a “new” crossing?

7. New level crossings could be permanent or temporary and include:
 - a proposed crossing at a location where a crossing has not previously existed;
 - the re-instatement of a crossing that is in place but has not been in active use for a period of time (which may or may not require authorisation to re-instate it); or
 - the instigation of rights to a crossing - enshrined in the enabling Act for that railway - but that have not previously been instigated so no prior crossing exists.

The process set out in this RGD will apply to all of these examples.

8. A legal right of way to have a crossing must exist (for the railway operator). In some cases such rights of way/access may be enshrined in very old legislation. For example by virtue of:
 - the original enabling Act for the railway (often a Private Act);
 - an Order made under the Light Railways Act 1896;
 - Transfer Orders obtained from British Railways Board that transfer the relevant powers for crossings originally contained in the enabling Act for the railway;
 - in some rare cases, a right granted on the conveyance of land to the original railway company.
9. Such Orders may refer to rights to crossings at specified locations but may not include any covenants preventing additional crossings. Such statutory rights of way for the railway over the public highways cannot be extinguished merely through non-use for any length of time; they can only be extinguished by being repealed.

10. However, such a right does not necessarily provide entitlement for a railway operator to *construct* or *operate* over a crossing and they may need to seek an Order under the Transport and Works Act (TWA) 1992 to obtain the necessary authorisations (including the transfer of relevant rights, powers or obligations to them which are contained in an existing Act). Applications for TWA orders must follow set procedures and these are explored in more detail at paragraphs 12 to 18.
11. The position on rights to crossings is not always straightforward and it is likely that legal advice will need to be sought on a case by case basis. As a starting point any applicant for a new crossing who makes contact with ORR should be asked to provide information on:
- which piece of legislation provides the necessary right of way for the railway; and
 - whether TWA procedures have been instigated and if so what stage they are at (recognising that TWA Orders may not be needed in all cases of new crossings).

Transport and Works Act 1992 (TWA)

12. The TWA introduced a new order making procedure for certain types of works including railways. A non-exhaustive list is provided in the Act and includes:
- the construction, alteration, repair, maintenance, demolition and removal of railways, tramways, trolley vehicle systems and other transport systems.
13. The TWA order making procedure is generally used where an infrastructure project requires compulsory purchase powers or the creation, extinguishment or transfer of rights over land. Some projects would therefore be subject to it – for example a brand new piece of infrastructure or the re-opening of a disused branch line (including any new or pre-existing crossings level crossings on it) - but for others it may not apply.
14. The procedure for applying for a TWA Order is set out in a variety of rules that provide for appropriate publicity to be given to the proposals and set out a timetable for the making of objections to the proposals. If objections are received, the Secretary of State, Welsh Assembly or Scottish Ministers consider the objections by means of a public local enquiry, a hearing or an exchange of written representations.
15. ORR is a statutory consultee for any proposals to amend existing powers in relation to railways as will be the relevant highway authority. The Department for Transport's guidance on the TWA Order making process encourages the promoters of any railway schemes that may fall under the TWA to consult statutory consultees, including ORR, **before** applying for a TWA Order.

16. So, for projects covered by the TWA, ORR has the opportunity to put forward any concerns at an early stage and to *potentially* object to a TWA Order. This route may be more effective than a rejection straight from the ORR expert panel (see later) particularly if we are aware of concerns expressed by other statutory consultees such as the highway authority. However, in any case, a TWA Order would not obviate the need for suitable and sufficient protection arrangements for any level crossing, (which may then be prescribed subsequently by way of a level crossing order as made under the Level Crossings Act 1983).
17. In England, TWA orders are made by the Secretary of State for Transport. As a result of devolution, applications for orders relating to works solely in Wales are made to, and determined by, the National Assembly for Wales and Scotland now has its own Transport and Works Order procedure under the Transport and Works (Scotland) Act 2007.
18. Further guidance on the TWA procedures can be found at <http://www.legislation.gov.uk/ukxi/2006/1466/contents/made> (for England and Wales) and at <http://www.scotland.gov.uk/Publications/2007/12/24105544/3> for Scotland.

Exceptional circumstances

19. ORR's high level policy on no new level crossings includes the term "exceptional circumstances". This term is not defined so that any case can be considered on its merits. Exceptional in this context means "away from" ORR's established policy of no new level crossings and – in line with the dictionary definition – would be in the territory of unusual or out of the ordinary circumstances.
20. Consistent with other government departments that have an "exceptional circumstances" caveat to their policy line, ORR expects an applicant to provide sufficiently compelling evidence to demonstrate that their case is exceptional and the reasons why. Previous examples of new crossings are limited so meaningful criteria cannot be drawn. However, it is ORR's policy to publicise where new crossings have been agreed and the supporting reasons so over time it may be possible to develop further guidance on what might constitute "exceptional" circumstances. In the meantime we will continue to take a case by case approach as set out below.

Managing enquiries and potential applications for new crossings

21. It is essential that anybody who is promoting, proposing or applying for a new level crossing contacts ORR as soon as possible to discuss the matter - it is never too early to start talking, even in principle.

22. It is likely that any initial contact will be via a local inspector but the case should then be referred to ORR's "expert panel" as soon as possible. Inspectors can advise on the process for new cases but should refrain from giving any opinion, advice or making decisions on the particulars (including any merits) of any proposed crossing so that a consistent approach can be taken within ORR's Railway Safety Directorate (RSD) and across the mainline and heritage networks. Any information already available to the inspector, including any previous knowledge of the crossing site or the applicant, should be passed on to the panel at this stage. The panel would appreciate early notification of any discussions inspectors may have regarding new crossings, even if at a very early or speculative stage.
23. ORR's expert panel is made up of members of the level crossings co-ordination group, as chaired by John Gillespie (Head of Safety Policy and Central Regulation Division) plus a representative from the legal team and the relevant local inspector for each case. This panel will come together to review and consider all cases as needed.
24. The information the panel require **from the applicant** (inspectors themselves are not expected to gather or collate this information) includes:
- the location of the proposed crossing including photographs and diagrams;
 - the reason for the crossing
 - information about the proposer of the scheme/applicant for a new crossing and the proposed crossing operator;
 - proposed timescales for any new crossing;
 - confirmation that there is a right of way and whether any relevant authorisations/Orders need to be sought through the TWA procedures;
 - details of any liaison that has already taken place with other Departments and agencies such as DfT, Highways Agency or local highway authority, planning authorities and other local bodies and stakeholders plus a summary of the responses/views received;
 - a description of what other options have been considered such as bridges and underpasses and why these have been discounted;
 - information about the road and rail traffic at any proposed crossing including the results of censuses;
 - details on the features of the proposed crossing and what protective arrangements would be in place were it to go ahead based on a suitable and sufficient risk assessment (noting that it may be

subject to a Level Crossing Order application further down the line);

- an explanation as to why the applicant considers their case is “exceptional”;
- any other information that the expert panel considers might be relevant or helpful.

25. The panel may choose to visit the site of any proposed crossing as part of its considerations.

26. ORR’s powers extend only to considering the safety aspects of proposed new crossings. It is for the Secretary of State to consider any wider socio-economic aspects. It is likely that cases where socio-economic benefits are claimed will be made under the TWA procedures so, although the case may come before ORR’s expert panel, we would provide a safety view as part of our consultation response to the TWA process and it would be for the SoS to make the ultimate decision having regard to all the circumstances.

27. That it is why it is important to establish early on whether the TWA “bites” so that the panel can follow the correct route in the circumstances i.e. expert panel review as part of the TWA consultation **or** expert panel review to give a decision to the applicant directly.

Process and timescales

28. Cases will vary so no firm timescales for a decision can be set. The expert panel will liaise on receipt of a new case but will only come together for decision making purposes on full receipt of all of the information set out at paragraph 24 above. The panel will either seek missing information directly or will ask the local inspector to obtain it from the applicant. Ann-Marie Hazeldine in ORR’s Manchester office will act as the central collator.

29. Once all the information is available the panel will aim to convene within 28 days and will impart their decision as soon as possible. This may be subject to further legal advice or consideration and, if it forms part of a formal consultation under the TWA, will be communicated to DfT’s TWA Unit (or equivalent in Scotland and Wales).

30. ORR may also consult anybody else that it deems appropriate to help in informing its decision making and this may extend timescales.

31. A record will be kept of the application, supporting information and the outcome and stored on file. The decision of the expert panel will be imparted in writing by the Chair of the panel and will be published on the ORR website and circulated to members of RSD’s Divisional Management Team for onward cascade.

32. If an applicant has any comments or concerns about the process these

should be addressed in writing to Ian Prosser, Director, Railway Safety.

Other cases

33. It is possible that cases of new crossings will come to light where ORR has no previous knowledge of their existence. This may particularly apply to “accommodation” crossings where, for convenience, landowners are granted access to their land via a level crossing – permanently or temporarily (for example during a harvest period) - where it is divided by a railway.
34. We would encourage prior engagement with ORR in all cases but, where such crossings are discovered, inspectors should request and review the risk assessment and consider our approach in line with the Enforcement Management Model.

Devolution issues

35. This policy applies to crossings in England, Scotland and Wales. In Scotland, references to Transport and Works Act 1992 should be read as the Transport and Works (Scotland) Act 2007. We are not aware of any other relevant devolution matters.

Reviewing the policy and process

36. We will review the process periodically and refine and develop our policy and approach accordingly. This will include refreshing membership of the expert panel if required.

Appendix B

**Current Timetable at
Honeybourne (December 2017)**

B1 Current Timetable at Honeybourne (December 2017)

Headcode	1P04	2W10	1P07	1P12	2E92	1W12	1P18	1W14	1P22	1W16	1W00	1P29	1W19	1P27
Origin	WOS	OXF	HFD	HFD	WOF	PAD	HFD	PAD	WOF	PAD	PAD	WOF	PAD	GMV
Destination	PAD	WOF	PAD	PAD	DID	WOF	PAD	GMV	PAD	GMV	HFD	PAD	FOS	PAD
arr	05:33	05:53		06:43		07:39	08:00	08:52	09:08		10:11	10:39	11:06	11:42
plt	2	1	2	2	2	1	2	1	2	1	1	2	1	2
dep	05:34	05:54	06:03	06:44	07:18	07:40	08:02	08:53	09:09	09:39	10:12	10:40	11:07	11:43
Arr PAD/WOS	07:27	06:22		08:27		08:15								

Headcode	1W01	1P29	1W23	1P31	1W25	1P33	1W27	1P36	1W29	1P37	1P39	1W31	1P42
Origin	PAD	WOF	PAD	WOF	PAD	WOF	PAD	WOS	PAD	WOF	HFD	PAD	WOF
Destination	HFD	PAD	WOF	PAD	WOS	PAD	WOF	PAD	WOF	PAD	PAD	GMV	PAD
dep PAD/WOS											16:01	15:22	17:26
arr	12:12	12:32	13:12	13:23	14:10	14:31			16:10		16:31	17:12	17:57
plt	1	2	1	2	1	2	1	2	1	2	2	1	2
dep	12:13	12:33	13:13	13:24	14:11	14:32	15:05	15:42	16:11	16:15	16:32	17:13	17:58

Headcode	1W33	1W02	1P45	1W03	1W03	1P47	1W04	1P49	1W39	1P51	1W42
Origin	PAD	PAD	GMV	PAD	PAD	GMV	PAD	WOF	PAD	HFD	PAD
Destination	GMV	HFD	PAD	WOS	HFD	PAD	HFD	PAD	GMV	PAD	WOS
dep PAD/WOS	16:22	17:22	18:48		18:22						
arr	18:29	19:05	19:26		20:12	20:30	21:16	21:27	22:11	23:08	23:47
plt	1	1	2	1	1	2	1	2	1	2	1
dep	18:30	19:06	19:27	19:41	20:13	20:31	21:18	21:28	22:12	23:09	23:48

Abbreviations

WOS – Worcester Shrub Hill
WOF – Worcester Foregate Street
PAD – London Paddington
HFD – Hereford
OXF - Oxford
DID – Didcot Parkway
GMV – Great Malvern

Notes:

Trains Highlighted in yellow indicate peak hour trains from Honeybourne.

Appendix C

Proposed Shuttle Timetable (20mph)

C1 Proposed Shuttle Timetable for Peak Hours (timed at 20mph)

Honeybourne dep plat		05:20:00 3			06:00:00 3			06:50:00 3			07:40:00 3			08:35:00 3
Long Marston arr dep		05:33:30			06:13:30			07:03:30			07:53:30			08:48:30
	05:00:00	05:38:30			06:18:30			07:08:30			07:58:30			08:53:30
Honeybourne arr plat	05:13:30 3	05:52:00 3			06:32:00 3			07:22:00 3			08:12:00 3			09:07:00 3
Connects with														
From	WOS 05:34	OXF 05:54	HFD 06/03	OXF 06:24	HFD 06:44	OXF 06:54	WOF 07/18	OXF 07:24	PAD 07:40	HFD 08:02	OXF 08:24	WOS 08:31	PAD 08:53	WOF 09:09
To	PAD	WOF	PAD	WOS	PAD	WOS	DID	WOS	WOF	PAD	WOS	OXF	GMV	PAD

Honeybourne dep plat	15:30:00 3				16:30:00 3				17:15:00 3	18:05:00 3			19:05:00 3		20:05:00 3		
Long Marston arr dep	15:43:30				16:43:30				17:28:30	18:18:30			19:10:00		20:18:30		
	15:48:30				16:48:30				17:33:30	18:23:30			19:15:00		20:23:30		
Honeybourne arr plat	16:02:00 3				17:02:00 3				17:47:00 3	18:37:00 3			19:28:30 3		20:37:00 3		
Connects with																	
From	PAD 16:11	WOF 16/15	HFD 16:32	OXF 16:41	WOS 17:01	PAD 17:13	WOS 17:31	OXF 17:43	WOF 17:58	PAD 18:30	WOS 18:31	WOS 19:01	PAD 19:06	GMV 19:27	PAD 19/41	WOS 20:01	PAD 20:13
To	WOF	PAD	PAD	WOS	OXF	GMV	OXF	WOS	PAD	GMV	OXF	OXF	HFD	PAD	WOS	OXF	HFD

Appendix D

Proposed Timetable at
Honeybourne based on two
trains per hour

D1 Proposed Timetable at Honeybourne based on two trains per hour

Headcode	1P04	2W10	1P07		1P12		2E92		1W12	1P18			1W14	1P22			1W16		1W00	1P29			1W19			1P27	
Origin	WOS	OXF	HFD	OXF	HFD	OXF	WOF	OXF	PAD	HFD	OXF	WOS	PAD	WOF	OXF	WOS	PAD	WOS	PAD	WOF	OXF	WOS	PAD	OXF	WOS	GMV	OXF
Destination	PAD	WOF	PAD	WOS	PAD	WOS	DID	WOS	WOF	PAD	WOS	OXF	GMV	PAD	WOS	OXF	GMV	OXF	HFD	PAD	WOS	OXF	FOS	WOS	OXF	PAD	WOS
arr	05:33	05:53		06:23	06:43	06:53		07:23	07:39	08:00	08:23	08:30	08:52	09:08	09:23	09:30		10:00	10:11	10:39	10:53	11:00	11:06	11:23	11:30	11:42	11:42
plt	2	1	2	1	2	1	2	1	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	1	2	2	1
dep	05:34	05:54	06:03	06:24	06:44	06:54	07:18	07:24	07:40	08:02	08:24	08:31	08:53	09:09	09:24	09:31	09:39	10:01	10:12	10:40	10:54	11:01	11:07	11:24	11:31	11:43	11:43
Arr PAD/WOS	07:27	06:22		06:52	08:27	07:22		07:52	08:15	09:46	08:52																

Headcode		1W01	1P29			1W23	1P31			1W25	1P33			1W27			1P36		1W29	1P37	1P39			1W31			1P42
Origin	WOS	PAD	WOF	OXF	WOS	PAD	WOF	OXF	WOS	PAD	WOF	OXF	WOS	PAD	WOS	OXF	WOS	WOS	PAD	WOF	HFD	OXF	WOS	PAD	WOS	OXF	WOF
Destination	OXF	HFD	PAD	WOS	OXF	WOF	PAD	WOS	OXF	WOS	PAD	WOS	OXF	WOF	OXF	WOS	PAD	OXF	WOF	PAD	PAD	WOS	OXF	GMV	OXF	WOS	PAD
																					16:01	15:50	16:35	15:22	17:05	16:52	17:26
arr	12:00	12:12	12:32	12:42	13:00	13:12	13:23	13:42	14:00	14:10	14:31	14:42	15:00		15:30	15:42		16:00	16:10		16:31	16:40	17:00	17:12	17:30	17:42	17:57
plt	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	2	1	2	2	1	2	1	2	1	2
dep	12:01	12:13	12:33	12:43	13:01	13:13	13:24	13:43	14:01	14:11	14:32	14:43	15:01	15:05	15:31	15:43	15:42	16:01	16:11	16:15	16:32	16:41	17:01	17:13	17:31	17:43	17:58

Headcode	1W33			1W02	1P45	1W03		1W03	1P47			1W04	1P49			1W39	1P51	1W42
Origin	PAD	WOS	WOS	PAD	GMV	PAD	WOS	PAD	GMV	OXF	WOS	PAD	WOF	OXF	WOS	PAD	HFD	PAD
Destination	GMV	OXF	OXF	HFD	PAD	WOS	OXF	HFD	PAD	WOS	OXF	HFD	PAD	WOS	OXF	GMV	PAD	WOS
	16:22	18:30	18:35	17:22	18:48		19:35	18:22										
arr	18:29	18:30	19:00	19:05	19:26		20:00	20:12	20:30	20:42	21:00	21:16	21:27	21:53	22:00	22:11	23:08	23:47
plt	1	2	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1
dep	18:30	18:31	19:01	19:06	19:27	19:41	20:01	20:13	20:31	20:43	21:01	21:18	21:28	21:54	22:01	22:12	23:09	23:48

Abbreviations
WOS – Worcester Shrub Hill
WOF – Worcester Foregate Street
PAD – London Paddington
HFD – Hereford
OXF - Oxford
DID – Didcot Parkway
GMV – Great Malvern

Notes:

Trains Highlighted in yellow indicate peak hour trains from Honeybourne.

Trains in red indicated proposed new train times to achieve a two train per hour timetable. (Further development and refinement of this timetable is required. It is therefore not a defined timetable)