Crianlarich timber railhead: feasibility study

Final Report to Forestry Commission Scotland

January 2012
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1. EXECUTIVE SUMMARY

Forestry Commission Scotland commissioned Deltix Transport Consulting (in conjunction with Railway Engineering Associates) in September 2011 to review and finish a feasibility study of the proposed Crianlarich Lower timber railhead partly completed by the A-Rail consultancy in 2010. The key aim of the work is to enable the Forestry Commission to decide whether or not to pursue the Crianlarich timber railhead project further, and its scope includes undertaking a review of changed or potentially changing circumstances since earlier feasibility work, and assessing their possible impact on the business case for a timber railhead.

The study has been both desk and field based, including: a site visit to Crianlarich: meetings with representatives of Argyll Timber Transport Group, CDI, Forestry Commission Scotland, Network Rail and the Timber Transport Forum; and telephone and e-mail discussions with the Business Development Manager of Colas Rail.

Rail economics and track record

The inherent technical characteristics of rail operation (guided track, steel wheel on steel rail, and a segregated and signalled right of way) give rail freight particular strengths for transits which involve:

- large regular volumes – ideally trainloads of typically 500+ tonnes payload
- long hauls – particularly when both ends of the transit are not directly rail-connected
- direct rail connection at one end of the transit at least – saving the cost of rail to road transfer and local road collection/delivery.

For a period of around five years in the late 1990s, underpinned by the EWS wagonload train service network, a wide range of timber flows was transported by rail from Scottish forests (with some 20 timber railheads across the country) to rail-connected processor mills in Scotland, England and Wales. Latterly the service from Crianlarich Upper was able to convey timber payloads of over 600 tonnes – as opposed to the standard West Highland Line limit of around 350t imposed by this single-track route’s very short crossing loops – as a result of running trains in the late evening when no other trains had to be crossed.

Flows from Crianlarich (and Arrochar) to the rail-connected Kronospan mill in Chirk continued until 2009, when the service was suspended. This was attributable to a number of factors, principally Kronospan identification of guaranteed tonnage from sources closer to Chirk, but also local amenity problems, notably concerns about HGVs having to reverse out on to the A82 because of the current entrance configuration and lack of space within the yard.

Following a visit to the longstanding timber railhead in Carlisle, Roland Stiven of the Timber Transport Forum (TTF) produced a September 2009 briefing paper – Logs on Rails: Kronospan’s Roundwood Rail Freight – which attributed the railhead’s success to five factors:

- a simple supply chain, with regular deliveries of large quantity of a limited number of products
- a dedicated contract rail service for one buyer to one rail-served destination
• reliable access to a choice of timber suppliers and road hauliers

• the lease of adequate sidings – to handle full trainloads; with adequate road access, storage space and a weighbridge; and well clear of any operational main line and associated Network Rail safety restrictions

• good quality rolling stock and convenient repair facilities.

To the above should be added the principle of partnership and good communication between all the players in the supply chain and the critical importance of the motivation, management and performance of the rail haulage company.

Technical innovations

Three technical innovations have sought (unsuccessfully to date) to address some of the economic constraints on rail involvement in timber transport – namely containerisation, the Non Intrusive Rail Crossover System (NICS) and the Freight Multiple Unit (FMU). Progress is being made on timber containerisation north of Inverness, and a renewed dialogue is developing with Network Rail on a potential timber trial of NICS, possibly at an in-forest location north or west of Crianlarich.

NICS would represent a compromise between the ‘high cost / high flexibility’ of a conventional new signalled siding connection and the ‘low cost / low flexibility’ of ‘lineside loading’ (as has been proposed for Rannoch / Barracks). In the case of the timber industry, the portability of NICS could be crucial – both the NICS assembly and associated temporary sidings could be utilised in one location for a few years of harvesting, then transferred to another location where harvesting was required. Should a significant number of conveniently-located NICS timber railheads (with relatively short ‘road’ hauls, primarily in-forest catchments) become the basis of a feasible rail strategy, then there might be less need for larger permanent facilities such as has been proposed for Crianlarich Lower.

Review of external changes since earlier Crianlarich feasibility work

Since earlier feasibility work went into abeyance in 2010, a number of external changes have taken place which may have implications for the proposed Crianlarich railhead. These include:

• planning permission for the Killin biomass plant, which is expected to cause some diversion of chip wood and to a lesser extent pulpwood otherwise intended for paper mills

• further preparatory work on the planned A82 Crianlarich Bypass, which would substantially reduce traffic volumes beside the Crianlarich Upper railhead and potentially facilitate changes to the railhead entrance and design configuration

• timber by rail is expanding, under the control of a well-regarded haulier – Colas Rail – which now operates regular train services from Carlisle, Ribblehead and Teignbridge, and plans further railheads in Wales and Norfolk

• there has been a reduction in the budget for the Scottish Government’s Freight Facilities Grant (FFG) for modal switch from road to rail and sea – but continued funding for the Strategic Timber Transport Scheme with its objective of facilitating the sustainable transport of timber in rural areas of Scotland
Demand for rail facilities at Crianlarich

The analysis of potential demand for use of a Crianlarich railhead and associated train services has been based on intelligence gathered from the following sources: Argyll Timber Transport Group (ATTG) 2007 forecasts of timber production in the Crianlarich catchment; an e-mail demand survey; and discussions with ATTG, Colas Rail and Forestry Commission Cowal & Tayside.

The intelligence indicates that while Colas Rail is not looking to re-open the Crianlarich Upper railhead in the immediate future, the wider resurgence of timber by rail does point to medium-term potential for resumption of rail services, subject to availability of grant aid and/or contributions from, and partnership with, the local forest industry. It is likely that a resumption of rail services from Crianlarich Upper (and Arrochar) to Chirk (and possibly also Carlisle) would initially be on the basis of a once-weekly train, then seeking to build this up as confidence in the rail product grew.

Neither timber production data, nor the intelligence generated by the study’s e-survey, nor discussions with key stakeholders, suggest that currently foreseeable rail demand would justify the capacity and cost of a bespoke new railhead at Crianlarich Lower.

Rail supply analysis

For a start-up rail service of one train a week to perhaps two destinations – Carlisle and Chirk – there would be limited commercial justification for investment in upgrading the Crianlarich Upper or Arrochar facilities. However, a modest ‘tidy-up’ of the two yards and refettling of the rail sidings would be required to meet acceptable standards for safety and efficiency of operations.

While the initially small volume of timber involved would minimise the previous local concerns in Crianlarich about lorry manoeuvring, ground conditions and noise, the optimum railhead upgrade for this stage of development – subject to the availability of grant aid and, potentially, ‘in kind’ contributions from the local forest industry – would appear to be a ‘significant upgrade’ involving a substantial reconfiguration of the road entrance to the railhead and the creation of a hammerhead reversing facility.

In any future phased development process – subject to the availability of private sector funding and public grants – the capacity and capability of the Crianlarich Upper facility could be upgraded stage by stage to a point (after completion of the A82 Crianlarich bypass) where over 100,000tpa could be handled cost-effectively (incorporating expanded storage facilities) and with any remaining community concerns fully addressed.

A wider issue relating to the potentially greater use of rail by the Scottish forest industry as a whole is the rail connectivity of major mills in Scotland, England and Wales. Realistically, up to a further six or seven major sites may be connectable – and at some point between three and ten connections a point of ‘critical mass’ will be reached, whereby rail becomes more than a very small niche option and therefore justifies additional management time to reap the full benefits of rail. This will be even more the case if the Non Intrusive Crossover is successfully trialled for timber and can then be deployed to create temporary railheads at a significant range of in-forest locations in Scotland, England and Wales.
Business case

Based on research and analysis of demand and supply for this study, the evidence suggests there is currently no business case for the funding, construction and operation of a bespoke timber railhead at Crianlarich Lower.

However, market intelligence points to the medium-term potential for a commercially viable re-opening of the Crianlarich Upper railhead, with either (a) a basic ‘tidy-up’ of the facility (but no changes to road access etc) funded by a combination of the rail haulier, Colas Rail, and the infrastructure owner, Network Rail, or (b) a ‘significant upgrade’ improving the road access and the configuration / quality of the railhead, funded by a partnership involving Colas Rail, Network Rail, in-kind contributions from the local forest industry and STTS funding.

Key conclusions

- the suspension of timber rail services from Crianlarich Upper to Chirk in 2009 was attributable principally to changing demand from Kronospan, but also to local factors (including road access from the A82) which to some extent still prejudice attitudes towards a resumption of rail services

- since the suspension of Crianlarich rail services, timber by rail in Britain has begun expanding again, thanks largely to the endeavours of Colas Rail, which has delivered a robust and reliable supply chain

- the wider resurgence of timber by rail points to medium-term potential for resumption of rail services at Crianlarich Upper and Arrochar, subject to availability of grant aid and/or contributions from, and partnership with, the local forest industry.

- the Crianlarich Upper railhead is likely to be physically capable of supporting an initially once-weekly train service, but this would be sub-optimal in terms of road access, working conditions etc

- of a number of options for railhead development – potentially allowing stage-by-stage upgrading of Crianlarich Upper – the optimum medium-term development would appear to be a ‘significant upgrade’ incorporating a substantially improved road entrance and a nearby hammerhead to eliminate lorry reversing on to the A82

- such a facility would be likely to cost up to £200,000 (but less if ‘fit-for-purpose’ standards were applied to the off-road hammerhead and significant in-kind contributions were made by the local forest industry) – and this upgrade would be eligible for STTS grant aid

- contact would need to be made with the hammerhead area landowner, the community in Crianlarich and the roads management authority (Transport Scotland) about the principle of such an enhancement at an early stage of any future re-opening proposal

- the rail industry, the local forest industry and the local community would need to work closely together to facilitate the resumption of cost-effective rail services at Crianlarich Upper and Arrochar which met customer needs, lent itself to expansion, and minimised local environmental / road safety impacts
the study has not identified a level of demand which would justify the capacity and cost of a bespoke new timber railhead at Crianlarich Lower in the foreseeable future – however, strategic considerations suggest that the scope for a longer-term (post A82 Crianlarich by-pass) ‘major upgrade’ at Crianlarich Upper should be more fully investigated before ‘protection’ of the Lower site is relinquished.

a substantially bigger role for rail in timber movement from the West Highlands (and elsewhere) will depend in part on (a) providing direct rail connection to an increased number of major mills in England and Scotland, and (b) cost-effective creation of new railheads closer to key harvesting locations – in the case of the latter, the Non Intrusive Crossover System (NICS), through its ability to create temporary railheads much closer to harvesting sites, has a potentially transformational role to play in the economics of timber transport by rail.

Recommendations to Forestry Commission Scotland

(i) As and when Colas Rail indicates a wish to investigate recommencing rail services at Crianlarich and Arrochar, make contact with Colas and Network Rail with a view to exploring (a) in general how the local forest industry (and the local community) can help to ensure that a resumption of rail services meets customer needs, lends itself to expansion, and minimises local environmental / road safety impacts, and (b) specifically the opportunities for Colas Rail to make application to STTS for a significant upgrade at Crianlarich Upper.

(ii) Following (i), facilitate early discussions between the rail and forest industries and (a) the owner of the land where the hammerhead would be created, (b) the community in Crianlarich and Arrochar, and (c) Transport Scotland as roads authority.

(iii) As and when Colas recommence rail service from Crianlarich Upper, convene discussions between interested parties on the potential for a phased development framework for this railhead, including the scope for a study of the design and cost implications (and local impacts) of a ‘major upgrade’ after completion of the A82 Crianlarich by-pass, and how earlier upgrade works might be dovetailed with this.

(iv) For the immediate future, undertake no further feasibility work on the proposed Crianlarich Lower railhead, but ensure that the location is ‘protected’ until such time as and when a Crianlarich Upper ‘major upgrade’ facility has been demonstrated to be capable of meeting the foreseeable long-term needs of the local forest industry.

(v) Based not just on its potential relevance to the West Highlands, but also in wider application across the North of Scotland and South West Scotland (and indeed parts of England and Wales), work with NICSCo and Network Rail to explore the scope for a running a timber trial of the Non Intrusive Crossover System on a suitable rural Scottish rail route.

(vi) Consider the wider ‘critical mass’ benefits of securing rail connections to additional major mills in Scotland and England and how the forest industry might facilitate such development.
2. BRIEF, METHODOLOGY & REPORT STRUCTURE

2.1 Brief

Forestry Commission Scotland commissioned Deltix Transport Consulting (in conjunction with Railway Engineering Associates) in September 2011 to review and finish a feasibility study of the proposed Crianlarich timber railhead partly completed by the A-Rail consultancy in 2010. The key aim of the work is to enable the Forestry Commission to decide whether or not to pursue the Crianlarich timber railhead project further. The work programme incorporated the nine original Study Brief tasks from 2010, but it was agreed with Forestry Commission Scotland that the original brief would be modified to:

i. prioritise tasks in light of (a) Forestry Commission Scotland’s key aim for the work and (b) the budget limit of £5,000; and,

ii. undertake a review of changed or potentially changing circumstances since earlier feasibility work, and assess their possible impact on the business case for a timber railhead.

The nine tasks were as follows:

1. Establish potential customers, markets and demand for timber within a 35 miles radius of Crianlarich.

2. Detail options, in discussion with harvesters, hauliers and end users, as to how the proposed terminal could provide a profitable and efficient service.

3. Explore the possibilities for additional traffic flows such as aggregates and gold ore.

4. Discuss with the rail freight operating companies and Network Rail how best to provide a flexible, efficient and economical service. Provide prices to customers for identified traffic flows and confirm train path times with Network Rail.

5. Ensure agencies and Local Authorities are involved and supportive of the project.

6. Work with forestry industry representatives to promote the subject.

7. Involve hauliers and rail freight operating companies in design, capabilities and operational requirements of proposed terminal to ensure efficient use of the facility.

8. Establish links and contacts with all of the potentially interested parties in the project, private and public sector.

9. Work to identify a lead partner or consortium who can take the project forward to FFG application and project construction.

2.2 Methodology

The study has been both desk and field based, including:
• a site visit to Crianlarich (with our sub-contractor Railway Engineering Associates) and an associated meeting with Ian Arnold and Kirsty Robb of Argyll Timber Transport Group

• an Edinburgh meeting with Claire Glaister of CDI and Roland Stiven of the Timber Transport Forum

• telephone and e-mail discussions with the above, plus Anne Mackenzie (Senior Route Freight Manager Scotland, Network Rail), Colin Mackenzie (Projects Consultant to the Highland Timber Transport Group), Andy Saunders (Business Development Manager, Colas Rail), Fergus Tickell (Chairman, Argyll Timber Transport Group) and Nick Wilby (Acting Operations Manager, Forestry Commission Cowal & Tayside)

• a Final Review Meeting with Matt Young of Forestry Commission Scotland and Claire Glaister in Edinburgh towards the end of the project.

2.3 Report structure

This report is structured under the following section headings:

• overview of rail freight economics
• review of rail track record & previous railhead proposals
• review of external changes since earlier feasibility work
• rail demand analysis
• rail supply analysis (including Crianlarich site visit)
• public policy issues
• business case and grant aid eligibility
• project development / business management issues
• conclusions and recommendations.
3. OVERVIEW OF RAIL FREIGHT ECONOMICS

The inherent technical characteristics of rail operation (guided track, steel wheel on steel rail, and a segregated and signalled right of way) give rail freight particular strengths for transits which involve:

- large regular volumes – ideally trainloads of typically 500+ tonnes payload
- long hauls – particularly when both ends of the transit are not directly rail-connected
- direct rail connection at one end of the transit at least – saving the cost of rail to road transfer and local road collection/delivery.

In addition, local circumstances may assist (or undermine) the rail case where removal of lorry miles from public roads would justify grant aid from government or where there is community resistance to intrusive lorry movements through or near residential areas. Capital investment in rail freight facilities has been eligible for up to 50%-75% support from the Scottish Government’s Freight Facilities Grant (‘FFG’) scheme, in recognition of the environmental benefits of mode switch from road to rail.

Access to the rail network can provide manufacturers, processors and logistics companies with a range of benefits, including lower transport costs, a multi-modal choice (avoiding total dependence on road haulage), plus public relations and environmental benefits. Rising oil prices are underlining the strategic argument, since rail – when moving goods in large volumes – is substantially more energy-efficient (and less carbon intensive) than road haulage.

The modern rail freight industry offers essentially two different load-carrying methods with different operational and commercial characteristics:

- for movements where the origin and/or destination of the freight transit are not directly connected to the rail network, the most suitable method is usually intermodal transport, using high-capacity containers which are transferred by crane from rail to road for local delivery
- where one or both ends of the transit is directly rail-connected, then the use of high-capacity conventional wagons (with timber payloads of up to 45 tonnes) can be the most cost-effective rail option.

Rail has high fixed costs (for track, signalling, locomotives and wagons) compared to road haulage, but lower variable costs for ‘line haul’ in trainload quantities – hence the generally increasing competitive capability of rail the bigger the volume and the longer the haul involved.

As circumstances vary from route to route and flow to flow it is not possible to provide a definitive ‘break even’ haul distance for rail haulage, but recent experience suggests that a minimum trunk haul length for rail to compete for timber to a rail-connected destination will be around 120 miles, with road collections of up to 20-30 miles around the source railhead. Where the destination is not rail-connected then trunk hauls well in excess of 200 miles are likely to be required, unless the railhead is in very close proximity to the final destination. In some specific cases, Mode Shift Revenue Support grant aid from the Scottish Government / Department for Transport may be required to make flows commercially viable on rail.
4. REVIEW OF RAIL TRACK RECORD & PREVIOUS RAILHEAD PROPOSALS

4.1 Recent history of timber by rail

From 1965 until its 1980 closure, the pulp mill at Corpach was supplied by regular trainloads of timber over the short haul (55 miles road equivalent) from a purpose-designed timber railhead at Crianlarich (Lower). This flow ceased when the pulp mill closed, but timber for other destinations was handled at the Crianlarich railhead until the early 1990s when, in the run-up to rail privatisation, the land was disposed of for residential property development.

For a period of around five years in the late 1990s, underpinned by the EWS wagonload train service network, a wide range of timber flows was transported by rail from Scottish forests (with some 20 timber railheads across the country) to rail-connected processor mills in Scotland, England and Wales. Source railheads included the Crianlarich Upper facility adjacent to the passenger station (see photos on page 10), which although less than ideal in a number of ways (see below), survived a major cull of timber-by-rail services in the early 2000s. Latterly the Crianlarich service was able to convey timber payloads of over 600 tonnes – as opposed to the standard West Highland Line limit of around 350t imposed by this single-track route’s very short crossing loops – as a result of running trains in the late evening when no other trains had to be crossed. Flows from Crianlarich (and Arrochar) to the rail-connected Kronospan mill in Chirk continued until 2009, when the service was suspended. This was attributable to a number of factors:

- principally, Kronospan identification of guaranteed tonnage from sources closer to Chirk
- neighbour noise complaints about late-night shunting of the yard
- the poor state of yard surfacing and configuration, and its safety and efficiency impacts
- police concerns about HGVs having to reverse out on to the A82 because of the current entrance configuration and lack of space within the yard – this is understood to have been regarded locally as the biggest issue of concern.

Following the cessation of the Crianlarich and Arrochar train, the only remaining timber by rail service was from Carlisle to Chirk – however, in 2010 this was joined by a regular trainload service to Chirk from a simple new railhead at Ribblehead in the Pennines. The current rail haulier, Colas, has introduced larger-capacity rail wagons and has delivered a supply chain which is robust and reliable. With renewed customer confidence, it has recently introduced a new timber train services from Teignbridge in Devon and is planning new railheads in South Wales and Norfolk.

4.2 Assessments of rail’s track record

The constraints on efficient rail freight haulage of timber traffic were highlighted in a number of consultancy reports in the 2000s, including the following:

- the 2001 Scottish Forest Products Transport Mapping study, by IBI and The Spaven McCrossan Partnership for Scottish Enterprise
Forestry Commission Scotland
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- the 2001 Feasibility Study of proposed Dalmally and Rannoch timber railheads, by The Spaven McCrossan Partnership for Argyll Timber Transport Group

These reports noted that virtually all the railheads recently used for timber traffic in Scotland had their origins in the Victorian era, had had minimal investment in modern times, and suffered to a varying extent from:

- short siding lengths relative to full train haulage capability
- rail operational complexity, typically requiring additional shunting movements to aggregate/disaggregate part or whole trainload quantities from/to individual sidings
- inadequate rail route infrastructure, such as those constraining train lengths on the West Highland Line
- lack of hardstanding and space for lorry manoeuvres and timber storage
- poor immediate road access, in terms of road width and community impact on adjoining residential areas
- high rail prices and poor service quality – in part reflecting rail’s inherent difficulties in handling irregular wagonloads as opposed to regular full trainloads
- a limited demand for long hauls suiting rail economics.

The 2005 Deltix study also noted that attempts over the previous 10 years to create a better match between rail transport and the forest products industry – for example by providing new purpose-designed railheads (eg Dalmally and Rannoch), enhancing existing railheads (eg Beattock), and connecting more mills to the rail network (eg Lockerbie) – had typically foundered on high capital cost and the complexity of dealing with Railtrack (the then rail infrastructure owner, now Network Rail). In February 2009 a paper by Colin Mackenzie for the Highland Timber Transport Group – The Transport of Timber by Rail: Facing the Challenge – identified three key obstacles, based on experience in the Highlands:

- the long established primacy of road transport (including its known reliability and costs, and its relative simplicity compared to the rail industry)
- the lack of rail-connected mill destinations
- the requirements and costs of Network Rail (including long lead times).

Following a visit to the longstanding timber railhead in Carlisle by Mackenzie and Roland Stiven of the Timber Transport Forum (TTF), the latter produced a September 2009 briefing paper – Logs on Rails: Kronospan’s Roundwood Rail Freight – which attributed the railhead’s success to five factors:
• a simple supply chain, with regular deliveries of large quantity of a limited number of products

• a dedicated contract rail service for one buyer to one rail-served destination

• reliable access to a choice of timber suppliers and road hauliers

• the lease of adequate sidings – to handle full trainloads; with adequate road access, storage space and a weighbridge; and well clear of any operational main line and associated Network Rail safety restrictions

• good quality rolling stock and convenient repair facilities.

The latter point also illustrates an almost unique characteristic of this railhead’s location compared to timber railheads elsewhere – namely its proximity to a major freight operations hub on the West Coast Main Line, Britain’s premier trunk freight route. One should also add that a minimum length of haul is required for rail’s economics to match or undercut road haulage – in the case of Kronospan at Chirk, with its own private rail siding, this is significantly less than if a final road delivery from railhead was required. Carlisle to Chirk is approximately 165 miles, and Ribblehead to Chirk some 125 miles.

To the lists above of key factors in rail success or failure should be added a crucial issue related to the principle of partnership and good communication between all the players in the supply chain – namely the critical importance of the motivation, management and performance of the rail haulage company. In the last years of timber train operation by EWS there was a perception that the company had little interest in timber traffic and considered that it could not be made profitable. This experience has left a lasting impression on those involved within the local forest industry, and the rail industry therefore has to overcome a negative perception about future rail capability based on core issues such as:

• a past inability to demonstrate that competitive rail economics can stand the test of time and that services can therefore be sustained for the foreseeable future

• difficulties of engaging effectively with the rail industry on train paths, service performance, wagon repairs and availability, etc

• rail’s lack of flexibility to serve alternative destination locations.

Fortunately, there also appears to have been a widespread belief that rail should be able to work, if services are properly planned and managed. In England and Wales the poor image of rail inherited from the last days of EWS has now been transformed by Colas Rail, a much smaller and more focussed company, which (as we shall see in Section 5) has delivered on price and service, earned a reputation for reliability and attention to detail, and is steadily expanding the timber-by-rail network through careful planning of locations for loading and the development of associated trainload services.
Looking north at Crianlarich Upper in 2005 [copyright J Furnevel]

Looking south over Crianlarich Upper in late summer 2011

Looking east towards the site of the proposed Crianlarich Lower railhead (middle distance, along the rail track beyond the yellow-jacketed figure) in 2005
4.3 Technical innovations

Before concluding this review of rail’s past performance, mention should be made of three technical innovations which have sought (unsuccessfully to date) to address some of the economic constraints on rail involvement in timber transport – namely containerisation, the Non Intrusive Rail Crossover System (NICS) and the Freight Multiple Unit (FMU), as shown in the photos on page 13.

(i) Containerisation:

Although all rail borne timber in Britain moves in conventional rail wagons, from time to time there has been interest in the potential application of the virtually ubiquitous containerisation concept to timber transport.

An Intermodal Rail Timber Demonstrator Project was undertaken for Scottish Enterprise by The Spaven McCrossan Partnership in 2001, with David Spaven (now of Deltix Transport Consulting) as Project Manager. As part of that study, an in-forest physical trial in the Carron Valley, using the ‘Containerlift’ lorry-mounted crane system, concluded that a saving of 25-35 minutes on a forest-railhead-forest cycle (excluding transit times) appeared achievable through containerisation, which would eliminate the load from forest roadside pile to conventional road trailer, and the load from trailer to rail wagon. Other key benefits of containerisation could include increased flexibility for backloading, and the ability to retain the integrity of each container load in storage areas at destination mills.

The study concluded that it was however the entire supply chain encompassing timber loading, container loading, road shuttle to railhead, railhead operations, rail trunk haul, and final delivery into the customer production process which would be critical in determining whether containerised rail services could provide a more cost-effective service than use of conventional rail services or, more importantly, throughout road haulage, from specific harvesting areas and on specific geographical flows.

Subsequent consideration by the forest products industry at a Timber Transport Forum Seminar in 2002 concluded that the general application of containerisation to the harvesting of round timber was not suitable to current British forest and mill operations, for a variety of reasons (some of which had been identified by the Spaven McCrossan study), including:

- the limited number of bulk flows available from one harvesting site to one production site
- lack of space for container operations on and beside forest roads
- the need to keep different timber cuts at the harvesting site separate for different markets
- probable increased damage to forest roads
- re-gearing of mill operations including weighbridge procedures and container storage.

However, the seminar did also conclude that there were specific flows where containerisation would work, and that “if conditions were right the implementation of a
containerisation solution should be relatively straightforward since there is equipment on the market suitable for movement of round timber”.

In his conference presentation at Perth in 2010, Tom Curry of Direct Rail Services reported on DRS research into the scope for use of ‘flat rack’ type containers for rail timber movements to non-rail-connected destinations. To overcome the in-forest objections raised at the 2002 seminar, the containers would remain on the rail wagon at the forest-end railhead, with timber loaded conventionally by lorry-mounted grabs. The containers would only be used intermodally – ie transferred from rail to road – at the destination end, to simplify and reduce the cost of handling and delivery to mills. This method of operation would not secure the in-forest time-saving advantages shown by the Carron Valley demonstrator, but would provide increased flexibility for backloading and the ability to retain the integrity of each container load in storage areas at destination mills. It is now planned to pioneer this type of operation between the Flow Country and Inverness, as discussed in Section 5 below.

(ii) The Non-Intrusive Crossover System (NICS):

Given the inadequate facilities and locations of many timber railheads operated in the 1990s, a theoretical option has been to identify new sites for purpose-designed railheads at the heart of harvesting areas – however, the cost of new track and signalling connections to the main line are in general prohibitive in relation to the likely economics of timber-based terminals. In 2005 a Scottish-based company (NICSCo, a sister company to Railway Engineering Associates) began trialling the pioneering the ‘Non Intrusive Crossover System’ (NICS) based on a low-cost and flexible means of connection, which – through use of hinged assemblies – avoids cutting through main line rails and does not interfere with the existing signalling system.

The Deltix study of NICS timber transport applications in 2008 identified a shortlist of 22 possible NICS railhead locations in Scotland (some of which could be temporary, based on the portability and flexibility of the NICS equipment) for potential further research. NICS would represent a compromise between the ‘high cost / high flexibility’ of a conventional new signalled siding connection and the ‘low cost / low flexibility’ of ‘lineside loading’ (as described in Section 6 below). Compared to night-time lineside loading, NICS is much less constrained in terms of time and space. Daytime loading at ‘temporary’ sidings – connected to the main line to allow wagons to be ‘parked’ clear of the main line – is feasible, and sidings can be connected on relatively steep gradients, provided the sidings themselves are close to level. Once the wagons have been loaded, NICS would be swung back into use to allow the departure of the loaded train, and to allow access for empty wagons to repeat the process.

In the case of the timber industry, the portability of NICS could be crucial – both the NICS assembly and the sidings could be utilised in one location for a few years of harvesting, then transferred to another location where harvesting was required.

NICS has been successfully used in many free-standing trial situations and was utilised commercially on the West Coast Main Line four-tracking contract in the Trent Valley area (albeit physically separate from Network Rail running tracks) where it helped to reduce delays and to save money. In the meantime NICSCo have
Intermodal rail timber demonstrator using standard 20’ and 40’ flat rack containers – Carron Valley / Coatbridge Freightliner 2001

Specially modified 45’ flat rack container at Inverness in 2011

The FMU en route from Aberystwyth to Chirk in 2005

The prototype Non Intrusive Crossover in 2006
continued to improve the system and made modifications to strengthen components in line with stress tests – and now believes that it has a system which would give the comfort required by Network Rail in relation to previous operational safety concerns. NICS effectively has a World Wide Patent, with the exception of South America, Central Africa, Russia and India. Its prospects of early application in mainland Europe are good, and it is hoped the product will be used during 2012 for six months in the Netherlands to assist in an extensive track redoubling contract.

NICS has from time to time come very close to Network Rail approval for trial use on 'main line' engineering works, but due to issues of 'risk aversion' and difficulties of finding a consistent path through the (southern based) Network Rail safety endorsement process it has still not been authorised. However, an operating 'protocol' for NICS has been approved by the Rail Safety & Standards Board, and in February 2012 the Route Director Scotland for Network Rail is hosting a meeting with NICSCo to discuss the scope for a carefully-planned and closely-monitored timber transport trial on a lightly used but heavily forested rail corridor in Scotland. Such a trial could demonstrate the potential to transform rail economics, reduce disruption to rural communities and provide savings in the upgrading and maintenance costs of rural road infrastructure. Should a significant number of conveniently-located NICS timber railheads (with relatively short 'road' hauls, primarily in-forest catchments) become the basis of a feasible rail strategy, then there might be less need for larger permanent facilities such as has been proposed for Crianlarich Lower.

(iii) The Freight Multiple Unit (FMU):

In the mid-1990s it was hoped that the innovative Freight Multiple Unit (FMU) concept could hold the key to improving the economics of rail freight for shorter hauls and/or lower train payloads than would normally be commercially viable. A key feature of the prototype FMU is driving control cabs at each end of the train, reducing shunting movements and turn-round times, and avoiding the need for run-round loops. Engine power is spread beneath both cabs, thereby minimising axle loads and allowing the FMU to operate over rural routes barred to modern freight locomotives.

Due to relatively modest gross weight (typically up to 300 tonnes) and a high power-to-weight ratio, the FMU has performance characteristics similar to rural passenger trains and can therefore make maximum use of available train paths, without being shunted into sidings to let passenger trains overtake. The 'short and frequent' pattern of FMU operation - with train lengths typically 120 metres or less - avoids the crossing loop length constraints which can limit loco-hauled operation of conventional freight trains on single-track routes.

FMUs would not be cheap to build – at the time estimated at £1m compared to £130,000 for a 44t truck – and nor would they be cheap to operate, so the key to success would be very high utilisation of the equipment, and ideally very short road hauls at the source, with the FMU then running fast to private sidings at paper, board and saw mills. The Forestry Commission, Amec Spie, EWS and Inbis Rail, the engineering company which was developing the FMU concept, ran a successful commercial trial with a prototype FMU from a temporary timber railhead in Aberystwyth to Kronospan at Chirk in 2005.
The promoter of the then planned Barrhill timber railhead intended to use a variant of the FMU for flows to Scottish, English and Welsh destinations. The project secured a Freight Facilities Grant but was then abandoned due to site difficulties with Railtrack, none of which related to the FMU concept itself. However, the commercial development of this new type of rail vehicle subsequently stalled.

4.4 Conclusions on rail track record

The established Carlisle-Chirk and more recent Ribblehead-Chirk and Teignbridge-Chirk trainload services have demonstrated that timber on rail can work very well – in the right circumstances. The reasons for rail’s past decline – and failure to realise its undoubted potential – can be summarised as follows:

- the inadequate capacity and capability of traditional railheads serving timber harvesting areas
- the cost of creating new railheads closer to key harvesting locations
- the limited number of destinations mills which are directly rail-connected at present
- a limited demand for large volume flows over long hauls suiting rail economics (the distance factor being exacerbated by the small number of rail-connected mills)
- rail price and quality of service problems, particularly during the tenure of the previous rail haulier (EWS) prior to timber train contracts being won by the current haulier, Colas Rail, in 2007
- the failure, to date, to introduce technical innovations which could help to transform rail’s competitive position.

The 2009 Timber Transport Forum paper Logs on Rails: Kronospan’s Roundwood Rail Freight – which attributed the Carlisle railhead’s success to five key factors, as discussed earlier – is perhaps the most succinct summary of the optimum conditions for success in the movement of timber by rail in current economic circumstances. However some of these factors are not likely to be fully or at all replicable at other locations, including Crianlarich.

A key question which therefore arises is to what extent rail and the timber industry – with or without technical innovations – can accommodate sub-optimal circumstances, making appropriate compromises so that timber flows from the West Highlands can reliably reap the benefits of the big volume / long-haul economics of rail?

Issues around the nature of the supply chain, the number of suppliers and customers using any given train service, rail wagon maintenance back-up, and the rail connectivity of key destinations therefore provide the critical wider context for assessment of site-specific capacity and capability issues for a Crianlarich railhead.

4.5 Review of previous Crianlarich railhead proposals

From the mid-2000s to 2010, several attempts were made to progress the concept of a conventional railhead at Crianlarich (Lower) on the remaining stub of the line which
formerly served the bespoke timber railhead to the east of the village, utilising the signalled Network Rail connection from the Crianlarich-Oban line – a purpose-built railhead design capable of accommodating the biggest trains. At the time of its design, a train of 12 wagons (480t payload) was considered to be the maximum length which could be accommodated in the crossing loops on the single-track West Highland Line, but prior to the cessation of rail service in 2009 the new rail haulier (Colas) had secured dispensation to run ‘over-length’ trains of 15 wagons from Network Rail.

In mid-2007 a Kronospan-led initiative for the new railhead (estimated cost £2.5m) had reached an advanced stage of discussion with Network Rail and a Freight Facilities Grant application to the Scottish Executive was in preparation. However, in late 2007 Kronospan decided to withdraw from the project. It is understood that key factors in its decision were:

- lack of long-term security of supply from the Crianlarich catchment
- competing long-term availability of supply from the much closer Borders and Dumfries & Galloway regions, served by the Carlisle railhead
- unwillingness to act as the sole funder (other than anticipated Scottish Government grant aid) for a multi-user facility.

However, in 2008 the concept was revived in modified form by CONFOR, working with the A-Rail consultancy and Railway Engineering Associates. To reduce capital expenditure it was envisaged that instead of a railhead with two loading sidings and a run-round loop for the train locomotive (to avoid any main-line train propelling movements), just a single siding and simple loading pad would be provided at a multi-user railhead, with trains required to be propelled by the locomotive from the railhead to Crianlarich (Upper), where run-round would take place to enable the train to then depart for the south.

While some issues around land purchase and road access remained outstanding, the project had attracted support from a wide range of agencies – including Crianlarich Community Council, Loch Lomond & Trossachs National Park Authority, SEPA, SNH and Transport Scotland. In the context of potential Freight Facilities Grant support, the Scottish Government had advised that, “the facility will need to be owned by a single entity who commits to transport timber by rail” – it was therefore mooted that a jointly-owned company be set up to own and operate the railhead and to contract for rail haulage. This might be along the lines of the Lockerbie Rail Freight Company which was set up in the late 1990s to develop rail facilities at the Steven’s Croft forest industry development site – although this rail project unfortunately failed, due to the lack of a champion in the rail industry and the difficulties of reaching agreement with Railtrack.
5. REVIEW OF EXTERNAL CHANGES SINCE EARLIER FEASIBILITY WORK

Since earlier feasibility work went into abeyance in 2010, a number of external changes have taken place which may have implications for the proposed Crianlarich railhead. The first two of these relates to local timber demand and the other seven to new / emerging factors in the transport sector itself.

The planned 5.6MWe Killin biomass plant – which has now secured planning permission – will utilise around 60,000 tonnes of wood material annually from a supply radius of 50km from the plant, the catchment adjoining those of two similar projects in Cowal and mid Argyll which are already consented. Clearly there is a strong geographical overlap with the notional 35-mile radius catchment for a Crianlarich timber railhead.

The 'pecking order' for biomass fuel is brash, deadwood, small diameter stem wood which has no other markets, oversized and bent logs, arboricultural and hardwood material from management of birch woods, then larch and pine diverted from more distant board markets (such as Kronospan at Chirk) and the rejuvenation of thinning in the area. Overall, therefore, the plant is expected to use significant volumes of material which is not currently used, but there will be some diversion of chip wood and to a lesser extent pulpwood otherwise intended for paper mills. It is anticipated that a higher proportion of the material will be displaced chip / pulp in the early years until harvesting of other types of fuel wood (and thinning) accelerates – this is potentially a maximum of 40ktpa, reducing over time.

In terms of potential rail destinations for a Crianlarich railhead, there may therefore be: some displacement of flows to Kronospan; no diversion of saw logs for BSW at Carlisle; and probably no diversion of pulp wood for Iggesund at Workington (it is understood that the bulk of its material is co-products from saw mills in the Cumbria / Dumfries & Galloway areas).

The completion of BSW’s relocation from Kilmallie to the expanded and partially rail-connected sawmill site at Corpach may have an impact both in terms of (a) timber demand in the ‘Crianlarich catchment’ (potentially abstracting from flows which might otherwise have gone to southern rail destinations), and (b) rail haulage opportunities and synergies. While the current relativities of road and rail haulage economics mean that a resurrection of the Crianlarich-Corpach shuttle timber train is not in prospect, BSW utilisation of rail for movement of sawn timber to southern markets may create rail spin-offs for other locations on the West Highland Line, including Crianlarich.

Preparatory work has progressed on the planned A82 Crianlarich Bypass, which would be routed to the west of the village. Transport Scotland’s published Environmental Statement for the scheme notes that the annual average daily traffic flow on the stretch of the current A82 would reduce as follows:

- from 5,700 vehicles to 3,000 vehicles on the section of the road between the centre of the village and its western end – on which the planned road access to the Crianlarich (Lower) timber railhead is located

- from 3,400 vehicles to 700 vehicles on the section of the road on which the existing access to the Crianlarich (Upper) railhead is located.

This raises two possibilities with regard to Crianlarich Upper after the bypass has opened:
(a) Modest changes to the entrance to the existing railhead and the main road alignment – to facilitate lorry manoeuvring movements in and out of the railhead and to provide a limited enhancement of its capacity and capability.

(b) Substantive changes to the size, configuration and boundaries of the railhead facilities in association with a substantive re-alignment of the 'former A82' further west – allowing a step-change enhancement in the railhead's capacity and capability.

However, information supplied by Transport Scotland implies that it may be four or more years before the bypass is completed, well beyond the more immediate time focus of this study. Nevertheless, it is possible that approach (a) above could be wholly or in part implemented before the bypass, without prejudice to more substantive longer-term upgrade, therefore all three options – plus a ‘do minimum’ scenario – are explored in Section 7 below.

After several years’ planning, in August 2010 Colas Rail began operating regular trains from a timber railhead at Ribblehead in the Pennines to Kronospan at Chirk. The once-weekly service has now expanded to three times a week. The rail facility is simple, comprising two sidings which formerly served an adjacent quarry plus some basic hard core surfacing for lorries. Crucially for rail economics, each of the sidings is of sufficient length to accommodate the maximum train length of 13 wagons (520 tonnes payload). Interestingly – measured against the optimum criteria set out in the 2009 Timber Transport Forum paper – it has no weighbridge and is remote from major repair facilities for rail wagon (running repairs being carried out by mobile operational staff). Loads are weighed at the customer destination.

Colas in conjunction with Network Rail has now opened a timber railhead at Teignbridge in Devon – for initially once-weekly trainload movements to Chirk – and this may create spin-off opportunities for the deployment of the locomotive and wagons for other flows on other days of the week. New services are also planned for South Wales and Norfolk. Colas is the smallest of the five rail freight hauliers in Britain – and with fewer resources and less buying power for fuel, has had to be reliable, flexible and innovative to survive and prosper in a highly competitive market. Its philosophy is to start new initiatives on a small scale, prove their operational economics and reliability, and then develop further on a phased basis, such as moving to two trains a week, then three trains, etc.

‘New’ timber railheads have been established where a ‘fit-for-purpose’ facility – with existing rail connection – can be created on Network Rail or private (non rail industry) ground at modest cost. Expenditure of only tens of thousands of pounds can typically be justified for a commercially viable project, in some cases assisted by contributions from key stakeholders, eg in the case of Ribblehead the local authority acting on behalf of the National Park Authority. In the latter case, there are planning restrictions on operating trains only on Mondays to Fridays and with no more than five lorry movements in and out of the railhead daily – and Colas have been able to comply fully with this requirement while still delivering a viable operation.

John G Russell (the Scottish logistics company) and Scottish Woodlands are leading the current £400,000 ‘Roundwood by Rail’ Strategic Timber Transport Scheme project to introduce containerisation for the movement of timber by rail from the Flow Country to the Norboard plant near Inverness. The key to this project is the use of specially-adapted demountable ISO ‘flat rack’ containers (of 45’ length) for carrying timber from forests in the Strath of Kildonan which are effectively ‘land-locked’ (ie
there is no proper road access) but are almost adjacent to the railway. The containers will not be loaded in the forest, but rather harvested timber will be loaded conventionally into in-forest ‘forwarder’ machines or lorries operating with ‘red diesel’ dispensation. The logs will be transferred by vehicle-mounted HIAB cranes on to the containers sitting on rail wagons at three ‘lineside loading’ locations (i.e. on the ‘main line’, without any sidings) during night hours when no other trains are running. This system will enable the use of standard skeletal rail wagons which can be redeployed for other traffic commodities when not required in the Far North; it will also reduce rail-road transfer costs at Russell’s existing Inverness railhead, as well as cutting costs by the use of conventional skeletal road trailers for the final delivery to Norboard. Russell has recently succeeded in getting Network Rail approval for a prototype container, and this method may well have wider applications for non rail-connected timber destinations in other parts of the country. The intended rail haulier for this service is understood to be Direct Rail Services, which has existing operations at Inverness.

Development work has continued on the planned Rannoch (Barracks) lineside loading facility. This project was awarded grant aid through Freight Facilities Grant and the Strategic Timber Transport Scheme in 2009, but has not yet been implemented due to difficulty in reaching agreement with Network Rail on operational and cost issues. Forestry Commission has submitted a proposal to NR for how it would construct the lineside loading facility, and is now engaged in discussions with NR on what further information it needs on site operations in order to give an estimate of its costs.

During 2011 consultants AECOM completed the HITRANS Timber Scoping Study. A particular emphasis in the report’s examination of opportunities for modal shift to rail and sea was the scope for extracting timber from remote locations without using the road network. AECOM envisage in-forest machinery supplying rail sidings (as explored in the 2005 Deltix report on Potential Timber Transport Applications of the Non-Intrusive Rail Crossover) with timber then delivered by rail to strategic sidings close to major customers.

In its November 2010 Budget proposals, the Scottish Government announced its intention to scrap the long-standing Freight Facilities Grant scheme (providing grant aid of up to 75% towards capital investment required to secure mode shift from road to rail and sea). Following a strong campaign by freight and environmental interests, the scheme was reprieved in February 2011, but only on the basis of a limited budget of £2m for schemes which could be completed within the financial year 2011-12. The Scottish Government’s recent spending announcement on Freight Facilities Grants indicated that a budget of just £750,000 would be available in 2012-13, rising to £2m in 2013-14. This study therefore addresses upgrading options at Crianlarich Upper which would lower capital costs than entirely new facilities at Crianlarich Lower.

It should also be noted that modal shift has been aided by the Mode Shift Revenue Support grant scheme, which has potential application to timber flows.

Over recent years, the greater vulnerability of road haulage than rail freight to fuel price increases has become more apparent. In the case of rail haulage, fuel costs typically (averaged across all sectors) now represent 20%-30% of operating costs, whereas for road haulage the comparative figure is typically between 30% and 40%. This key commercial issue is also closely linked to public policy objectives for carbon reduction. The Scottish Government’s 2011 document Low Carbon Scotland: Meeting the Emissions Reduction Targets 2010-2022: Report on Proposals and Policies (RPP) indicates that £15m has to be spent annually between now and 2022
on freight modal shift in order to deliver on carbon targets – although as we have seen above, there is currently little clarity on how this relates to the immediate Spending Review plans.

A relevant constant factor since 2010 is the continuation of the Strategic Timber Transport Scheme (STTS), for which new funding of up to £2m pa has been made available for the years April 2012-March 2015. The scheme’s aim remains “to facilitate the sustainable transport of timber in rural areas of Scotland for the benefit of local communities and the environment, maximising the value of monies available through innovative Regionally and Nationally Strategic projects and partnerships.” Projects continue to have to demonstrate community and social benefits, environmental benefits and reduced damage and disruption to public roads. A further objective of the scheme is to enable improved access to landlocked forests, whilst at the same time delivering the key objectives above. STTS can only be used where other grants (such as Freight Facilities Grants) cannot deliver.
6. RAIL DEMAND ANALYSIS

6.1 Introduction

The analysis of potential demand for use of a Crianlarich railhead and associated train services has been based on intelligence gathered from the following sources:

- Argyll Timber Transport Group (ATTG) 2007 forecasts of timber production in the Crianlarich catchment
- an e-mail demand survey produced in conjunction with Claire Glaister and Kirsty Robb
- discussions with ATTG and Forestry Commission Cowal & Tayside
- discussions with Colas Rail.

6.2 2007 ATTG data

This data was produced in 2007 by Ian Arnold of ATTG, using Forestry Commission production forecast figures and ATTG estimates of private sector production to generate annual total production estimates for the Crianlarich catchment, i.e. within 35 miles of the railhead. Between 2012 and 2016 inclusive the annual total estimated was 121,000 tonnes, rising to 185,000t annually between 2017 and 2026.

Of the 2012-16 totals, some 53% was private sector (not defined geographically), 31% from the nearest FC forests (Glen Orchy), 7% from FC Fearnoch and 8% from FC Cowal & Strathyre. In later years the private sector share would drop to 38% and FC Cowal & Strathyre to 6%, with FC Glen Orchy rising to 42% and FC Fearnoch to 14%.

The totals of course do not define what proportions might supply different markets – both sectorally and geographically. Compared to the situation in 2007 when the market was essentially dominated by pulp wood (for paper and board manufacturers) and saw logs, the local and regional biomass market is now a growing factor which has some overlap with pulp wood. In the absence of rail services to Chirk since 2009, there has been further consolidation of supply to shorter-haul markets within Scotland, including for example three major mills in Ayrshire – only one of which is rail-connected. It would appear that the Crianlarich Lower proposal was developed at a time when a key driver was producers’ concerns about availability of markets and the need to maximise opportunities for cost-effective longer hauls, whereas – as partly evidenced by the demand survey (see 6.3 below) – the primary interest in rail now appears to be coming from timber users. The latter – particularly if they can benefit for existing or potential rail connection to mills – can potentially underpin longer-term supply contracts with use of rail, whose investment profile also tends to be long-term.

Given the inevitable predominance of major markets close to supply sources – and even allowing for the fact that the availability of a rail service will in itself stimulate changed patterns of timber movement – it seems improbable that the full 120,000t+ / 160,000t+ plus capacity of a bespoke timber railhead would ever be required, unless there were very major changes in the relative economics of road and rail. Given the latter’s significantly lower dependence on oil, such changes are by no means unlikely, but the timing and extent of these remain uncertain.
6.3 The demand survey / discussions with forest industry players

(i) Introduction:

A pro forma survey (as shown in the Appendix) was created in conjunction with Claire Glaister and Kirsty Robb, covering the following question areas:

- potential volumes on key rail flows (Crianlarich and Arrochar)
- road collection distances
- facilities at Crianlarich railhead
- rail ‘added value’ opportunities
- leadership / ownership / management of a railhead development project
- commitment to rail volumes
- impact of wider market developments on railhead prospects.

The survey (with a covering e-mail from Claire Glaister) was sent to the following:

- Aitcheses Ltd
- Balcas Timber
- Confederation of Forest Industries
- Egger
- Euroforest
- Forestry Commission Scotland
- Forest Enterprise Scotland
- Fountains Forestry
- Highfield Forestry
- Iggesund
- John Clegg & Co.
- Loch Lomond & Trossachs National Park Authority
- Norbord
- Northern Energy Developments
- Robin Dixon
- Scottish Woodlands
- Stirling Council
- TACTRAN
- UPM-Kymmene / UPM Tilhill
- Adam Wilson & Sons

There were only four respondents to the survey, but two of these are major (private sector) players in terms of production / harvesting – Scottish Woodlands and UPM Tilhill.

(ii) Flows and volumes:

Based on recent experience of the minimum haul lengths for rail to compete with throughout road haulage, just three potential rail destinations were specifically suggested in the survey (BSW Carlisle, Iggesund Workington and Kronospan Chirk), but a further category of “Other major long haul destinations in England / Wales” was also offered.
Two of the respondents to the demand survey did indicate that they might each convey up to 100tpw by rail to each of Carlisle, Workington and Chirk. One of the respondents might, in addition, consign up to 100tpw by rail from Arrochar to each of these three destinations. Taken at face value, the combined volumes to Carlisle and Chirk (the most likely initial rail destinations) total 600tpw – which would represent almost exactly the payload capability of a weekly train service.

The road catchment distance indicated by respondents was typically up to 40 miles from both railheads.

The rail-connected Caledonian Paper (UPM-Kymmene) mill at Irvine was not offered as a potential rail destination in the survey, but it is known to be a major market for locally harvested timber – and as noted in Section 7.5 below, there may be scope for a cost-effective rail flow from Crianlarich to Irvine.

(iii) Facilities required at Crianlarich:

Comments by respondents on the ‘minimum’ facilities desirable at Crianlarich are reproduced verbatim below:

“An upgrade of existing facility with improved surfacing and access improvement for lorries to access and exit although I believe the site constraints make this difficult to achieve. Additional signage on public road to warn of operations and possible warning lights to ensure safety compliance for lorries accessing and exiting site.”

“Concrete surface to allow the sweep-up of bark / debris, a constant battle with the previous operation...”

Comments by respondents on the ‘optimum’ facilities desirable at Crianlarich are reproduced verbatim below:

“Improved access and ability to turn lorry within site. A Weigh bridge on site would be useful as payment could be based on this facility.”

“Weighbridge, loading capability (as load safety was always an issue previously for the rail operator), lorry park and rest area”

Comments by respondents on ‘other aspects of capacity / capability’ are reproduced verbatim below:

“Need possibly for someone to be on site to supervise operation but very much dependant on customer and rail provider how this would work.”

“The industry has moved on since the previous rail receiver (Kronospan) stopped operations due to local public objection re noise, and concern over safety through lorry movements. The industry now supplies more local markets throughout the highlands, and central Scotland, without losing the processing benefit to Mid Wales. Arrochar was stopped in advance of Crianlarich due to fierce local objection on the grounds of safety, noise, suitability of siding, and road damage.”
(iv) Rail’s added-value:

Comments by respondents on possible ‘added value’ from rail are reproduced verbatim below:

“Rail generally helps to maximise the volume which can be moved in a short space of time and helps to open up markets further afield. Shorter hauls to railhead can improve stumpage values to woodland growers which is a positive factor to promote new planting and restocking. Storage is important but is an added cost and better to avoid if at all possible however useful to have the option in the event of breakdown or another problem which allows timber to be moved from forest to railhead.”

“Timber security would be a problem for the storage of timber at such a location.”

(v) Rail’s unique selling points:

Independently of the e-mail survey, discussions with Ian Arnold, Colin Mackenzie and Nick Wilby pointed towards rail’s potential USP of storage capability close to – but not in – local forests. Over the last two winters, lorry access to forests has been problematic for several months, and the availability of sufficient suitable storage space at the railhead could be strategically useful. Of course, it has to be borne in mind that with the current footprint and layout of the Crianlarich Upper facility, the scope for storage is minimal.

These discussions also suggested that the logistics of moving long poles to the likes of BSW Carlisle could be easier by rail than road.

(vi) Leadership / ownership / management of a railhead development project:

Comments by respondents on ‘leadership / ownership / management’ issues (other than one or two-word negative responses) are reproduced verbatim below:

“The timber purchaser who ever that might be as they can control agreed volumes and quota requirements. Problem occurs if more than one purchaser and who controls what but could have different trains allocated for different days which has worked before.”

“Kronospan would be the main beneficiary, therefore it is important that one or 2 organisations do not gain commercial advantage.”

“Not sure anyone should lead as this facility is only for a small part of the wider industry.”

“Our Company can only contribute as a timber supplier as we source our timber from a lot of private clients and we can manage this supply chain. Indirectly our clients would contribute financially as the costs would ultimately be deducted from the value of the railhead price for the timber.”

“Ideally the timber processor would undertake this role in conjunction with the rail provider”
“If it HAS to go ahead it should be operated independently of forestry companies.”

(vii) Commitment to rail volumes:

In response to the question: "How could aggregated volumes from various parties be ‘committed’ in order to secure the best possible price and service for a regular train service from Crianlarich to key English and Welsh destinations?" respondents commented as follows:

“It is really up to the Timber processor to have agreement with the suppliers such as ourselves who would commit volume. Possible to have more than one processor managing site on different days or periods purchasing different products. May take a bit of discussion / agreement to resolve the best management model guaranteeing regular supplies."

“I really don't know as we wouldn't play any part in this.”

(viii) Wider market trends:

In response to the question: "How do you see longer-term industry demand and supply trends impacting on the economics of a Crianlarich railhead and associated train services?" respondents commented as follows:

“I suggest that the re-introduction of the rail service would compete with the volume currently utilising the Timberlink subsidised shipping service, to the benefit of Welsh and English based firms, thereby removing the processing spin-off from Scotland."

“Timber within the Crianlarich catchment is a vital part of the supply chain to 3 major Ayrshire based companies. I have to ask, why are we facilitating a transport solution for English and Welsh companies at the expense of these long established Scottish companies?"

“Very hard to predict but if small scale power plant went ahead at Killin this would obviously affect supply but at end of the day it depends who has most buying power in the market place and where the actual timber market. I think there must be a role for rail to move timber efficiently to the further afield markets in the long term.”

“More local markets being created for sawmilling capacity (eg BSW Kilmallie) and for smaller scale biofuel plants. This will require less long-haul requirement.”

“We are the developer of a biomass power project near Killin (13 miles to the east of Crianlarich) - the project planning application is due to be determined in Nov. The project will utilise 60K tonnes per annum of forest sourced low grade round wood and some brash. The supply for this project is anticipated to come from a radius of 50km round the site. Therefore the likely wood supply catchment for the railhead and biomass project will significantly overlap. The presence of a local market would have an impact on the flow of timber through a Crianlarich railhead, particularly material that might be suitable for Kronospan and Iggesund.”
6.4 Discussions with Colas Rail

As part of a nationwide business development process, which is primarily – but by no means exclusively – focussed on existing / potential rail customers at or close to two existing rail terminals (Chirk and Carlisle), Colas Rail has expressed interest in the possibility of medium-term resumption of rail services from Crianlarich and Arrochar, initially with a weekly train to Chirk (and possibly also Carlisle).

Colas are also open to the idea of other potential rail destinations from Crianlarich / Arrochar. When it last investigated the scope for conveying Iggesund traffic by rail to the nearby Workington Docks railhead, Colas found that, compared to road haulage, the total cost of running a train out from Carlisle plus handling plus local road delivery was greater than local road haulage from Carlisle, where very competitive rates are available.

While the UPM-Kymmene mill at Caledonian Paper in Irvine is only 75 miles by road from Crianlarich, there may be scope for a cost-effective ‘hub-and-spoke’ rail service taking advantage of Colas Rail resources at its Carlisle base [or for a West Highlands to Carlisle timber train service to be routed via Ayrshire rather then the West Coast Main Line].

6.5 Other commodities

Information advised through ATTG suggests that the Tyndrum gold mine – which has recently secured planning approval – will generate some two lorry loads of product weekly to Holland. While in theory this long haul could lend itself to rail – ‘piggybacking’ on a timber train service – the low volume of business and the requirements for (i) container handling and appropriate security at Crianlarich and (ii) the timber train to operate via a suitable intermodal railhead to provide interchange with a Channel Tunnel train service, suggest that the rail would not be able to compete with road for this traffic.

In discussion with ATTG, no evidence was forthcoming of aggregates traffic which had been suggested as a potential user of Crianlarich rail services. Any such traffic would in any event require different handling facilities from timber.

6.6 Conclusions

Intelligence gathered for this study indicates that the market, in the form of Colas Rail, is interested – subject to availability of grant aid and/or contributions from, and partnership with, the local forest industry – in the medium-term potential to deliver a resumption of rail services from Crianlarich Upper to Carlisle and Chirk, initially with a weekly train, then seeking to build this up as confidence in the rail product grows.

While the sample which responded to the e-survey for this study was small and not necessarily representative, there are clearly reservations about the relevance of rail to the needs of the local forest industry, in part based on concerns relating to (i) past train service performance, (ii) ensuring fair allocation and control of train space where more than one consignor / customer is involved, and (iii) the quality of facilities at the Crianlarich Upper railhead. However, based on the way Colas Rail has steadily and successfully developed its timber-by-rail portfolio since Crianlarich lost its rail service in 2009, it can be assumed that these issues would be addressed by Colas Rail –
insofar as this could be done cost-effectively in relation to the volume of business on offer.

A wider issue of concern relates to the consolidation of local supply to Scottish markets since 2009, whereas rail is seen as only serving only the English and Welsh mill sector. While, as we shall see in Section 7, there is potential for rail to serve at least one rail-connected Scottish mill in the short-to-medium term, there might still be arguments about the displacement of one product (saw logs) by another (pulp wood). Furthermore, the forthcoming development of very local biomass markets – which have some potential overlap with rail movement of pulp wood – raises what can be viewed as a threat to local market stability by the return of rail services re-opening more distant markets. However, the other side of the coin is that rail can be regarded as an opportunity rather than a threat, as it gives the local industry more market options – and rail’s greater energy efficiency and lower carbon impact than road haulage is potentially a strategically important insurance for the future.
7. **RAIL SUPPLY ANALYSIS**

7.1 **Introduction**

The supply side of the analysis focuses on key issues in the following categories:

- the railhead – rail, road and handling operations
- the railhead – capacity
- the railhead – capital costs of upgrading / new construction
- rail route capacity / capability and train haulage economics
- rail connectivity of key destinations
- conclusions.

Likely planning and road access considerations are reviewed in Section 8.

7.2 **The railhead – rail, road and handling operations**

It is generally accepted that the operational arrangements for rail, road and timber handling when timber was last moved by rail from Crianlarich (and Arrochar) in 2009 were sub-optimal, as summarised in 4.1 above. However, the margins available on rail haulage were (and are) modest, and the rail haulier, Colas, had therefore identified an economic way of servicing the two railheads based on an ‘over-length’ train of 15 wagons and evening train operations. Any future resumption of train services from Crianlarich Upper and Arrochar would probably be based on a combination of the following wagon types:

- KFA – length 20.6m, payload up to 40t
- KSA – length 23m, payload up to 45t.

In reviewing the physical railhead options in 7.3 below, the analysis has ranged from a ‘do minimum’ in terms of operational arrangements through to a bespoke facility providing an optimal working system for rail, road, handling and storage, and fully meeting community / police concerns noted earlier. It should be emphasised, however, that in all cases, the ‘soft’ issue of agreed working arrangements and close liaison between Network Rail, Colas, road hauliers and suppliers / receivers of timber by rail will be crucial to the safety and efficiency of operations in and around any chosen railhead option.

7.3 **The railhead – capacity**

The potential rail throughput capacity of the various railhead options at Crianlarich is theoretically as follows:

- Upper (without ‘major upgrade’): 18,000tpa (one train pw) to 90,000tpa (five trains pw) – each train conveying nine wagons from Crianlarich (plus six from Arrochar)

- Upper (with ‘major upgrade’): up to 110,000tpa (five trains pw) – each train conveying 11 wagons (the maximum length which can be rounded at the station crossing loop) from Crianlarich (plus four from Arrochar); and this
option would substantially improve the road access, internal layout and storage capability of the railhead

- Upper (with ‘major upgrade’ and second daily train to service Crianlarich plus Arrochar): up to 180,000tpa (five trains pw) – taking full advantage of the 18-wagon length capacity of the upgraded railhead (but this scenario should be treated with caution until train pathing and potential speed of loading from road to rail have been fully investigated)

- Lower (minimalist option): up to 110,000tpa (five trains pw, of 11 wagons each)

- Lower (maximalist option): up to 150,000tpa (five dedicated trains pw from Crianlarich, of 15 wagons each)

In addition, it might be possible to run a second daily train from Crianlarich Lower / Arrochar, creating a theoretical capacity of up to 300,000tpa at Crianlarich, subject to train pathing and speed of loading from road to rail permitting – but anything remotely like this level of rail demand is inconceivable in the foreseeable future.

In theory, infrastructure upgrading work could be undertaken to lengthen the Crianlarich station crossing loop to 15 wagons (equating to the maximum weight of timber train which can be hauled south by a Class 66 locomotive) or more, but it is not clear that an increase in train size from 11 to 15 wagons for timber trains would make the business case for such substantial expenditure.

### 7.4 The railhead – capital costs of upgrading / new construction

There has long been an aspiration to provide a well-designed bespoke timber railhead at Crianlarich, but it has also been recognised that this is dependent on (a) a critical mass of sustained demand for the railhead and associated train services, and (b) availability of investment funds and, critically, grant aid in recognition of the public policy benefits of modal switch to rail. As rail margins are narrow, and – as noted earlier – the availability of grant aid may be restricted, this study has recognised that a range of options need to be reviewed for strengths and weaknesses, and that a judgement needs to be made as to which is most appropriate to the emerging demand and supply situation. Indicative costs have been supplied where this was feasible within the budgetary constraints of the study.

The principal options are as follows, beginning with Crianlarich Upper where there is an opportunity for very low-cost start-up (as well as more substantial changes), and concluding with Crianlarich Lower where both options necessarily involve significant capital expenditure.

**(i) Crianlarich Upper – ‘do minimum’:**

It is anticipated that if Colas concludes that resumption in rail service from Crianlarich Upper is commercially justified then it will require to negotiate a lease from Network Rail. A modest ‘tidy-up’ of the yard and refettling of the rail sidings would be required to meet acceptable standards for safety and efficiency of operations, but – particularly if the service begins at a modest level such as just one train a week (serviced by some 12-15 lorry loads) – there will be commercial justification for only a minimum of expenditure to create a reasonable ‘fit for purpose’ facility. It is assumed that this would be funded by Network Rail (as owner of the site) and/or Colas (as lessee).
(ii) Crianlarich Upper – ‘modest upgrade’:

Additional works could be undertaken both at the road entrance to the railhead, and in the handling / storage area between the two sidings. Depending on the standard of surfacing required, the cost of such an upgrade is estimated by Railway Engineering Associates (REA) to lie in the range £35k-£75k (excluding any drainage work).

In addition, if the standard train set used on the service results in ‘redundant’ lengths of siding (ie just too short to accommodate all of an additional wagon length) then each siding could be cut back appropriately to create additional lorry manoeuvring / timber storage space. This has not been costed for the purposes of this study, but costs are likely to be modest.

(iii) Crianlarich Upper – ‘significant upgrade’:

A more costly option would be to substantially reconfigure the road entrance to the railhead and to create a ‘hammerhead’ reversing facility (in the vicinity of the rough ‘lay by’ on the west side of the A82 south of the entrance) in order to eliminate reversing of lorries out on to the A82 from the railhead. The view might be taken that such a level of development would be appropriate for implementation around the time of initial resumption of rail services, in order to improve road access and working conditions in the yard and minimise local adverse impacts at the start of resumed operations. The potential layout as designed by REA is shown in Drawing No. C11/RO14/001 on page 50.

REA’s indicative estimate of the additional cost of such an upgrading (assuming Stage (ii) above had previously been implemented) is £140k, excluding land acquisition, drainage and diversion of existing services. If implemented as a single upgrade after Stage (i) the indicative cost range is £175k-£215k (with the same exclusions).

This costing assumes a high level of specification for the road surface, but in practice – other than for an apron extending a few metres from the main road – much of the hammerhead could be constructed to typical forestry road standards. This in turn raises the possibility of ‘in kind’ contributions from the local forest industry to help such a project to be delivered – such as stone from small local quarries and road design by Forestry Commission engineers. Contact would need to be made with the hammerhead area landowner about the principle of such an enhancement at an early stage of any future re-opening proposal.

Such an upgrade would appear to have good potential for STTS funding, given the qualitative outcomes and community benefits it would secure – whereas Freight Facilities Grant could be problematic in light of its quantitative environmental criteria based on reducing lorry miles on public roads.

(iv) Crianlarich Upper – ‘major upgrade’:

Based on the scenario that the A82 Crianlarich bypass is constructed, REA have produced an indicative design (Drawing No. C11/RO14/002 on page 51) for a substantially increased footprint for the railhead, encompassing:

- a new ‘former A82’ road alignment to the west
- a new road entrance and exit
- additional space for timber storage and lorry manoeuvring
• increased lengths for both single-ended sidings.

The latter feature would enable the complete nine-wagon train portion from Crianlarich to be loaded in a single siding, and thereby simplify train shunting operations (with the train arriving from the south placing a set of empty wagons on the other (unoccupied) siding). This upgrade option has not been costed, but the key advantages it might have over the Crianlarich Lower ‘maximalist’ option which is its comparator include:

• lower rail track construction costs – as Upper requires only two single-ended sidings (since the existing crossing loop at the passenger station enables the locomotive to ‘round’ its train without providing a dedicated loop within the railhead) and the existing ‘switches and crossings’ connecting the existing sidings to the ‘main line’ can be remodelled in situ for the new layout

• better road access – avoiding a need in the case of Lower for traffic-light controlled access to the A85.

On the other hand, it would also have disadvantages compared to the Lower option, notably

• realignment of some 350m of public road

• probably heavier earthworks costs (cutting in rock as opposed to infilling)

• around double the number of train shunting movements to detach empty wagons and attach loaded wagons (since Lower would have double-ended (loop) sidings plus its own rounding loop for the locomotive).

Based on a similar pattern of train services to the other Upper options, this option would not in itself increase the rail throughput capacity of the railhead (since this would be constrained by the length of the rounding / crossing loop at Crianlarich station) – however, by comparison with the three other Upper options it would simplify shunting operations as well as providing substantially more space for timber storage and lorry manoeuvring.

(v) Crianlarich Lower – ‘minimalist’ new railhead:

In 2008, following the withdrawal of Kronospan from the ‘maximalist’ project which had been based on two loading / unloading sidings and a locomotive rounding loop, discussions were held (involving A-Rail, Confor, Forest Enterprise, Kronospan and UPM/Tihill) on the scope for a simpler and less-costly start-up option, which could if required be developed later to the full throughput capability of the original scheme.

The ‘minimalist’ option was based around a single loading / unloading siding adjacent to a 10m wide concrete pad, plus a further 5m storage strip on open ground. The single siding would necessitate complex shunting movements to and from the rounding loop at Crianlarich Upper, where the arriving set of empty wagons would have to sit until the locomotive had brought the loaded wagons up from Lower. These shunting movements would be similar in number to those for the ‘major upgrade’ railhead at Upper, but over a greater length of track. It would also be necessary to construct a safe walking route immediately adjacent to the track to enable the train’s ‘ground staff’ to precede the train on the ‘propelling’ (reversing) movement of the loaded train from Lower to the Upper rounding loop. It is not in any event certain that Network Rail would authorise such a long propelling movement.
The proposed road access for this option – unlike that for the ‘maximalist’ option – would involve a roadway running east from the railhead site along the abandoned solum of the line towards Callander, under the viaduct carrying the West Highland Line towards Tyndrum, then turning sharp right to make a new junction with the A85. There could be land acquisition and planning issues associated with this option (but see 8.2(i) below), and the proposed road junction with the A85 looks potentially problematic.

The extant papers from this period do not identify the length of loading/unloading siding envisaged, but as the key constraint would be the length available at the Upper crossing loop (allowing the locomotive to ‘run round’ the laden wagons after propelling up from the railhead and before hauling the train south to market) – it is understood that the maximum train length would therefore be 11 wagons, or the equivalent of around 110,000tpa rail throughput. This is the same level of throughput as could be achieved by like-for-like train frequency with the ‘major upgrade’ at Crianlarich Upper, and 40,000tpa less than with the ‘maximalist’ option at Crianlarich Lower.

The capital cost of this option is estimated as around £1m at today’s prices – but excluding land purchase, road access, power supply or lighting, which might increase the total to the order of £1.5m-£2m.

(vi) Crianlarich Lower – ‘maximalist’ new railhead:

Until late 2007 it was envisaged that a high-capacity new railhead would be provided at the Crianlarich Lower site, which – with 15-wagon trains – would be capable of handling 150,000tpa rail throughput, as well as offering extensive storage capability. The railhead would comprise two loading/unloading sidings on each side of a 12m wide pad, plus a locomotive rounding loop (as shown in Drawing No. RO11_001 on page 52).

The road access would be via a new (traffic light controlled) junction with the A82 immediately north of that road’s reverse curve alignment under the Crianlarich-Oban railway.

The estimated capital cost was £1.6m – excluding land purchase, road access, power supply or lighting. If serviceable (second hand) track was available for the siding works then the cost could be reduced to around £1.3m. The extant papers include a draft FFG application document of August 2007, prepared by A-Rail for Kronospan, which quotes a total figure of £2.3m (including 10% contingencies).

7.5 Rail route capacity / capability and train haulage economics

Colas Rail has advised that Crianlarich Upper could previously accommodate 10 KFA wagons in the two sidings, but possibly only nine of the longer KSA wagons – a measuring exercise will be required before any resumption of service. Arrochar could accommodate seven wagons, so in theory a combined train length of 16-17 might be possible, but this is not possible due to the maximum ‘trailing load’ which a standard Class 66 locomotive can haul over the West Highland Line gradients south of Crianlarich – 1,080 gross tonnes (a fully laden train of 10 x KSA plus 5 x KFA wagons) or a payload of around 600 tonnes of timber.

As an ‘overlength’ train is required for competitive rail economics, this can only be run with dispensation from Network Rail at times when its operation (and associated additional time to complete the issue of electronic ‘tokens’ for each single-track block.
section) does not delay passenger train workings. While the rail industry has ‘permitted development’ rights to operate trains at any time it chooses, it may be possible to timetable an overlength timber train such that it arrives at Crianlarich not long after 20.30 and completes its shunting and departs south by 22.30 – thereby avoiding shunting operations during ‘unsocial’ hours.

It may be difficult to identify more than the one currently-authorised return daily ‘overlength’ path on the line, and as the evening northbound path is already used once or twice weekly for alumina trains from Blyth to Fort William (which return during the day), this might limit the maximum timber tonnage which could be carried from Crianlarich. However, as the northbound timber train would be empty, its point-to-point timings would be relatively fast and therefore potentially easier to slot into another path. This is a detailed timetabling issue for Colas to resolve with Network Rail.

While there is no prospect of a return to the uneconomic consignment of as little as single wagons for single customers (as in the peak years of timber by rail in the 1990s), there should be scope for one train to comprise, say, up to three different portions (five or six wagons each) for three different customers without undermining rail economics or risking quality of service. Each wagon consignment would be weighed at the customer end of the transit.

With regard to train haulage economics, rather than seeking indicative rail haulage and local road collection prices (which may be commercially sensitive) we have predicated in Section 7.6 below the types of flows (based on haul length and rail connectivity) which – based on the recent rail track record in timber haulage – are likely to be competitive with throughout road haulage.

7.6 Rail connectivity of key destinations

(i) Introduction:

As we have seen, length of haul (together with volume) is a critical factor in rail economics. The minimum length of haul required is also very much dependent on whether or not the destination mill is directly rail-connected, or located so close to a viable existing railhead that road delivery costs can be substantially reduced (eg through ‘red diesel’ operations over less than 1 km of public road). In future, of course, with rising oil prices etc, it is likely that rail break-even distances will fall – but when and by how much cannot be predicted at this stage.

For the purposes of this study we may broadly assumed – although there will be exceptions reflecting local circumstances such as varying maximum train payload on different routes – the following rail break-even distances (assuming a road catchment of up to 35 miles around Crianlarich), although in some specific cases Mode Shift Revenue Support grant might be required:

- rail-connected mills: 120 miles
- mills within two miles of viable railhead: 150-200 miles
- mills within 20 miles of viable railhead: well over 200 miles.

As noted earlier, local factors can however be crucial, so, for example when Colas last investigated the scope for conveying Iggesund traffic by rail to the nearby Workington Docks railhead it found that, compared to road haulage, the total cost of running a train out from Carlisle plus handling plus local road delivery was greater than local
road haulage from Carlisle, where very competitive rates are available. Conversely, while the UPM-Kymmene mill at Caledonian Paper in Irvine is only 75 miles by road from Crianlarich, there may be scope for a cost-effective ‘hub-and-spoke’ rail service taking advantage of Colas Rail resources at its Carlisle base [or for a West Highlands to Carlisle train service to be routed via Ayrshire rather then the West Coast Main Line].

Below we list key mills falling within the first two categories, and also note those which are (a) rail-connected but less than 120 miles from Crianlarich, or (b) by virtue of their location are realistically rail-connectable. In future, of course, with rising oil prices etc, it is likely that rail break-even distances will fall – but when and by how much cannot be predicted at this stage. Three rail-connectable mills which due to rail geography are not relevant to Crianlarich potential have been omitted – Balcas Invergordon, Norboard Cowie and Norboard Dalcross.

(ii) Rail-connected mills more than 120 miles from Crianlarich:
- Kronospan at Chirk (320 miles)

(iii) Mills less than two miles from viable railheads:
- BSW at Carlisle, which is also rail-connectable (152 miles)
- Iggesund at Workington, which may be rail-connectable (184 miles)

(iv) Rail-connected mills less than 120 miles from Crianlarich:
- BSW at Corpach (55 miles) – but enhancement required
- UPM-Kymmene at Caledonian Paper in Irvine (75 miles)

(v) Other rail-connectable mills:
- Egger at Barony (82 miles)
- AW Jenkinson, Forest Garden and James Jones at Lockerbie (125 miles)

7.7 Conclusions on supply side issues

With a well-regarded incumbent rail haulier of timber now carefully expanding its service portfolio in various parts of the country, the opportunity is emerging for a low-key resumption of rail services at the Crianlarich Upper and Arrochar railheads.

For a start-up rail service of one train a week to perhaps two destinations – Carlisle and Chirk – there will be limited commercial justification for investment in upgrading the Crianlarich Upper or Arrochar facilities. However, a modest ‘tidy-up’ of the two yards and refettling of the rail sidings would be required to meet acceptable standards for safety and efficiency of operations.

While the initially small volume of timber involved would minimise the previous local concerns in Crianlarich about lorry manoeuvring, ground conditions and noise, the optimum railhead upgrade for this stage of development – subject to the availability of grant aid and, potentially, ‘in kind’ contributions from the local forest industry – would appear to be the ‘significant upgrade’ involving a substantial reconfiguration of the road entrance to the railhead and the creation of a hammerhead reversing facility.
In the case of the potentially linked project at Arrochar, there is now a bus stop and car park adjacent to the position that loaded lorries need to adopt to reverse into the rail yard – and therefore the resumption of rail service would require careful planning and local consultation. However, a pertinent point is that ATTG and the local forest provided investment in upgrading of the station access road, which has benefitted local residents – and the road was used by timber lorries for only a short period of time before the suspension of rail services in 2009.

Neither timber production data, nor the intelligence generated by the study’s e-survey, nor discussions with key stakeholders, suggest that currently foreseeable rail demand would justify the capacity and cost of a bespoke new railhead at Crianlarich Lower.

In any future phased development process – subject to the availability of private sector funding and public grants – the capacity and capability of the Crianlarich Upper facility could be upgraded stage by stage to a point (after completion of the A82 Crianlarich bypass) where 110,000tpa could be handled cost-effectively (incorporating expanded timber storage facilities) and with any remaining community concerns fully addressed. However, it should be noted that any intermediate stages of development between ‘do minimum’ and ‘major upgrade’ would involve some works which would in the longer term be ‘abortive’, as the footprint of the railhead and the location of its constituent rail, road and storage elements would be significantly altered between the two extremes of development.

A wider issue relating to the potential attraction of rail to the Scottish forest industry as a whole is the rail connectivity of major mills in Scotland, England and Wales. In essence, as and when more mills than the current three can be directly connected to the rail network, then rail will become increasingly attractive as an option offering a range of cost-effective alternative destinations. Realistically, up to a further six or seven major sites may be connectable – and at some point between three and ten connections a point of ‘critical mass’ will be reached, whereby rail becomes more than a very small niche option and therefore justifies additional management time to reap the full benefits of rail. This will be even more the case if the Non Intrusive Crossover is successfully trialled for timber and can then be deployed to create temporary railheads at a significant range of in-forest locations in Scotland, England and Wales.
8. PUBLIC POLICY ISSUES

8.1 Introduction

Loch Lomond & The Trossachs National Park Authority, Stirling Council, TACTTRAN and Transport Scotland were consulted as part of this study; in addition, intelligence gathered as part of earlier feasibility work was made available in the extant A-Rail papers.

8.2 Planning, land ownership and related issues

(i) Crianlarich Lower:

The previous proposal for a new three-siding facility at Crianlarich Lower was advised to various statutory bodies, and replies setting out the latter’s requirements in relation to the site were received from SEPA (October 2005), Scottish Natural Heritage (August 2007) and Loch Lomond & The Trossachs National Park Authority (September 2007). The latter indicated (in an e-mail of 5th September) that:

"the general principle of the development would be consistent with Policies TR1 (Reducing the Environmental Effects of Travel) and TR2 (Improving the Transport Network) of the National Park Plan. The Authority wishes to see a modal shift in the movement of freight, notably timber, within and through the Park. Notwithstanding this, as has been raised at previous meetings, there are a number of issues which will require in the determination of any planning application."

The latter were listed as: access by road; River Tay Special Area of Conservation; water quality / flooding / amenity issues (eg noise and lighting); contaminated land; landscape / visual impact; and design of any proposed structures / buildings.

It is assumed that all these considerations would also be pertinent to a ‘minimalist’ (ie single siding) facility at Crianlarich Lower. In a 15th April 2010 e-mail referring to the minimalist option, Nicki McIntyre of SNH advised that: “Provided there are no significant changes to the project I would envisage our advice remaining unchanged from my 2007 letter.”

On 2nd November 2009, A-Rail wrote to the Scottish Government Freight & Inland Waterways Branch advising that the land required to build the railhead was owned by Network Rail and British Rail Residuary and asking “for your assistance in securing this area of land for possible future [rail] use.” On 13th January 2010, the Director, Property Sales & Management of BRB (Residuary) Ltd wrote to A-Rail advising that “I am pleased to inform you that Transport Scotland has recently agreed to purchase our land at Crianlarich. This comprises the railway line leading to Crianlarich. However, in a 12th March 2010 e-mail to A-Rail, Gillian Hastie of Transport Scotland advised that: “In November I wrote to you explaining Transport Scotland was in discussions with British Rail Board Residuary about taking responsibility for the land at Crianlarich lower, among other sites. This is a complex matter and the work is still continuing.”

In extant A-Rail notes (undated, but evidently post May 2010) it is stated that: “Kronospan had an agreement with Glen Dochart Estate to purchase a 15M x 400M
strip of land along the Northern Boundary to provide the area of land required for the Terminal.”

(ii) Crianlarich Upper:

In response to a November 2011 request from Deltix for an ‘in principle’ view of the planning perspective of the ‘major upgrade’ option – ie incorporating a realignment of the current A82 beside the timber railhead (as and when the bypass is opened) – Catherine Stewart, Development Management Planner at Loch Lomond & The Trossachs National Park Authority, provided a Pre-Application Enquiry Response which indicated that:

“I can confirm that the general principle of the development for an improved timber railhead facility at Crianlarich station would be generally consistent with the National Park policies, particularly Local Plan policy TRAN2 as this supports a shift from road to rail. The Authority wishes to support a modal shift in the movement of freight, including timber, within and through the National Park. Notwithstanding this there are a number of issues which require careful consideration in the determination of any planning application.”

The latter were listed as: road access, landscape and visual impact; amenity issues and public consultation; impact on the West Highland Way; and design of any proposed structures / buildings.

For the other options at Crianlarich Upper – ie ‘do minimum’ and ‘modest upgrade’– it is assumed that planning permission would not be required, as the footprint of the railhead would not change, and Network Rail has “Permitted Development” rights at operational depots. In the case of a ‘significant upgrade’, additional land would be required for the ‘hammerhead’ and its ownership would therefore need to be clarified at an early stage of any re-opening proposal. The ownership of the additional land required for the ‘significant upgrade’ and ‘major upgrade’ options is not known.

8.3 Transport issues

(i) Crianlarich Lower:

In a 7th November 2005 fax, RW Bain of the Network Management Division of the then Scottish Executive advised Lorne Anton (then of English, Welsh & Scottish Railway, later of A-Rail) that:

“I confirm that in principal I have no objection to the proposal subject to the submission of detailed designs by you or your agents. Careful consideration will need to be given to the design of the traffic signals required for the yards so as not to cause queuing on the trunk road. In particular concerns have been raised regarding the length of any queuing traffic on the east to west link in case it blocks the A82/A85 junction and the possibility of vehicles running into the back of queuing traffic on both trunk road approaches.”

In a telephone discussion with K Aitken of Transport Scotland in November 2011 it was indicated that the (vehicle-activated) traffic-light controlled access proposal was still acceptable ‘in principle’, provided that volumes were relatively modest eg 15-20 lorries departing from the railhead daily. The latter equates to around 125,000 tonnes of timber annually, some 25,000 tonnes less than the estimated capacity of the
'maximalist' railhead and some 15,000 tonnes more than the capacity of the Crianlarich Upper 'major upgrade'.

(ii) Crianlarich Upper:

The 'in principle' views of Stirling Council (as future roads authority for the railhead road access once the bypass is completed) were sought on the 'major upgrade' option, and Transport Scotland on the possibility of dovetailing work on realignment of the former A82 with work on the bypass.

Ben Cove, Transport Planning Officer of Stirling Council replied in November 2011 to the effect that: “At this stage the principle of enabling a greater mode shift towards rail with the added benefit of an improved road alignment through the bridge is supported.” A number of detailed points were raised, to be taken into consideration as the design develops, including:

- the existing pedestrian underpass to the passenger station should remain
- consideration of how vehicles approaching the site will be managed and directed will need to be provided - it is accepted that the bypass and roundabout will be in place prior to the development occurring
- the impact on parking lay-bys for, and pedestrian access to, the West Highland Way spur will need to be considered
- Transport Scotland may have a surplus of fill material from the construction of the bypass which might assist in the construction of the new access road
- “at this time and for the foreseeable future Stirling Council would not be in a position to provide any funding support for the scheme”.

Clearly a new railhead would to some extent lead to the generation of additional lorry traffic in the immediate area, and this might cause local objections. However, if rail traffic were developed in a phased manner, as anticipated, starting with a weekly train, then moving to a twice-weekly train etc, the changing local impact of rail will be gradual, with no overnight step-changes after initial resumption of services.

No views were sought on the road management implications of the more limited upgrade options, but it is known that the previous operational arrangements were from time to time a matter of police concern – and the 'significant upgrade' option addresses this. Agreement on the road changes involved would need to be reached with the roads management authority, ie Transport Scotland.
9. BUSINESS CASE & GRANT AID ELIGIBILITY

9.1 Business case

Based on research and analysis of demand and supply for this study, the evidence suggests there is currently no business case for the funding, construction and operation of a bespoke timber railhead at Crianlarich Lower. However, market intelligence points to the potential for a commercially viable low-cost resumption of rail services at Crianlarich Upper, with either (a) a basic ‘tidy-up’ of the facility (but no changes to road access etc) funded by a combination of the rail haulier, Colas Rail, and the infrastructure owner, Network Rail, or (b) a ‘significant upgrade’ improving the road access and the configuration / quality of the railhead, funded by a partnership involving Colas Rail, Network Rail, in-kind contributions from the local forest industry and STTS funding.

9.2 Freight Facilities Grant

Transport Scotland’s Freight Branch administers the Freight Facilities Grant (FFG) scheme which is designed to encourage the transfer of freight from public roads to rail and sea. The FFG scheme offers grant aid up to 50%-75% of the capital cost of facilities required to secure mode switch from road to rail or sea. FFG has been in existence since 1974, and since 1997 alone 42 awards, totalling £62 million have been made to projects in Scotland – taking up to 34m lorry miles off Scottish roads annually.

Grant aid is payable towards any dedicated facilities and equipment required to achieve the mode switch from road to rail, eg civil engineering works, track, signalling, cranes, containers, internal movement road tractors and trailers, and dedicated access roads. For FFG there are three key criteria laid down by the Scottish Government:

- the standard grant limit is up to 50% of the capital cost of eligible facilities, but in exceptional circumstances grant can be paid up to 75%
- grant cannot be paid in excess of the quantified environmental benefits secured by removing lorries from public roads over a committed traffic period (typically 5 years or more)
- the actual level of grant paid (within the two ceilings above) will be that which is required to just tip the commercial balance from road to rail.

Determining the actual level of grant which can be paid requires a Discounted Cash Flow analysis of all capital and operating costs associated with the road and rail options, plus calculation of the environmental benefits in accordance with a formula laid down by the Department for Transport to reflect varying impacts on different classes of road.

In part due to the relatively lengthy process involved in preparing and submitting FFG applications, the FFG budget (of initially £14m, then £10m, then £7m annually) has been underspent since 2001 (when the Rosyth ferry terminal was funded). The average annual spend since then has been around £2.5m, across rail and water schemes. The average (single site) rail grant award over the last decade has been around £1.5m, with the largest award being £3.9m. 10 awards have benefitted timber
schemes, but only seven of these to date have come to fruition – all water-based. The three rail-based schemes which have not come to fruition (Barrhill and two at Rannoch) have foundered on lack of progress with Railtrack / Network Rail.

As noted earlier, the FFG scheme was reprieved in February 2011, but only on the basis of a limited budget of £2m for schemes which could be completed within the financial year 2011-12. The Scottish Government’s recent spending announcement on Freight Facilities Grants indicated that a budget of just £750,000 would be available in 2012-13, rising to £2m in 2013-14. This study therefore addresses upgrading options at Crianlarich Upper which would allow lower capital costs than entirely new facilities at Crianlarich Lower.

While FFG might seem the most obvious route for grant aid, this scheme is driven by environmental benefits generated by lorry mileages removed from public roads, whereas the particularities of local circumstances at Crianlarich (eg lorries reversing out on to the A82), suggest that STTS – where projects have to demonstrate community and social benefits, environmental benefits and reduced damage and disruption to public roads – might be a more appropriate vehicle for site enhancement.

9.3 Mode Shift Revenue Support

The Scottish Government also has a grants scheme which provides operational subsidy for rail movements over shorter hauls (provided these are justified by environmental benefits). In 2012-13 Mode Shift Revenue Support (MSRS) will be funded from the £1.1m pa Support for the Freight Industry budget. However, this budget will only be sufficient to allow continued funding of flows currently supported by MSRS and Waterborne Freight Grant.

9.4 Strategic Timber Transport Scheme

As noted earlier, new funding of up to £2m pa has been made available for the years April 2012-March 2015 for the Strategic Timber Transport Scheme which can only be used where other grants (such as Freight Facilities Grants) cannot deliver.

While there is now the prospect that the market (unaided in capital terms) may deliver a resumption of timber-by-rail services at Crianlarich, this would involve only a modest ‘tidy-up’ of the railhead. Ideally the resumption of rail services would be dovetailed with upgrading to improve the efficiency of operations and to minimise adverse local impacts. Such a ‘significant upgrade' would have a good fit with the objectives of STTS and could also be facilitated by in-kind contributions by the local forest industry and the Forestry Commission.

It seems likely that the forest industry would be much more comfortable with an STTS application from Colas Rail rather than Network Rail. It can be anticipated that there would be an expectation that Network Rail’s ‘in kind’ contribution to the project might be a lower leasing price for Colas, in return for the latter securing grant aid and in-kind contributions to upgrade the safety and efficiency of access to the Network Rail facility. Discussions with Network Rail and Colas Rail, in December 2011 and January 2012 respectively, demonstrated that both parties are relaxed about the principle of Colas leading the project and being the grant applicant.
10. PROJECT DEVELOPMENT / BUSINESS MANAGEMENT ISSUES

10.1 Introduction

The ninth task in the original 2010 Study Brief was: “Work to identify a lead partner or consortium who can take the project forward to FFG application and project construction.” Through the e-survey and discussions with key stakeholders, this study has sought to identify (a) who might fulfil this role in a new railhead project, and (b) in light of the more immediate likelihood of resumption of service at Crianlarich Upper, who might be able to facilitate this development and promote its use.

10.2 New railhead project at Crianlarich Lower

Based on intelligence gathered for the study, there appears to be little evidence to justify – or enthusiasm to lead – a new railhead project. This absence of enthusiasm may be attributed to:

- the lack of rail-suited volume to justify a bespoke railhead at Crianlarich Lower providing capacity of up to 150,000tpa at a capital cost of £1.5m+
- current economic circumstances and the lack of investment funds
- remaining doubts about the capability / desirability of a rail role in the local timber transport market.

Crianlarich Lower (even in its 'minimalist' form) does not offer the option of a phased process of development with low-cost start-up. In light of the foregoing, the question of leadership of a bespoke railhead development project – and its funding / ownership / management – is probably therefore academic at present.

10.3 Phased development project at Crianlarich Upper

In contrast, as shown in Section 7, the existing Crianlarich Upper railhead – while sub-optimal in a number of aspects of its current size, configuration and facilities – is likely to be capable of supporting (a) an early resumption of timber train services, and (b) a phased development process, allowing stage-by-stage upgrading of its configuration and facilities, with the potential – after completion of the A82 Crianlarich by-pass – to offer a bespoke facility providing annual throughput capacity of over 100,000 tonnes of timber, and significant timber storage capability, with any remaining community concerns fully addressed.

While a medium-term resumption of train services may be delivered by the market – primarily through Colas Rail, Network Rail and rail customers / consignors – this would involve little or no alteration to the quality of the Crianlarich rail facility and its road access. The local forest industry (eg Forestry Commission / private sector / Argyll Timber Transport Group / local hauliers) has a potentially important role to play in facilitating and promoting an enhanced rail facility which addresses local concerns such as reversing of lorries on to the A82. As and when rail at Crianlarich proved its capability and capacity for expansion, there would then be scope for the further development of the railhead in a 'major upgrade' providing more storage capacity, improved lorry manoeuvring space and extended rail sidings.
11. CONCLUSIONS & RECOMMENDATIONS

11.1 Conclusions

(i) The suspension of timber rail services from Crianlarich Upper (and Arrochar) to Chirk in 2009 was attributable principally to changing demand from Kronospan, but also to local factors (late-night noise, yard surfacing and configuration, and road access from the A82) which to some extent still prejudice attitudes towards a resumption of rail services.

(ii) Since the suspension of Crianlarich rail services, timber by rail in Britain has begun expanding again, thanks largely to the endeavours of a new rail haulier, Colas Rail which has delivered a robust and reliable supply chain. Its record of thorough planning and implementation of new services elsewhere suggests that if Colas resumed of rail services at Crianlarich Upper in the medium term, then attention to local detail and a competitive quality of service would be provided.

(iii) In planning for any resumption of rail services, Colas Rail (and Network Rail) would need to take account of reservations within the local forest industry, based in part on (a) past train service performance, (b) ensuring fair allocation and control of train space where more than one consignor / customer is involved, and (c) the quality of facilities at the Crianlarich Upper railhead.

(iv) The Crianlarich Upper railhead is likely to be physically capable of supporting both an initially once-weekly train service, but this would be sub-optimal in terms of road access, working conditions etc.

(v) Of a number of options for railhead development – potentially allowing stage-by-stage upgrading of Crianlarich Upper, with the longer-term potential to offer a bespoke facility providing annual throughput capacity of over 100,000 tonnes of timber, and significant timber storage capability – the optimum short-term development would appear to be a ‘significant upgrade’ incorporating a substantially improved road entrance and a nearby hammerhead to eliminate lorry reversing on to the A82. Such a facility would be likely to cost up to £200,000 (but less if ‘fit-for-purpose’ standards were applied to the off-road hammerhead and significant in-kind contributions were made by the local forest industry). This upgrade would be eligible for STTS grant aid.

(vi) Contact would need to be made with the hammerhead area landowner, the community in Crianlarich and Arrochar and the roads management authority (Transport Scotland) about the principle of such an enhancement at an early stage of any future re-opening proposal.

(vii) The rail industry, the local forest industry and the local community would need to work closely together to facilitate the resumption of cost-effective rail services at Crianlarich Upper which met customer needs, lent itself to expansion, and minimised local environmental / road safety impacts.

(viii) The study has not identified a level of demand which would justify the capacity and cost of a bespoke new timber railhead at Crianlarich Lower in the foreseeable future. However, strategic considerations suggest that the scope for a longer-term (post A82 Crianlarich by-pass) ‘major upgrade’ at Crianlarich Upper should be more fully investigated before ‘protection’ of the Lower site is relinquished.
(ix) Initial planning and roads management responses to the principle of a longer-term ‘major upgrade’ at Crianlarich Upper have been positive, but a range of issues about its feasibility, funding and impact – and its compatibility with shorter-term phases of railhead upgrade – would need to be explored with the local community, the local forest industry and the rail industry.

(x) Planned rail containerisation developments between the Flow Country and Inverness point to prospects for conversion to rail of other current road-hauled flows destined for non-rail-connected destinations’ and this could help to add to the portfolio of locations served from a Crianlarich railhead.

(xi) A substantially bigger role for rail in timber movement from the West Highlands (and elsewhere) will depend in part on (a) providing direct rail connection to an increased number of major mills in England and Scotland, and (b) cost-effective creation of new railheads closer to key harvesting locations. In the case of the latter, the Non Intrusive Crossover System (NICS) – through its ability to create temporary railheads much closer to harvesting sites – has a potentially transformational role to play in the economics of timber transport by rail.

11.2 Recommendations

(i) As and when Colas Rail indicates a wish to investigate recommencing rail services at Crianlarich and Arrochar, make contact with Colas and Network Rail with a view to exploring (a) in general how the local forest industry (and the local community) can help to ensure that a resumption of rail services meets customer needs, lends itself to expansion, and minimises local environmental / road safety impacts, and (b) specifically the opportunities for Colas Rail to make application to STTS for a significant upgrade at Crianlarich Upper.

(ii) Following (i), facilitate early discussions between the rail and forest industries and (a) the owner of the land where the hammerhead would be created, (b) the community in Crianlarich and Arrochar, and (c) Transport Scotland as roads authority.

(iii) As and when Colas recommence rail service from Crianlarich Upper, convene discussions between interested parties on the potential for a phased development framework for this railhead, including the scope for a study of the design and cost implications (and local impacts) of a ‘major upgrade’ after completion of the A82 Crianlarich by-pass, and how earlier upgrade works might be dovetailed with this.

(iv) For the immediate future, undertake no further feasibility work on the proposed Crianlarich Lower railhead, but ensure that the location is ‘protected’ until such time as and when a Crianlarich Upper ‘major upgrade’ facility has been demonstrated to be capable of meeting the foreseeable long-term needs of the local forest industry.

(v) Based not just on its potential relevance to the West Highlands, but also in wider application across the North of Scotland and South West Scotland (and indeed parts of England and Wales), work with NICSCo and Network Rail to explore the scope for a running a timber trial of the Non Intrusive Crossover System on a suitable rural Scottish rail route.
(vi) Consider the wider ‘critical mass’ benefits of securing rail connections to additional major mills in Scotland and England and how the forest industry might facilitate such development.
APPENDICES

Plan of Crianlarich Upper ‘significant upgrade’
Plan of Crianlarich Upper ‘major upgrade’
Plan of Crianlarich Lower ‘maximalist’ new railhead
Briefing on Stirling & Tayside Timber Transport Group
Drawing No. RO11_001 – Crianlarich Lower ‘maximalist’ new railhead
Briefing on Stirling and Tayside Timber Transport Group

The Stirling and Tayside Timber Transport Group was formed in May 2005 following the amalgamation of two former regional timber transports groups - the Stirling Timber Transport Liaison Group and the Tayside Timber Transport Group.

Part of a network of Regional Timber Transport Groups across the UK and one of seven in Scotland, its main objectives are to:

i. To act as a forum for timber transport issues in the Stirling and Tayside areas for key stakeholders.

ii. To identify and address timber transport issues and opportunities in a collaborative and co-operative manner.

iii. To contribute and support the work of the Timber Transport Forum.

iv. To promote, scrutinise, and where appropriate, support applications from the area to the Scottish Timber Transport Fund.

v. To review, on a regular basis, the locations of future timber harvesting areas and their associated road infrastructure requirements and developments.

vi. To review and revise maps showing Agreed Routes for Timber Haulage, as required.

vii. To explore and promote the potential for increased use of rail and other alternative forms of transport, including the development of additional terminals.

viii. To consider the longer term (15 years+) implications of timber harvesting operations on the existing transport network

The Timber Transport Group network is overseen by the Timber Transport Forum; a public-private partnership established in 2000 to provide opportunities for sharing ideas and best practice on timber haulage issues. The Forum brings together representatives of the nine Regional Timber Transport Groups from England, Scotland and Wales; local government; central government agencies and the timber industry.

Further information on the work of the Forum and the Regional Timber Transport Group network can be found at [www.timbertransport.org.uk](http://www.timbertransport.org.uk). The Stirling & Tayside RTTG includes representatives from the following groups and organisations:

- Angus Council
- Confederation of Forest Industries
- Forestry Commission Scotland
- Forest Enterprise Scotland
- Fountains plc
- Euroforest Ltd
- Highfield Forestry
- Clackmannanshire Council
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