Friends of the Earth Cymru

Cyfeillion y Ddaear Cymru

COAST TO COAST

A sustainable, integrating and affordable transport strategy linking north, mid and south Wales

This report is also a critique of a north-south road-building strategy comprising overtaking lanes and bypasses

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Researched and written for Friends of the Earth Cymru
by Neil Crumpton

January 2000

"Friends of the Earth exists to protect and improve the conditions for life on Earth, now and for the future.
Friends of the Earth is

- one of the largest international environmental networks in the world, with over 50 groups across five continents
- one of the UK's most influential national environmental pressure groups
- a unique network of campaigning local groups, working in 250 communities throughout England, Wales and Northern Ireland."

"Friends of the Earth Cymru was set up in 1984 to specifically campaign in Wales on environmental and social issues."

To join Friends of the Earth or for more information write to: 33 The Balcony, Castle Arcade, Cardiff, CF10 1BY or phone: 029 20 229577 e mail: cymru@foe.co.uk
web: http://www.foe.co.uk

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Many thanks to Brian Bigwood and Dr John Hunt for their contributions to this report.

Brian Bigwood, is a Fellow of the Institute of Logistics and Transport (FILT) and Fellow of the Institute of Transport and Administration (FInstTA). He details a possible 'Traws Cymru' integrating coach service and costs in Appendix E (see also Chapter 12).

Dr J Hunt is the Director of Studies for Civil Engineering and Director of ENGIN IT Services at the School of Engineering, Cardiff University. He has studied the operation of single carriageways and overtaking lanes for 14 years and presented papers on single carriageway issues at 6 international conferences. He has audited the single carriageway computer simulation software REVS that WS Atkins propose for use in a detailed continuation of the IWA study.

He has worked with the Transport Research Laboratory (TRL). He is a member of the Institution of Highways and Transportation and the Institution of Civil Engineers.

Dr Hunt has challenged the scale of the drive-time reductions estimated for the for the IWA's £63 million overtaking lanes. He has stated that:

"Calculations of this type are very difficult and depend on assumptions which can have a substantial effect on the outcome. The provision of overtaking sections as proposed is very unlikely to produce average time savings of 30 minutes. One directional auxiliary lanes impose a disbenefit by reducing overtaking opportunities for the non priority direction both within and downstream of the overtaking section. Catch up upstream and downstream of the overtaking sections is flow and flow distribution critical. I estimate that in view of the overall characteristics of the route, the proposed overtaking lanes would reduce average journey times by no more than 15 minutes."

Scope of Report

Coast to Coast deals specifically with north-south transport links along the Cambrian Way serving mid-Wales and via the Marches Line. Links to and from Ceredigion and west Wales were not included in the scope of this report.

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Executive Summary

On the 6th May 1999, election day for the Welsh National Assembly, the Institute of Welsh Affairs launched a report entitled 'Uniting the Nation' Improving the Cambrian Way north-south road links in Wales. The report implies that the IWA believe a 1 hour reduction in average north-south drive times would be achievable, at current traffic levels, by the implementation of a £123m roadbuilding programme along the A470 and its northern feeder roads. The programme would comprise 50 overtaking lanes costing £63m, together with several bypasses and other upgradings costing £60m.

Friends of the Earth Cymru, who are not opposed to safety upgrading along routes in rural Wales, are concerned by the bulk of the IWA proposals and the thinking behind them because we believe that they put speed before safety and sustainability. FOE Cymru have assessed the IWA proposals with other options, be it road based or other modes, to assess their effectiveness in terms of the criteria within the New Approach to Appraisal (NATA) policy, namely: cost, safety, environment, economy, accessibility and integration.

FOE Cymru point out that the IWA's claimed 30 plus minutes drive-time reductions effected by the 50 overtaking lanes has been challenged by Dr John Hunt, a senior lecturer at Cardiff University's School of Engineering, who has studied the operation of single carriageway roads. Dr Hunt estimates that the reduction would be no more than 15 minutes. FOE Cymru also estimate that £60 million spent on bypasses and other road upgradings would reduce drive-times by only 10-15 minutes, rather than the near 30 minutes indicated by the IWA. Hence, FOE Cymru estimate drive-time reductions, resulting from the £123 million package of overtaking lanes and bypasses, would be about 30 minutes, rather than the 1 hour believed achievable by the IWA.

Overall, FOE Cymru are of the opinion that the IWA proposals would:

? encourage traffic growth, even if drive-time reductions were less than 30 minutes rather than the one hour the IWA believe is achievable. This would have a range of environmental and social impacts, even after the widespread introduction of clean fuel technologies.

? be self-defeating, in that the more effective the overtaking lanes and bypasses were in reducing, or perceiving to reduce, drive-times, the quicker any reductions would be reversed by extra traffic they would attract.

? encourage fast driving, which has road safety implications including the transfer of risk to more vulnerable road user groups.

? not encourage rest-stops for safety as recommended by Royal Society for the Prevention of Accidents and hence compromise road safety.

? have a questionable effect on economic development, because they may well be ineffective or damaging in themselves, and/or displace funding for effective alternative measures.

? be costly, if not unaffordable, with respect to the constrained transport budget, and of minimal priority in comparison with other much needed transport investments, like the north-south express rail service.

? not enable or encourage the integration of transport modes, or social inclusion, mainly benefiting drivers of faster cars, many of whom have motoring expenses reimbursed.

To address the desire for better communication to aid political union and cohesion, in tandem with the needs of transport integration and sustainability, Friends of the Earth Cymru propose that the Assembly transport budget should be prioritised on investment to address the most strategic and critical problems regarding sustainable and integrated transport activity in Wales. Budget allocation should include substantially increased investment in integrated 'packages' put forward by Local Authorities and high priority should be given to road safety.

Within this context, investment on north-mid-south transport links should focus on:

? the establishment of a coast to coast express rail service operating on the Marches Line. This would include investments in rolling stock, revenue support, and line-speed enhancements to reduce Bangor-Cardiff journey times to about 3 hours 15 minutes.

? the establishment of a hi-tec, hourly coach service, operating between Bangor-Cardiff along the A487/A470. This would integrate various bus and rail links serving mid Wales and provide services out to the north and south coasts.

Local Transport Plans in towns and villages to encourage traffic reduction, road safety, and improve public transport and integration. Strategies would include traffic calming measures to address road safety concerns and improve local amenity, both within settlements and on road sections between settlements. Investments would include funds for teleconferencing facilities and information technology infrastructure.

? road safety upgrading on the Cambrian Way routes. This would include remedial work at 'accident cluster' sites, localised widening of substandard width sections, and low design-speed upgrading of road sections with severe bends or other poor alignment problems.

? schemes and policies to promote railfreight on the mid Wales rail network thereby reducing lorry traffic along the Cambrian routes.

? the package of FOE Cymru proposals would be much less expensive than the IWA proposals. Localised upgrading of 10 miles of road may cost about £15 million. The five year set-up and running costs of the Traws Cymru coach service has been estimated in detail at £22 million before revenue returns (see Appendix E). Setting up a north-south express rail service would cost about £10 million before ongoing support to establish the service. It may well be that the revenue returns from the coach service could roughly offset the ongoing five year financial support for the express rail service. Both the train and coach service would hope to at least break even by year five as a customer base is established. A further £13 million might well be spent on Local Transport Plans, railfreight facilities, localised safety upgrading and other initiatives. The total cost of these FOE Cymru

proposals would amount to roughly £60 million which is half the cost of the IWA proposals. Considering the scale of the Assembly transport budget the FOE Cymru proposals are much more affordable.

1 Introduction

1.1 This report is a critique of the call for major road building proposals, principally overtaking lanes and bypasses along the 'Cambrian Way' road routes, put forward to reduce north-south drive-times through Wales. The Cambrian Way routes comprise the A470, and its northern feeder roads, the A483 and A487. This critique explains why FOE Cymru regard the IWA proposals as: self defeating, detrimental to road safety, socially exclusive and not cost-effective. It also explains why the IWA proposals are not focussed on transport integration and sustainable development, and why they could damage the fragile mid Wales economy.

1.2 For comparison, FOE Cymru puts forward alternative proposals for improving north-mid-south links and encouraging integrated and sustainable transport activity through and within mid Wales. These proposals include the setting up of a 'Traws Cymru' coach service, serving mid Wales, and linking mid Wales, via the A470 corridor to Cardiff, and to north west Wales and Bangor. The proposals would also include the continuation of localised upgrading of poorly aligned road sections of Cambrian Way.

2 Background

2.1 On the 6th May 1999, election day for the Welsh National Assembly, the Institute of Welsh Affairs launched a report entitled 'Uniting the Nation' Improving the Cambrian Way north-south road links in Wales. The report claims that a £63 million programme of overtaking lanes and a further £60 million of bypasses and other upgradings along the A470 and its feeder roads, would reduce drive-times between north and south Wales by one hour. The timings assume no increase in annual traffic levels.

2.2 Friends of the Earth Cymru, who are not opposed to safety upgrading along routes in rural Wales, are concerned by the bulk of the IWA proposals and the thinking behind them because they put speed before safety and sustainability. FOE Cymru challenges the whole assumption that faster road access is necessarily beneficial to a region.

2.3 Overall, FOE Cymru are of the opinion that the IWA proposals would:

? be self-defeating, in that the more effective the overtaking lanes and bypasses were in reducing or perceiving to reduce, drive times, the quicker the actual reductions would be reversed by extra traffic they would attract.
? encourage traffic growth, which would have a range of environmental and social impacts, even after the widespread introduction of clean fuel technologies.
? not encourage rest-stops for safety as recommended by Royal Society for the Prevention of Accidents and hence compromise road safety.
? encourage fast driving, which has road safety implications including the transfer of risk to more vulnerable road user groups.

? have a questionable effect on economic development, because they may well be ineffective or damaging in themselves, and/or displace funding for effective alternative measures.
? be costly with respect to the constrained transport budget, and comparatively not cost-effective.
? threaten much more essential transport investments, especially considering the constrained transport budget.
? not enable or encourage the integration of transport modes.
? be socially exclusive, mainly benefiting drivers of faster cars, many of whom have motoring expenses reimbursed.

This report details the reasons why FOE Cymru has reached this view.

3 The IWA Report

3.1 The IWA report followed a study they had commissioned. The study was carried out by consultants WS Atkins, financially supported by the British Roads Federation and the Welsh Development Agency.

3.2 The report concluded that the construction of 50 overtaking lanes, varying in length mostly between 500 metres and 2,000 metres, located at strategic locations along the A470, A487 and A483, could reduce Bangor/Llandudno-Cardiff journey times by about 33 minutes and Wrexham-Cardiff times by 24 minutes. The proposed schemes would cost about £63 million to construct. Together with planned and possible Welsh Office road schemes costing a further £60 million, including bypasses at Newtown, Porthmadog, and other communities, the report claims that drive time reductions of one hour are achievable.

4 Overtaking Lanes

4.1 FOE Cymru is not opposed in principle to the provision of overtaking lanes to aid the safe flow of traffic. Indeed, within the last few years FOE Cymru has suggested that such lanes could be considered for the A40 to Fishguard, the A477 to Pembroke Dock and on our own alternative scheme for an extension of the A55 across Anglesey to Holyhead. FOE Cymru has also suggested that 'passing places', used voluntarily by slower vehicles, could be provided on the A5 between Chirk and Llandygai, through the Snowdonia National Park.

4.2 That said, our rationale for the provision of overtaking lanes has been as a possible solution to resolving situations where a section of road has a history of accidents involving overtaking, or where there is frequent use by slow moving vehicles causing significant driver frustration. Crawler lanes on hills can offer the most effective benefits. Other solutions may also be possible and may indeed be preferable. FOE Cymru have not advocated the specific and systematic provision of overtaking lanes in a bid to significantly reduce long-distance drive times.

4.3 It could be argued, by some, that most sections of the A470, and any other road for that

matter, is frequented by slower vehicles which give rise to significant driver frustration and accidents. However, the phrase 'significant frustration' is a relative term which, in terms of sections of the A470 can be gauged and prioritised to some degree by reference to recorded accident data and driver experiences. The provision of overtaking lanes to address specific safety issues, rather than reduce drive times, is likely to produce a very different set of proposals, in number, in priority and possibly location.

5 Traffic Growth and Induction

5.1 If built, the effectiveness of the overtaking lane schemes would be eroded by traffic growth. Traffic growth on the Cambrian Way, as part of the continuing UK trend, would reduce the effectiveness of the overtaking lanes as they are highly sensitive to increases in traffic flow, as the IWA report indicates. Indeed, the more effective the overtaking lanes are at reducing drive-times, then the more self defeating they would become because they would induce even more traffic. Even the perception of reduced drive-times could encourage traffic growth.

5.2 The IWA study states that the overtaking lanes become significantly less effective on route sections where vehicle flows exceed about 6,000 vehicles per day (vpd). On significant lengths of the existing routes, traffic flows are already approaching 6,000 vpd if not already in excess of this flow, especially in the summer months (see IWA report, Fig 1). So, this flow rate could easily be exceeded on most sections of the routes, when most of the annual traffic is using them, under existing traffic growth forecasts.

5.3 If the IWA proposals are constructed, then induced traffic, trying to take advantage of the faster drive times, would add to the flow. There is overwhelming evidence to show, and the governments' road experts, the Standing Committee on Trunk Road Assessment (SACTRA) agree, that the faster the road access, the more traffic is 'induced'. Hence, the less effective the overtaking lanes and bypasses would become as the flows rise above 6,000 vpd. The reduction in drive-times would simply be eroded away. Yet, the IWA report does not address these factors, which in our view is a significant omission, and a serious flaw in their proposals.

5.4 A flow rate of 6,000 vehicles a day (vpd) may sound a lot but it can be described as a moderate flow on a single carriageway. Single carriageways can accommodate around 19,000 vpd before seriously congesting at junctions in peak times. Roads with daily flows which rise over 12,000 vpd are considered for dualling by highway authorities, although recently the Welsh Office Highways Directorate put forward a road scheme, near Llanllyfni on the A487, with a short section of single carriageway with a forecast flow of around 20,000 vpd.

6 Minor Works Schemes, Localised Widening and Upgrading

6.1 The IWA report says that the construction of the existing Welsh Office Highways Directorate 'minor works' (less than £5m) upgrading programme would also reduce drive-times. The programme of minor works and 'on-line' upgrading is supported, up to a point,

by FOE Cymru.

6.2 Some generally shorter sections of the roads in question are particularly substandard, some notoriously so, being narrow, twisty or both. Such sections, possibly as short as 100 metres or so, pose dangers for unwary drivers and for oncoming vehicles, especially wide vehicles. They are also particularly dangerous for those cyclists and pedestrians brave enough to negotiate them or who unwittingly cycle or walk into them.

6.3 On such sections FOE Cymru would suggest low-cost 'localised widening'. This would consist of widening the carriageway, and hard strips/verges to the Welsh Office design manual recommendations (7.3 metre carriageway and moderate verge/hard strips widths, or less at severe constriction points). At many locations this may require little more than a strip of concrete and drainage along one side of the problem section, the boundary wall/fence moved back by a few metres, and the carriageway resurfaced with black-top. If the widening takes place on the inside of a bend, the bend would also be straightened to some degree and visibility increased. The widening and straightening would very likely reduce drive- times through the section. FOE Cymru estimate that average speed through such sections could increase from between 35-40 mph to 50 mph following such localised widening.

6.4 If such localised widening is not favoured, or is inappropriate for a given road section, due to the severity of a bend or other alignment problems, FOE Cymru would then suggest a low speed design upgrade. The upgrade would be based on one of the lower of the six design-speed 'steps' in the Welsh Office Design Manual*. For the reasons given in Annex A, FOE Cymru estimate that most types of vehicles can negotiate bends on '37 mph' upgrades, even in wet conditions, at little increase to legal drive times on most journeys.

6.5 Building to the faster steps causes unnecessary problems in FOE Cymru's view. It may well require the expensive removal of scenic chunks of adjacent hill side and associated valuable habitat. Indeed, the Welsh Office has specified lower design speed upgrade on the A470 along the scenic Lledr Valley. However, there are also safety aspects to consider.

6.6 There is a body of opinion, experience and anecdotal evidence which says that the higher speed designs, with their sweeping, large radii bends, wide verges and open highway aspects, enable and encourage drivers to speed well in excess of their vehicle's respective speed limit. FOE Cymru subscribes to this view (see Appendix A) and consequently calls for lower speed designs.

Note: The speed limits on single carriageways are 60 mph for cars; 50 mph for buses, coaches, cars towing caravans/trailers and goods vehicles under 7.5 tonnes loaded; 40mph for goods vehicles exceeding 7.5 tonnes.

6.7 As drive times are important to the IWA, it is instructive to compare the cost and drive time reductions of the overtaking lanes with localised or low design-speed upgrades that FOE Cymru would support. The IWA proposes 50 overtaking schemes costing £63 million, or, on average £ 1.26 million each. Each scheme reduces drive times by an amount dependent on the traffic flow in that area (see IWA report text and Graph 1):

Note: '£ m/min' means: million pounds per minute (drive time reduction) and 'vpd' means 'vehicles per day'.

IWA Estimates

Table Cost-Effectiveness of Overtaking Lanes at Various Traffic Levels		
1.4 minutes	at 4,000 vpd	£0.9 m/min
55 seconds	at 6,000 vpd	£1.4 m/min
43 seconds	at 8,000 vpd	£1.8 m/min
36 seconds	at 10,000 vpd	£2.1 m/min
30 seconds	at 12,000 vpd	£2.5 m/min

It can be seen that cost-effectiveness diminishes rapidly as traffic flows increase. If Dr Hunt's 15 minute drive-time reduction estimate is used, rather than IWA's 30 plus minutes, then the costs in the table might be doubled as in the table below.

Table Cost-Effectiveness of Overtaking Lanes at Various Traffic Levels		
42 seconds	at 4,000 vpd	£1.8 m/min
28 seconds	at 6,000 vpd	£2.4 m/min
22 seconds	at 8,000 vpd	£3.6 m/min
18 seconds	at 10,000 vpd	£4.2 m/min
15 seconds	at 12,000 vpd	£5.0 m/min

6.8 In comparison, FOE Cymru estimate, in Appendix B, that the 'cost per minute' reduction in drive times resulting from the on-line upgrading in the minor works programme ranges from £3.75m/minute for a 'localised widening' up to £ 6.7m/minute for a high speed upgrade. According to FOE Cymru's estimates, the comparison is significant, in that the cost per minute reduction between the localised widening (£3.75 m/m) and the overtaking lanes are similar at a traffic flow of about 8,000vpd if Dr Hunt's estimates are used.

6.9 FOE Cymru also conclude that cheaper lower design-speed upgrades offer higher reductions in legal drive-times than do higher speed designs. This is because the higher speed designs waste money on constructing the straighter, and open conditions that provide comfortable cruising at speeds well in excess of the 60mph speed limit used in the calculations (see Appendix B).

6.10 It is also significant that drive-time reductions on the upgraded sections would be fairly consistent because they would be little affected by traffic increases, be it through upward national trends, induction or summer season highs. All vehicles could flow through an upgraded section more quickly, so speed is mainly limited at times by heavy goods vehicles, rather than sharp, blind bends, a narrow carriageway and stone wall 'verges'. As can be seen from the IWA report (Graph 1), the overtaking lanes are sensitive to traffic growth until the drive-time reductions are minimal. So, on-line upgrades would become more cost effective at reducing drive times as traffic flows increase above the 8,000vpd mark if Dr Hunt's estimate is used.

6.11 Much of the Cambrian Way currently has daily flows in the summer months of over 6,000/7,000 vpd (see IWA Report Fig 1). So it would not require much traffic growth, especially in the summer months, to take flows over the 8,000vpd mark. Indeed, summer flows along the Cambrian routes are typically about twice the winter flows, so the majority of the annual traffic using the road experiences the higher flow rates. Consequently, most of the annual traffic would experience the lower drive time reductions afforded by the overtaking lanes and the more consistent reductions afforded by on line upgrades.

6.12 To sum up, on safety grounds alone, FOE Cymru would prioritise localised widening or low design-speed upgrading rather than overtaking lanes, unless a specific safety case can otherwise be demonstrated at a particular location. Furthermore, although the upgrades may not be as cost effective in reducing drive-times as overtaking lanes at low traffic flows, they would become increasingly cost effective, when or if flows rise above 8,000 vpd on the various sections of the route if Dr Hunt's estimates is used. In any event, affordable low cost upgrades would make more of the Cambrian Way safer for oncoming motorists, and safer for cyclists, pedestrians and walkers. The overtaking lanes would largely not do so.

7 Bypasses

7.1 The IWA report implies support for the provision of several bypasses in order to achieve additional time savings. However, FOE Cymru estimate that the proposed bypasses would mostly result in minimal reductions in drive times (see Appendix C for discussion/estimation of drive time reductions).

7.2 FOE Cymru's estimates for drive time reductions on bypasses are:

A470 BuilthWells	3.4 miles	£14m	1.3 minutes	£10.5 m/min
A483 Newtown	3.5 miles	£21m	3-5 minutes	£5.5 m/min
A487 Porthmadog	4.0 miles	£12 m	5-10 minutes	£1-2 m/min
A470 Llanrwst	3.3 miles	£9 m	1 minute	£9.0 m/min

Note: Scheme costs and lengths taken from Welsh Office 'Roads in Wales' 1994

7.3 The most noticeable journey time reduction (5-10 minutes depending on season) would probably result from the £12 million Porthmadog-Tremadog bypass on the A487. This bypass is not on the A470 and so would reduce drive times only for that fraction of the north-south motorists who originate from north-west Wales. Similarly, the proposed £21 million Newtown bypass (3-5 minutes reduction) is on the A483 to north-east Wales and Llanrwst is on the A470 to the north Wales coast.

7.4 It should also be noted that in terms of reducing drive-times, bypasses are generally not very cost effective compared to localised widening, low design speed upgrading of poor alignment road sections or overtaking lanes. However, their effect, unlike overtaking lanes, would not degrade quickly with the traffic growth which they would induce.

7.5 If traffic congestion is causing specific problems in certain villages and towns then some 'tarmac solutions' could be considered. For example, in Builth, a second road bridge across the river, not far to the east of the existing bridge, might be more than necessary to resolve the awkward bridge approach there. In Rhayader, some way of enabling long vehicles to access the A44 from the A470 could be identified. At Talgarth on the A479, local residents have identified a short, less than 1 mile, bypass of their village's awkward bridge alignment.

7.6 In terms of reducing drive-times, bypasses are generally not a cost effective option. Bypasses are expensive in themselves, and could damage the economy of the bypassed area. Their proposed construction would again raise wider questions about transport, planning, environmental, economic and social issues.

7.7 In the case of a Porthmadog bypass, FOE Cymru do not believe that the relatively large drive time reductions estimated should give credence for such a bypass. Green tourism and other traffic reduction measures should be actively supported by the Assembly, rather than it cater for increased traffic levels. Parking should be limited and revenue-raising, to fund the range of no-car modes. Visitors and locals should be encouraged and facilitated to arrive, travel around and depart by rail, bus, cycle, walking boot, boat and even horse-back. The Welsh Highland Railway would much more likely become a traffic generator, rather than a sub regional tourist transporter, if such a bypass were built. The narrow road along the cob, a listed structure, could be widened if necessary and not too costly, as it would change the areas present character and future potential much less than a bypass would do.

8 Safety

8.1 The IWA report states that 'safety is of course a fundamental requirement of any scheme' (IWA report 1.11). FOE Cymru is concerned that the whole ethos behind the study is detrimental to road safety.

8.2 The IWA report makes no mention of the Royal Society for the Prevention of Accident (RoSPA) recommendation that drivers should take a 15 minute break from driving after 2 hours 30 minutes on the road. The RoSPA report which contains the recommendation is called 'Managing Occupational Road Risk' and was published in July 1997. The Welsh Office publication 'Keeping Wales Moving' (Oct 98, para 1.14) also refers to the need for rest breaks. The issue of rest-breaks should have been addressed in the IWA report but appears to have been overlooked as the isochrone maps (Figures 5 and 6) makes no allowances.

8.3 If safety is fundamental to the IWA then the RoSPA recommendation of rest-breaks needs to be addressed. Reference to the IWA report's isochrone maps (Figures 5 and 6), showing 20 minute travel time bands, would suggest that a break should be taken around Dolgellau on the A470 for journeys from Cardiff to north west Wales. For drivers from Cardiff, travelling beyond Wrexham, which is itself just about compatible with the recommendation at 2 hours 45 minutes, a break at Welshpool on the A483 would be advisable. Similarly, drivers travelling south, from the north coast, should break at Rhayader, Builth Wells or Llandrindod Wells. These timings assume that it takes 20 minutes to travel

from Cardiff to the A470/A465 roundabout at Merthyr (see IWA Figures 5 and 6).

8.4 Not only has one important aspect of road safety been overlooked by the omission of even reference to rest breaks, FOE Cymru believe that the IWA support an assumption that also compromises road safety.

8.5 The overtaking lanes are specifically proposed to enable faster drive- times for private vehicles particularly over longer distances. Yet, encouraging faster longer-distance driving by funding overtaking lanes is reinforcing a belief that cars driving around the countryside at high speed is necessary for economic and social development. FOE Cymru think that such a belief is mistaken. Furthermore, such a message can only encourage more people to drive faster throughout mid Wales, not just on the Cambrian Way. The message also chimes with the evident enjoyment of some drivers of the thrill of driving fast, despite the risks to self and others.

8.6 Encouraging faster average speeds has implications for, not only the safety of vehicle occupants themselves, but also other road users. This includes people living in settlements along the route, and also farms and dwellings with accesses directly onto carriageway. The provision of overtaking lanes may well result in less driver frustration in the countryside but the delays and frustration are likely to be transferred and focussed onto the settlements. Drivers who have maintained higher average speeds for longer are also likely to have impaired low-speed judgment in villages and towns. Pedestrians and cyclists, especially the young and old, would be particularly vulnerable. More of the risk would be transferred from the motorist to the non-motorist.

8.7 Furthermore, ignorance and misjudgment of the lower speed limits set to protect community activity is likely to intimidate pedestrians and cyclists off the road. This is a cause of traffic growth, delay and consequently safety in itself. The community severance effect caused by traffic, especially traffic in a hurry, is hardly a positive social development.

8.8 Increasing community severance eventually leads to calls for bypasses. However, bypasses are expensive, reducing funds for alternative transport provision, and in turn induce traffic growth with its attendant safety implications. This is the now familiar unsustainable transport vicious circle that is beginning to be addressed by politicians and public with integrated transport policies. Such policies are as relevant in rural mid Wales as they are in central London.

8.9 Currently, through many settlements along the Cambrian Way, many motorists are driving at speeds above the speed limit. To address this safety issue, traffic calming schemes should be a priority in all Local Transport Plans along the routes. Properly designed and well funded schemes, which could include speed cameras, are likely to achieve substantial and lasting speed reductions. A splash of paint and rumble strips at either end of the settlement is less likely to do so. Traffic calming measures may need to be located within the settlement to complement measures located at the boundaries. Local participation at the design stage could identify innovative features and engender a positive attitude to the proposals.

8.10 Gateway entrances, which mark the boundary of a settlement, could include central 'islands' (for example, a two metre wide flower bed) which traffic has to slow down to drive around. Vegetation, wooden fencing and/or stonework features within the verges could also be used to present drivers with a narrower, rather than open, prospect. Such features would look much more in keeping with the rural surroundings than the garish large yellow backed speed-limit signs that have been used in recent years. Similar traffic calming features could be used on 'countryside' sections of the road where natural features, such as rock outcrops, present safety problems.

8.11 In summary, and leaving aside the question of whether faster road access is needed for economic development, the fact there would be cars travelling at faster speeds has wider safety and transport implications. FOE Cymru is very concerned that the IWA is encouraging faster north-south travel by car, rest-stops or no rest-stops.

9 Economic Effects of Relatively Faster and Slower Road Access

9.1 The economic development of rural areas of Wales in particular is a stated priority for the Assembly. FOE Cymru agrees with this and has for some time campaigned for more emphasis in support of indigenous, rather than inward investment, which FOE Cymru believe would benefit rural and peripheral areas relatively more.

9.2 In order to provide sufficient investment in the local economy, FOE Cymru have proposed that funds, be it National Assembly or European, earmarked for regional economic development, should not be spent on major road building designed for faster access. There has grown an assumption, born out of some historical experience, not necessarily applicable in the recent past, now or in the future, that faster road access is a perceived benefit which is likely to attract inward investment, and so is a benefit to an area.

9.3 In fact, the governments' own expert committee on roads (SACTRA) and others, have, since the late 1970's, warned that faster road access can damage poorer regional economies by enabling stronger, more centralised economies to out-compete the smaller, generally weaker local businesses. Rural Wales is particularly vulnerable because of the high percentage of small businesses and self employed, and now also because of the fragile state of the agricultural economy.

9.4 Other consequences of faster access can also have a damaging effect, namely:

? self-sufficient day-trip car tourism rather than visitors shopping locally and staying over at local hotels, guest houses, etc.

? longer distance commuting which contributes to traffic growth, air pollution in sensitive areas. Such commuting also results in an increase in rural house prices beyond the financial reach of local people, which leads to out-migration of the young and unwanted demographic changes.

? closure of village shops, as shoppers travel further to regional superstores.

? closure of community hospitals.

? closure of smaller schools

9.5 The effect of faster road access on regional economies is the subject of a recent report by SACTRA (August 99). FOE Cymru consider that although the IWA acknowledged such economic concerns about their proposals, their report did not address them.

9.6 Some businesses may well benefit from faster access but the net effect of all the changes may well fall slightly above or below the zero net effect mark, despite the large diversion of funds to roadbuilding from other support strategies. Even for those who are likely to benefit from reduced drive times to the capital or wherever, the need to travel to conduct business is declining.

9.7 Historically, members of rural communities did need to travel to major centres to conduct business. However, as global markets transform the world, ways of conducting business by personal meeting may well be largely overtaken because of the profits gained by electronic handshakes.

9.8 Indeed, the average reduction in drive-times, before traffic growth, from mid Wales to Cardiff, or north Wales, estimated by the IWA would be in the order of half an hour. Following Dr Hunt's estimates about overtaking lanes, and FOE Cymru's estimates about bypasses and other upgrades, the time reductions would be about 15 minutes. This is hardly decisive for mid-Wales, except possibly to the regular long-distance car commuter, whom no transport policy should be encouraging.

9.9 If, using the forthcoming SACTRA methodology, it could be reasonably argued that the mid Wales economy would benefit to some degree by faster road access, then the cost of creating such faster access needs to be compared with alternative ways of strengthening the economy. FOE Cymru would suggest that an equivalent sized package of investment in business support and grants, training, added value food production, organic conversion and forestry products grants, agri-environment and energy schemes, green tourism and reduced shop rates, may still be much more cost effective. It should also be remembered that investment in traffic and freight reduction needs also to figure in the assessment. This would include FOE Cymru's proposals (see below), together with community accessible, high quality, teleconferencing facilities in every rural town, support for community hospitals and tele-medicine facilities. Low cost localised road widening would also make the Cambrian Way safer for touring cyclists and walkers, who are likely to be contributing to the local economy, unlike those who are simply driving through it.

9.10 If faster road access can still be reasonably assessed to be of significantly greater benefit to the regional economy than the best combination of alternative proposals, then additional traffic reductions in other regions may be required to achieve national targets and global commitments.

9.11 To sum up, if the objective is economic development, significant road funding could well compromise investment in more reliable, or innovative, rural support measures. In the

case of the mid Wales economy, the sensitivity of IWA proposals to traffic growth on the Cambrian Way is such that faster road access times are likely to be marginal, due to self defeating effect of traffic induction, if not traffic growth. Consequently, FOE Cymru suggest that the effect of the IWA road proposals on the regional economy is also likely to be marginal.

9.12 If this is so then the IWA's £123 million package of road proposals would result in 'jobless traffic growth'. As the promotion of Sustainable Development is a duty under the Government of Wales Act (Section 121) this would be a cause of serious concern, and an irresponsible waste of public funds.

10 North-South Journeys by Express Rail Service

10.1 For the large percentage of the Welsh population living within striking distance of the north and south Wales rail links, the best way to travel to the other end of the country quickly is by express rail.

10.2 In recent years a quality express north-south rail service has been proposed by consultants. With a £10 million investment a Bangor-Cardiff journey time of 3 hour 30 minutes is relatively easy to achieve. Operating three services a day, two train units and a spare carriage would cost about £5 million and track upgrading, mainly between Chester-Wrexham-Shrewsbury would cost a further £5 million at most. Some ongoing financial support would be required in the likely five-year customer establishment period by which time the service should break even. Bangor-Cardiff travel times of 3 hours 15 minutes is achievable at greater cost say £20-30 million for the track upgrading and straightening. Comparison with the IWA drive times, though including the 15 minute rest stops, reveals that travel between the north coast to Cardiff, Newport and even the Valleys, would be far quicker by express rail.

10.3 Drive-times by car, assuming £63m programme of overtaking lanes and rest stops (taken from IWA Figure, with an additional 15 minutes for a rest-stop included) would be:

Bangor	Cardiff	4 hours 5 minutes
Llandudno Junction	Cardiff	4 hours 5 minutes
Wrexham	Cardiff	2 hours 45 minutes

By Express Rail, journey times would be:

Note: Journey times below would result from 100mph track speed upgrading along route (add 30 minutes for initial service). Track speed upgrading to 100 mph would cost something around £20 million.

Bangor - Cardiff	3 hours 15 minutes (50 mins saving over car)
Llan Junction - Cardiff	2 hours 55 minutes (70 mins saving over car)
Wrexham - Cardiff	2 hours (45 minutes saving over car)

10.4 Travellers from Llandudno Junction would save considerable time travelling by rail. They could arrive in Cardiff by express rail just as a motorist, who had left Llandudno Junction at the same time, was setting out from Builth after a rest stop. The rail traveller could then take 15 minutes hiring a car from outside Cardiff station and drive as far as the Brecon Beacons before meeting the southbound driver, even before the effectiveness of the overtaking lanes had been degraded by traffic growth.

10.5 To sum up, the express rail service is likely to always be faster, safer, more relaxing and less polluting than the north-south journey by car. Indeed, the savings in journey time by express rail after track upgrading are significant, even from Wrexham. Unless a vehicle is required for a specific purpose that cannot be conveniently achieved in some other way, a traveller should ask themselves where the advantage is before deciding whether to travel by car.

For the large percentage of the Welsh population who live along the north and south coasts which are within striking distance of railway stations, rail travel has a variety of advantages and should be encouraged. For populations who live in mid Wales or with no easy access to the rail services, FOE Cymru propose a new integrating public transport service (see below).

11 Lower Impact Vehicles

11.1 The IWA report suggests that even in a timescale of 10 years that vehicles with less environmental impact would answer concerns about traffic and sustainable development. FOE Cymru also welcome new 'hybrid' engine and fuel cell vehicles, which will soon be on the market.

11.2 Hybrid engines greatly increase fuel efficiency by integrating an internal combustion engine with an electric motor/battery system. The Toyota Prius, soon to be launched in the UK, has a fuel consumption of 80mpg, a top speed of 90mph and will cost between £15-20k. However, even this more efficient technology will soon be bettered.

11.3 Within a few years, vehicles which are virtually clean at the point of use, using fuel cell electric motors fuelled by hydrogen or methanol will also be commercially available. Vehicle manufacturers are forecasting the first commercial fuel cell vehicles by 2004, and trials of fuel cell coaches are currently being carried out in Chicago and Vancouver. FOE Cymru welcome these technological improvements, and is actively promoting a 'hydrogen economy', as it has major advantages as transport fuel. Hydrogen can also be generated renewably, almost negating carbon dioxide emissions. Furthermore, the milage costs of such vehicles are well within the cost of petrol/diesel based motoring, allowing the Chancellor to retain a significant tax take.

11.4 In the context of transport policy along the A470 corridor, it should be asked what effect would such technology have. Let us assume, for the sake of argument that, by 2015-2020, most vehicles travelling along the Cambrian Way are hydrogen or methanol powered. There would be benefits in terms of much reduced vehicle air pollution and noise.

11.5 Less local air pollution problems would be highly beneficial to the health and amenity of communities along the routes and to the fragile upland ecology of mid Wales where acid rain 'critical loads' are still exceeded and ozone levels are high. There would be much less noise from traffic travelling at low speed as fuel cell motors are very quiet, and tyre and aerodynamic noise is more a feature of higher speeds. For these reasons, if vehicles are not driven above the speed limits, and if there were no increase in traffic, there may be even less call for bypasses by those currently affected.

11.6 By 2015, vehicle technology could also be electronically limiting the top speed of vehicles on certain stretches of carriageway, for example the 40/30mph limit areas through communities. Vehicle sensors would receive signals from transponders at the boundaries of villages and urban areas, automatically limiting their speed to the speed limit. This would bring benefits for road safety and local amenity, and reduced policing costs.

11.7 Together, both the clean engine and speed limiter technologies would potentially resolve many of the main concerns about traffic passing through communities along the A470. The pressure for bypasses may reduce as a result of improved technology. The amount of traffic is another matter. Yet, as already discussed, drive times along the Cambrian Way are very sensitive to increasing traffic and even environmentally friendly cars would not change this.

11.8 One could argue a case that by resolving the most significant and costly impacts vehicles have on society and environment, that there would be more money available in health, agricultural and other budgets. However, the likelihood that this would result in more funding for road building would be speculation.

12 Friends of the Earth Cymru's Proposals

12.1 The integration of transport modes and the need to reduce traffic, or the growth in traffic, are key government policies and such policies command much support from the public including environmental groups.

12.2 FOE Cymru has long campaigned for sustainable, integrated transport policies, including traffic reduction strategies. In Wales, FOE Cymru has proposed, and to some extent prioritised, the funding of certain capital and revenue investments to achieve such objectives. Some of the most cost-effective investments, in our view, are the provision of Safe Routes to School schemes, a nationwide real-time public transport information service, an express north-south rail service and improved public transport services generally.

12.3 Based on these policies and priorities, FOE Cymru has outlined below how various proposals would address transport issues in rural mid-Wales and affect traffic levels, access and journey times along the Cambrian Way corridor.

'Traws Cymru' Coach Service

12.4 One of the first investments that should be made is to establish an hourly north-mid-south coach service principally along the A470 corridor. Such a service would instantly transform public transport provision in and through mid-Wales.

12.5 The service could include a rest stop of 5 minutes in Newtown. Coaches could then either run south on the A470/A4081 serving Llanidloes and Rhayader to Llandrindod Wells, or possibly more quickly via the A483. From Llandrindod, the service would run on the A483 to Builth Wells, then on the A470 to Brecon, Merthyr and Cardiff. Northbound services would run to Dolgellau, then on the A487 to Porthmadog, Caernarfon, and Bangor.

12.6 A fleet of 15 coaches could provide an hourly service, taking about 2 hours 45 minutes from either coast to mid Wales (Llanidloes), and 5 hours 30 minutes for passengers wishing to travel by coach on the Cambrian Way between and Bangor and Cardiff.

12.7 Over a 5 years period such a service would cost the operator about £22 million before revenue returns. The National Assembly for Wales would provide the Transport Grant to a lead authority funding the service and revenues would be returned to the National Assembly. The ticket price required for the service to break even, based on an average of about half the number of seats being occupied, would be about £16 single, and maybe £20 for the club class. Such a low ticket price would provide a socially inclusive transport service through mid Wales. Only pre-booked, week in advance, coast to coast rail journeys are currently cheaper, at about £30 return.

12.8 By coordinating with local bus services and regional railways, the 'Traws Cymru' coaches would effectively create a remarkably good integrated public transport service around, and to and from mid Wales. The National Assembly would probably need to provide some capital and revenue support in the early years to establish the service.

12.9 To succeed, FOE Cymru believe that a 'Traws Cymru' coach service should offer very high quality in terms of comfort and facilities. There would be an extra spacious seating/working area in a 'club class' section, power points for lap-top computers, personal TV's, radios, etc, aerial ports for personal TV's, and E-mail facilities. An on-board real-time journey planning facility should also feature. Food services could also be provided by tele-ordering ahead to strategically placed catering pick-up points. Comfortable, safe, waiting facilities should also be located at key points along the route. For the busy mid Wales businessmen, executives, and even the few Assembly members, the quality facilities on the coach would enable rest to be taken, or work to be done, en route. The route has also been noted for its spectacular scenery.

12.10 The coach service could greatly facilitate fair political inclusion in Wales. Destinations like Llandrindod Wells and Newtown, whose hotels and facilities are often used for conferences and groups holding 'national' meetings, are on the coach route. For a meeting starting at 11.30 am in Llandrindod, attendees could leave Cardiff at 8.40 am or Bangor at 8.10 am. The Heart of Wales railway also passes through Llandrindod and could provide complimentary services to and from Swansea/south west Wales and Wrexham/north east

Wales. Alternatively, for a (new) meeting destination in Llanidloes, travel times from the north would be about 2 hours 55 minutes and from Cardiff, 2 hours 40 minutes.

12.11 The service could and should be integrated with:

- Ynys Mon's bus services to terminal at Bangor.
- Gwynedd's bus and Sherpa services, for journeys from Llandudno, Llanrwst and the National Park.
- Railway Stations at Caersws or Newtown on the Shrewsbury to Aberystwyth line for destinations along the A470.
- Railway Station at Llandrindod Wells for destinations along the Heart of Wales railway.
- Express coach services from Merthyr Tydfil along the Heads of the Valleys road between Neath and Abergavenny.
- Other local bus services, post buses, community mini-buses etc, along the route.

12.12 With serious efforts to co-ordinate these public transport services with the north-south coaches, journeys between many destinations, hitherto unlinked, become feasible and attractive. Add in real-time information and forward journey planning services, and the makings of a truly user-friendly integrated transport system serving mid-Wales, and linking northern and southern populations with mid Wales, becomes a realistic proposition.

12.13 It might be argued that overtaking lanes would contribute to punctual running of the coach service. FOE Cymru would again say that localised upgrading, to resolve twisty, narrow road sections, would be much more useful, enabling the coaches to maintain speeds nearer their 50mph speed limit. Coaches overtaking even slow moving vehicles may well require long overtaking lanes. 'Voluntary' passing places for slow moving/farm vehicles may work, given some 'public spirit' by drivers of such vehicles.

12.14 In the coming years, public transport passengers are likely to benefit more and more from transport policy developments. For passengers on the Traws Cymru service, especially on the stage between Merthyr and Cardiff, parking and parking charges, bus priority lanes and other strategies to benefit public over private transport, are likely to reduce travel times, travel costs and inconvenience.

12.15 A coach service would reduce the need to travel by car. If, for example, the service carried an average of 20 people per coach, and the 14 coaches completed 34 full transits of Wales per day, then 680 people per day would be carried in total. This might reduce future traffic flows along the routes by say 300-500 vehicles per day. On route sections of 4,000 vehicles per day, this would represent about a 7.5 - 12.5% reduction in traffic flow. Such a reduction in traffic would probably reduce travel times for those who really do need to travel by car. Note that these figures are indicative and market research on patronage would be needed.

Early Implementation of Local Transport Plans

12.16 The sooner that Local Transport Plans, drawn up by Local Authorities are funded and implemented, the better, for local communities and through traffic. Schemes like Safe Routes to Schools, community routes, and Green Commuter Plans can all reduce local traffic and peak hour congestion in the rural towns like Newtown, Porthmadog, Llanrwst and generally south of Merthyr, including Cardiff itself. This would reduce traffic delays and uncertainty on the A470, A487 and the A483.

12.17 It is difficult to estimate the reduction in journey times that implementing LTPs would cause. It would probably just be a few seconds in the smaller towns and may be something around a minute or so at peak times in the larger towns. However, driver frustration would likely be lessened and local community safety would be improved.

Investment to encourage trunk road freight to rail

12.18 The IWA study identifies that slower moving lorries (40mph speed limit on single carriageway roads) are a cause of significant delays on the roads in question. It notes that a reduction in HGVs below 10% of the total flow allows for relatively even faster drive times for those road users who could use the overtaking lanes. FOE Cymru point out that it is not so much the relative percentage of HGVs that degrades the effectiveness of the overtaking lanes but the absolute number of HGVs scattered along the route. Reductions in the actual number of lorries using the route would reduce drive-times.

12.19 Timber lorry traffic, such as that transporting wood from the mid-Wales plantations to Shotton Paper Mill, could be reduced by encouraging the use of rail freight. Utilising Freight Facilities Grants and other grants, together with intermodal technology, could improve loading and location flexibility, thus reducing trans-shipment costs. Similar technology might be identified for coppice wood supplies for wood-burning power stations, which ideally would be located adjacent to rail links.

12.20 Other potential freight transfers are quarried rock and concrete products from quarries such as Hendre and Ton y Fannau to markets in the English midlands, and supermarket deliveries to Welshpool, Newtown and Aberystwyth. Fuel shipments from the Wirral to Aberystwyth could also transfer back on to rail.

12.21 Any transfer of freight to rail may help improve the economics of transferring more freight once a service is in operation. How much additional investment this might require, compared to the cost of the IWA road building proposals, needs at least some analysis.

Investment in Farm Access

12.22 Reducing the need for slow moving farm vehicles to use the A roads by the provision of access to alternative/off-road routes may be cost effective when safety is considered. There may be locations where the provision of an adjacent gate and track, or even an underpass or bridge, would enable farm vehicles to gain access to adjacent farm track networks with minimal use of the main road. A consultation leaflet sent to farmers along the

route may be a way of identifying any potential locations where minimal investment would create large benefits for everyone concerned. Identifying usefully located 'passing places' for voluntary use, where slow moving vehicles could move into to enable following vehicles to pass, should also be worth some consultation and consideration.

13 Welsh Assembly Transport Budget

13.1 The IWA report tries to make a case that funding the overtaking lanes could be accommodated over a 10 year period (7.10 'the Cambrian Way Programme of £63 million is planned as a 10 year programme'). However, FOE Cymru points out that transport demands are now out of scale with sustainable transport budgets and sustainable development. The wishes of the relatively few long distance drivers on the Cambrian Way face strong competition from drivers staring down the barrel of forecast traffic growth and serious congestion on more critical parts of the Welsh road network. In response, everything from expensive road proposals, to traffic reduction strategies and integrated transport policies are being called for, so there is likely be less funds for road building. Indeed, in the current and any likely financial scenario, any proposed transport scheme of any nature will have to be clearly beneficial, very well targeted, and backed by determined objectives on integration and sustainability.

13.2 Continuing traffic growth has resulted in calls for more road building from all corners of Wales. The total cost of the proposed new roads is enormous and is, in FOE Cymru's view, unaffordable in economic, social and environmental terms. Schemes, either programmed or conditionally accepted, amount to about £1,000 million for trunk roads, £475 million for Local Authority schemes, and a further wish-list of £400 million for other Local Authority schemes. Rising traffic levels are also pushing up the road maintenance bill which ideally should increase to over £80 million per annum according to Welsh Office figures. More recently, bids for traffic reducing integrated transport 'packages' are being developed and need serious financial support. The recent report on transport by the Welsh Local Government Association (`Integrated Transport: the Local Government Agenda in Wales') also identifies major transport budget limitations in the face of problems being generated by national traffic growth, and questions whether increasing road spending is wise.

13.3 This year, the amount spent on new road construction will be about £60 million. Of the £145 million transport budget settlement for 1999-2000, £41 million went to Local Authority road schemes (£30m) and integrated transport packages (£11m). Of the £104 million trunk roads budget, £60m was spent on maintenance, which is regarded as the top priority. Of the remainder, about £30 million was spent on new trunk road build and a further sum on minor road schemes to address safety and environmental problems. Furthermore, from next year the A55 Anglesey Private Finance Initiative (PFI) contract repayments will erode the transport budget by about £15 million per annum for the next 30 years (Welsh Office estimate).

13.4 Objective One or other structural funds have been mentioned but European Commission policies are unlikely to result in much, if any, funding of road schemes. The Cambrian Way is not even on the Trans European Road Network (TERN). PFI is no way forward either, in FOE Cymru's view, as it effectively forces our children to pay for this generations' transport choices which would be the very antithesis of the well known Bruntland

definition of Sustainable Development. Indeed, PFI has been called a 'financial

time bomb' as not only do future generations pay, they pay more. Private sector companies have to pay about 2% more for loans than do public enterprises, who can borrow cheaply from the Treasury. Private companies are also required to make much higher returns on capital for their shareholders. To cap it all, astute private sector accountants can shift much of the 'risk' back to the Treasury anyway.

13.5 The Assembly will soon be presented with some major decisions regarding the allocation of the transport budget. Alternatives to the construction of the proposed £250 million A465 Heads of the Valleys dualling and the M4 Relief Road of £350 million are the two biggest decisions. Even with a 'new schemes' budget of say £55 million per annum, a decision to build either one of these road schemes would result in little funds for much else for five years or more. However, choices are available. At the 1997 Public Inquiry into the A465 dualling, FOE Cymru put forward alternative proposals for a £50 million safety/modernisation upgrade of the A465, which is a 1960's structure. Further south, National Assembly consultants Ove Arup, are identifying public transport options and alternatives to the forecast M4 congestion around Newport and the M4 Relief Road.

13.6 Transport pressure in south east Wales is the big issue, the M4 is carrying about 90,000 vehicles a day (vpd) around Newport. In comparison, the A465 is carrying about 16,000 vpd, and the amount of long distance Cambrian Way traffic is less than 3,000 vpd. Indeed, the Cambrian Way has not widely been seen as a priority, and even if it was there is still a strong case for priority funding of remedial work at the 'accident cluster' sites and minor works schemes to bring it, and all, Welsh A roads up to acceptable safety standards. Furthermore, minimal investment could establish a Traws Cymru coach service, increased rail freight and other traffic reducing schemes and strategies.

13.7 The package of FOE Cymru proposals would be much less expensive than the IWA proposals. Localised upgrading of 10 miles of road may cost about £15 million. The five year set-up and running costs of the Traws Cymru coach service has been estimated in detail at £22 million before revenue returns (see Appendix E). Setting up a north-south express rail service would cost about £10 million before ongoing support to establish the service. It may well be that the revenue returns from the coach service could roughly offset the ongoing five year financial support for the express rail service. Both the train and coach service would hope to at least break even by year five as a customer base is established. A further £13 million might well be spent on Local Transport Plans, railfreight facilities, localised safety upgrading and other initiatives. The total cost of these FOE Cymru proposals would amount to roughly £60 million which is half the cost of the IWA proposals. Considering the scale of the Assembly transport budget the FOE Cymru proposals are much more affordable.

13.8 To sum up, it is quite clear that there is simply very little money to fund any road schemes and there is a compelling case for rapidly increasing the budget for traffic reducing integrated transport packages. In view of the funding considerations and the pressing transport issues, FOE Cymru simply do not see how overtaking lanes on the Cambrian Way could have any priority, even with on-line 'minor works' upgrades along the routes.

14 Conclusion

It has been the aim of countless Welsh generations to be able to travel more quickly between north, mid and south Wales. The very terrain which has shaped and protected the Welsh culture by virtue of its difficult access, has also been an impediment to greater political and social and economic union. With the establishment of the National Assembly it was always likely that there would be a renewed call for better communication and faster links between the regions of Wales. This call has come at the dawn of a new millennium and at a time of rising awareness and concern about certain aspects of global development and each country's place in that process. The call has also come at a time of rapid technological change and also of serious consideration of the motor cars' place in a richer country's society.

That there needs to be greater communication between north, mid, west and south Wales is not in doubt. The effectiveness of National Assembly policy and spending will be dependent on the its members knowing what is happening and what might happen in every Welsh region, so communication is fundamental to a cohesive union. How such communication is most effectively achieved is the central question.

It is in this context that the Institute of Welsh Affairs commissioned a study to discover whether a cost effective, environmentally acceptable approach could be found to reduce road journey times between north and south Wales, in the knowledge that other bodies were studying journey times and associated issues of other transport modes.

The IWA study estimate that a series of overtaking lanes along the Cambrian Way road routes could reduce drive times between north and south Wales by about half an hour assuming no increase in annual traffic levels. The Institute proposed a £63 million programme of such overtaking schemes, and called for bypasses and other upgrading costing an additional £60 million. This strategy should now be compared with other options, be it road based or other modes, to assess its effectiveness in terms of the New Approach to Appraisal (NATA) criteria of cost, safety, environment, economy, accessibility and integration.

FOE Cymru, which has a primary interest in sustainability, from local to global, has studied the IWA proposals and has responded with recommendations of its own.

FOE Cymru has concluded that the IWA proposals are flawed, because, if built:

? the proposals would offer poor value for money, if they were not actually unaffordable, given the constraints of the transport budget and transport investment priorities on critical aspects of the Welsh road and transport network.

? the proposals would be self defeating, the more effective the overtaking lanes were at reducing drive times the more traffic they would induce, which would increase drive times because the effectiveness of the lanes would be adversely affected by likely increases in traffic flows.

? the proposals put speed before safety and would be detrimental to road safety, because

they would promote fast long distance driving, as acceptable and even necessary. Neither do they show any awareness of the need for rest breaks. Such thinking would send out a wider signal to motorists in general which would not only compromise road safety within communities along the Cambrian Way but throughout the Welsh road network. Given the Assembly's funding constraints, the proposals could also jeopardise funding for safety strategies in Local Transport Plans, and for low cost on-line upgrading of road sections which have a poor safety record or are potentially dangerous for vehicles, cyclists and walkers. Although the proposals may resolve driver frustration in some situations, the proposals would induce more traffic onto the network rather than encourage the use of much safer public transport modes for long distance travel.

? the proposals would be detrimental to UK policies on traffic reduction and sustainable development. The proposals would induce road traffic and jeopardise funding for investment in public transport modes and consequently the viability of such modes. Induced traffic would also result in more energy use, and in the short to medium term, increased levels of damaging air pollution within communities and sensitive upland areas.

? the proposals would tend to cause social exclusion as they would use much needed public funds to predominantly benefit the small section of the population who have access to faster vehicles and who travel long north-south distances in Wales. The transport budget could be better spent on investments with wider benefits for all social groups.

? the proposals do not compare favourably with investment in long distance express rail services, in journey time, in travel costs or in sustainable transport activity. Nor do the proposals identify or prioritise investment in new public transport schemes serving mid Wales, or facilities for electronic communications.

? the proposals could damage the fragile mid Wales economy by enabling faster road access to and from the bigger, stronger more centralised competition in the English midlands. The net effect of the proposals could well be jobless traffic growth, despite benefits to some rural businesses.

? the proposals would be of little benefit to transport integration, giving further dominance to the private car.

15 Recommendations

To address the desire for better communication to aid political union and cohesion, in tandem with the needs of transport integration and sustainability, Friends of the Earth Cymru propose that the Assembly transport budget should be prioritised on investment to address the most strategic and critical problems regarding sustainable and integrated transport activity in Wales. Budget allocation should include substantially increased investment in integrated 'packages' put forward by Local Authorities and high priority should be given to road safety.

Within this context, investment on north-mid-south transport links should focus on:

? the establishment of a coast to coast express rail service operating on the Marches Line.

This would include investments in rolling stock, revenue support, and line-speed enhancements to reduce Bangor-Cardiff journey times to about 3 hours 15 minutes.

? the establishment of a hi-tec, hourly coach service, operating between Bangor-Cardiff along the A487/A470. This would integrate various bus and rail links serving mid Wales and provide services out to the north and south coasts.

? Local Transport Plans in towns and villages to encourage traffic reduction, road safety, and improve public transport and integration. Strategies would include traffic calming measures to address road safety concerns and improve local amenity, both within settlements and on road sections between settlements. Investments would include funds for teleconferencing facilities and information technology infrastructure.

? road safety upgrading on the Cambrian Way routes. This would include remedial work at 'accident cluster' sites, localised widening of substandard width sections, and low design-speed upgrading of road sections with severe bends or other poor alignment problems.

? schemes and policies to promote railfreight on the mid Wales rail network thereby reducing lorry traffic along the Cambrian routes.

Appendix A - Road Design-Speed and Actual Vehicle Speed

For safety, motorists must obviously be able to see far enough in front of them, at the speed they are driving, to be able to stop within that distance in an emergency.

In the Highway Code 1999 Edition, on p27 under the heading Stopping Distances, Rule 105 clearly states:

'Drive at a speed that will allow you to stop well within the distance you can see to be clear.'

The Code also lists the typically shortest stopping distances at various speeds (ie. thinking + braking distance). For example the stopping distance from 60 mph is 240 ft (73 metres). This distance is effectively the 'Emergency Stopping Distance' (ESD) and will be referred to as ESD in this annex. The Highway Code rules that stopping distances should be at least doubled if the road is wet.

When a section of road is considered for upgrading, a number of options are drawn up, based on six basic recommended design 'steps' in the Welsh Office design manual*. The six steps are speed related and are called 'design-speed' steps, namely: 75 mph, 63, 53, 44, 37, 30 mph (converted from kilometres/hour). Each step represents varying degrees of bend straightening and realignment of the existing carriageway. A set of design parameters, recommended for each design-speed, include bend radii, forward visibility, stopping distances and verge widths. The design step finally chosen by the Assembly committee may be influenced by financial, physical or other considerations, including public opinion. The design guide, 'Roads in Upland Areas' offers useful guidance for the type of terrain along the Cambrian Way. It is important to remember that the design-speed steps are recommendations, they are not binding 'standards', nor do they have to be set at the maximum speed limit for the type of road under consideration.

*Welsh Office Design Manual 'TD 9/93 Highway Link Design Vol.6' *Welsh Office 'Roads in Upland Areas: A Design Guide'

Stopping Sight Distance

One of these parameters is called the Stopping Sight Distance (SSD) which relates to the distance of a driver's forward visibility along the road. This distance is greater than the Highway Code's shortest, or emergency stopping distances (ESD) to take account of non-optimum road conditions. For example, at a design-speed of 60 mph (100 kph) the 'desirable minimum' SSD is 215 metres, and 'one step below desirable' is 160 metres. Steps below the desirable minimum are called a 'relaxation' from recommendations. These SSD's are much longer than the Highway Code's ESD of 73 metres for 60 mph. This reflects the Code's requirement of doubling the SSD if the road is wet. So, at 60 mph the Code's wet-weather stopping distance would be twice 73 metres (ie 146 m), which is still less than the Welsh Office's 60 mph SSD relaxation of 160 metres. If an actual SSD is lower than the relaxation SSD it is called a 'departure' from recommendations.

Forward visibility on straighter sections of road is far in excess of the required SSD. So, it could be said that the design-speed indicates the maximum speed at which drivers can see

beyond the required emergency stopping distance, when travelling around bends in non optimum conditions eg. wet/slippery road.

As forward visibility increases the Full Overtaking Sight Distance (FOSD) is exceeded and overtaking is permitted. For example, on a 37 mph design section, the FOSD is 345 metres and on a 60 mph design section (the speed limit on single carriageways) it is 580 metres.

On twisty mountain roads, for example the A470(T) in the Lledr Valley, the long straights required for the FOSD do not often occur, if at all, and may not be cost-effective to design into an upgrading scheme. In practice, achieving the SSD is the more immediate concern, although forward visibility can be gained by cutting back vegetation or setting the boundary wall or fence back on the insides of bends. Indeed, the SSD can be achieved in locations where drivers can see over boundary walls or through fencing and across adjacent land.

So, it can be seen that the SSD, the design-speed, and the bends of the existing road are inter-related. The higher the design-speed step selected for the upgrade, the longer the SSD required, and usually the higher the cost of construction works, landscape impact, etc. to achieve the SSD, the bend radii, and other design parameters.

Lower design-speeds have been selected in mountainous terrain or within National Parks partly because of landscape impact. For example, for the A470(T) Cancoed to Minffordd scheme, the Welsh Office chose a 50 mph design speed and an SSD of 120 metres (one step below desirable minimum). Just north of the Cancoed scheme the proposed A470(T) Lledr Valley road upgrade has a design speed of 44mph in one section, and a 30mph design speed in an adjacent section.

The SSD's are conservative recommendations to allow for low performance vehicles (ie. brakes, handling) on wet roads and adverse conditions. However, this means that in dry conditions, drivers of can exceed the speed limit and still have forward visibility in excess of the emergency stopping distance. This can contribute to safety problems in itself.

It can be seen from the Table below just how fast the higher design-speed upgrades can enable motorists to drive:

(Note: * extrapolated data using graphs - this is because Highway Code does not supply SSD's for illegal speeds, and the 10mph listings do not co-relate with Design Speed steps - which have been converted from kph for easier comparison)

Design Speed Step (mph)	SSD - desirable	SSD - relaxed	Highway Code's ESD dry road	Highway Code's ESD wet road	Maximum speed for various SSD's
30 mph	70 m	50 m	23 m	46 m	
37 mph	90 m	70 m	32 m*	64 m	
44 mph	120 m	90 m	43 m*	86 m	
53 mph	160 m	120 m	58 m*	116 m	
60 mph	215 m	160 m	73 m*	146 m	
75 mph	295 m	215 m	114 m*	228 m	
			50 m*	100 m	48 mph*
			70 m*	140 m	58 mph*
			90 m*	180 m	67 mph*
			120 m*	240 m	78 mph*
			160 m*	320 m	87 mph*
			215 m*	430 m	90 mph*

As can be seen from the Table, a road upgrade with a design speed of 30 mph would have a 'desired' forward visibility (SSD) of 70m. As it happens, 70m is the emergency stopping distance (ESD dry) for a vehicle travelling at about 58 mph on a dry road. Even if a road upgrade was built to the relaxed 30 mph design, vehicles could still travel at about 48 mph in dry conditions and still comply with the Highway Code.

A 60 mph upgrade, built to recommended 'desirable' design, would have an SSD of 215 metres. This would enable vehicles to travel at 90 mph in the dry and still have the required emergency stopping distance of 215 metres (extrapolated). Even a relaxed 60 mph design would enable speeds of about 87 mph and still remain within in the dry ESD.

Note that the 'relaxed' SSD's at all design-speed steps (except 75 mph) are still just greater than the Highway code's emergency stopping distances for wet roads. The recommended 'desirable' SSD's are even longer in distance and hence enable faster speeds on wet roads, and much faster speeds on dry roads, and drivers would still remain within the Code's emergency stopping distances.

The potential for 'speeding' problems arising from 'generous' SSD's are compounded by the fact that the Highway Code's figures used for 'typical braking distances' are significantly longer than many modern cars can achieve. As more and more new vehicle models have better braking/handling performance, including Automatic Braking Systems (ABS) which greatly reduce skidding, wet weather stopping distances are reducing. Consequently, many cars can stop well within the Highway Code's typical emergency stopping distance (see Table below).

While this may suggest that modern braking performance should enable safer driving, it can also encourage faster driving, even on twisty roads. A driver can stop more quickly and so drives more quickly. This effect can be described by the phrase 'risk compensation', because drivers increase speed because they feel 'safe' to do so to the point where the perceived risk is the same. Consequently, even on roads with the lower speed designs, much faster or illegal vehicle speeds can be encouraged.

Car Braking Distances (Source: BBC Motoring Programme 1999)

Note: the cars' total stopping distance are an extra 69 ft (21 metres) to allow for the 'thinking distance'.

Car	**Braking distance from 70 mph (to standstill in dry conditions)**	**Stopping Distance**
Lexus	139 ft (42.4m)	63.4m
Peugeot 106 GTI	162 ft (49.4m)	70.4m
Porche	170 ft (51.8m)	72.8m
Escort	198 ft (60.4m)	81.4m
Discovery	224 ft (68.3m)	89.3m
Highway Code	246 ft (75m) from 70 mph in dry	96m

These figures show that modern cars have braking performance often significantly in excess of the typical values used in the Highway Code (for dry conditions). Consequently, such vehicles could travel much faster than the Highway Code indicates and still perform an emergency stop within the Code's Rule 105.

For example, a braking distance of 180ft (55 metres) required of cars travelling at 60 mph can actually be achieved in several models of car travelling at over 70 mph. Even when thinking distances are included, any vehicle type with a braking distance from 70mph of 170ft (52 metres) or less, can stop in the Stopping Distance required of a vehicle travelling at 60 mph.

Thinking Distance	**Braking Distance**	**Stopping Distance**	**Speed**
69 ft (21 metres)	246 ft (75 metres)	315 ft (96 metres)	for 70 mph
59 ft (18 metres)	180 ft (55 metres)	240 ft (73 metres	for 60 mph
49 ft (15 metres)	125 ft (38 metres)	175 ft (53 metres)	for 50 mph

Examples illustrates what can happen:

A Peugeot 106 GTI (top speed 126 mph) can stop from 70mph in 70.4 metres in dry conditions. It could therefore drive along a stretch of road with a 30 mph design speed at about 69 mph and still comply with Highway Code regulations (SSD for 'desirable' 30 mph step is 70 metres). Even on a wet road, FOE Cymru estimate that vehicles like the Peugeot GTi can maintain 60 mph through the bends in 'desirable' 44 mph upgrades. If speed is slowed momentarily to 50 mph through the tighter bends and then back up to 60 mph on the straighter sections a 'desirable' 37 mph design upgrade would still enable near-minimum drive times through the section.

Even a Landrover Discovery could negotiate a 'desirable' 37 mph design upgrade at 70 mph in dry conditions, and still comply with the Highway Code's emergency stopping

distance rules (SSD for 'desirable' 37 mph step is 90 metres). In wet conditions, FOE Cymru estimate that it would only have to slow to at about 40 mph through the tightest bends in a 'desirable' 37 mph upgrade, and still comply with the Highway Code.

To sum up, the step designs in the Welsh Office design manual and the typical distances used in the Highway Code understandably and rightly use conservative figures in their recommendations and requirements. Ample stopping distance and forward visibility is required for low performance vehicles travelling on wet roads. However, what is safe for some is more than generous for others. Many modern vehicles can exceed the speed limit, in dry conditions, in all but the relaxed lowest 30 mph design bends and still comply with the Highway Code's rule on emergency stopping distance.

Hence, FOE Cymru suggest that a 'desirable' 37 mph design upgrade is more than ample for most drivers needs. If a 37 mph design is significantly more expensive, damaging or difficult to construct than the 30 mph design, then FOE Cymru suggests the latter is chosen.

Appendix B - Cost/Time Reductions of Localised Upgrading and High/Low design Speed Upgrades

It is worth focussing on the reduction in drive times of minor works and localised upgrading schemes, compared to overtaking lanes, by way of some rough calculations.

Using figures taken from Welsh Office publications, it could be assumed that high design speed upgrading through typical upland Wales terrain costs about £4.0 million per mile: A470 Cancoed-Minffordd, £4.7m/mile, A5 Bethesda (deleted) £4.4m/mile A5 Half Way Bridge (deleted) £4.0m/mile, A494 Llanbedr Dyffryn Clwyd £3.7m/mile.

If it is fair to assume that high design speed upgrading enables a 60 mph speed, rather than an average of 35-40 mph, along the upgraded section, then upgrading 5 miles would cost £20m and the upgrades would reduce drive times by 3 minutes (or 6 minutes for 10 miles). That is:

10 miles at 30mph takes 20 minutes
10 miles at 35mph takes 17 mins
10 miles at 40mph takes 15 mins
10 miles at 50mph takes 12 mins
10 miles at 60mph takes 10 mins

So, the 'cost per minute' would be £ 6.6 million/min.

It would take a detailed survey to identify if there are more or less than 5 miles of particularly substandard sections of road (costing £4m per mile for a high speed upgrade) along the routes in question.

Localised widening and low design speed upgrading of particularly narrow, twisty road sections, that FOE Cymru would find much more acceptable, may cost say £1.5 million per mile (ie. just the worst sections within the mile would be treated). This may increase average speeds from 35-40 mph to say 50 mph. Drive times would reduce by 2 minutes per 5 miles of localised upgrading, costing £7.5 million. If such assumptions are reasonable, this upgrading approach would reduce drive times by an average of £3.75 million/minute.

The difference between the high design speed upgrading approach compared to localised widening and low design speed upgrading is that the overall financial outlay is less for the latter for similar improvements in road safety. In both cases the width of carriageway/hard strip/verges are 'standardised' and would be much safer for oncoming traffic flows, cyclists, walkers and pedestrians. Such financial savings are important because the Assembly's transport budget is severely constrained.

Appendix C - Estimated Journey Time Reductions on Proposed Bypasses

The scheme length and costs in the Table below are taken from Roads in Wales 1994 (Welsh Office - Scheme costs at 1993 prices). The travel time reductions have been estimated by FOE Cymru in a desk top study of bypass plans, and some local consultation and direct measurement. Times may increase slightly during peak-time activity and might be reduced by the implementation of Local Transport Plans:

Bypass Location	Scheme Length	Cost Estimate	Travel Time reduction
A470 B' Wells	3.4 miles	£14 million	1 minute 20 seconds
A483 Newtown	3.5 miles	£20 million	3-5 minutes
A487 P'madog	4.0 miles	£12 million	5-10 minutes (seasonal)
A470 Llanrwst	3.3 miles	£9 million	1 minute

Builth Wells: Current typical travel time on the existing A470 through Builth between the bypass connection points is about 5 minutes 5 seconds. Travel time, at 60mph along the proposed 3.4 mile bypass including one or two (?) roundabouts, (at either end of the scheme ?), would take 3 minutes 24 seconds, plus 20 or 40 seconds to negotiate each roundabout - total 3 minutes 44 seconds. The journey time reduction would be about 1 minute 20 seconds outside a short afternoon peak, or during the two weeks of the Royal Welsh Show. Localised carriageway realignment at the Wye bridge in the town and a new pedestrian/cycle bridge over the river would reduce sporadic delays on the bridge and improve conditions in Builth for residents. Journey time reductions for the small alternative bypass suggested across the Whitehouse Fields are difficult to estimate but are likely to be less than a minute.

Newtown: Current typical travel time on the existing A483 route through Newtown is about 7-9 minutes between bypass connection points. The built-up section comprises two roundabouts about 1.5 miles apart, between which is a 30mph zone and two sets of traffic lights and about a mile of 40 mph zones outside the roundabouts. Travel time along a 3.5 mile bypass assuming roundabouts at either end would take about 4 minutes 10 seconds. Hence, the journey time reduction would be about 3-5 minutes off peak.

Porthmadog: Current travel time on the existing A487 route through Porthmadog-Tremadog, between bypass connection points, is about 10 minutes outside the main visitor season and more like 15 minutes during the summer holiday season. Travel time along a 4.0 mile bypass assuming roundabouts at either end would take about 4 minutes 40 seconds. The journey time reduction would be about 5 to 10 minutes depending on the time of year.

Llanrwst: Current typical travel time on the A470 through Llanrwst between the bypass connection points is about 4 minutes 30 seconds. Travel time along a 3.3 mile bypass at 60 mph, which would include one roundabout with the A548 at its mid point, and assuming junctions rather than roundabouts at either end of the scheme, would take 3 minutes 18 seconds, plus 20 seconds to negotiate the roundabout. The journey time reduction would be about 1 minute.

Appendix D - AA Research into Accidents on long Straight Roads

Research by the AA in 1996, has indicated that forward visibility or sight distance, considered only moderate by current design criteria, has been associated with a decrease in accidents compared to straighter roads with longer forward visibility *.

The research found that 'a length of road with either low (less than 215 metres sight distance) or substantial (more than 580 metres sight distance) forward visibility over most of its length is associated with an accident frequency about 1.5 times as high as a link with mostly fair forward visibility (between 215 metres and 580 metres sight distance)'. The overtaking sight distance listed in TD 9/93 for a 44mph design speed is 410 metres, which is actually about the mid point between 215m and 580m.

* Accidents on Rural Roads Single Carriageway 'A' Class Roads, Wyn Hughes and Graham Amis, Cambridgeshire County Council for AA Foundation for Road Safety Research, 1996.

Appendix E 'TRAWS - CYMRU EXECUTIVE COACH - LINK'

This proposal looks at the potential of a high quality coach link between north and south Wales, following the route of the A470 where practicable, linking up towns with major populations which include Bangor, Caernarfon, Porthmadog, Dolgellau, Newtown, Llandrindod Wells, Builth Wells, Brecon, Merthyr Tydfil and Cardiff.

An option exists to link at Dolgellau a further enhanced service to Machynlleth, Aberystwyth, Carmarthen and Swansea, similar to that operated by the Traws-Cambria.

The 'Traws-Cymru' service proposals are to operate seven days a week, between 06.00hrs and 23.00hrs on an hourly basis. (Outline timetable in appendix.), with a journey time between Bangor and Cardiff of under six hours.

The quality and comfort of the vehicles must be high to attract current car users to change modes, creating a 'Club-class' for business travellers as well as enhanced standard class comfort. Each vehicle would be manned by a specially trained driver and a host/ hostess.

Enhanced waiting and reception areas should be built at key termini at towns mentioned above. It could be possible to gain agreement with one of the 'roadside' restaurant chains to provide such waiting facilities.

Outline costings indicate that each vehicle annually would cost about £ 290,752 per year. To provide a full service as proposed above, would require a fleet of 15 vehicles with a total annual commitment of £ 4,361,280 based on a five year programme is £21,806,400, before revenue.

Given the demand to re-open long closed railway lines without any clear market being defined, this type of service, if successful, would help grow a market that could eventually warrant a fixed infrastructure link between north and south Wales.

COSTINGS per vehicle **Item**	**Week**	**Annual**
Leasing & maintenance contract	£1000	£52000
Running costs incl. Tax/Insur/Tyres/Oil etc..	£ 288	£15000
Fuel @ 8mpg (est.50galls per day - 400miles)	£1050	£54600
Drivers wages, incl.training x 3	£1350	£70200
Host/Hostess, incl.training x 3	£ 900	£46800
Infrastructure, cleaning, elec, heating etc..	£ 150	£ 7800
Marketing @ 10% of budget	£ 345	£17954
Management overheads @ 8%	£ 276	£14363
TOTAL	£5389	£290.752

Costings indicate a daily expenditure of £799, (364 days p.a.) requiring 50 passengers (i.e 50% seats being full) travelling at an average fare of £15.98p, to break even, given a daily available capacity of 100seats per coach.(see appendix for further break-even figures)

There would be capital cost for the provision of waiting infrastructure and equipment estimated to be about £500,000. (7 sites x £70,000 each). Tracking systems are approximately £1000 per vehicle, plus £30.000 for base facilities, i.e. total cost of c.£45,000.

MANAGEMENT

Each base would operate as a cost centre monitoring and controlling its own expenditure and income.

A vehicle would be based at each of the following places, which represent roughly hourly intervals in the timetable, starting and finishing at the relevant Welcome Centre. Bangor, Porthmadog, Dolgellau, Newtown, Builth Wells, Brecon and Cardiff.

The operation could run as a consortium of operators working under the marketing strategy of Traws -Cymru, with a board of directors to oversee the business, or a stand alone company, similar to National Express, who would contract operators under strict quality control. A single approach in acquiring vehicles, marketing and ticketing is essential.

Active support from statutory agencies, local authorities and businesses would be sought promoting the opportunity for working whilst in transit using the 'Club-car' facilities supported by on board host/hostess.

Local management would be responsible for servicing, cleaning and manning the service as per the contract requirements, with severe penalties following any failures. Bonus payments for exceptional service e.g. reliability and punctuality could be devised.

Management would ensure staff are properly trained. They would also ensure the local reception centres were properly maintained, equipped and cleaned daily.

They would also be responsible for maintaining on-going information of the service informing passengers of arrivals and any delays.

VEHICLES

All vehicles would be of a high specification both mechanically and in construction., complete with auxilliary braking systems and fuel efficiency system. Efficient heating and ventilation equipment.

The interior should seat approximately 40/45 passengers, in two separate areas. One, the standard class, would have reclining seats with lap-top tables. Two, would be of a higher standard, i.e. Club-car standard, where there would be tables, possibly 2 with six seats to each thereby permitting meetings whilst in transit attracting premium fares. Each vehicle would have a toilet and servery facilities, on-board telephone and fax facilities along with direct communication with the various bases en-route.

Ideally, the front entrance into standard class should give access to those with a mobility handicap.

Luggage storage could be provided beneath the Club-car section towards the rear of the vehicle.

On-board entertainment could be provided, along with a number of communication ports for lap-top computers etc., plus the provision of t.v. aerial ports for portable t.v's. There would be potential high drain on any electrical supply, therefore this would have to be taken into account in the initial vehicle specification.

The route proposed has a height restriction in Newtown of 13' 3", which would exclude some 'highliner' coaches.

Each vehicle should be fitted with some form of satelite tracking system giving direct access to base, who would direct 'real-time' information to anyone who requested it.

TIMETABLE

The justification for operating on an hourly headway as opposed to a 2 hourly headway, is based upon the identifying of two crucial elements in persuading people to travel on public transport, especially for the shorter journeys, a) attractive fares, and b) frequency of services.

There is a definite correlation in the provision of low fares and a frequent service with the level of patronage. To attract sufficient revenue to cover the identified operating costs, it will be essential to ensure a 40% capacity on all journeys.

DRIVER / HOST/ HOSTESS

All drivers must be trained to a high standard of driving for all weathers to give a smooth and comfortable ride. Drivers must also have good inter-personal skills to deal with their passengers. Recognition of such skills should be recognised in some form.

Hosts/ Hostesses should also have good inter-personal skills. They would be responsible for the comfort of the passengers, providing refreshments and information. They would receive passengers on-boarding, checking tickets/reservations/collecting revenue etc.. The opportunity to advance book taxis, refreshments and accommodation could be provided.

Both would be provided with uniforms relevant to the operations of the service.

SUPPORTING INFRASTRUCTURE (Welcome Centres)

Waiting for a public transport service is where it fails compared with the use of a car. Despite the fact that many passengers are happy to rail-head for trains, coach services do not inspire the same confidence in passengers to wait in the open-air or in drafty waiting areas.

It will be necessary to provide a purpose built waiting area, fully enclosed, heated, well-lit furnished with comfortable chairs, tables, entertainment e.g. television and telephone/fax facilities. Where practicable, refreshments should be available, e.g. vending machines.

Each of the termini should have such a reception centre and the local management would be responsible for the manning and maintenance of them.

Where appropriate, agreement could be made with one of the roadside restaurant chains to provide reception centres, e.g. Dolgellau and Builth Wells. Passengers could then be delivered by car, bus etc., and wait in comfort.

The route traverses many key services, e.g. North Wales Coast Line at Bangor, Sherpa and Cambrian Line in Porthmadog, Dolgellau for south-west Wales, Newtown for Cambrian Main Line and Welshpool, Llandrindod Wells and Builth Wells for the Heart of Wales Line, Brecon for the Beacons National Park, Merthyr Tydfil for the Heads of the Valley and Cardiff for the Great Western Mainline and the Valleys. Therefore Welcome Centres should be ideally situated to take advantage of connecting services.

Ideally, 'real-time' information should be provided, although it would be possible to maintain permanent contact using existing telephone equipment between coach and Welcome Centre.

At least one base should receive information from a satelite tracking system and forward the information, ideally Bangor or Cardiff.

There should be secure parking at each Welcome Centre with some form of C.C.T.V. both inside and outside the waiting area.

Primary Sites

Bangor	bus/ railway Station
Caernarfon	Poolside bus station
Porthmadog	railway station (Queens Hotel)
Dolgellau	White Hut (roadside restaurant)
Caersws	main road by railway station
Newtown	main bus station
Llandrindod Wells	railway station
Builth Wells	roadside restaurant on entrance to the town
Brecon	roadside restaurant on by-pass
Merthyr Tydfil	t.b.a.
Cardiff	main railway/ bus station

Secondary sites

Glandwyfach	for Criccieth etc.
Maentwrog	for Harlech etc.
Cemmaes Road	for Machynlleth etc.
Cross Gates	for Rhayader/ Radnor etc.
Llyswen	for Hay on Wye etc.
Pontypridd	for Valleys
Jctn. A 470 & M.4.	M.4 corridor

MAINTENANCE SPECIFICATION

Although all vehicles would probably be the responsibility of one holding company, the day to day cleaning, fuelling and light maintenance would be the responsibility of the local operator, undertaking the above during the vehicles downtime, i.e overnight.

In leasing these vehicles, it would be appropriate to enter into a maintenance contract with the suppliers. Major works could be undertaken at Cardiff/Bangor where a relief vehicle would be available in case of emergency.

Maintenance contracts must be of the strictest quality for both major and minor works, as reliability is of the greatest importance.

There is ample recovery time available, time tabled here for Cardiff, in which re-fuelling, cleaning and minor maintenance can be undertaken

MARKETING SPECIFICATION

Although the title of this proposal calls the service 'Traws-Cymru', it maybe more appropriate to identify another brand-name.

A marketing strategy will need to be devised to launch the project followed by an ongoing promotion to maintain the service profile. Innovative pricing mechanisms to encourage 'off-peak' movements need to be identified. Possible through ticketing or network ticketing could be investigated. Special rates for businesses who wish to use the 'Club-class' facilities should be included.

The timetable in the attached appendix, shows nominal timings that will need confirmation. At least an hour recovery time has been allowed for at both Bangor and Cardiff in case of delays. It also permits time for cleaning and re-stocking the vehicle. A five minute comfort break is proposed for Newtown which is approximately half-way point.

Should timings turn out to be too tight, an option to use Caersws as a Welcome Centre rather than Newtown, following the A470 via Llanidloes to Llandrindod Wells.

No account has been made of drivers shift patterns which should be further investigated. The proposals are for optimum use of the vehicles.

All vehicles would be liveried inside and out, staffed by well turned out staff. Welcome centres would also reflect the brand-image.

ECONOMIC BENEFITS

The obvious immediate benefits to the various local economies where services will be based, is the provision of new jobs. Each vehicle working will require the employing of at least three drivers, three host/hostesses and extra management input. On top of the direct operational manpower, there will be the need for cleaning and servicing staff, probably another two staff at each base, plus the need for major overhaul and maintenance staff possibly at Bangor and Cardiff.

This requires an estimated employment of:

1. 21 Drivers
2. 21 Host/Hostesses
3. 7 local management positions
4. 14 local cleaning and servicing staff
5. 2 staff for major overhaul at Bangor/Cardiff

Little reference has been made to tourist potential on the service, which is huge. The service must concentrate on establishing a regular domestic market thereby ensuring a reliable base on which to operate. The economic benefit to tourism should be examined.

THE WAY FORWARD

It is hoped the idea gains initial interest to enable the project to proceed into a feasibility study. The study should cover the following:

a) investigating and justifying costs
b) identify possible funding mechanisms (Rural Transport Grant/ Obj.1/2)
c) identify possible participants / lead operator
d) identify possible Welcome Centre sites. (possible partners - restaurant chain)
e) examination of economic benefits from tourism.

Ideally, the service should be up and running in the shortest possible time as the demand for more sustainable forms of transport increases daily.

Appendix 1 - Timetable
Appendix 2 - Fare table
Appendix 3 - break-even fares

Appendix 3.

Break-even fares v seats filled

Capacity per day for each vehicle which is presumed to have 40 seats available
40 seats in each direction + ½ journey per day =100 seats

£799 daily cost	100seats sold	= £ 7.99p per seat (100%)
£799 daily cost	80seats sold	= £ 9.98p per seat (80%)
£799 daily cost	50seats sold	= £15.98p per seat (50%)
£799 daily cost	40 seats sold	= £19.98p per seat (40%)

Price per seat indicates revenue required to break-even on a daily basis. Obviously, should the vehicle be fitted with more seats, figures will fall, but the project would not succeed if it did not provide adequate space and comfort for passengers. No account has been taken for higher fares that could be charged for any Club-class facility.

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Friends of the Earth Cymru
33 The Balcony
Castle Arcade
Cardiff
CF10 1BY
Tel: 029 20 229577

Fax: 029 20 228775
e mail: cymru@foe.co.uk
Web: http://www.foe.co.uk