LICHFIELDS

Subject: Encirc Deadline 7 Representation

Our ref 41915/05/JG/JG
Date 4 September 2023

1.0 Introduction

1.1 This relevant submission in relation to the HyNet Carbon Dioxide Pipeline Project ("the Project") is made on behalf of Encirc Limited ("Encirc") for Deadline 7 ("DL7").

1.2 It summarises the oral submission made on behalf of Encirc at Hearings on Thursday 10 August 2023.

1.3 Encirc has already made representations in relation to the Project at Deadline 3 ("DL3") (ref. REP3-050) and Deadline 4 (ref: REP4-280). Representations were also submitted on 13th June to a consultation on a change request ("CR1") made by the Applicant, which was accepted by the Examining Authority on 27 March 2023.

1.4 The hearing session on 10 August focused on two matters relating to the interface between the proposed DCO and the operation and future development plans of the Encirc plant, through which the applicant has requested rights as part of the DCO. These relate to:

1 The access to works to construct and thereafter maintain and monitor the pipeline beneath the rail tracks operated by Encirc, Network Rail and Peel at land Plots 1-19, 1-20, 1-20, 1-21, 1-22 and 1-23 and accessed via plots 1-06a-1.06.

2 Access to 1-07-1-18 from Grinsome Road through the land owned and operated by Encirc shown as plots 1-01, 1-02, 1-03 and 1-04.

2.0 Pipeline construction beneath rail lines

2.1 The presentation to the Hearing on 10th August by the applicant sought to make the case to the Examining Authority that the plans of Encirc to develop further intermodal facilities at the Glass Manufacturing and Filling Plant had no status and should be given little weight in the consideration of the DCO and the proposed powers of land rights over Encric property.

2.2 Encirc was disappointed with this intervention as the seriousness with which Encric is progressing the rail proposals to secure product export from the Glass Manufacturing and Filling Plant had been explained in detail to the applicant and the importance of the proposed enhanced rail usage to Encirc's business also made clear. This project status and the importance of the rail export facility to future economic growth of the Encirc business was explained at the Hearing on 10 August.

2.3 Planning permission for the Encirc (then Quinn Glass) Glass Manufacturing and Filling facility was granted in 2009. The grant of planning permission included for the

development of an intermodal facility on land to the south east of the manufacturing plant, with rail access taken from the sidings attached to the main Network Rail lines and which had, historically, provided rail access to the coal fired power stations at Ince A. This planning permission was implemented. The grant of planning permission was subject to a Section 106 Agreement under the Town & Country Planning Act 190, requiring Encirc to implement non-road based modal transport of materials with a requirement to increase annual freight cargo by such means to 12% over a phased period. That phased period has reached the point where the 12% requirement is now established.

2.4 In the 2009 S106 Agreement included (which is at Appendix 3) there is a layout of the approved intermodal rail facility, to accommodate containerised product export movements. The approved rail facility took a sidings access off the then extant Kemira rail line. This rail terminal layout is the same as the approved layout, forming part of the original planning permission, of the intermodal facility (drawing ref: 3P7079/PL/1000 Rev3) is attached at Appendix 1.

2.5 In 2011, Encirc (then Quinn Glass) obtained separate planning approval for the bulk materials handling facility (phase 2) to be built to the north of the rail sidings to accommodate raw materials import, rather than product export for which the phase 1 intermodal terminal was designed. The approved drawing is attached at Appendix 2. This layout was further amended in 2013 by a further grant of planning permission (Appendix 3).

2.6 As the Encirc development progressed and the phased rail usage percentages were applied, Encirc investigated possible rail usage and concluded that, at the time, product export by rail was unfeasible. However, import of raw materials was investigated and found to be potentially feasible, such that rail access was secured and a new phase 2 terminal supporting the import of raw materials (sand and crushed glass 'cullet') developed and brought into operation in 2016 (Appendix 3 as above). This was preceded by a number of planning permissions for infrastructure at the intermodal facility to allow for the movement of raw materials rather than containerised product.

2.7 The success of the Encirc Glass Manufacturing and Filling facility has resulted in Encirc reaching the point where the enhanced use of rail needs to be brought forward to ensure that the 12% annual freight movement target in the S106 Agreement is not a constraint to the further growth of the business.

2.8 Encric appointed MDS Transmodal, a nationally renowned rail logistics consultancy to review the feasibility of moving finished glass product to markets via the rail network. MDS Transmodal reported their findings to Encric in February 2023. Their report is attached at Appendix 4. This report identified the locations to where finished product could be viably moved by rail and advised on the appropriate intermodal terminal layout and signal arrangements at Encirc. This will be phase 1 of the intermodal facility originally granted planning permission in 2009. The chief difference between the originally approved intermodal facility and that which is now being brought forward will be that because Encirc now has its own connection to the Network Rail line, connection can be taken from that

connection rather than from the Kemira siding as indicated on the drawings approved by the 2009 permission and subsequent amendments as described above.

2.9 Alongside the consultancy advice of MDS Transmodal, Encric procured and ran trial trains from the Glass plant's terminal to various locations from 2022 and completed these trials in April 2023. A press notice setting out these details is attached at Appendix 5.

2.10 Pre-application discussion have been held with officers of Cheshire West and Chester in relation to the forthcoming application for the phase 2 intermodal terminal at Encirc. The purpose of these discussions was to scope the planning application and the potential for EIA to be required and the likely scope of such EIA. Commencement of the development of Encirc's product export intermodal facility is scheduled for 2025.

2.11 Encirc's consultants (Lichfields and Eversheds) met with representatives of the applicant on 10 August 2023 to allow the applicant to explain the engineering requirements for passing the pipeline beneath the rail lines at Land Plots 1-19 to 1-24. It was explained that:

1 directional drilling of a pipeline beneath all rail lines was technically possible, but without Network Rail approving that solution, the applicant was not able to commit to it as a construction methodology; and

2 Without Network Rail 's approval of directional drilling, the DCO would need to include for the construction of the pipeline beneath the rail lines to incorporate a vertical shaft between the rail lines to accommodate boring infrastructure in both directions. This shaft would need to be located on plot 1-22 and involve the necessary acquisition of rights over plot 1-22 requiring access from plots 1-06a to 1-06 and from plots 1-02 to plots 1-06 and thence to plot 1-22. This would require the DCO to confirm rights to the applicant over land where Encirc proposes to build new rail lines and the phase 2 intermodal facility.

2.12 A meeting was held between the applicant and Encirc on 24th August 2023, to further discuss the implications of the above scenarios. This introduced the potential timings of the relative works by Encirc and the applicant. The table below was presented for discussion. It is a helpful summary of three timeline scenarios and the implications of not undertaking a single directional drilled construction methodology beneath the rail lines.

	CO2 Pipeline Constructed First	Construction Activities Occur in Parallel	Encirc Sidings Constructed First
Single Trenchless Crossing	Possible – confirmation from NR required in Detailed Engineering	Future Agreement needed, triggered by both parties notifying the other of their intent to carry out works	Possible and likely construction technique
Intermediate Shaft Required	Possible – confirmation from NR required in Detailed Engineering	Future Agreement needed, triggered by both parties notifying the other of their intent to carry out works	Unlikely to be possible (not enough space / disruption to Encirc's new development)

2.13 In summary, a single trenchless crossing is technically achievable. If this method is followed, only access to plot 1-22 is required for monitoring purposes and a permanent right of access to plot 1-22 can be provided by Encirc. If plot 1-06 is required for access to 1-22 for monitoring purposes, then it must be varied so that it does not interfere with the planned intermodal facility. A trenchless crossing also means that permanent rights to Plot 1-21 would not be needed. Requesting permanent rights to 1-21 goes beyond what is reasonably required, with Encirc willing to facilitate permanent rights to access the

adjacent plot 1-22 for monitoring purposes. Encirc will only support temporary rights to 1-21 in the event that a directional drilling shaft is required. The land agreement terms between Encirc and the applicant can deliver this solution, but the DCO cannot be amended due the expiry of the Examination in September. With the single trenchless crossing, the condition of Plot 1-22 can be agreed between Encirc and the applicant to allow monitoring to be undertaken under the scenarios where the DCO is implemented first or Encirc's intermodal facility is developed first. The Protective Provisions can also accommodate these matters.

2.14 Should the single trenchless crossing not be possible (i.e. not approved by Network Rail) then the picture becomes very complicated, but suffice to say that Encirc implementing their intermodal facility before the applicant requires Plot 1-22 to sink the construction shaft, renders it not possible to sink that shaft due to insufficient space being available and therefore conflict with Encirc's operation arising. The same would apply under the scenario where the two projects are implemented at the same time, or there is crossover in construction timelines. The only scenario which may feasibly work without the trenchless crossing is if the DCO was implemented before Encirc implemented the intermodal facility. Under this circumstance, a methodology could be agreed between the parties that ensured that plot 1-22 and plot 1-21 (should it be required for temporary works) are left in a suitable condition to allow the Encirc intermodal facility works. Protective Provisions could be applied which secured this latter scenario. However, under the other two scenarios, the applicant would have to revert to a single trenchless crossing.

2.15 An overview of this issue is therefore that of the six scenarios considered in the table above, only one can potentially be achieved through technical agreement between the parties and all others rely on a single trenchless (directionally drilled) crossing beneath the rail lines being undertaken. The only matter preventing conformation of the single trenchless crossing is the agreement of Network Rail. Encirc cannot understand why this agreement has not been progressed at this stage of the process.

3.0 Access from Grinsome Road

3.1 The DCO seeks approval for access to the pipeline corridor works areas from the Grinsome Road roundabout (Plot 1-01a) through Encirc's land and on internal Encirc access roads (1-01, 1-02, 1-06d).

3.2 It was explained at the Hearing that uninterrupted access to and on the Encirc Site is essential to the operation of Encirc's business. Road traffic movements around and on Encirc's land during the construction phase of the DCO will impact its operations. Plot 1-02 is used heavily by Encirc and is vital for the operation of its business. The route between the rail terminal and the plant accommodates as a minimum, 80 one-way (160 two-way) HGV movements of sand and cullet per day per week, operation between 7.00am and 3.30pm. The route in in continuous operation during this period. This continuous operation cannot be interrupted.

3.3 The Encirc automated warehouse planning application (ref. 22/03693/FUL) received a resolution to approve (subject to S106) at Cheshire West and Chester Council's Planning Committee on 17 August 2023. The approved Site Plan was appended to Encirc's DL4

submission and shows that the DCO land plots 1-02, 1-06d, 1-06, and 1-06a are not compatible with this Encirc's approved development plans. However, Encirc considers that the DCO is achievable without access to these plots.

3.4 Encirc considers that access through plots 1-01 and 1-02 is not necessary to provide a road connection to the Ince AGI. A current proposal, subject to a planning application before Cheshire West and Chester Council by Forsa Energy (21/04024/FUL) will provide a direct access route from Grimsome Road to the Perimeter Road (plot 1-03). The Site Plan for this application was provided with Encirc's DL4 submission. This alternative access to the Ince AGI precludes the need to access the perimeter road through Encirc's facility via plots 1-01 and 1- 02.

3.5 The applicant has stated that it requires temporary rights of access over plot 1-06d for oversize construction vehicle access to 1-06. Encirc considers that the use of the trenchless crossing method, discussed in detail above, negates the need for temporary access through 1-06d to 1-06 for oversize construction vehicles. Notwithstanding this, there is no existing connection between land plots 1-06d and 1- 02/1-03 and creating a connection would require the changing of the internal security fencing line. This would result in breaches of Encirc's obligations as HMRC bonded warehouse under the provisions on the Customs and Excise Management Act 1979 and subordinate legislation.

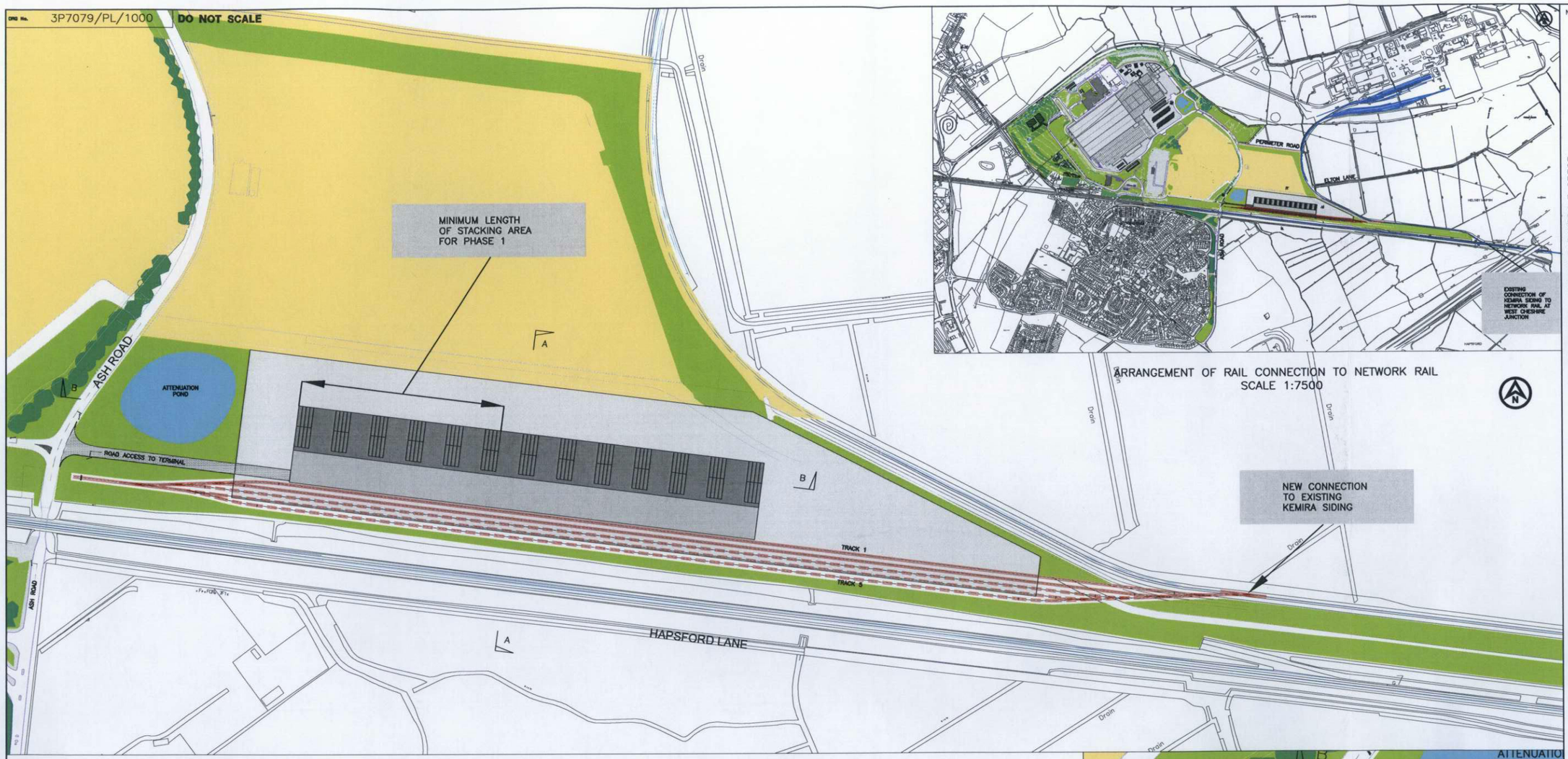
3.6 All DCO movements on Encirc land must be controlled by a well-developed protocol to manage the use of roads and ensure that the DCO construction process does not prejudice Encirc's ability to carry out its operations.

3.7 The parties are continuing to negotiate in respect of protective provisions for the benefit of Encirc. As part of the submission for deadline 7, Encirc have submitted a copy of its preferred protective provisions which highlights which points are not yet agreed with the applicant. The protective provisions are accompanied by a table setting out the outstanding points and explaining Encirc's position.

Appendix 1

DRG No. 3P7079/PL/1000

DO NOT SCALE

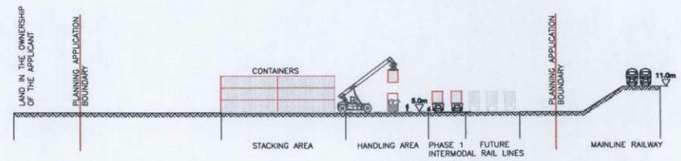


PLAN OF INTERMODAL TERMINAL

SCALE 1:1000

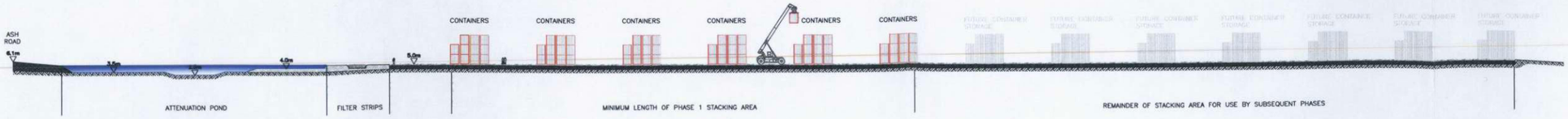
ARRANGEMENT OF RAIL CONNECTION TO NETWORK RAIL

SCALE 1:7500



PROPOSED SECTION A–A

SCALE 1:500



PROPOSED SECTION B–B

SCALE 1:500

PROPOSED ACCESS ARRANGEMENT

SCALE 1:500

NOTES

LEGEND

- NEW TRACK PHASE 1
- NEW TRACK FOR LATER PHASES
- EXISTING TRACK
- PLANNING APPLICATION BOUNDARY
- INTERMODAL AREA
- HANDLING AREA
- STACKING AREA
- ATTENUATION POND
- ACCESS ROAD
- LOW LEVEL LANDSCAPING

BASED UPON GRIMSHAW DRAWING FILE 07012_PA_L_040_PROPOSED ILLUSTRATIVE MASTERPLAN REV B.DWG AND ORDNANCE SURVEY MAPPING WITH THE PERMISSION OF HER MAJESTY'S STATIONERY OFFICE. ©CROWN COPYRIGHT RESERVED. LICENCE NUMBER AL100018327

MATERIAL SPECIFICATION:

THE MATERIAL SPECIFICATION AND PAVEMENT CONSTRUCTION DETAILS FOR ALL AREAS OF HARDSTANDING WILL BE CONFIRMED AT THE DETAILED DESIGN STAGE, AS IS SUITABLE FOR THE LOADINGS IMPOSED BY THE PROPOSED USE AND SUBJECT TO THE FINDINGS OF A GROUND INVESTIGATION SURVEY.

CONSTRUCTION PHASING:

THE INFRASTRUCTURE TO BE PROVIDED FOR THE PHASE 1 INTERMODAL TERMINAL SHALL INCLUDE THE NEW TRACK FOR PHASE 1, ACCESS ROAD, HANDLING AREA, AT LEAST 3,500SQM OF STACKING AREA, THE ATTENUATION POND AND ASSOCIATED DRAINAGE, ALL OF WHICH ARE SUBJECT TO DETAILED DESIGN.

THE REMAINDER OF THE STACKING AREA SHALL BE CONSTRUCTED AND LAID OUT IN SECTIONS, SUCH THAT SUFFICIENT STACKING AREA IS PROVIDED FOR OPERATIONAL REQUIREMENTS.

THE REMAINDER OF THE INTERMODAL AREA SHALL BE PROVIDED AS CRUSHED STONE (OR A SUITABLE ALTERNATIVE SURFACE), AS REQUIRED FOR THE OPERATIONAL REQUIREMENTS OF THE INTERMODAL TERMINAL.

THE REMAINING TRACKS WILL BE PROVIDED AS MAY BE NECESSARY TO SUIT THE OPERATIONAL REQUIREMENTS OF THE INTERMODAL TERMINAL.

REV	DATE	DESCRIPTION	BY	CHK	APP
3	21.07.09	NOTES AND ANNOTATIONS ADDED	AJC	DB	DB
2	20.07.09	MASTERPLAN LAYERS AMMENDED	AJC	DB	DB
1	17.07.09	FIRST ISSUE	CB	BA	BA

REVISIONS

CLIENT: QUINN GLASS

PROJECT: PROPOSED INTERMODAL TERMINAL PHASE 1

TITLE: PROPOSED PLAN AND SECTIONS

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HASKONING UK LTD
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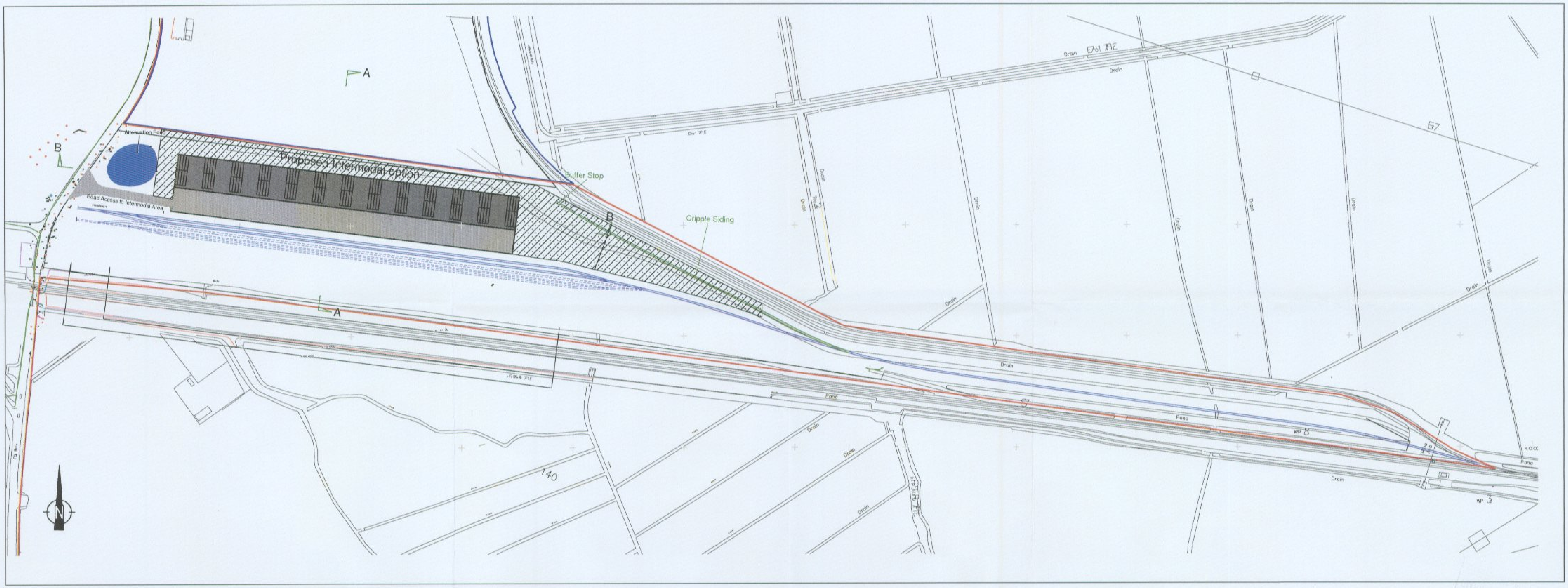
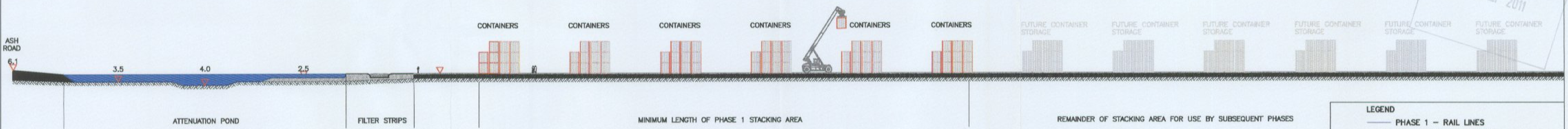
DRAWN	CB	CHECKED	PASSED
DATE	22.07.09	CLIENT'S REF.	
SCALE AT A0	AS SHOWN	AUTOCAD REF.	
DRAWING No.	3P7079/PL/1000	REVISION	3

LICHFIELDS

Appendix 2





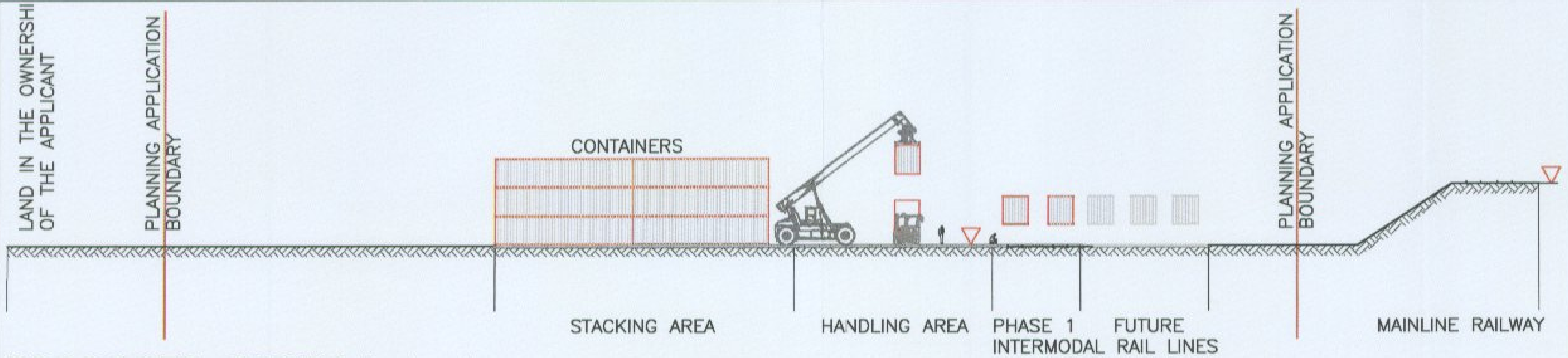
PROPOSED SECTION B–B

SCALE 1:750

LEGEND

- PHASE 1 – RAIL LINES
- New track for Later Phases
- Existing Track
- PLANNING APPLICATION BOUNDARY
- OTHER LAND IN THE APPLICANTS CONTROL
- Intermodal Area
- Handling Area
- Stacking Area
- Attenuation Pond

MATERIAL SPECIFICATION
The Material Specification and pavement construction details for all the areas of hardstanding will be confirmed at the detailed design stage and is suitable for teh loadings imposed bny the proposed use and subject to the findings of a ground investigation survey.



PROPOSED SECTION A–A

SCALE 1:500

Rev.	Details	Date	By

QUINN projects

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Tel: (028) 6774 8866
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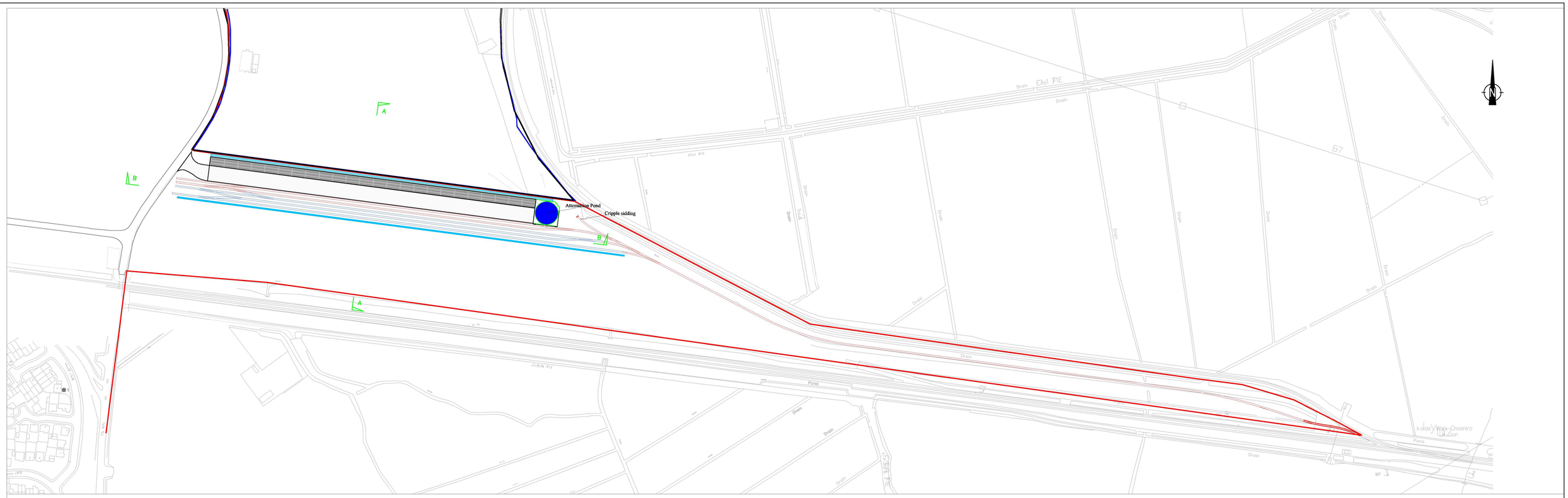
Job Title: **Proposed Rail & Intermodal Facility at Quinn Glass**

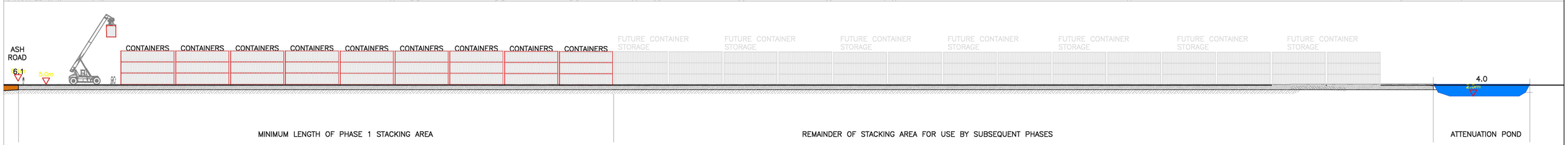
Drg. Title: **Site Layout**

Date:	Scale:	Drg. No.	Rev.
August 2011	1:2500	QR - 03	G

LICHFIELDS

Appendix 3





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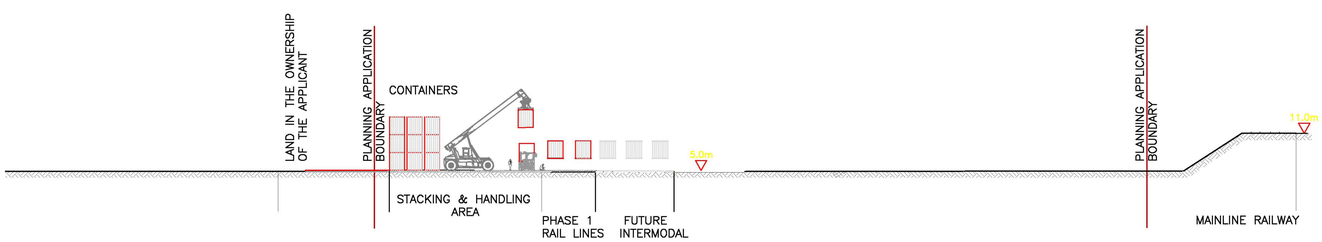

PROPOSED SECTION A–A

SCALE 1:500

LEGEND

- PHASE 1 – RAIL LINES
- New track for Later Phases
- Existing Track
- PLANNING APPLICATION BOUNDARY
- OTHER LAND IN THE APPLICANTS CONTROL
- Handling Area Intermodal
- Stacking Area Intermodal
- Attenuation Pond

MATERIAL SPECIFICATION
The Material Specification and pavement construction details for all the areas of hardstanding will be confirmed at the detailed design stage and is suitable for teh loadings imposed bny the proposed use and subject to the findings of a ground investigation survey.

Rev.	Details	Date	By
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Drg. Title: **Site Layout**

Date: OCT 2011
Scale: 1:2000 @ A1
Drg. No. **C - 01**
Rev. **A**

LICHFIELDS

Appendix 4

Encirc

Developing a Rail-based Logistics Strategy

Draft report prepared by MDS Transmodal Ltd

February 2023

MDS Transmodal

Contents

1. Introduction

In November 2022, MDS Transmodal Ltd were retained by *Encirc* to provide advice on the commercial viability, design and implementation of intermodal rail services for the outbound delivery of cargo from their Elton factory (near Ellesmere Port). It is understood that *Encirc* has taken a strategic commercial decision to switch a significant proportion of their finished goods flows from road haulage to rail freight for both economic and sustainability reasons.

This formal report document is a summary of the advice provided and covers:

- Identifying the volumes of rail freight that *Encirc* can reasonably expect to switch to rail;
- An assessment of the financial viability of moving cargo by rail freight;
- Examining rail access issues at Elton for intermodal rail freight, covering loading gauge and capacity;
- The suggested terminal and track layout at Elton;
- The likely commercial and service structure challenges which *Encirc* is likely to face;
- Terminal availability distant from Elton
- The mechanics of an operational trial and
- A summary and next steps.

2. Assessment of Potential Volumes

Encirc has provided its outbound despatch volumes for 2022. The data supplied included:

- All individual outbound shipments by location and customer;
- The number of pallets moved on each shipment – typically 26 pallets or 52 pallets double stacked on a standard semi-trailer; and
- The total tonnes moved on each shipment.

An across the board uplift of 5% is assumed by 2025. Table 2.1 opposite provides a summary of the data, showing that just under 23,000 shipments were undertaken in 2022, comprising around 896,000 pallets. The 5% uplift implies that by 2025, 24,000 shipments are forecast to be undertaken comprising around 941,000 pallets.

The data was interrogated further to identify those locations that could potentially sustain a full-length train service. This covered regions over 125km distant from Elton that currently or would expect to receive the equivalent of at least 35 shipments per week. This is shown in Table 2.2 opposite. Overall, four areas/regions are identified as justifying rail services. The volumes indicated for 2025 suggest potentially weekly trains to Scotland, twice weekly trains to each of the Midlands and the Bristol area alongside 3 trains per week to Yorkshire.

Table 2.1: Summary Volumes – Current and 2025 Forecast

	Current	2025 Forecast
Shipments	22,813	23,954
Pallets	896,260	941,073

Table 2.2: Potential Rail Volumes – Current and 2025 Forecast

Terminal	Current Shipments		2025 Forecast Shipments	
	Total	per week*	Total	per week*
Leeds area	5,414	104	5,685	109
Bristol area	3,477	67	3,651	70
Midlands	3,712	71	3,898	75
Scottish Central Belt	2,280	44	2,394	46
Total	**14,883**	**286**	**15,627**	**301**

* Annual total divided by 52 weeks and 26 pallets per unit

3. Financial Viability

The table opposite shows modelled rail shipment costs per unit moved from Elton (assumed to be a 13.7m/45ft 'pallet-wide container) to the destinations indicated where volumes are likely to justify a full-length train service. It is based on the following assumptions:

- Investment in or long-term lease of a rake of 20 x IDA or IKA (mega-fret) low-deck wagons*;
- Hire of traction and train crew for a week from a FOC (effectively a dedicated locomotive on 'permanent' hire);
- Five round trips per week per wagon set (over 5.5 days)
- Train loaded outbound from Elton, returns with empty re-positioned containers; and
- Fuel, track access, third-party terminal lifts and lifts at Elton and local road hauls at current prices.

The costs associated with the empty re-position back to Elton would therefore accrue to *Encirc*. These estimated rates consequently represent the 'high watermark'; the ability to attract third-party traffic back to the North West e.g. tanks of liquids for bottling, backloads for customers or third party traffic would act to lower these rates.

* Note that IDA wagons are shorter than IKA wagons so around 10% more units can be carried on a train of finite length.

Table 3.1: Modelled Rail Costs

Terminal (and Destination)	Distance	Rail Cost/Unit	Terminal Lifts	Local Road Haul	Total/Unit
Avonmouth (Bristol)	280km				
Mossend/Coatbridge/ Grangemouth (Scottish Central Belt)	370km				
Leeds FLT/Wakefield (Leeds)	130km				
Birch Coppice/H Hall (Burton)	160km				

Table 3.2 opposite shows modelled road haulage shipment costs per trailer from Elton to the destinations indicated where volumes are likely to justify a full-length train service. It is based on the following assumptions:

- Standard 6x2 tractor unit hauling a tri-axle semi-trailer;
- Vehicle combination is 'single shifted' i.e. parked up overnight at home depot or out on the road;
- Re-position allowance for next load of 50km (time and fuel) and statutory legal breaks/rest periods; and
- Fuel and other charges at current prices.
- 26 pallets per HGV

Encirc's own supplied costs per unit are also shown in the table. It appears that *Encirc's* rates are broadly comparable with the modelled outputs.

Table 3.2: Road Transport Costs

Destination	Distance	MDST Modelled	*Encirc Actual*
Bristol	280km	[redacted]	
Scottish Central Belt	370km		
Leeds	130km		
Burton	160km		

Table 3.3 compares the three sets of costs. Rail to Bristol and the Scottish Central Belt would appear to offer significant savings over the actual/modelled road transport costs. Rail costs to Leeds and Burton are currently above the estimated/actual road haulage costs. However, it would be a mistake to assume there would be simple cross subsidization between the routes because there are economies in operating a single wagon set intensively.

It is also worth re-iterating that the ability to attract third-party or backload traffic could lower the net cost of estimated outbound rail costs.

Table 3.4 is a summary of the estimated overall weekly cost impact of transferring around 60% of the above potential traffic to rail, assuming one train each per week to Bristol, Scotland and the Midlands and two to Yorkshire (Leeds or Wakefield).

Overall, based on modelled costs, there would be a weekly saving of [redacted] before considering the net revenue available from backloads. That would rise to [redacted] based on *Encirc's* existing road haulage costs.

Table 3.3: Modelled Transport Unit Costs Compared

Destination	Rail	Road MDST Modelled	*Road Encirc Actual*
Bristol	[redacted]		
Scottish Central Belt			
Leeds			
Burton			

Table 3.4: Overall modelled weekly cost benefit assuming 5 train departures/week (175 units outbound per week)

Destination	Rail cost	Road cost	Rail freight	Volume	Cost benefit/ week
Bristol	[redacted]				
Scottish Central Belt					
Leeds					
Burton					
Overall					

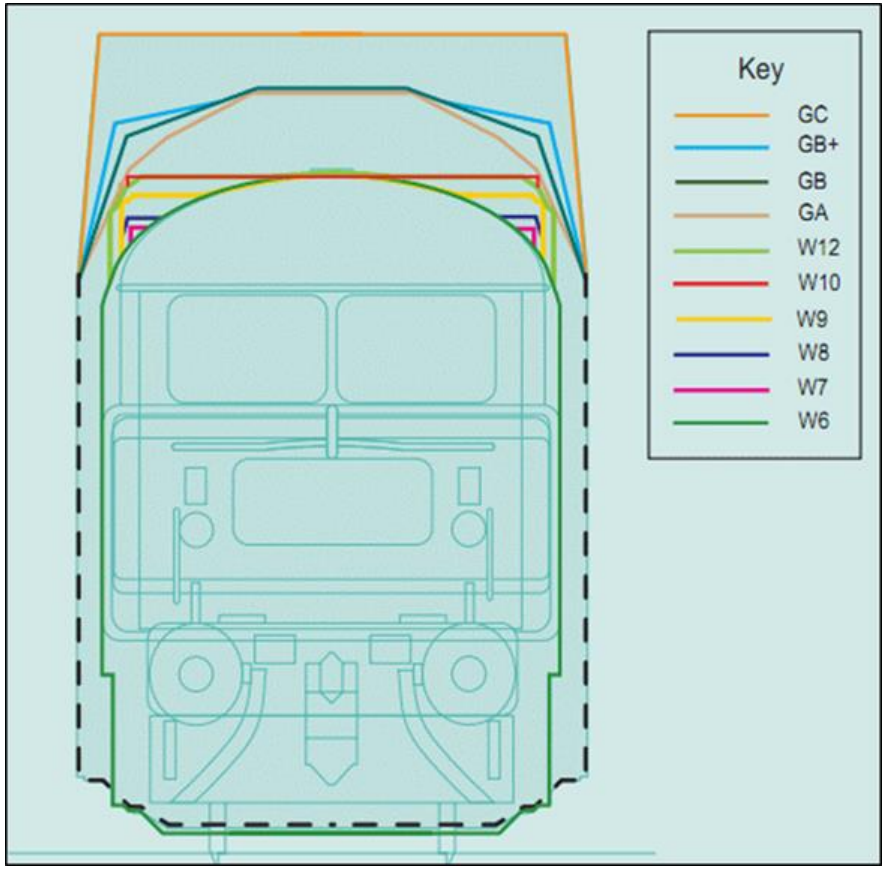
4. Rail Access: Loading Gauge

The physical definition of the maximum height and width in cross section of a railway line is called its *loading gauge*. The size of the loading gauge of a particular section of track will determine the size of platform wagon and intermodal unit combination that can be conveyed on that section of line. The size of the loading gauge is determined by lineside features such as overbridges, tunnels and platform edges. The physical dimensions of a intermodal wagon/intermodal unit combination must be within the loading gauge profile to ensure that it will not collide with any of these lineside features.

There are six standard freight loading gauge profiles on Network Rail's infrastructure. These are listed below together with the above rail height at the top left/right corners of an intermodal unit.

- W6 gauge – above rail height 3,440mm at unit width 2,440mm;
- W7 gauge – above rail height 3,531mm at unit width 2,480mm;
- W8 gauge – above rail height 3,618mm at unit width 2,528mm;
- W9 gauge – above rail height 3,695mm at unit width 2,600mm;
- W10 gauge – above rail height 3,891mm at unit width 2,500mm; and
- W12 gauge – above rail height 3,896mm at unit width 2,550mm.

Note the profiles are smaller than the UIC gauges used on HS1, the Channel Tunnel and (generally) across mainland Europe.



W10 or above is required to handle containers with a height of 2,896mm (9ft 6in) on standard (metre high) platform wagons. The West Coast Main Line (WCML) is cleared to at least W10. However, the railway infrastructure between Elton and Acton Grange Junction (WCML at Warrington) is officially classified as W7. Trans-Pennine routes (via Diggle and Calder Valley) are also now classified at only W7. The W7 loading gauge profile is principally designed to convey 2,438mm (8ft) tall waste containers on intermodal platform wagons with a deck height of just over 1m.

W7 cannot accommodate 2.5m wide shipping containers with a height of 2,896mm (9ft 6in) on any platform wagon. The largest unit W7 gauge can accommodate would have a height of 2,636mm (8ft 9in) at 2,500mm width on a mega-fret wagon (IKA wagon with a deck height of 825mm) or 2.73m (9ft in) on a low-liner wagon (IDA wagon with a deck height of 730mm).

W8 gauge can convey intermodal units at 2,896mm (9ft 6in) tall, albeit using either IDA or FLA wagons (both around 0.72m – 0.73m deck height). The ability to handle such units would provide two benefits:

- It would allow *Encirc* to utilise standard 'off the shelf' equipment rather than having to invest in bespoke boxes; and
- The terminal would be able to attractive to third-party traffic, which will most likely utilise standard shipping units.

Network Rail had previously advised that 2,590mm (8ft 6in) tall units could be conveyed on mega-fret wagons (deck height of 825mm) to Acton Grange Jn. In the absence of any further detailed gauging data, specialists *DGauge* were commissioned to ascertain whether a standard shipping container with a height of 2,896mm (9ft 6in) and width 2,500mm could be conveyed on a low deck-height wagon (in this case a FLA Lowliner with a deck-height of 720mm). The summary results are shown in the table opposite.

From the analysis data, *DGauge* report that there are currently no foul lineside structures between Elton and Acton Grange Junction for the tested wagon/container combination. There are six structures where the clearances are small and below the acceptable standard at normal line speed (so called 'Reduced' clearance).

Table 4.1: DGauge Profile Analysis – 2,896mm unit on FLA Wagon

Structure Type	Total No. of Structures	Substandard	Reduced	Special Reduced	Foul
Major Structures	229	6	6	0	0
Minor Structures	195	0	0	0	0
Total Structures	**424**	**6**	**6**	**0**	**0**

ELR	Line	Structure	Clearance	Speed Reduction Clearance
CHW1	1100	Rake Lane Bridge No.35	86.7	N/A – structure on inside of curve
CHW1	1100	Smithy Lane Bridge No.37	72.6	N/A – structure on inside of curve
CHW1	2100	Halton Road Bridge No.55	81.0	Normal Clearance cannot be achieved. 91mm at 10mph
CHW1	1100	Keswick Lane Bridge No.68	81.6	Normal Clearance at 30mph
CHW1	2100	Station Road Bridge No.70	59.2	Normal Clearance cannot be achieved. 81mm at 10mph
CHW1	2100	Frodsham Tunnel 10 Miles 7 Chains	90.0	Normal Clearance at 30mph

At these locations, Network Rail could grant a mitigation to allow operations without the need for any measures e.g. speed restrictions. Otherwise, the *DGauge* analysis suggests normal clearances could be achieved with the reduced speed running noted in the table (the analysis allows for a degree of 'sway' at standard line speed, which will reduce as train speed slows).

On this basis, the Elton terminal should be able to handle standard shipping containers with a height of 2,896mm, albeit on low deck-height IDA or FLA wagons. However, circa 43% of potential *Encirc* traffic is destined for the Yorkshire area and the two key Trans-Pennine routes are only currently cleared to W7, effectively limiting those markets to 2,590mm tall units on either IDA or FLA low deck-height or IKA mega-fret wagons. Alternatively, trains can use a circuitous but W10 cleared route via the WCML and Lichfield to serve Yorkshire, but this adds at least 300 kms round trip to the journey.

5. Rail Access: Capacity

Sufficient track capacity (paths) will be required to operate additional services at Elton alongside the existing sand and cullet trains. While this is likely to be one intermodal service per day initially (i.e. two paths, one in plus one out), the ability to launch further services for both *Encirc* and third-party traffic will be an important opportunity to consider.

Freight path availability is, in part, defined by the frequency, operating speed and stopping patterns of passenger train services. The table opposite shows the current and aspirational passenger train frequency (daytime hours) between Ellesmere Port and Warrington Bank Quay. The main line passing Elton currently handles two services per day, an early morning and mid-evening service to/from Ellesmere Port. Beyond Helsby there are three services per hour per direction (hourly services between Chester and Leeds, Llandudno and Manchester and Chester and Liverpool via Runcorn respectively). The Chester-Liverpool service departs the Chester-Warrington line at Frodsham Jn via the Halton Curve.

There is a long-standing aspiration (by Cheshire West & Chester Council) to provide a more frequent service between Ellesmere Port and Helsby, most likely achieved by extending the current Merseyrail Electric services beyond Ellesmere Port (two per hour per direction). Merseyrail's new rolling stock includes a sub-fleet equipped with batteries for short distance movements away from the electrified network (principally to serve a new station at Headbolt Lane near Kirkby). Further units could be retro-fitted with batteries or additional battery-electric trains acquired to provide such a service extension.

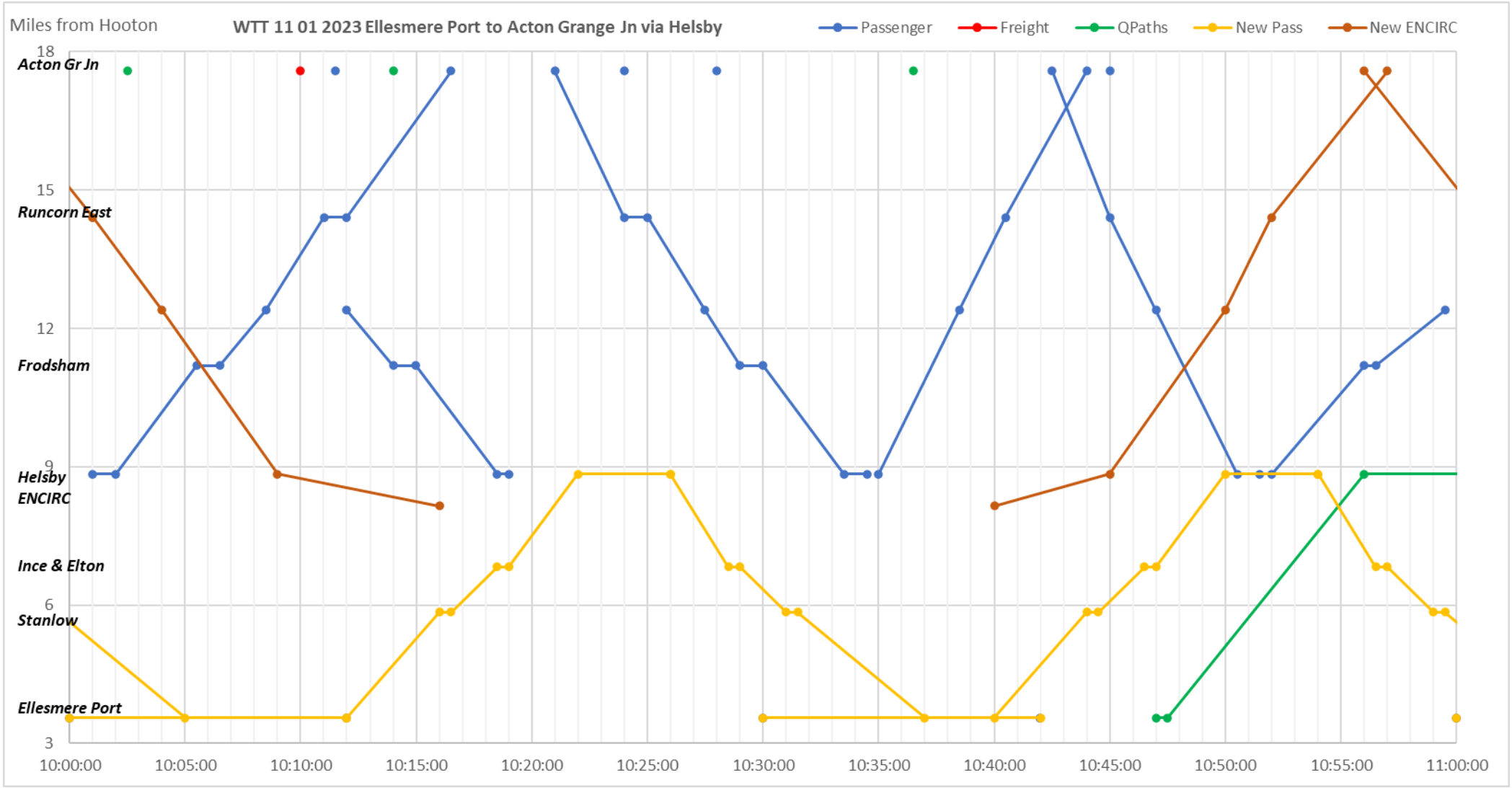
Table 5.1: Passenger Train Frequency (daytime hours)

Track Section	Trains per hour current (per direction)	Trains per hour aspirational (per direction)
Ellesmere Port to Helsby	2 per day	2 per hour
Helsby to Frodsham Junction	3 per hour	3 per hour
Frodsham Junction to Warrington Bank Quay	2 per hour	2 per hour

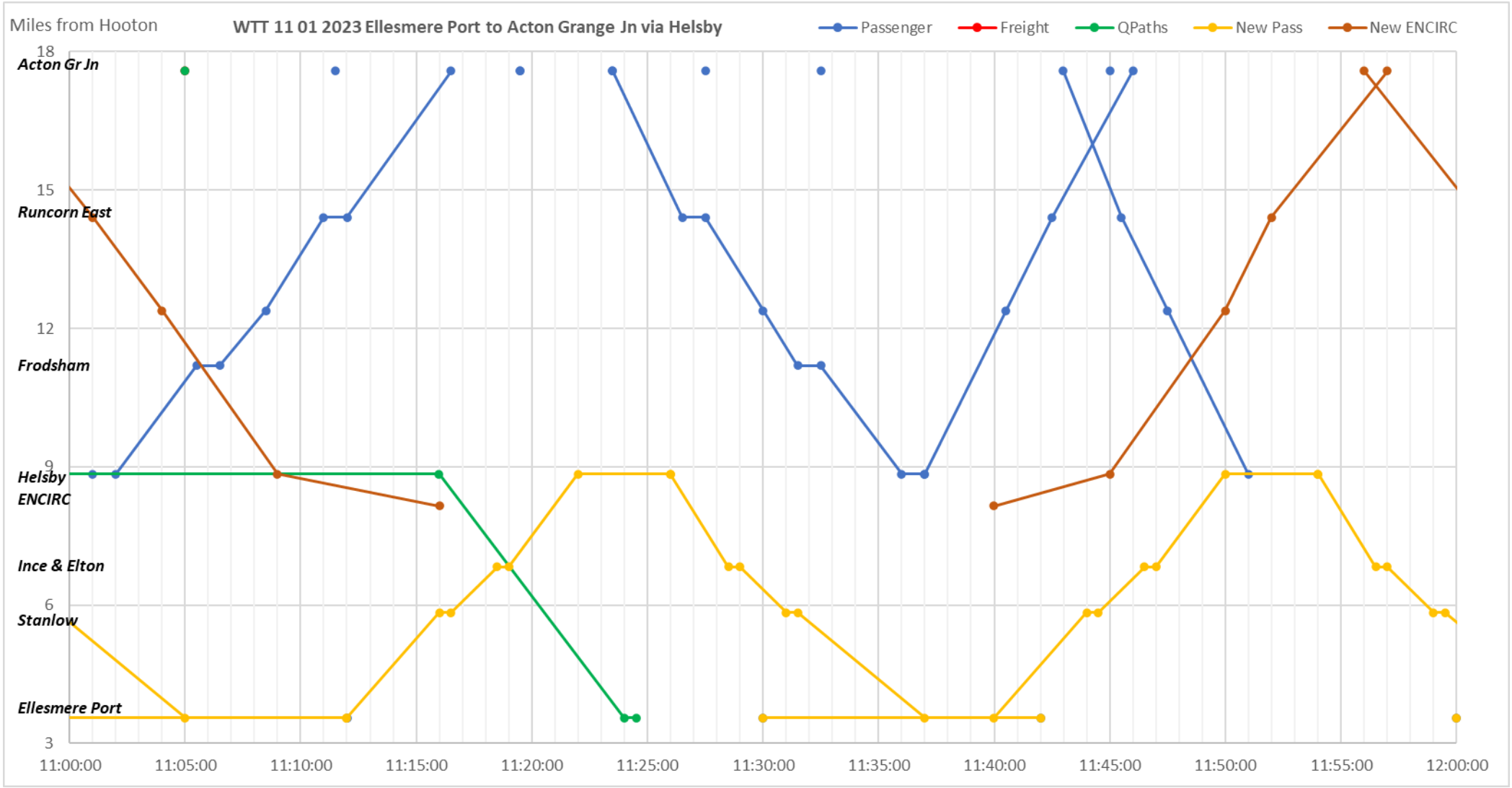
Given the significant step-change in passenger frequency, the aspirational service pattern has been tested to ascertain whether additional freight services could also serve Elton. The existing Working Timetable (WTT) on a weekday between Ellesmere Port and Acton Grange Jn from 10:00 to 14:00 was plotted onto a train graph. A potential twice hourly passenger service between Ellesmere Port and Helsby (an extension of existing Merseyrail services using battery-electric multiple units) was inserted onto the train graph (using the timings of the existing diesel service). The option of adding additional freight paths between Elton and Acton Grange Jn was then tested.

The analysis suggests that the existing inbound and outbound path used by the sand and cullet trains between Warrington and Elton can be replicated in each day-time hour across the time period considered. This is shown on the train graphs on the following pages.

Traingraph: WTT Ellesmere Port to Acton Grange Jn via Helsby 10:00 to 11:00



Traingraph: WTT Ellesmere Port to Acton Grange Jn via Helsby 10:00 to 12:00



6. Terminal Design at Elton

The diagram on the following page provides an indicative sketch of the suggested terminal and track layout at Elton for the intermodal terminal. The black lines represent the existing track layout associated with the deliveries of silica sand and cullet. The red lines would be new track infrastructure to handle intermodal trains separate from the bulk operation (although the existing locomotive release line would be common to both operations). In total, around 1,150m of new track plus four switches would need to be installed. Key features of the layout include:

- Based on utilising 'low-liner' wagons, the ability to handle an intermodal train up to 630m trailing length (655m with locomotive; to be confirmed before final designs agreed);
- 2 x 330m loading/unloading sidings for intermodal wagon;
- An associated hard standing area (broadly 30m wide) alongside the sidings for the temporary storage of inbound and outbound containers; and
- An inbound reception track which allows intermodal trains to be sectioned or re-formed separate from the bulk train operation.

The track between Point C and Point D can accommodate a full length train (c680m). Train shunting and sectioning etc.. can be undertaken in isolation of Network Rail's infrastructure once clear of the main line.

Train Arrival Procedure

1. Train departs main line using existing switch/turnout.
2. Train enters the new track (at Point C) before coming to a halt at Point D (train stands with the locomotive at Point D, rear of last wagon just beyond Point C).
3. Locomotive detaches, pulls forward into the track between Points D & E, and then uses the new cross-over to enter the existing run-round line.
4. Locomotive attaches to the last wagon at Point C (which now becomes the front of the train). The whole train is then propelled backwards so the rear-most wagon reaches Point E. The rake of wagons is then sectioned half-way (just before Point F).
5. Locomotive pulls forward with the remaining half-length train (leaving half the wagons in the north siding Points E to F), so the last wagon is just beyond the switch at Point F. It then propels them backwards into the south siding (Points B to A) so the rear-most wagon reaches Point A. The train is now accommodated in both sidings and is ready for cargo handling.

Sketch – Encirc Indicative Track Layout

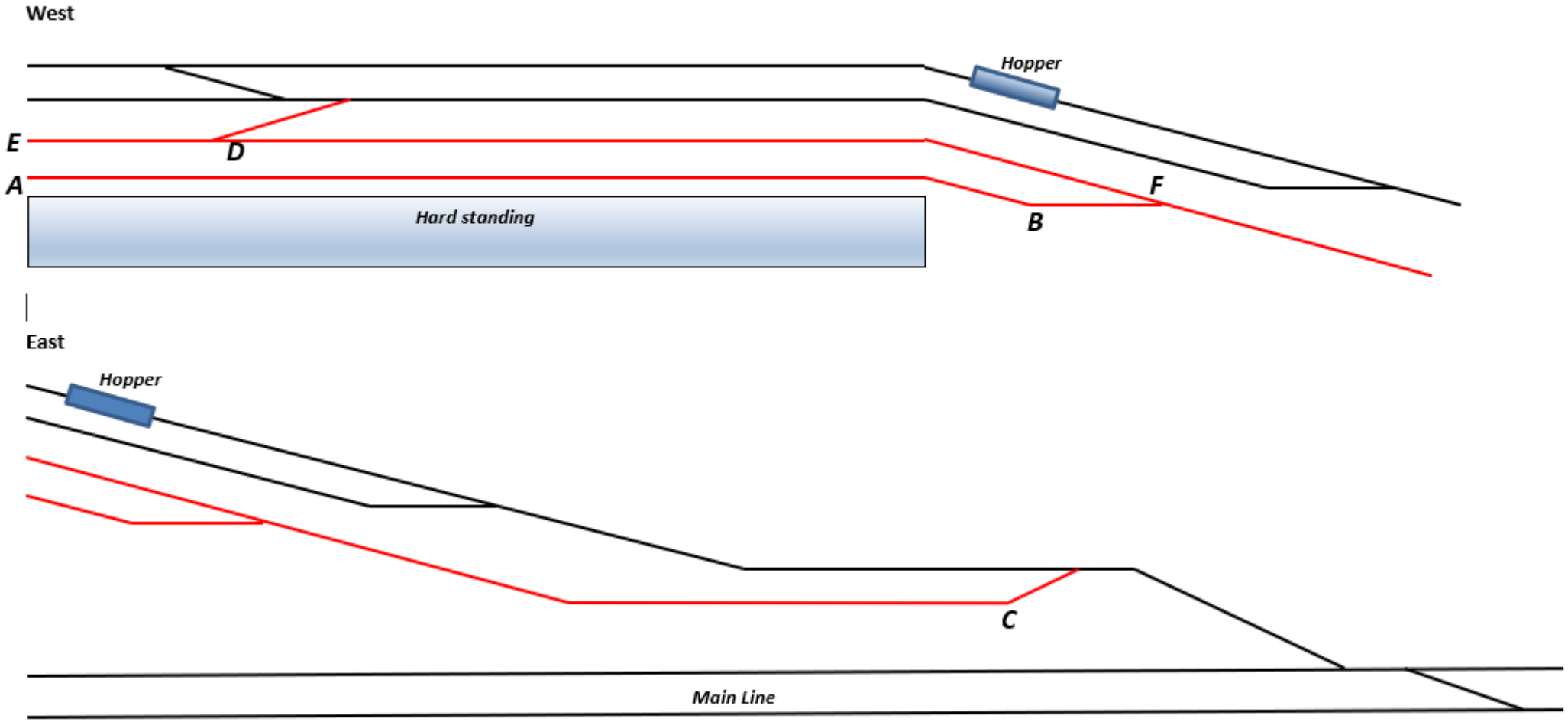
Not to Scale

Existing track

New track

Approx distance A – B & E – F: 330m

Approx distance C – D: 680m



Train Departure Procedure

1. The locomotive attaches to the half-length train in the south siding (Points A to B). It draws forward towards Point C to a position where the rear-most wagon is beyond the switch at Point B
2. The locomotive then propels the half-length train backwards into the north siding (Points E to F), so that just beyond the switch at Point F the two half-length trains meet and can be re-connected to form a full-length train.
3. Re-formed full-length train pulls forward to Point C and awaits timetabled departure time.

Hard Standing Area

Container lifting to/from railway wagons and skeletal trailers would be undertaken using a pair of reach-stackers. In order to handle up to two intermodal trains per day (as implied by the volume analysis), the hard standing area would need to be large enough to accommodate up to 80 loaded container units (for despatch in the next 24 hours) plus up to 40 inbound containers (empty) for a short time prior to re-positioning back to the factory for reloading. An area the equivalent of 30m x 350m should be sufficient for such a task. If third party traffic was handled more space maybe required.

7. Service Structure Challenges

Once issues of network capacity and loading gauge have been addressed, the key challenge in developing a rail freight strategy will be in maximizing asset utilization; essentially maintaining high load factors and using wagons, locomotives and containers intensively. In this respect, *Encirc* appears to be well placed. The following factors apply:

- Sufficient potential outbound traffic is available for at least one full length wagon set and a locomotive to be used intensively
- Existing terminals are available near to *Encirc's* principal clients (see a following slide for relevant terminals and the trains each terminal serves)
- However, if operated as weekly services to several in-house local cross/docking facilities used to drip-feed product to clients, the implication is that individual containers would round trip only once per 15-16 days.
- Concentration of traffic to Yorkshire mitigates this issue as 2-3 services/week could operate to either Leeds or Wakefield
- Leeds and Wakefield terminals also serve the South-East deep-sea ports on a daily basis and could therefore receive bulk wine containers as backloads to Elton
- Several Scottish terminals are available (market dispersed) but there would be a frequency challenge. A twice weekly may just be viable or alternatively second service could be operated via Teesport if combined with third party traffic.
    - note that the only northern English terminals currently serving Scottish terminals are the Tees and Seaforth
- Two terminals are available at Bristol Docks (at Avonmouth and at Portbury) but they are only used weekly at present.
- Birch Coppice (Tamworth) is available for traffic to Burton and for other minor flows across the Midlands.
- DIRFT could serve the South East market but at present there is not sufficient traffic to justify a weekly service
    - the existing cullet inbound train could haul a few intermodal wagons on a regular basis, replicating the proposed trial.
- The UK intermodal rail network of services is relatively fragmented and controlled by a handful of aggregators, freight operating companies (i.e. traction suppliers), ports and shipping lines. There is scope for cooperation with these operators.

8. Industry structure, technical requirements and terminals

Rail services are more complex to initiate than road haulage services, involving access to Network Rail and securing traction services, wagons, terminals and arranging for local delivery, potentially from different suppliers.

- 5 significant traction suppliers (FOCs) are available which could operate on a pay per haul basis, based on agreed fuel price adjustment deals
  - FOCs will then interface with Network Rail (NR) to secure paths. NR charges for access on a standard public domain tariff
- Wagons can be leased or bought with maintenance deals (as has Drax and some aggregates companies) or provided (and charged for) by the FOCs.
- In principle terminals are open access but in practice deals need to be struck with the FOCs that use or control those terminals; *Encirc's* traffic mix limits choice of current terminals (see next slide, showing number of weekly services to/from each relevant terminal)
- A fleet of containers will be required which will need to be 2.50m wide (2.44m wide internally) and 45' long to achieve 26 pallets/unit.
- If services were limited to Scotland, Bristol and the Midlands, containers could be 9'6" high provided low-liner (IDA) wagons were procured.
- If services are also to operate to Encirc's largest market area (Yorkshire), over the next 10 years loading gauge will be limited to W7 which means 8'6" high containers will be required, which could be carried on (more easily procured) mega-fret (IKA) wagons. However, 10% more IDA wagons can be hauled on a train of finite length
  - 45' long x 2.5m wide x 8'6" high containers may need to be ordered specifically, as they are unusual (but not unique)
- Local road haulage could be provided by a range *Encirc's* existing contractors, one of which [redacted] does also act as a rail aggregator.
- Other aggregators are also available (such as [redacted] who would see *Encirc's* traffic as substantial base-load volumes to start new services
  - but to attract third party they would all probably expect access for 9'6" boxes to Elton and therefore to low-liner (FLA or IDA) wagons given Elton will be limited to a W8 load gauge.

Options are available to develop a 'mix and match' approach as to how services are contracted. However, it would be in Encirc's interest to examine the option of assembling the above service components itself to ensure it is an informed purchaser of aggregator services.

Available terminals relevant to *Encirc* and current services/month

Wakefield	Tilbury	21
	Felixstowe	21
	Southampton	20
	LondonGateway	16
	Wakefield	1
	Peterborough	1
Wakefield Total		80
Birch Coppice	Felixstowe	56
	LondonGateway	26
	Southampton	19
Birch Coppice Total		101
Tees	Daventry	26
	Mossend	20
	Felixstowe	20
	Grangemouth	15
	Elderslie	5
	Tilbury	4
	Wentloog	4
	Motherwell	1
Tees Total		95
Coatbridge	LondonGateway	53
	Southampton	20
	Felixstowe	19
	Tilbury	18
	Folly Lane	8
Coatbridge Total		118

Leeds	Felixstowe	37
	Southampton	35
	LondonGateway	21
Leeds Total		93
Avonmouth	LondonGateway	2
Avonmouth Total		2
Mossend	Daventry	95
	Hams Hall	22
	Inverness	21
	Tees	21
	Doncaster iPort	18
	Seaforth	11
	Carlisle	1
	Grangemouth	1
Mossend Total		190
Daventry	Mossend	97
	Tilbury	62
	Grangemouth	28
	Doncaster iPort	23
	Wentloog	21
	Daventry	4
	Tees	2
Daventry Total		237

9. Proposed trial

To ‘prove’ the feasibility of moving glass bottles by rail the following trial is proposed:

- Lease a pair of (readily available) 40’/8’6”/2.44m wide containers to be delivered to Tilbury (to carry 22 pallets each)
- Existing empty cullet train collects mega-fret wagon (2 platforms) as it moves southbound through Wembley
- Load the pair of empty 40’/8’6” boxes onto a mega-fret twin wagon at Tilbury port terminal (equipped for lifting intermodal traffic and currently serving a Tilbury – Wakefield train for Coca Cola and internally rail linked to existing cullet terminal).
- Attach to existing weekly northbound cullet train and haul to Elton
- Shunt mega-fret onto locomotive release line and discharge boxes with *Container lift* equipment
    - requiring a skeletal trailer to shuttle boxes to shed to load with bottles while cullet train is itself being discharged.
- Reload boxes to train and reattach mega-fret wagon to cullet train
    - 4-5 hours available while cullet being discharged
- Return to Tilbury, detach mega-fret and discharge 40’ boxes at intermodal terminal
- Deliver product by road to local to clients.
- Next northbound cullet train redelivers mega-fret wagon to Wembley (in passing)

10. Towards a commercial strategy

Encirc can develop a base load volume of both outbound bottles (filled and empty) and inbound bulk liquid and clients' product for onward distribution that can fill trains, but not on a daily basis to all potential remote rail distribution hubs.

It follows that *Encirc* could:

1. Strike a deal with a specialist aggregator whereby *Encirc* provides base load cargo that the aggregator could use as base for a wider network, leaving investment in wagons, choice of FOC traction supplier and selection of terminals and collaborative deals with other third parties to him, or
2. Develop a bespoke network with a single train of wagons to different terminal, matching outbound and inbound traffic (including third party traffic), strike a deal directly with a traction supplier, invest in or lease low height wagons and containers and develop a medium scale third party terminal based on a contract to handle a given volume a mix of traffic

In either case the cost advantage of being adjacent to the plant means that *Encirc* would need to develop its own intermodal terminal at Elton.

The second approach would provide *Encirc* with the flexibility to deal with both other cargo owners and aggregators and to select terminals and partners that also:

- enabled inbound tank traffic from several ports to transfer to *Encirc* train at (say) Leeds or Wakefield (see other terminals with which these are connected) or even (by extending service) at Teesport via feeder services; another local receiver of tanks maybe available to share this opportunity
- provided a separate link to Scotland via the Tees
- sought loaded westbound flows ex North-East/Yorkshire

  -e.g. a TESCO flow from Tees to Ditton based on W7 loading gauge using 8'6" boxes; trains passing via Runcorn to Elton to reload eastbound
- encouraged existing clients to backload Encirc containers for the North-West, distribution from Elton/Ellesmere Port

Discussions are now starting to examine these options; simply examining these opportunities would allow *Encirc* to understand how to cost out rail services.

11. Summary and next steps

- Rail services appear economically viable for empty or filled bottles ex Elton compared with road haulage costs
- Backloads into the north-west maybe available
- The local rail network can physically accommodate standard 9'6" containers given suitable railway wagons
- The existing terminal will need to be extended to accommodate intermodal traffic, and its scale may depend on whether *Encirc* seeks to attract third party traffic to develop scale economies
- Adequate rail network capacity is available
- There is a commercial rail freight industry that can provide the requisite services with (just) sufficient competition between suppliers to provide competitive rates
- Whether *Encirc* take a 'do it yourself' approach to rail service development or seek an established rail aggregator (such as [redacted] it would be sensible to examine the 'do it yourself' option to understand rail freight industry cost structures
- A trial is currently being planned that capitalizes on the existing cullet train arriving from Tilbury that would load bottles to rail and make deliveries to a client.

Next steps could include

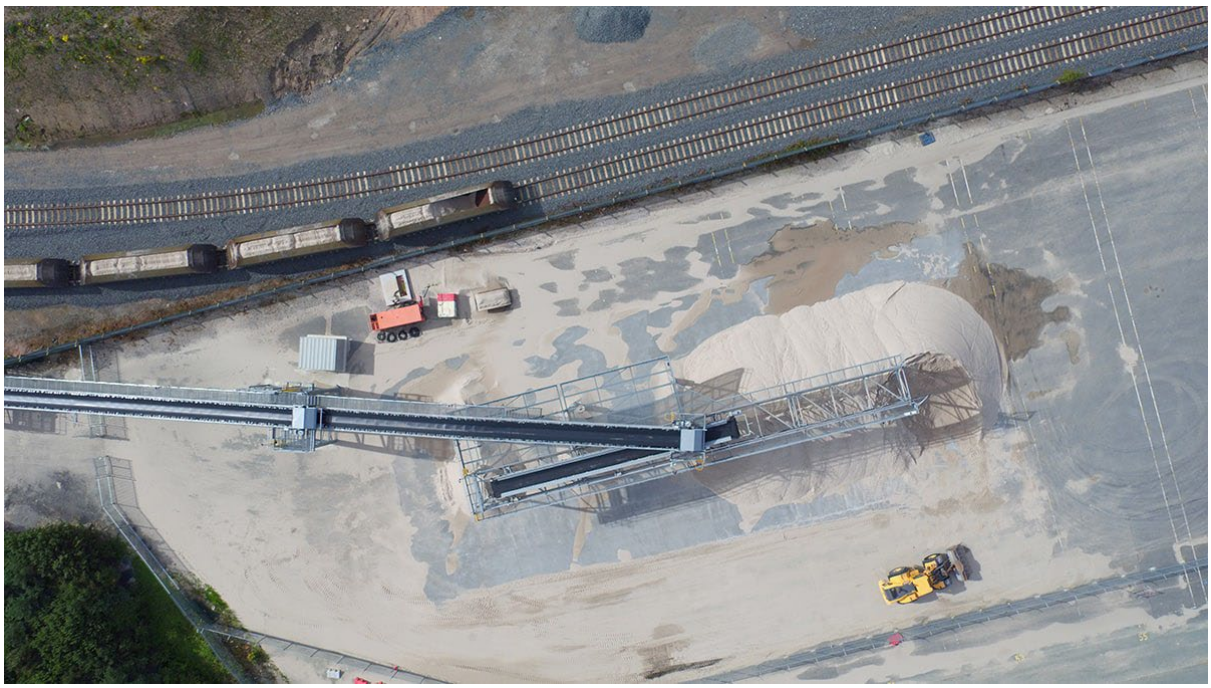
- developing a terminal at Elton
- confirming with Network Rail that *DGauge's* findings with respect to loading gauge to Elton are agreed
- thereby determining wagon strategy and secure suitable wagons
- selecting suitable containers
- establishing which remote terminals are to be used
- deciding upon commercial partners within the rail industry (FOCs, aggregators, other cargo owners etc.)

LICHFIELDS

Appendix 5

Rail trials put Encirc on track to create ultra-sustainable distribution network

May 2023



Leading glass container manufacturer Encirc has successfully completed trials of rail transport of finished bottles using the railhead at its Elton, Cheshire site. The successful trial period represents a significant step in the company's ambition to create the most sustainable national drinks supply chain in the UK.

Emissions from distribution, part of Scope 3 emissions under the Greenhouse Gas Protocol, contribute significantly to the carbon footprint of container glass. While these emissions can often be considered 'out of reach' of efforts to decarbonise, Encirc has identified rail distribution as a potential solution to reducing Scope 3 emissions.

The manufacturer's Elton railhead is currently used to deliver raw materials and recycled glass used in the production process. However, Encirc has earmarked it to play a crucial role in its plans to create an ultra-sustainable transport network for glass across the UK.

Adrian Curry, Managing Director of Encirc, explained: "The potential benefits offered by our Elton railhead are significant. A tonne of freight transported by rail produces 76% fewer carbon emissions compared with road haulage, so developing our rail capacity across the UK will enable us to vastly reduce our own carbon footprint and that of our partners."[1]

Encirc has conducted three successful trials over the last two years, providing a workable framework for how the rail transport network will work in practice. Supported by WH Malcolm, MDS Transmodal and Cheshire West Council, the trials began in 2022 with the successful delivery of spirit bottles to a customer in Scotland and have most recently continued with the transport of bottles to the company's newly acquired filling site, 'The Park', in Bristol.

Curry continued: "The rail network can have a transformative impact on the carbon footprint of our supply chain, and that has a direct effect on those of our partners. Each load of bottles and jars delivered by train is the equivalent to taking 66 lorries off the UK's roads, an already sizeable

reduction which we intend to scale up significantly in the long term, with 70% of bottles produced at the Cheshire site eventually leaving by rail.

“Looking in more detail at the product itself, introducing rail to the supply chain will significantly reduce the carbon footprint of the bottle across its full lifecycle, and therefore the emissions it passes onto the consumer.”

While Encirc recognises that not all of its customers will have capacity to receive deliveries by train, it is making strides towards intermodal transport where at least part of the journey is undertaken by rail rather than relying on road haulage exclusively.

The drive to decarbonise its distribution comes as the latest milestone in Encirc’s broad push to improve the sustainability of its operations, sitting alongside initiatives to vastly reduce Scope 1 and 2 emissions. It follows on from a plan unveiled last year with global drinks brand Diageo to create hundreds of millions of zero-carbon bottles in a new hydrogen-powered furnace by 2030.

Curry concluded: “We’re not afraid to be bold with our plans to decarbonise our own operations and that of the wider glass industry. Low-carbon furnaces will be central to this effort, but the impact of the supply chain is an area that’s often overlooked by businesses looking to reach net zero. We can do better with our supply chain without starting from scratch and make our operations a more positive influence in the supply chains of our partners and their customers.”

Encirc currently manufactures more than one in three of the glass bottles and jars used in the UK food and drinks industry. The company has a unique global offering, running a full wine and beverages filling operation at its two filling sites in Cheshire and Bristol.

To see more about Encirc’s sustainability journey visit www.encirc360.com

[1] https://www.networkrail.co.uk/stories/railway-day-freight-cuts-emissions-across-britain/