



Magor Station - Integrated Transport Report

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On behalf of MAGOR



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1. About This Document

1.1 Document Outline

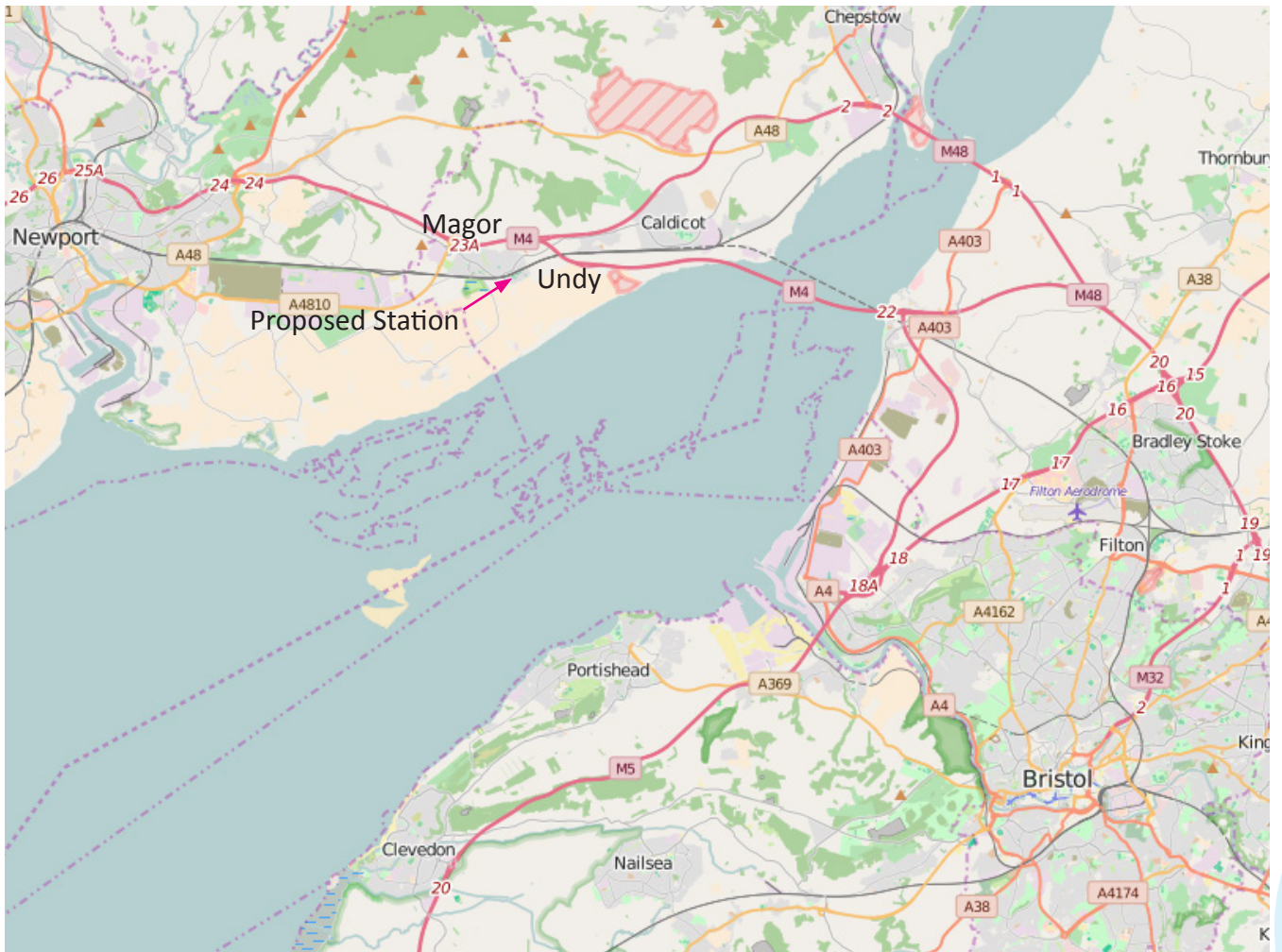
- 1.1.1 This report has been produced on behalf of MAGOR (Magor Action Group On Rail); as part of the UWE Agency Project, a Masters level placement module which consists of working on a 'live' project for five weeks.
- 1.1.2 It is intended to build on the work completed within GRIP stages 1 and 2; focussing on the benefits of community involvement with a station proposal / development; and the potential means of access, travel demand, and transport integration for the station; and is designed to inform the committee prior to the commencement of GRIP stage 3.
- 1.1.3 This document is primarily based on desktop research, other research conducted by, or for, MAGOR, and discussions with members of the MAGOR committee.

2. Introduction

2.1 Local Context

- 2.1.1 Magor forms a continuous settlement area with the adjoining village of Undy; together the Community of Magor with Undy has a population of approximately 6,000. Magor has a historic core that forms a conservation area, with a post office, pharmacy, and pub located around a compact village square containing a war memorial in its centre; and an adjacent church and churchyard; as well as surrounding housing from the 20th century.
- 2.1.2 To the west of Magor is the Llanwern Steelworks. This site benefits from a direct rail connection for freight, however steelmaking ceased in 2001, with the site using hot steel slab transported from Port Talbot steelworks. The former steel-producing part of the site, bordering the eastern edge of Newport, is now part of the Glan Llyn development, a 240 hectare mixed use site where 4,000 dwellings and 6,000 jobs are expected to be delivered by 2026-8.
- 2.1.3 The 2014 LDP (Local Development Plan) from Monmouthshire County Council states:

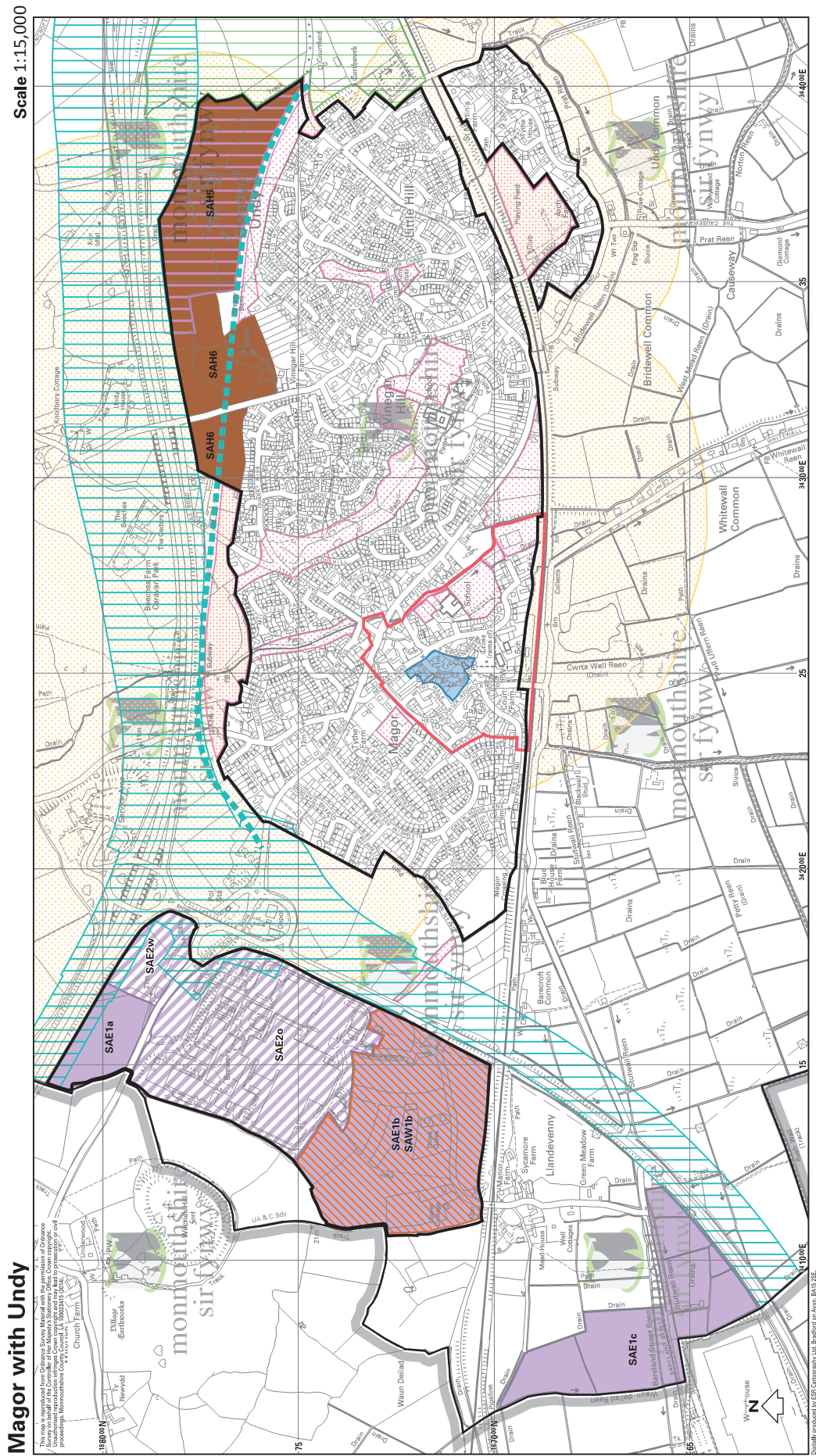
“In fact, the whole of the ‘Severnside’ sub-region particularly at Magor and Undy, has experienced rapid residential growth since the 1970s without the community and employment infrastructure to match. While they do have some existing employment opportunities, the Severnside settlements have the characteristics of a ‘dormitory’ area with high levels of out-commuting, although this also reflects their good accessibility to the nearby employment markets of Newport, Cardiff and Bristol.” (para 5.2)
- 2.1.4 “Magor and Undy sits within the “Severnside” area, where research has shown that 48% of the population travel out of the area to work (Navigant consultants for Severnside Total Place)



Source: OpenStreetMap (above); Mott MacDonald (below)



Inset from the Local Development Plan showing key sites relating to Magor with Undy (Monmouthshire County Council)



2.2 Route Description

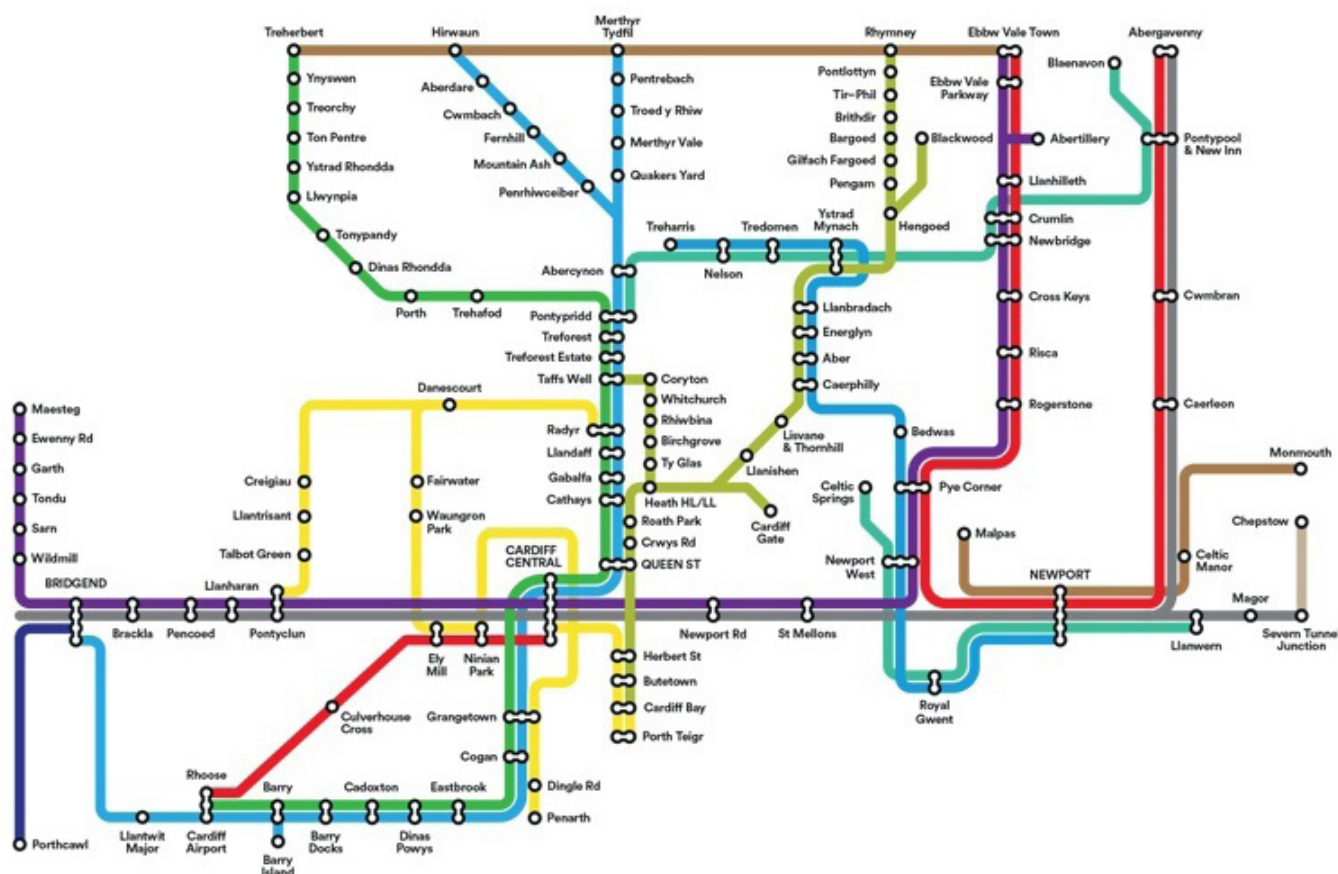
2.2.1 The South Wales Main Line is the main rail line from London to Swansea; branching off from the Great Western Main Line west of Swindon. The line has four tracks between Severn Tunnel Junction and Newport; consisting of main lines predominantly used by express passenger services, and relief lines predominantly used by freight services.

2.3 Concurrent Works

2.3.1 Other ongoing projects and proposals that are expected to have an impact on the operation of the SWML, or on travel demand, are outlined below:

2.3.2 **Electrification of the South Wales Main Line:** Ongoing delays have resulted in the completion date for electrification on the SWML to Cardiff being expected in 2019, and to Swansea in 2024. Nonetheless, the Magor/Undy station proposal has benefited from a new footbridge installed as part of the electrification works.

2.3.3 **South Wales Metro:** The South Wales Metro is a proposed integration of heavy rail, light rail, and buses; the first phase of which was approved by the Welsh Government in October 2015.



2.3.4 **Expansion of Undy:** The Development Plan allocates land in Undy for 545 new homes, comprising c. 270 homes at Rockfield Farm and c. 225 homes at adjoining Vinegar Farm. Section 106 agreements will require provision for off-site highways improvements and an enhanced financial contribution for community facilities.

2.3.5 **Glan Llyn:** It is unclear whether this development (see para. 2.1.2) will have a rail station, however the Magor station will provide an ideal location to interchange onto buses that will serve the development.

2.3.6 **M4 relief road:** The M4 relief road is a proposed motorway that will parallel the existing M4 motorway from Junction 23 (where the M4 and M48 merge) to Junction 29 (where the M4 and A48(M) diverge), passing to the south of Newport whereas the present M4, which bypasses Newport to its north, would be downgraded. It would bypass the Brynglas Tunnels, twin-bored, two lane tunnels that are a significant bottleneck.

2.3.7 Objectors include Roadchef, operators of Magor services, which would be bypassed; and Associated British Ports, on the basis a proposed bridge the crosses their site would be too low for the tallest ships at Newport).

2.3.8 **B4245 Magor/Undy By-pass:** The Monmouthshire CC Development Plan contains a proposed bypass to relieve the present Main Road through Magor and Undy. This would pass to the north of the settlement, parallel to the M4 motorway.

2.3.9 The B4245 carries approximately 11,000 vehicles per day in each direction between Magor and Rogiet, with projected 2022 peak hour flows under a 'Do Minimum' scenario of:

Peak Hour Traffic Flows 2022 (M4 Traffic Forecasting Report)	Westbound	Eastbound
AM	1160	490
PM	570	1060

Source: ARUP, M4 Corridor Traffic Forecasting Report, 2014

2.3.10 **Severn Tunnel Junction:** This station lies 3 km to the east of the proposed station site and serves the village of Rogiet (and was known as Rogiet Station until the eponymous tunnel opened). The Severn Tunnel Action Group (STAG) is a group that campaigns for improved services. The station's site away from the main road precludes frequent bus services, as buses must use an inadequately sized turning area. Car parking is a significant issue at this station, charged at £3.40 per day. Inadequate station parking, despite the construction of additional parking alongside a playing field, means that surrounding streets have single yellow lines (restrictions 12 noon to 3 pm, Monday to Friday).

2.3.11 A comprehensive Severn Tunnel Junction Interchange Study was completed in 2011 by Capita Symonds on behalf of Monmouthshire CC; this produced a selection of three options, the most beneficial of which was determined to be a 500 space car park, bus interchange, and taxi rank; with a new link road and interchange to the M48, which would also incorporate aspects of the other two options in regard to additional parking. Land ownership issues mean that this proposal has not progressed beyond GRIP stage 3; however accessible footbridges are presently being installed as part of the DfT Access for All programme.

2.3.12 Severn Tunnel was formerly served by the no.62 bus service, however in November 2011 this was cancelled and replaced with the 'Grass Routes' demand responsive service (see para. 9.4).

3. Local Plan Context

3.1 Monmouthshire County Council's local plan

3.1.1 Relevant items on the policy map include SAH5 and SAH6 (strategic housing on the north of Magor); and MV10 (Magor/Undy bypass). Additionally there are strategic employment sites on the eastern edge of Magor.

4. Project History

4.1 Overview

4.1.1 The Sewta Rail Strategy Study (2005) included a review of the former TIGER recommendations for a new station examined five possible locations for a new station; namely:

1. Llandeenny – accessed from the road leading from M4 Junction 23a to Green Moor.
2. Magor Old Station Site – accessed from Redwick Road.
3. Magor with Undy – at the footbridge linking Chapel Terrace with Whitewall and with highway access from the B4245 Main Road through the open land to the north.
4. Undy – site recommended in the TIGER Strategy at the point where the B4245 Main Road parallels the railway.
5. East Undy – access from Church Road East which leads from the B4245 at the eastern edge of the built-up area.

4.1.2 In regard to the new stations proposed, Option 3 (Magor with Undy) was considered to have positive economic and social benefits, as well as an effect on modal shift. A factor in deliverability was the possible relocation of Severn Tunnel Junction.

4.1.3 “The conclusion of this report was that due to the journey time savings and the freeing up of the main lines, the best outcome was given by a complete transfer of services from Severn Tunnel Junction to a new station on the relief lines at Magor and Undy (location 4).” (GRIP 1 report p.1)

4.1.4 The subsequent 2013 Sewta Rail Strategy covers a variety of aspirations for the line, such as increasing Bristol to Cardiff service frequencies from two to three trains per hour. It recommends a strategic Park and Ride at Severn Tunnel Junction, but a Magor station did not feature.

4.2 Wales and Borders Rail

4.2.1 The power to award this franchise lies with the Department for Transport, with the Welsh Government as cosignatories (Cole, 2013); it is one of three using the SWML at this point, along with GWR and Cross Country.

4.2.2 Within the response MAGOR (2016) gave to the “Setting the Direction for Wales & Borders Rail” consultation by the Welsh Government, overcrowding on Cardiff to Bristol services is highlighted along with inadequate parking at Severn Tunnel Junction. This parking will be further constrained for six months whilst work is undertaken on a bridge, as this will prevent access to additional overspill parking for around 80 vehicles.

4.3 GRIP 1

4.3.1 GRIP 1 was an outline study of the station, where negative and positive impacts of new station were identified.

4.3.2 The relief lines are predominantly 40mph with some 70mph around Severn Tunnel Junction (p.7) - with opportunity to raise line speeds to compensate for additional stop.

4.3.3 The services identified as being most suitable for calls at Magor / Undy were those already calling at Severn Tunnel Junction, namely: 1tph from Cardiff Central to Weston-Super-Mare and return, via Bristol Temple Meads; and 1tph from Cheltenham Spa to Maesteg and return, via Chepstow.

4.3.4 An estimated journey time increase of c. 2 ½ minutes was predicted; 2min 26sec stations on the down line toward Newport, 2min 23 sec toward STJ - although some of this could be recouped with increased relief line speeds. Additionally, as this estimate used Class 150 rolling stock; it may be possible to recoup further time with the use of more powerful cascaded rolling stock such as Class 165 and 166 *Turbos*, which will be able to accelerate faster and ascend from the Severn Tunnel faster. However, this may not be an issue as the forthcoming electrification and introduction of IEP rolling stock will require a comprehensive revision of existing timetables in order to deliver advertised time savings.

4.3.5 The horizontal and vertical alignment of the line is considered tolerable, at a gradient of 1:300.

4.3.6 Parallel and staggered platform arrangements are considered; the staggered arrangement offers better connectivity with the proposed community centre and causes fewer issues with existing signals.

4.4 GRIP 2

4.4.1 ***Passenger Demand Forecasting:*** The appendices to the GRIP 2 report examined previous work on passenger demand, including existing travel at Severn Tunnel Junction during 2005.

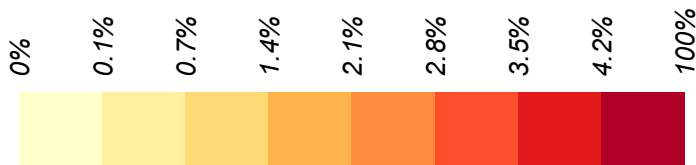
4.4.2 57% of trips to Severn Tunnel Junction were by car; of these, 37% were from Magor/Undy. The Magor/Undy station therefore. It should however be noted that annual passenger traffic (entries, exits, and interchanges) at Severn Tunnel Junction has increased in each consecutive year since at least 2004/5, from 118,000 to 239,000 in 2014/15 - a doubling in a mere 10 years.

4.4.3 The Severn Tunnel Junction Interchange Study was commissioned by Monmouthshire County Council and conducted by Capita Symonds in April 2011; it found that 47% of STJ users were travelling between 2km and 5km to the station; and 24% more than 5km.

4.5 Footfall Survey

- 4.5.1 A survey conducted on the morning of Tuesday 10th May 2016 between 06:00 and 10:00 hrs showed a total footfall of 510 passengers; with 65% using GWR, 26% Cross Country, and 9% Arriva Trains Wales (ATW) services respectively; with about one third of the ATW footfall consisting of those who were transferring from ATW trains to GWR services. Part of this was to ensure sufficiently resilient rail replacement services during a six week closure of the Severn Tunnel in Autumn 2016 as part of electrification works, however it also shows us who would benefit from a Magor station.
- 4.5.2 For the six weeks of the blockade from 12th September to 21st October it there will be a replacement bus and train at 06:55 and a replacement bus at 07:34.
- 4.5.3 Over the course of a single hour (from 06:55 to 07:55) just over 250 passengers used Bristol bound services, highlighting the capacity issues on three and four car trains.
- 4.5.4 Overall the vast majority of passengers (286 or 77% of those asked) were travelling via the Severn Tunnel; 74 or 20% in the direction of Cardiff, and 11 or 3% in the direction of Gloucester. The most popular destinations were Bristol Temple Meads (192 respondents), Filton Abbey Wood (69 respondents), and Cardiff (53 respondents). A minority of passengers travelled further, including to Bath Spa (11 passengers) and London Paddington (16 passengers). Some passengers using Severn Tunnel Junction were changing between services, eg when travelling from Chepstow to Bristol.
- 4.5.5 This indicates the significance of the Bristol commuter market, but also the unfulfilled potential of the station for Cardiff bound commuters, as those travelling from Magor / Undy via STJ must effectively double back on themselves. A Magor station would reduce travel distance and time for these commuters whilst also giving them the option of walking or cycling to the station.
- 4.5.6 Severn Tunnel Junction had 395 respondents, of these, 50 were from Undy and 48 from Magor; combined this represents c. 25% of respondents. This represents a broadly similar proportion of overall passengers, as compared with 2005, on the basis that the previous figure for car trips only (37% of 57%) is equivalent to 21% of overall journeys, and the numbers of people travelling to STJ by other modes from Magor / Undy is likely to have been negligible at that time.
- 4.5.7 An earlier survey from December 2010 as part of the Severn Tunnel Junction Interchange Study found that 45% of passengers were travelling to Bristol, 29% to Cardiff, 10% to Newport, 4% to Bath, and the remainder to other destinations. [CITATION]. This is not wholly dissimilar, although in the May 2016 survey a higher proportion were travelling to Bristol. Causes of this may include parking and congestion becoming more severe in Bristol relative to Newport; increased housing costs, or the availability of jobs. It should be emphasised that the future development of the Temple Quarter Enterprise Zone, adjoining Bristol Temple Meads, will increase commuter traffic from Magor.
- 4.5.8 Some lines where minor stations lack ticket barriers have significant levels of fare evasion, this is largely influenced by whether platforms have ticket machines, as well as the ability of a conductor to cover all passengers on a (potentially crowded) train.

Train



Scale 1:21200

Contains Ordnance Survey data (c) Crown copyright & database right 2014-5.

4.6 Census Data

- 4.6.1 Travel to Work data from the 2011 Census (p. 12) shows how the proportion of commuters travelling to work is higher amongst residents of Rogiet, in close proximity to Severn Tunnel Junction, than those in Magor or Undy, indicating that the greater convenience of the station has encouraged modal shift.
- 4.6.2 Commuter flow data shows that 3.1% of residents from Magor, Undy and Rogiet commute to work by rail, this is 3.5% if those working from home are excluded. The most popular destinations for rail commuters were Bristol Temple Quarter, Cardiff, central Bristol, the North Fringe of Bristol, Newport, and Cardiff Bay [in that order]. However, the most popular destinations overall (with over 50 commuters) were the Llanwern Steelworks, Caldicot, central Newport, Crick (including the MoD site on the former RAF Caerwent), Chepstow, Lisiverry, Celtic Lakes, Pillgwenlly, Llantamam, Bristol Temple Quarter, MoD Abbey Wood / UWE / Bristol Business Park, St Arvans, Monmouth, and central Bristol [in order].
- 4.6.3 This provides further indication that commuters from Magor, Undy, and Rogiet are more likely to use the train if they commute to Bristol, Cardiff, or South Gloucestershire; than if they were commuting to Newport. However, a high proportion of those making specific journeys used rail (22/49 of those travelling to central Cardiff, 19/56 of those travelling to UWE, MoD Abbey Wood, or adjoining areas).

4.7 Seven for Severnside (Accessible Transport Plan)

- 4.7.1 This document has been prepared by Monmouthshire County Council as a draft for discussion purposes, it emphasises the existing transport connections; as well as the tourism potential in the area. The original version was adopted in 2013; however it has subsequently undergone revision due to identified issues, with a lack of community buy-in identified as an issue.
- 4.7.2 In this instance, of the seven objectives, Transport Accessibility is the key goal, although a new station will help towards the attainment of, or accessibility to, the other objectives.

5. Rail Market Context

5.1 Welsh Route Study

- 5.1.1 The Welsh Route Study (Network Rail, 2016) has identified the South Wales to Bristol commuter market as a key priority flow for the Regional Urban Market; with passenger capacity on services between Cardiff and Bristol a key issue. There is a commitment to provide cascaded rolling stock from the Thames Valley (displaced by Crossrail) by 2019; this is necessary to alleviate peak time crowding on two or three-car local services.
- 5.1.2 Growth in passenger demand for commuters into Cardiff along the GWML (2013 base year) is estimated at 46% by 2023 and 120% by 2043 (p.26). The forecast demand growth (in percentage

terms) is however greater along the Ebbw Vale Line and Valley Lines; these are secondary lines with local services that serve a similar market to Magor/Undy.

- 5.1.3 “The rolling stock that will be cascaded to this route (from the Thames Valley) will provide capacity for up to 2,795 passengers in the three hour morning peak. The load factors would remain at less than 85%, indicating there is sufficient capacity to accommodate forecast demand in 2023 and 2043.”(p.25)

5.2 Welsh Route Study Goals

- 5.2.1 **CO29 Newport/Severn Tunnel Junction:** Bristol/Bath. “Improved generalised journey time through either increased service frequency to three services per hour and/or improved journey times. These Conditional Outputs reflect the existing passenger markets and the need to improve connectivity between the areas, which is important for commuters and businesses. [Sections 7.2.2 and Western Route Study. (p.40)]”

- 5.2.2 **CO30 South Wales Main Line:** This relates to improving generalised journey times between Bristol and Swansea through increased frequency.

- 5.2.3 **Upgrading Relief Lines between Cardiff and Severn Tunnel Junction to improve capacity and connectivity:** (p.41)” This covers the options for upgrading the relief line speed between Cardiff Central and Severn Tunnel Junction to a comparable level to the main lines - this would improve the deliverability of the Magor with Undy station; as aspirations for new stations between Cardiff Central and Severn Tunnel Junction are acknowledged on p. 54.

- 5.2.4 **“5.4.1.2 Bristol Airport:** - Bristol Airport provides flights to European and African destinations and is well served by shuttle bus links from Bristol Temple Meads station. Bristol Airport does offer a range of domestic and international flight destinations that are not served by Cardiff Airport and as such this is a relatively convenient local airport for the Cardiff and South Wales region. There is a Conditional Output relative to the Cardiff – Bristol rail passenger market which sets out the requirement to improve connectivity between Cardiff and Bristol (frequency and journey time), which does provide for overall improved generalised journey time and connectivity to Bristol Airport from Cardiff and South Wales.” (p.43)

5.3 Technical Considerations

- 5.3.1 The feasibility of Magor with Undy, along with other schemes associated with the South Wales Metro, is subject to technical constraints - foremost among these are capacity issues at Cardiff Central causing a shortage of both platform space and crowding issues. The Severn Tunnel itself forms a continuous signal block which limits the total number of trains that may be routed through it.
- 5.3.2 The Western Route Study covers the commuter market for Bristol and Bath (from South Wales) in further detail and considers projected growth in demand.
- 5.3.3 The Long Term Passenger Rolling Stock Strategy identifies that at the end of CP5 there will be a surplus of DMU rolling stock due to the completion of Crossrail and associated electrification. This

cascaded rolling stock, if redeployed elsewhere within the Great Western franchise, will ensure that there is sufficient peak hour capacity for any additional passengers as a result of the Magor / Undy station; furthermore this cascaded rolling stock (especially if consisting of Class 165/6 units) is likely to result in an as yet unquantified technical performance improvement in regard to SRTs (Sectional Running Times) as is the case with the MetroWest scheme (Network Rail, 2013, p. 11)

6. Comparator Projects

6.1 Station Proposals

6.1.1 Several rail infrastructure projects are broadly similar to Magor / Undy in terms of scale and population served; they demonstrate the viability and usefulness of stations serving other commuter towns, and can be used to highlight potential issues.

6.1.2 **Ilkeston:** a planned station in Derbyshire with two platforms, ticket machines, parking for 150 cars and a taxi rank. Originally planned to open in 2014, the station was delayed due to the discovery of great crested newts, and the cost of flood protection works exceeding the available budget; as such the station is currently due to open in August 2016.

6.1.3 **Cranbrook:** a 'new town' to the east of Exeter. On the northern edge is the London Waterloo to Exeter line; this offers an hourly service in each direction. At present this line is single track; more frequent services would necessitate doubling. Services to Exeter Central take 9 minutes, a significant time saving over peak time car or bus journeys.

6.1.4 Cranbrook currently (early 2016) has around 3,000 residents, with expansion to 8,000 planned over the next 10 years; showing that building railway stations is justified within settlements of a similar size to Magor / Undy. Additionally, the South Wales Main Line already has more frequent local services.

6.1.5 The new station benefited from the fact that the existing timetables had sufficient flexibility to allow for an additional stop (Hulland, 2016). The proximity to Exeter and the settlement size results in a good business case, and the unstaffed nature of the station means ongoing running costs are low.

6.2 Llanharan

6.2.1 Llanharan is a village of c. 3,500 people in the County Borough of Rhondda Cynon Taf, to the west of Cardiff.

6.2.2 Llanharan Station was originally opened in 1850 and was closed in 1964 as part of the Beeching Cuts. The current station was opened in December 2007 at a cost of £4.3 million, part funded by SEWTA. Annual usage has increased from 0.108 million (for 2008/9, the first full year after opening) to 0.165 million (for 2014/5), with an increase each year that it has been open, despite the wider economic downturn. The station is on the South Wales Main Line, but is served exclusively by Maesteg Line services, with hourly services in each direction from Monday to Saturday.

6.2.3 The station is in DfT category F2 (small unstaffed stations with fewer than 100,000 passengers / £1m income per year) is similar in terms of level of service and facilities to that proposed; the station is unstaffed but has shelters and a ticket machine; as well as a 43 space free car park.

6.3 Pontyclun Station

6.3.1 Pontyclun is a village of c. 8,000 people, also in the County Borough of Rhondda Cynon Taf. The station lies on the South Wales Main Line, served by Maesteg Line services as well as occasional mainline services. Monday to Saturday sees hourly services in each direction. The station closed in 1964, but was re-built and re-opened in 1992. Around 296,000 passengers use the station annually, a figure that has increased each year since 2004/5 when this was 174,000 per annum. The station is in category F2.

7. Integrated Transport

7.1 Theory / Context

7.1.1 Within larger towns and cities, integrated transport has existed in varying forms for a long time. Whilst initial railways were often poorly integrated due to ownership by multiple companies, subsequent developments such as the creation of London Transport and the subsequent introduction of the familiar zonal structure and Travelcards simplified fares and encouraged multi-modal journeys.

7.1.2 In smaller towns and cities, it is more necessary to co-ordinate different services as the service frequency alone is too low to prevent users needing to wait. Possibly the most notable example of public transport co-ordination between buses and trains is the 'Clock Face' timetabling used in Switzerland and Germany, where buses and/or local train services will arrive at and depart at stations to coincide with regional and express trains. However, this is typically conducted at transit hubs, where local bus and train services may terminate (for example, arriving ten minutes to and departing ten minutes past the hour) and long-distance services continue (for example, arriving two minutes to and departing two minutes past the hour). The proposed station would not be at the terminus of either bus or train routes; therefore minimising wait times when interchanging will be more challenging.

7.2 Role of Community Rail Partnerships

7.2.1 Community Rail Partnerships (CRPs) involve local people and organisations working alongside local authorities, TOCs, and Network Rail, to improve local railways, with initiatives such as station enhancements and promotions. Designation of a line or route as belonging to Community Rail is a formal process approved by the relevant Minister, allowing for some derogation and flexibility in regard to EU interoperability regulations, setting of local fares, and franchise management. Community rail services serve similar ends with the exclusion of tracks and signalling.

7.2.2 Research from ACoRP (2015) shows that community rail routes have a greater passenger growth (in percentage terms), against the national network or regional services; and that over 3,200 volunteers support CRPs. Volunteering can be supported through formal role descriptions, training, and

guidance; as well as measures of recognition to boost morale, such as station signage acknowledging the work of CRP volunteers.

7.2.3 Additionally, 'station adoption' is a measure that can be taken irrespective of whether a route is recognised as a Community Rail Line - as such it would be a more appropriate approach for a main line station such as that proposed for Magor.

7.2.4 Station adoption is highlighted as a particular low cost, high benefit measure; particularly so where security or other issues can be addressed without significant capital expenditure. Factors for success include being able to finance a paid CRP officer, and (on some lines) future success can be constrained by a shortage of rolling stock and infrastructure.

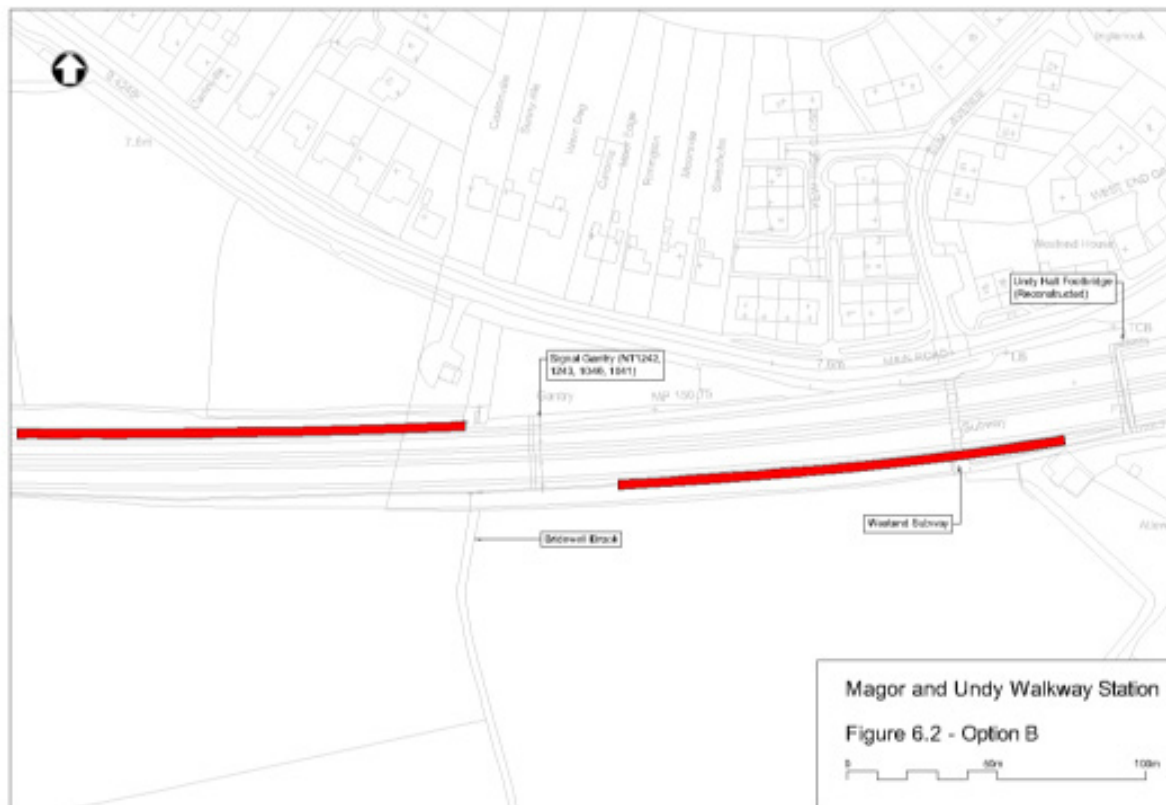
7.3 Station Demand

7.3.1 A PhD thesis by Simon Blainey (2009) examines a variety of potential station sites, using mathematical modelling to determine likely levels of station traffic. The proposed station (Undy within the report) is estimated to have a total flow of 49,951 passengers (p.240); this would now likely be an under-estimate given the growth in overall rail usage as well as growth specifically within Magor / Undy. In regard to BCR analysis, it was the second most favourable potential station site (to Liswerry) in South East Wales (p.263).

8. Station Site and Proposal

8.1 Overview

8.1.1 Within the GRIP 1 study, two alternative solutions were brought forward; Option A (Parallel Platforms), and Option B (Staggered Platforms). The latter option was preferred on the basis that it allows for a better connection to the proposed community centre, whilst not requiring significant work to existing signalling.



Staggered platform arrangement as outlined within GRIP 1 study (Mott MacDonald).

8.2 Proposed Facilities

8.2.1 “The station will comprise of two platforms where CCTV, CIS display and a Help Point installed on each. A CIS display shall be installed at the entrance and an external telecoms cabinet provided for the station. The subway will likely be included in the CCTV system for the station; due to the enclosed nature of the existing footbridge this could require coverage as well. ATW have been consulted on these aspects and would be open to discussions about including areas outside of the station lease in the CCTV coverage.” (GRIP 2 report, para 7.6)

8.2.2 The Passenger Demand Forecasting Handbook is not publicly accessible, however it is stated that improved waiting facilities (seating and shelters) can increase rail use, particularly for journeys originating at that station, and for purposes other than regular rail use.

9. Access Arrangements

9.1 Overview

9.1.1 In order for the station to have the intended effect of relieving pressure on the local road network, whilst also being accessible to the highest possible number of users so as to provide the greatest possible socioeconomic benefit; it is important to develop Magor / Undy Walkway Station as an interchange; with the particular goal for sustainable, integrated transport.

9.1.2 Earlier work such as the reports of the *SWARMMS* study (Halcrow, 2002) recognised the importance of access to the main transport corridors, particularly from rural areas where those without cars

are prone to social exclusion. A particular challenge outside of major metropolitan areas is that of “lack of reliability in [rural transport’s] connection to other public transport services or... ..low levels of patronage. Even though all [rural transport schemes] provide some benefits to the community they are intended to serve, it inevitably calls into question their value for money, and the ability to fund them over the longer term.” (para E.4; SWARMMS Rural Access report)

9.1.3 Whilst Magor with Undy is not an isolated area and has rather strong transport links (particularly for private car users), the (in-) ability of all people to use these links, and the resultant externalities both in Magor and the eventual destinations (e.g. Bristol and Cardiff) is an environmental and social issue. Additionally, there are smaller communities nearby which would benefit from improved links to the rail network.

9.1.4 The *Guidelines for Development Management for Stations* document produced by ATOC contains information as to the appropriate level of planning (including through a Station Travel Plan) and provision (including cycle parking and repair facilities). The appropriate level of provision is displayed in a table as follows:

Station footfall	Network Rail Classification	Location Growth Potential	STP Category	STP Evidence Base	STP Documentation including Action Plan	STP Governance	STP Communication	STP Resources
< 0.25 mill pax trips	(D) Medium Sized Staffed – stations serving local populations or commuter pick-up points	Dependent on planned growth in the specific location Proximity of station to town/ housing areas Topography and local access constraints, which prevent provision of parking. Footfall levels maintained with scope for up to 10% growth	Summary STP and Action Plan - TOC led	Assessment of station and immediate environment. Snapshot customer surveys. Triggered by any NSIP/AFA schemes	STP Action Plan needed, with 3 year targets and defined minor schemes	Steering Group with representation from wider community with agreed terms of reference	Community consultation required through STP in parallel with working up physical scheme options. Evidence base on barriers to access drawn from local community	Opportunity funding justified from existing budgets or reprioritisation
> 0.25 mill pax trips	(E) Small Staffed – stations serving smaller local populations or commuter pick-up points	Dependent on planned growth and capacity for footfall to increase >10% year on year. Footfall levels maintained with scope for 5% growth	Summary STP and Action Plan - TOC/ Community Rail Partnership/ Neighbourhood-led	As above, but a ‘lighter’ version potentially using community groups to gather the evidence base as part of their Neighbourhood Planning process. LPA may request	Access assessment and ‘plan on a page’ evaluation/ summary Action Plan	Regular check-in meetings and communication with the local community	As above, using umbrella/ intermediary community groups (e.g. Parish Councils etc)	Opportunity funding justified from existing budgets or reprioritisation

<i>Station footfall</i>	<i>Network Rail Classification</i>	<i>Location Growth Potential</i>	<i>STP Category</i>	<i>STP Evidence Base</i>	<i>STP Documentation including Action Plan</i>	<i>STP Governance</i>	<i>STP Communication</i>	<i>STP Resources</i>
< 0.25 mill pax trips	(F) Small Unstaffed – stations with relatively infrequent services serving mainly rural or low-density areas	Dependent on local opportunities to develop sustainable transport Footfall levels maintained	No requirement but can be community-led as above	No formal requirement, but LPA may request where there is a key opportunity	No formal requirement but opportunity-led with LPA	No requirement unless LPA specifies	No requirement unless LPA specifies	No requirement, but will be opportunity for time/ re-source pledging from local communities

Extract of table showing relative STPs (Source: ATOC, 2014)

9.2 Bus

9.2.1 At present, the proposed station is served by the 74 bus (hourly service from Chepstow to Newport, operated by Newport Bus) and a variant route of the X7 (single early morning service from Magor to Bristol, with evening return, operated by First).

9.2.2 The level of service is low compared with larger urban areas, with an hourly bus service meaning that without coordination, waiting times for those wishing to change between buses and trains are likely to be significant. There is presently no form of real time bus information to provide live estimates of arrival times; this could be displayed alongside train arrival times on an electronic display. Other improvements to the bus service (eg removal of redundant bus stops) can be considered separately.

9.2.3 Whilst it is likely the level of bus use to access the station will be a relatively low proportion of overall journeys with the present level of bus service, the station's convenient location in relation to the bus stops on the B4245 ensure for a clear interchange - in particular for tourists, concessionary pass holders, charter bus services for major events, and rail replacement bus services; whilst providing passive provision for any future increase in bus service levels that may in future be necessary to serve Glan Llyn. Additionally, the GWR services from Cardiff Central to Taunton call at a regular time past the hour; other bus / rail interchanges have proven to be more challenging. For example, the Cumbria 'PlusBus' had issues in that trains at Kirkby Stephen called at irregular times. (SWARMMS Rural Access para 5.2.15).

9.2.4 The Llanwern Steelworks and Glan Llyn development are situated to the west; Magor with Undy is situated in a suitable location to allow for rail users originating to the east to interchange to potential bus services necessitated by the proposed size (4,000 homes) of the latter.

9.2.5 In the future, additional public transport interchange facilities , with space to allow buses to turn about, could be provided adjacent to the existing car park on the proposed community centre site. At present, the existing bus stops are adequate.

9.3 Cycle

- 9.3.1 For Category F stations, the usual level of provision is cycle parking outside the station, usually in the public realm; with typical objectives being to provide new or additional cycle parking and improve the quality of provision to current standards, eg by placing old style 'wheel bender' cycle racks with higher quality modern stands.
- 9.3.2 The advice given for Category F stations with less than 250,000 annual journeys is "to Relate [cycle parking] provision to scale of development occurring within a 2 mile radius of the station; Minimum 6 spaces and case-by-case consideration for additional spaces" (p.13 ATOC, 2014)
- 9.3.3 However, given that the passenger numbers at Severn Tunnel Junction are in excess of 250,000 per annum despite being a Category F station; and the intention that the proposed station serve as an exemplar for sustainable transport, a Category E level of service is more appropriate; with a "Base level of 30 spaces or 1 space per 20 passengers". The footfall survey would thus indicate that [XX] spaces are required. As a comparator, Severn Tunnel Junction currently has 10 covered cycle racks with CCTV coverage.
- 9.3.4 In general, "Sheffield stands" are both low cost and secure, (TfL, 2006) and work well if positioned correctly, although they need a base level of maintenance, as there have been instances of theft where a gap in the cycle stand frame has been disguised with tape. Larger stations use higher capacity double decker racks, however this may not be necessary at Magor.
- 9.3.5 National Cycle Network (NCN) Route 4 runs from London to Fishguard, and passes a short distance to the south of the proposed station, through the reens (wetland / marshes) whilst also providing a connection with the village of Redwick. NCN routes are long-distance routes typically intended for leisure and touring cyclists; as such, this access point allows cyclists to travel by rail directly to the Welsh countryside.
- 9.3.6 Whilst provision of permanent staffed cycle facilities beyond cycle parking is unlikely to be feasible; public cycle repair stands and tyre pumps (available from Cyclehoop and other manufacturers) have been delivered at other station sites. These 'self-help' facilities include repair tools that are secured to a stand with a secure, flexible steel cable, and will in many instances be sufficient to allow a cyclist to inflate their tyres or make minor repairs to a cycle. Additionally, the existing car park adjacent to the proposed community centre could accommodate vehicle-based mobile cycle repair services.
- 9.3.7 **Brompton Bike Hire:** Brompton docks are used to provide cycle hire at certain stations - these are units that contain lockers with folding Brompton bicycles for hire, and a user terminal. Users must pre-register. Presently there are none within the entirety of Wales, the nearest being at Bristol Parkway and Bristol Temple Meads. As they are typically installed at commuter destinations, rather than origins, it would be of greater benefit to support the installation of one at Cardiff Central and/ or Newport station as part of the South Wales Metro.



Brompton Dock at Bristol Parkway station. *Author's own work.*

9.4 Demand Responsive Travel

9.4.1 Grass Routes is the demand responsive travel operated by Monmouthshire County Council on a membership basis. It operates fully accessible vehicles with volunteer drivers; and has scheduled routes each day between main towns, which are flexible upon demand. Journeys are at a fixed price to the user, and are the same for a single or same day return.

9.4.2 At Severn Tunnel Junction, there is an existing service operated by Grass Routes which serves commuters between 6.30am and 8.30am; and 4.30pm and 6pm.

9.4.3 A recent Welsh Assembly research briefing (Jones 2016) highlights the differences between community transport services operating under Section 19, and Section 22, of the Transport Act 1985. Grass Routes presently operates under a Section 19 permit (which restricts transport to members of an organisation; and may additionally restrict the classes of person who may be carried under the terms of that permit). Section 22 permits allow non-profit organisations to carry members of the general public.

9.4.4 There may be benefit in establishing a circular peak-time route under a Section 22 permit, that loops around Magor and Undy, and connects with trains at the new station. Such a route would

allow Grass Routes to maximise its potential in regard to modal shift by providing an alternative to commuters who may otherwise consider driving to the station.

9.4.5 Section 22 operators have, however, experienced difficulty in that whilst, as non-profits, their fares should only cover expenses without a view to make surplus income; when a concessionary pass holder uses a service, the operator is only reimbursed a percentage of the average single fare, thus for every concessionary passenger, the operator makes a loss. As, in addition to disabled people, every person over 60 living in Wales is entitled to a concessionary pass, this could be a significant financial risk. However, what is proposed here is to make community transport more attractive to working age commuters who may otherwise drive short distances to the station.

9.4.6 Volunteer drivers for community transport schemes can be hard to recruit and retain. In some other locations, daytime service has been provided by school transport drivers, but aside from their unavailability for the morning rush hour, employing them would substantially increase running costs.

9.5 Private Cars

9.5.1 A key objective of the Magor station proposal is that it will reduce the need to rely on private cars to access the rail network; however there will be some need for parking, to provide for rail users from more distant areas, as well as to avoid overspill parking on nearby residential streets.

9.5.2 An existing car park on the 3 fields site would be used for station parking, this could be expanded were it to prove necessary. Parking charges should be the same as at Severn Tunnel Junction so as to avoid displacing existing parking issues from Rogiet to Magor.

9.5.3 Existing users of STJ would notice some improvement in the availability of parking; although anecdotally there is a significant level of suppressed demand for rail travel due to the difficulty of station parking to the extent that it would, based on the level of overspill parking, likely result in a return to the existing situation within a short amount of time.

9.6 Taxis and Private Hire

9.6.1 Taxis fulfil an important role in transport to rail stations, and will be particularly useful for disabled passengers and those with luggage. A taxi rank will be provided to allow taxis to wait; it is envisaged that most people would pre-book a taxi to meet them on arrival at the station.

9.6.2 At present, app-based private hire / ride-share services [Lyft and Uber] do not cover Magor, meaning that visitors to the area from major metropolitan areas where these are active are more likely to require information regarding local taxis.

9.7 Walking

9.7.1 As is the case for cycling, it will be important to ensure that there is adequate way-finding for pedestrians at Magor / Undy station, as the site is in a residential area and it is not immediately apparent where key local facilities (such as the post office or pharmacy) are located.

9.7.2 A pedestrian footpath has been completed from the proposed community centre site to provide a link to the village square, approximately half a mile away. In order to facilitate commuter use and increase perceived safety, provision of street lighting should be considered. Motion actuated street lighting may be an option if light pollution is a concern.

9.7.3 The pavements along the B4245 Main Road are narrow at some points near the proposed station. It may be possible to tie in widening of pavements with the provision of the Magor/Undy bypass, as there would in that case be less reason to cater to any significant volume of HGV traffic.

9.8 Community Facilities / Co-location

9.8.1 The “up” platform would be on the edge of the 3 Fields Site, where a community centre is proposed; there was additionally a proposal to build a GP surgery at this site from Caldicot Medical Group (which has subsequently been cancelled)

9.8.2 Presently, an Amazon Locker is located within Magor Post Office, however this is only open from 9:00am to 5:30pm (Mon-Fri) and 9:00am to 12:30pm (Sat). Providing an external locker at Magor Station with 24 hour access could be useful for commuters who would be able to collect packages on their way home.



Amazon Locker at Bristol Parkway station. *Author's own work.*

9.9 Ticket Office / co-selling

- 9.9.1 TOCs often find it necessary or desirable to close ticket offices at minor stations, typically due to a lack of custom, with the DfT recording a general decline in the proportion of tickets purchases at a ticket office (28% in 2012/13, vs 54% in 2006/7) (DfT 2013, p.36) - although the absolute decline is not as significant due to growth in overall ticket sales. Tickets sold at ticket offices cost twice as much per sale in staff and running costs as those sold via self-service; this is likely to increase further due to the fixed costs associated with ticket offices irrespective of sales.
- 9.9.2 Whilst current touch-screen models offer a far greater range of options than early ticket machines (intended as queue-busters for the most commonly requested options) did, certain types of ticket cannot be purchased on self-service ticket machines, and the aforementioned Department for Transport review into ticketing shows that passengers are most confident of getting the best value from a ticket office. Staffed ticket offices can also help to fulfil peak time demand for ticket purchases, and on some stations in Merseyside, ticket offices and retail services have been combined successfully.
- 9.9.3 The closest comparators are likely to be stations such as Severn Tunnel Junction (ATW operated) and Filton Abbey Wood (GWR operated), where self-service ticket machines are supplemented by a kiosk staffed on a part-time basis. On that basis, a similar level of provision may be desirable during weekday mornings, perhaps in combination with other station duties.

10. Discussion

10.1 General

- 10.1.1 There may be some benefit in attempting to align, to the greatest extent possible; the cascading of surplus rolling stock displaced by Crossrail, the station opening, and completion of the housing proposed at Vinegar Hill; due to the opportunity that life transitions (such as moving into new housing or finding a new job) present in terms of changing travel behaviour, and the relative difficulty of encouraging residents to modify behaviour to make use of new or improved services, when they may already have sunk and/or fixed costs relating to (additional) car ownership. In essence, the aspiration should be to make sure that cascaded rolling stock is available by the time of the station's opening, so as to avoid any additional overcrowding and provide a sufficient level of service; and that the station should be available at the completion of the latter part of the approved housing developments. Further research on the importance of life stages is available from the UWE repository (Clark et al, 2014)
- 10.1.2 At present, it is probably of greatest benefit to concentrate efforts on promoting active travel, in the context of low service frequencies on local bus services. However, the passive provision for increased bus usage is a considerable strength of the proposed station site.
- 10.1.3 The proposal allows Magor / Undy station to play a complimentary role to that of Severn Tunnel Junction, by relieving parking demand at the latter, independently and irrespective of any future expansion at STJ. Furthermore, any future bus interchange at STJ would likely result in a higher level

of service on those routes passing Magor / Undy station. The station would also provide some users with an alternative to travel on the B4245, whilst relieving traffic independently from any proposals relating to the M4 Relief Road.

10.1.4 There is a significantly greater proportion of rail users for commuter flows from Magor and Undy to destinations across the Severn such as Bristol and South Gloucestershire (where the relative cost of rail travel is reduced due to bridge tolls); or with greater levels of congestion and parking difficulty such as Cardiff. These destinations also have (relatively) convenient rail stations relative to major employment centres, and are more distant, thus allowing for a greater proportion of the overall journey to be made by train.

10.1.5 Conversely, rail is underutilised for travel into Newport, despite it having a conveniently located main station. This indicates that the counter-intuitive journey to Severn Tunnel Junction, which involves doubling back; and the resultant increase in distance and journey time, is a significant deterrent to making this journey by rail; whereas a new station can be used to ensure Magor with Undy is able to utilise existing connections as well as other forthcoming projects that may arise from the South Wales Metro.

10.1.6 At present there is a degree of uncertainty regarding the progress of the proposed community centre adjoining the station; the station proposal would be deliverable irrespective of this, however it may make station adoption and provision of certain facilities easier if there was a visible connection to the community centre, in addition to it bringing some additional footfall.

11. Conclusions

11.1 General

11.1.1 The proposed Magor station allows the community to fully capitalise on the existing transport links enjoyed by the locality, in a way that is accessible to all.

11.1.2 Prior studies with mathematical modelling, as well as user surveys have shown that there would be a significant usage of Magor, both abstracted from Severn Tunnel Junction and from modal shift.

11.1.3 We would recommend that MAGOR prioritise the provision of active travel to the new station in the short term, while ensuring that the 'passive' public transport provision by virtue of proximity to the existing bus stops on Main Road is retained, with a particular effort to improve bus services when Glan Llyn proceeds to a greater level of development.

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