

48T FOR 48M

48 TONNES **FOR** 48 MILES



MALCOLM
LOGISTICS



48 TONNES FOR 48 MILES

1. EXECUTIVE SUMMARY

The Scottish and UK Governments have objectives to reduce greenhouse gas emissions (GHG) and increase rail freight. WH Malcolm (Malcolm Logistics) has identified an opportunity to help achieve both, by a controlled increase in permissible weight for the road transport of intermodal rail freight.

At the moment intermodal rail freight is at a competitive disadvantage as its potential payload per box carried by road is 15% (3.8Tonnes) less than equivalent road only transport. This situation exists as the specialised equipment required to operate intermodal services which combine road and rail transport is heavier than that used for road transport alone.

Malcolm Logistics has reviewed traffic flows of some of our road transport customer business. Traffic exists which could be transported by rail rather than road should the payloads be equivalent. In order to exploit this opportunity it is proposed the gross vehicle weight of HGVs transporting goods to and from rail terminals be increased with appropriate controls from 44 to 48 tonnes. This will allow rail to carry the same payload as road to compete equally. As part of a package of control measures to manage such an approach it is proposed the 48 tonne dispensation is restricted to within 48 miles of the rail terminal, hence '48 for 48'.

The proposal for 48t limit is only for intermodal traffic and does not support a general 48t limit.

End transport users who would benefit from this change include Diageo (Leven and Shieldhall), Norbord (Cowie) and UPM (Irvine) and many others. As a result of the transfer from road to rail **GHG emissions associated with this traffic will be reduced by 42%** and on these examples alone there would be an annual **net reduction in road transport in excess of 70 million Gross Tonne Miles** each way. These are significant benefits. Our analysis demonstrates the principal manufacturing sites in central Scotland are within 48 miles of a rail terminal. Other businesses and logistics providers can therefore also benefit from '48 for 48'.

Implementing '48 for 48' does not require significant financial investment as the necessary vehicles and trailers already exist. Supporting information has been supplied by manufacturers.

The UK Government controls maximum vehicle weights on the road network. The support of the Scottish Government and other stakeholders is therefore sought for this proposal to progress to the required approval.

Andrew Malcolm

Group Chief Executive
W H Malcolm Limited

2. BACKGROUND

WH Malcolm Limited is a long established logistics company based in Renfrewshire, Scotland. The business employs over 2,000 staff, operates a fleet of more than 475 lorries, manages 5 million square feet of warehousing, provides civil engineering and groundworks services, operates landfill sites and provides waste management services.

The Logistics Division (Malcolm Logistics) accounts for 60% of the Group's £215m turnover. It has been a significant player in the intermodal rail freight market since 2001 with the development of rail services from Grangemouth, Mossend and Elderslie. Currently Malcolm Logistics operates daily intermodal freight train services between Mossend / Grangemouth and DIRFT (Daventry) in the East Midlands. Malcolm Logistics also has a rail terminal at Elderslie, Renfrewshire.

Intermodal freight traffic involves the use of multiple modes of transport (e.g. road, rail and sea). Intermodal traffic which moves by road and rail uses containers or swap bodies that can be carried on both trains and road vehicles. These flows are generally between Scotland, The Midlands, Southern Britain or Ports. Each train will typically carry 28 containers. The movements from Grangemouth to DIRFT for example are 340 miles, so nearly 20,000 road miles are avoided due to each train round trip.

Malcolm Logistics is actively seeking to develop new rail freight services at Elderslie and generate additional traffic on the existing Mossend and Grangemouth rail services. As part of these efforts constraints and opportunities affecting rail freight have been studied.

This proposal has been initiated by Malcolm Logistics. There are services offered by Eddie Stobart, JG Russell, and the rail freight companies (D B Cargo, DRS, Freightliner and GB Railfreight) which would also benefit from the proposal. Malcolm Logistics has discussed and consulted widely through industry bodies to seek support for this initiative. Stakeholders consulted include the Scottish Government, Scottish Enterprise, CBI, Heriot Watt University, Network Rail, Eddie Stobart, JG Russell, SESTRANS and the Road Haulage Association (RHA), shipping liner, port operators and end freight users.

3. CLIMATE CHANGE

The UK Climate Change Act 2008 and The Climate Change (Scotland) Act 2009 both set a Greenhouse Gas (GHG) emissions reduction target of at least 80% by 2050 (based on 1990 emissions).

The Scottish Government's Climate Change Plan, Third Report on Proposals and Policies 2018 – 32 sets out how Scotland can deliver its target of 66% emissions reductions for the period 2018 – 32. The Transport sector emissions target is a 37% reduction.

Malcolm Logistics believe that '48 for 48' gives an opportunity to deliver significant environmental benefits.

4. GROWTH OF RAIL FREIGHT TRAFFIC

The Scottish Government has set an objective to grow rail freight traffic by 7.5% during Control Period 6 (2019 – 2024). This objective is to be achieved through a combination of growing existing rail freight and introducing new business to rail.

'48 for 48' provides a basis for delivering Government policy to grow the use of rail freight solutions.

5. THE RAIL PAYLOAD RESTRICTION CHALLENGE

One of rail freight's challenges is the net difference in product payload between road transport alone and a combined road / rail solution - a 3.8 Tonne disadvantage. Rail freight can comfortably handle heavier traffic. But for these weight restrictions more goods would travel by train.

All HGVs have a gross vehicle weight restriction applied to them. The typical trailer and container / swapbody

combination used with combined road and rail freight operations weighs 10.8 tonnes. The weight of the typical curtain side container trailer used for road transport alone is 7 tonnes. The maximum vehicle payload is the gross vehicle weight minus the trailer / container / swapbody weight. The difference in these weights explains why road transport alone has a payload advantage against a combined road and rail solution.

The table below illustrates this in more detail.

ROAD TRANSPORT ONLY Artic & Curtainsider



TOTAL 15.5T

INTERMODAL ROAD AND RAIL TRANSPORT Artic & Trailer & Container



TOTAL 19.3T

NET PAYLOAD (T)

	Curtain-sided Trailer	Swapbody/Container
Gross Weight	44.0	44.0
Vehicle Weight (Incl unit)	15.5	19.3
Net Payload Capacity	28.5	24.7

The result is a 3.8 Tonne disadvantage to Rail - a 15% difference in potential payload between road and rail.

Rail needs to work together with road in order to flourish.

6. THE PROPOSAL - '48 FOR 48'

To allow rail freight to compete equally with road transport alone it is proposed the gross weight limit on road vehicles used in connection with rail freight transport is increased from 44 Tonnes to 48 Tonnes.

A higher weight combination on road/rail traffic has happened in the UK before, as shown below -

Period	Gross Road Vehicle Weight (T)	Gross Combined Road - Rail Vehicle Weight (T)
Pre 1983	34	34
1994	38	44
1994	38	44
1999	40	44
2001 - Present	44	44

The UK Government commissioned 1980 Armitage Report recommended increasing HGV weight limits to 44 tonnes for 6 axle HGVs. This was implemented in 2001 - removing the benefit rail freight had enjoyed since 1994. There may be concerns that granting 48 tonnes to rail freight will simply result in pressure for 48 tonnes for all HGVs. The Armitage Report justified all HGVs enjoying 44 tonnes and that is why the change occurred in 2001. There is no Report recommending 48 tonnes, and no reason to believe such a Report will be produced. '48 for 48' is designed to provide rail freight with a level playing field with road alone. An increase to 48 tonnes for all

HGVs is not justified, and even if it was rail freight would then require dispensation for 51 tonnes for there to be a level playing field.

Andrew Malcolm of Malcolm Logistics says 'this proposal is designed to benefit rail freight and not to promote an unwarranted increase to 48 tonnes for all HGVs. The weight differential is needed so rail freight solutions have parity with road alone'.

It is also quite common throughout Europe to have weight limits in excess of 44 tonnes (see below).

Country	Weight Limit
Czech Republic	48 tonnes
Denmark	50 tonnes
Finland	48 tonnes
Netherlands	50 tonnes
Norway	50 tonnes
Sweden	48 tonnes

See Appendix 1 for review material from the RHA of country restrictions, and historical development of UK permissible weights.

7. THE BENEFITS OF RAIL FREIGHT AND '48 FOR 48'

The key benefits of carrying freight by rail rather than road are as follows:

Environment	Reduce overall GHG emissions
	Reduce Transport GHG emissions as less vehicle movements
Safety	Less HGV road movements leading to a reduction in vehicle collisions
Economic	Less wear and tear on road infrastructure
	Less pressure on congested road network
	Reduce impact of increasing HGV driver shortages

Malcolm Logistics believe that '48 for 48' is an opportunity to grow rail freight and deliver significant environmental and safety benefits. It does this by removing truck movements from an already congested road network. This will help Scotland and the UK to meet their ambitious GHG reduction targets.

8. CASE STUDIES

Malcolm Logistics has analysed 4 routes used by major Scottish manufacturers. It is anticipated additional traffic will be transferred from road to rail should '48 for 48' be introduced - potentially 100 loads per week in each direction. It is possible to handle this additional traffic on existing rail services by running longer trains.

The findings are shown below.

8.1 GREENHOUSE GASES

GREENHOUSE GAS SAVINGS (1 YEAR)						
USER	ORIGIN	DESTINATION	TONNES CO ₂ e			% REDUCTION
			ROAD ONLY	ROAD & RAIL	SAVING	
Norbord	Cowie	Crick	1,640	939	701	43%
UPM	Irvine	Bicester	588	362	226	38%
Diageo	Shieldhall	DIRFT	1,350	794	556	41%
Diageo	Leven	DIRFT	1,480	778	702	47%

An annual emissions saving of **2,185 Tonnes** of GHGs in each direction between Scotland and England will be achieved – a **42% reduction**. These figures are calculated using Department for Business, Energy & Industrial Strategy 2018 GHG conversion factors.

8.2 ROAD TRANSPORT - GROSS TONNE MILES (GTM)

Case Studies comparing existing and potential impact are shown below and overleaf.

NORBORD - COWIE TO DIRFT				
	GROSS LOADED HGV WEIGHT	NO. (ANNUAL)	ROAD MILES	GROSS TONNE MILES
Road Only	44	1,500	340	22.44m
Road and Rail	44	1,500	10	0.66m
Reduction				21.78m
NETT GROSS TONNE MILE REDUCTION = 21.78 million (97%)				

UPM - IRVINE TO BICESTER, OXFORDSHIRE				
	GROSS LOADED HGV WEIGHT	NO. (ANNUAL)	ROAD MILES	GROSS TONNE MILES
Road Only	44	500	381	8.38m
Road to Mossend	44	500	44	0.97m
Road DIRFT to Bicester	44	500	44	0.97m
Reduction				6.44m
NETT GROSS TONNE MILE REDUCTION = 6.44 million (77%)				

8. CASE STUDIES (continued)

8.2 ROAD TRANSPORT - GROSS TONNE MILES (GTM) (continued)

Case Studies comparing existing and potential impact are shown below and overleaf.

DIAGED - SHIELDHALL TO DIRFT				
	GROSS LOADED HGV WEIGHT	NO. (ANNUAL)	ROAD MILES	GROSS TONNE MILES
Road Only	44	1,500	328	21.65m
Road and Rail	44	1,500	19	1.25m
Reduction				20.40m
NETT GROSS TONNE MILE REDUCTION = 20.40 million (94%)				

DIAGED - LEVEN TO DIRFT				
	GROSS LOADED HGV WEIGHT	NO. (ANNUAL)	ROAD MILES	GROSS TONNE MILES
Road Only	44	1,500	373	24.62m
Road to Mossend	44	1,500	40	2.64m
Reduction				21.98m
NETT GROSS TONNE MILE REDUCTION = 21.98 million (89%)				

Case Study Summary

42% reduction in GHG emissions

77% - 97% reduction in HGV GTM (70.598 million GTM)

Reduced congestion on Scotland and the UK's main road arteries (M8, M80, M73, M74, and M6) due to 100 HGV movements per week in each direction being removed.

There is real benefit to be gained from the introduction of '48 for 48'.

9. THE OPPORTUNITY FOR SCOTLAND

Raising the gross vehicle weight to 48 tonnes increases the payload of rail to 28.7 tonnes. Boosting the market reach of rail freight will result in more southbound rail traffic.

Typical payload weights of Anglo-Scottish loads are:-

NO. (ANNUAL)	RAIL (TONNES)	ROAD (TONNES)
Northbound	15	15
Southbound	24	28.3

Northbound intermodal loads are typically retail goods which are relatively light. They often space out before they weigh out.

Southbound loads are typically manufactured goods. They weigh out before they space out. The categories that would potentially be able to take advantage of a weight change are:

- Spirits**
- Water**
- Soft Drinks**
- Timber**
- Construction Materials**
- Newsprint**

Increasing the permitted weight would give the option of getting shipments of 48 Tonnes to Ports, and hence leveraging the additional weight. This may make some relatively short routes viable by rail – e.g. from Elderslie to Grangemouth, which could remove traffic from the M8/M80 corridor.

There is an issue developing with increasing HGV driver shortages. This will affect Scotland disproportionately due to longer distances to markets in the south and put industry in Scotland at a competitive disadvantage compared to other parts of the UK. Increasing the amount of goods transported by train will help address this.

This would also benefit routes from Scotland to Ports such as Teesport and Liverpool.

10. CONTROL MEASURES

In order to manage such a change it is proposed suitable control measures are put in place. Some examples follow -

- The 48 tonne exemption is limited to a 48 mile radius around the rail terminal where the goods are transported to / from. This covers the main manufacturing hubs in Central Scotland (see Appendix 2).
- Use of dedicated road routes. Examples are within Appendix 3, Tables 1, 2, 3 and 4.
- Targeted route investment. Dedicating specified routes only allows road investment to be targeted if this is necessary.
- Enforcement action. The Traffic Commissioners and other criminal authorities have the powers to deal with improper behaviour.
- Use of equipment which does not adversely affect roads (see Section 12).
- Operating '48 for 48' under STGO category 1 regulations. Such controls include:
 - Vehicles running at 51 Tonne on designated routes (altered to 48 Tonnes)
 - Display 'STGO Cat 1' plate to the front of the vehicle
 - 2 working days' notice must be provided to highway and bridge authorities about the weight: the dimensions may need to be given to the police (in practice expect this is a relatively small number of routes, with a regular flow of traffic, so could be a standard dispensation)
 - Speed limits: Motorway 60 mph, Dual Carriageway 50 mph, Other Roads 40mph
- This could also operate '48 for 48' as a trial in the same manner as the DfT Longer Length Trailer Trial. Licences are granted to participants. This would allow the effectiveness and impact of 48 tonnes to be established. The majority of the fleet can cope with 47.3T with no modification. Current Longer Length Skeletal trailers can already cope with the full 48T. The 48T can be achieved with minor investment on the rest of the fleet.

It is considered '48 for 48' can be effectively managed through the use of such suitable control measures.

11. IMPACT ON ROADS FROM '48 FOR 48'

Malcolm Logistics has consulted with both artic and trailer suppliers to evaluate the impact on road surfaces from carrying additional weight with current specifications. There are artics and trailers in existence which can handle the increased load weight and comply with existing legal weight restrictions per axle. More details are provided within Appendices 4 and 5.

As current axle weight restrictions will be complied with there is no additional road maintenance burden for the road legs. The transfer of freight to rail will reduce the volume of freight on the road.

12. EQUIPMENT

From the perspective of the logistics industry the combined road – rail solution is able to accommodate an increase to 48 tonnes without the need for significant investment.

Trains

Rail Terminals

Road Vehicles

Trailers

Containers / Swapbodies

Port

Ship

13. SUPPORT REQUESTED

The UK Government controls maximum vehicle weights on the road network. The support of the Scottish Government and other stakeholders is therefore sought for this proposal to progress to the required approval.

**APPENDIX 1:
HISTORICAL DEVELOPMENT OF UK PERMISSABLE WEIGHTS AND EUROPEAN COMPARISONS**

History of United Kingdom Weight Increases

1960
Articulated vehicle: 24 tonnes, maximum length 10.05 m and three axles.
1964
Articulated vehicle: Weight raised from 24 to 32 tons (32.5 tons on 4 axles).
1968
Length limited was raised to 15 metres to accommodate 40ft containers. Most countries moved to a gross weight of 38 tonnes.
1980
Sir Arthur Armitage published a report* recommendation about the impact of a lorry, traffic management and new roads. He advised increasing the weight limits as follows:
22.5 tonnes for tri-axle
32 tonnes to 38/40 on 5 axles
44 tonnes on 6 axles
In most cases, the load was limited by the gross weight permitted on the articulated vehicle, not by the space available in the trailer. This increases in weight could be accommodated without any increase in size.
<i>*This report is only available upon request to The National Archives.</i>
1983
Articulated vehicle: Weight raised from 32 to 38 tonnes on 5 axles.
<i>Based on recommendations of Armitage's report, increase in weight could be accommodated without any increase to vehicle size which Armitage took a firm stance against.</i>
1994
Articulated HGVs travelling to & from railheads are permitted to operate at 44 tonnes on 6 axles.
All other HGVs were limited to 38 tonnes.
1999
UK Government allow 5-axles vehicle combinations to operate up to 40 tonnes.
2001
After certain recommendations are taken in to account, the use of 6-axle 44 tonnes vehicles was permitted for general use.

Summary

Every change to the gross weight of vehicles has been due to vehicles becoming more efficient and the Government wanting to improve the economic performance of the country. Latterly, the Government justified increases based on environmental benefits such as reduced number of vehicles on the road, more freight moved by rail and the associated AQ improvements.

For example, as vehicles moved from 2 axles, to 3 and so on it was accepted by Government that heavier vehicles could be safely accommodated without damaging our roads. In later years, the move from 38t to 44t for rail freight was to encourage the use of rail freight and then from 38t to 40t & 44t for general purpose vehicles was to reduce the environmental impact of road freight but was only permitted due to the sophistication of modern vehicles.

References

<http://webarchive.nationalarchives.gov.uk/+/http://www.dft.gov.uk/consultations/archive/1997/lw/lorryweightsaconsultationdoc1695>

<https://publications.parliament.uk/pa/cm199900/cmselect/cmenvtra/296/29609.htm>

<http://road-transport-technology.org/Proceedings/3%20-%20ISHVWD/Lorry%20transport%20-%20British%20experience%20-%20Lyness%20.pdf>

<https://www.independent.co.uk/news/uk/lorry-weight-limit-to-be-raised-to-44-tons-proposal-for-heavier-vehicles-aims-to-switch-freight-off-1459023.html>

HVG Barriers and Restrictions

Congestion

2006 TS Congestion Report; <http://www.gov.scot/Publications/2006/11/01103351/3>

INRIX Congestion Scorecard Report; attached to email

Development of LEZ's

- Scotland - 4 Major Cities (others likely to follow)
- England - 33 local authorities

Quality Assurance Schemes;

- FORS & CLOCS

London;

- direct vision standards & London lorry control scheme
- ultra-low emission zone

ATF Crisis;

- Annual tester shortage

Fuel Duty

- Always unpredictable but is the highest in Europe and shows no sign of decreasing. If anything, it will increase as EV charges will start to be introduced

Lack of / cost of overnight parking

European Comparison

PERMISSABLE MAXIMUM WEIGHTS OF TRUCKS IN EUROPE (in tonnes)							
Country	Weight per non-drive axle	Weight per drive axle	Lorry 2 axles	Lorry 3 axles	Road Train 4 axles	Road Train 5 axles and +	Articulated Vehicle 5 axles and +
Albania	10	11.5 (3)	18	26 (2)	36	40	44
Armenia	10	10	18	22	36 (19)	36 (19)	36 (19)
Austria	10	11.5	18	26	36	40	44
Azerbaijan	10	10	18	24	36	42	44
Belarus	10	10 / 11.5	18 / 20	25	38 / 40	40 / 42	42 / 44
Belgium	10	12	19	26	39	44	44 (1)
Bosnia-Herzegovina	10	11.5	19	26	38	40	40
Bulgaria	10	11.5	18	26 (2)	36	40	40
Croatia	10	11.5	18	24	36	40	40
Czech Republic	10	11.5	18	26 (2)	36	44 (2)	42 / 48
Denmark	10	11.5 (3)	18	26 (2, 3)	38	42 / 48	42 / 48
Estonia	10	11.5	18	26 (2)	36 (4)	40 (5)	40
Finland (6)	10	11.5	18	26 (2)	36	44 / 60 (7)	42 / 48
France	13	13	19	26	38	40	40
FYROM	10	11.5	18	24	31	40	40
Georgia	10	11.5			44	44	44
Germany	10	11.5	18	26 (2)	36	40	40
Greece	7/10	13	19	26	33	40	40
Hungary	10	11.5	18	25	30	40	40 / 44 (8)
Iceland	10	11.5	18	26 (2)	36	40	44
Ireland	10	11.5 (9)	18	26 (2)	36	44 (2)	44 (2)
Italy	12	12	18	26 (2)	40	44	44
Latvia	10	11.5	18	26 (2)	40	40	40
Liechtenstein	10	11.5	18	26	36	40	40
Lithuania	10	11.5	18	26 (2)	36	40	40 / 44 (10)
Luxembourg	10	12 (11)	19	26	44	44	44
Malta	10	11.5	18	25	36	40	40 / 44 (8)
Moldova	10	10	18	24	36	40	40
Montenegro	10		16	24	36	40	40
Netherlands (12)	10	11.5	21.5	33	40	50	50
Norway	10	11.5	19	26	37	42	44
Poland	10	11.5	18	26 (2)	36	40	40
Portugal (4)	10	12	19	26	37	40	40
Romania	10	11.5	18	25	36	40	40
Russia	10	10	18	25 (2)	36	38	38
Serbia	10	11.5	18	26	32	40	40
Slovakia	10	11.5	18	26 (2)	36	40	40
Slovenia	10	11.5	18	26 (2)	36	40	40
Spain	10	11.5	18	26	36	40	44 (13) / 42 (14)
Sweden	10	11.5	18	26 (2)	38	48/60 (10)	48/60 (10)
Switzerland	10	11.5	18	26 (2)	36	40	40
Turkey	10	11.5	18	25/26 (16)	36	40	40/44 (10)
Ukraine	11	11	16 (17)	22 (17)	38 (17)	38 (17)	38 (17)
United Kingdom	10	11.5	18	26 (2)	36	40 (18)	40 / 44 (10, 18)

References

America

36.28t

Austria

44.0t Road, train 40.0t

Canada

3-axle=23,7t, 4-axle=31,6t 5axl=39,5t, 6-axles=43,5t (with spread tridem=46,5)

China

2-axle=18t, 3-axle=24t, 4-axle=36t, 5-axle=43t, 6-axle=49t

Maximum weight of transit transport is 40 tons in Europe except between the countries of the Benelux (the Netherlands, Belgium and Luxembourg) where 44tons is permitted.

The Czech Republic

Road train ·

With 4 axles (2+2) 36.0t *

With 5 axles (2+3) 45.0t *

With 5 axles (3+2) 43.0t *

With 5 axles (3+2) if the drive axle of the motor vehicle is fitted with twin tyres and air suspension or equivalent, or if each drive axle is fitted with twin tyres and the maximum weight per axle does not exceed 9.5t 44.0t *

With 6 axles (3+3) 48.0t **

* this is the maximum authorised weight for a tractor + semi-trailer combination; however, the individual elements must not exceed the maximum authorised weight for a single motor vehicle or semi-trailer. The maximum permitted weight for a semi-trailer depends on its configuration (number of axles and distance between the axles) and is based on the weight per tandem or tridem axle (qv).

** this is the maximum authorised weight for a motor vehicle + trailer combination; however, the individual elements must not exceed the maximum authorised weight for a single motor vehicle or trailer.

Denmark

It depends on the axles.

- with 5 axles (2+3)
- with 5 axles (3+2)
- with 6 axles
- with 7 axles
- EMS (25.25m), on restricted road network, with 8 axles

Finland

- 5 or more axles is 40t
- tractor with 3 and semi-trailer with 2 or 3 axles when transporting a 40-foot ISO container in combined transport (rail / road or inland / road)=44t

For national transport, higher total weights apply for combinations, up to 60t for 7-axle combinations.

Sweden

The maximum authorised weight of a vehicle is determined by the distance between the outermost axles of the vehicle or combined vehicle.

12.00m to <12.50m	48.0t
12.50m to <13.00m	49.0t
13.00m to <13.50m	50.0t
13.50m to <14.00m	51.0t
14.00m to <14.50m	52.0t
14.50m to <15.00m	53.0t
15.00m to <15.50m	54.0t
15.50m to <16.00m	55.0t
16.00m to <16.50m	56.0t
16.50m to <17.00m	57.0t
17.00m to <17.50m	58.0t
17.50m to <18.00m	59.0t
18.00m or more	60.0t

Information by Country

America: http://www.jfhillebrand.com/USA/Documents/Uncorked%20Sept%202014_WEB.pdf

Austria: <https://www.iru.org/apps/infocentre-item-action?id=271&lang=en>

Canada: <https://comt.ca/english/programs/trucking/MOU%202014.pdf>

China: <https://www.iru.org/apps/infocentre-item-action?id=2255&lang=en>

The Czech republic: <https://www.iru.org/apps/infocentre-item-action?id=281&lang=en>

Denmark: <https://www.iru.org/apps/infocentre-item-action?id=283&lang=en>

Finland: (Dutch) <https://www.evofenedex.nl/kennis/landeninformatie/finland/afmetingen-en-gewichten>

Sweden: <https://www.iru.org/apps/infocentre-item-action?id=326&lang=en>

APPENDIX 2: 48 MILE DISTANCE FROM RAIL TERMINAL

Examples of the typical distances from manufacturing locations to rail terminals are below.

LOCATION	DISTANCE TO GRANGEMOUTH	DISTANCE TO MOSSEND
Cowie	12 miles	29 miles
Irvine	59 miles	44 miles
Shieldhall	34 miles	20 miles
Leven	44 miles	56 miles

A maximum distance of 48 miles allows access to rail terminals from the key manufacturing locations within the central belt.

APPENDIX 3: DEDICATED ROAD ROUTES

TABLE 1 - COWIE TO GRANGEMOUTH

Norbord, Station Road, Cowie FK7 7BQ to Laurieston Road, Grangemouth FK3 8XX

PRIMARY ROUTE

Miles	Route
0	Norbord, Station Road, Cowie FK7 7BQ
0.1	Station Road turn left to Main Street B9124
0.3	Cross B9124 railway line bridge
0.8	Turn right onto Gallamuir Road B9124
1.6	Continue along B9124 to A9, turn left and join A9
4.2	Follow A9 through Plean to roundabout where merge onto M876
5.9	Merge onto M9
9	At Junction 6 take A905 exit to Grangemouth / Falkirk
9.3	Turn right onto Glensburgh Road A905
9.7	At roundabout take 3rd exit onto Falkirk Road A904
10	Turn left onto Laurieston Road
10.2	Arrive DB Cargo, Grangemouth

TABLE 2 - IRVINE TO MOSSEND

UPM, Meadowhead Road, Irvine KA11 5AT to Mossend ET, McNeil Drive, Mossend ML1 4UR

PRIMARY ROUTE

Miles	Route
0	UPM, Meadowhead Road, Irvine KA11 5AT
1	Proceed along Meadowhead Road to roundabout and take 2nd exit onto Long Drive B7080
2	Follow Long Drive through 3 roundabouts
2.1	At the roundabout take 2nd exit onto A71 slip road to Crosshouse / Kilmarnock / Glasgow
2.4	Merge onto A71
3.4	At roundabout take 3rd exit and stay on A71
6.4	At roundabout take 2nd exit onto Hurlford Road A71
8.7	At roundabout take 2nd exit onto the A77 slip road to M77 Glasgow
9.1	Merge onto A77
12.7	Continue straight onto M77
29.2	Merge onto M8
39.1	Continue onto Glasgow and Edinburgh Road A8
42	Take slip road left at Junction 7 Eurocentral
42.2	At roundabout take 2nd exit Townhead Avenue
42.3	At roundabout take 3rd exit Townhead Avenue
43	Follow Townhead Avenue to 2nd roundabout and take 3rd exit McNeil Drive
44	Proceed straight along McNeil Drive through one roundabout
44.5	Arrive Mossend Euro Terminal

APPENDIX 3 (continued) : DEDICATED ROAD ROUTES

TABLE 3 - LEVEN TO GRANGEMOUTH

Diageo, Banbeath Place, Leven KY8 5HD to Laurieston Road, Grangemouth FK3 8XX

Miles	Route
0	Diageo, Banbeath Place, Leven KY8 5HD
0.1	Turn right onto Kennoway Road
0.3	Turn right onto Windygates Road A915
6.7	Proceed along A915 through 6 roundabouts
7	Cross A915 railway line bridge
7.2	At roundabout take the 3rd exit onto Rosslyn Street A921
7.9	At roundabout take 1st exit onto A92
18.2	Merge onto M90
29	Take exit on right towards Airport / A8
29.6	Merge onto M9
41.4	At Junction 5 take A905 exit to A904
41.8	At roundabout take 1st exit onto A9
42.7	At roundabout take 2nd exit A9
43.7	At roundabout take 3rd exit onto A904
44.2	Follow A904 and turn right into Laurieston Road
44.4	Arrive DB Cargo, Grangemouth

TABLE 4 - SHIELDHALL TO MOSSEND

Diageo, 500 Renfrew Road, Shieldhall, Glasgow G51 4SA to Mossend ET, McNeil Drive, Mossend ML1 4UR

Miles	Route
0	Diageo, 500 Renfrew Road, Shieldhall
0.2	Proceed left onto Renfrew Road
0.7	At roundabout take 4th exit onto Renfrew Road
1.5	Proceed along Renfrew Road and at roundabout take 1st exit onto Renfrew Road / A8
1.6	At roundabout take 1st exit onto M8 slip road
1.9	Merge onto M8
15.1	Continue onto Glasgow and Edinburgh Road A8
18	Take slip road left at Junction 7 Eurocentral
18.2	At roundabout take 2nd exit Townhead Avenue
18.3	At roundabout take 3rd exit Townhead Avenue
19	Follow Townhead Avenue to 2nd roundabout and take 3rd exit McNeil Drive
20	Proceed straight along McNeil Drive through one roundabout
20.5	Arrive Mossend Euro Terminal

48T FOR 48M

48 TONNES FOR 48 MILES

APPENDIX 4 :

48 T FOR 48 M: ARTIC & TRAILER COMBINATIONS SHOWING AXLE WEIGHTS AND AXLE WEIGHT / LOAD DISTRIBUTION

VOLVO FH & 45FT STANDARD SKELETAL TRAILER

▶ 6 Axle Combination



↑
Axle 3
8T

↑
Axle 2
8T

↑
Axle 1
8T

↑
Axle 3
11.5T

↑
Axle 2
7.5T

↑
Axle 1
8T

TRAILER

Gross Train Weight	39T
Gross Bogie Weight	24T

UNIT

Gross Vehicle Weight	23.4T
Train Weight	44T
Design Weight	56T

VOLVO FH & 45FT LONGER LENGTH SKELETAL TRAILER

▶ 6 Axle Combination



↑
Axle 3
9T

↑
Axle 2
9T

↑
Axle 1
9T

↑
Axle 3
11.5T

↑
Axle 2
7.5T

↑
Axle 1
8T

TRAILER

Gross Train Weight	41T
Design Bogie Weight	27T
Gross Design Weight	42T

UNIT

Gross Vehicle Weight	23.4T
Train Weight	44T
Design Weight	56T

APPENDIX 5 : SDC TRAILERS ENGINEERING REPORT

6/28/2018

Operational weight v allowable axle load analysis

SDOC-1045-0

1. Abstract

Aim of this document is to examine the possibility of utilising trailers at greater Operational Loading than standard 44T for specific 'railhead' movements.

'Allowable Weights' on kingpin and bogie are to be maintained according to existing regulations.

Customer's current trailer and potential alternative 'new' trailer configuration is considered and loading analysis is carried out.

46.25 tonne operation is possible with existing design

48 tonne operation is possible with a new design including a steer axle & tandem/single axle configuration, as classed under constructions 3.25m ruling on axle spacing.

2. Technical Detail

Loading analysis is based on Tractor weight of **8624 Kg** (Scania details as customer)

Customer's current trailer is based on 8 Lock Straight Skeletal **SDCSK43S300149287**

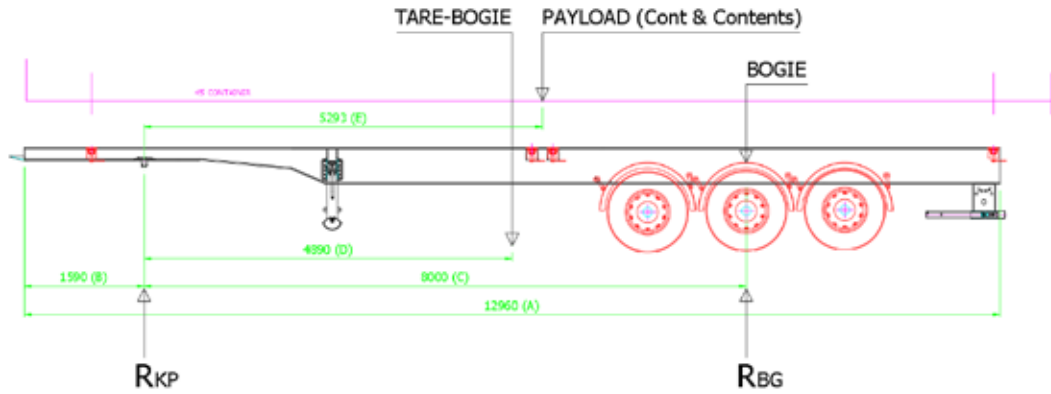
'New' trailer configuration utilises same innovation as used on SDC Extra Length trailers whereby axles are arranged such that 27T bogie loading is permissible in UK under current legislation, achieved by having an axle spread greater than 3.25m.

The axle arrangement to permit 27T bogie loading necessitates the use of a rear steer axle but allows shorter wheelbase and greater manoeuvrability.

Customer's current trailer is configured for 1x45', 1x40' and 2x20'

Proposed 'new' trailer is configured for 1x45', 1x40' only (but could include 2x20' if required)

2.1 Existing Trailer Type



Following load analysis aims to get as much Payload weight as possible whilst not overloading allowed 24/15 tonne bogie & kingpins loads respectively. In doing this the overall combination of weights exceeds the maximum 44 tonnes. To maximise the axle loadings, and operational combination weight of 46.245 tonne is required. This allows for a payload of 30,976 kgs including the container self-weight. Based on a container weight of 4790 Kgs, this would leave a goods payload of 26,181 kgs.

Constant Factors

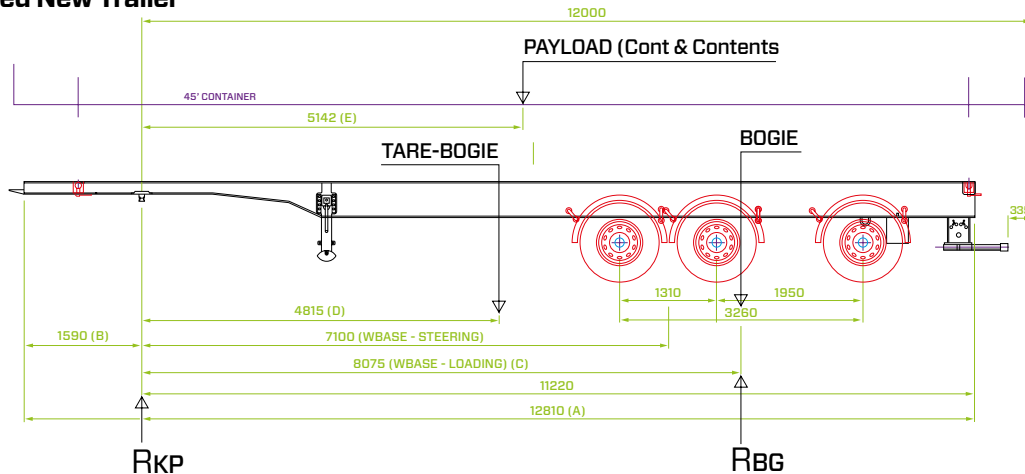
**** BASED ON PREV SUPPLY 149287 (MALCOLM) ****

Operation Wt	(kg)	46250	
Tractor Self Wt	(kg)	8624	Scania as customer spec
Tare Wt	(kg)	4150	
Bogie Self Wt	(kg)	2500	
Payload Wt	(kg)	30976	! Max Gross per ISO is 30480 Kg - but containers exist with higher rating that are not fully intermodal !!
Est Container Wt	(kg)	4790	! Estimate only - will vary depending on container construction

Container Position	All dimensions in mm					All loads in Kg		
	A Chassis Lth	B Kpin Posn	C Wheelbase	D Kpin to Chassis Ctr	E Kpin to Container Ctr	Resultant Bogie Load	Resultant Kpin Load	Resultant Estimated Actual Payload
1 x 45'	12960	1590	8000	4890	5293	24003	13623	26186

NB : Highlighted cells are calculated - others are free entry

2.2. Proposed New Trailer



Following load analysis defines the operational weight at 48 tonne, with the trailer geometry being customised within this figure to achieve a 27 tonne bogie, as defined in current UK C&U, whilst not exceeding 16 tonne on the kingpin in order that truck loadings also, will not fall outside existing C&U regulations.

This allows for a payload of 31,376 kgs including the container self-weight. Based on a container weight of 4,790 Kgs, this would leave a goods payload of 26,586 kgs.

Container Positions/Principle Dimensions On Rigid Skelly

Constant Factors

**** AIM IS TO ACHIEVE 48T OPERATION ****

Operation Wt	(kg)	48000	
Tractor Self Wt	(kg)	8624	Scania as customer spec
Tare Wt	(kg)	5000	Estimate
Bogie Self Wt	(kg)	3000	
Payload Wt	(kg)	31376	! Max Gross per ISO is 30480 Kg - but containers exist with higher rating that are not fully intermodal !!
Est Container Wt	(kg)	4790	! Estimate only - will vary depending on container construction

Container Position	All dimensions in mm					All loads in Kg		
	A Chassis Lth	B Kpin Posn	C Wheelbase	D Kpin to Chassis Ctr	E Kpin to Container Ctr	Resultant Bogie Load	Resultant Kpin Load	Resultant Estimated Actual Payload
1 x 45'	12810	1590	8075	4815	5142	24172	15204	26586

NB : Highlighted cells are calculated - others are free entry

3. Conclusion

- With the current truck and trailer configuration and normal 44 tonne operational weight limit, the max payload is 24 tonne.
- With the current truck and trailer configuration, an increase in operational weight to 46.25 tonne allows an addition 2.25 tonne of payload to be carried without exceeding the allowable 24 tonne axle loading on the ground. New result; less truck and trailer movements, less emissions.
- Based on proposed 'new' design - increasing the operational weight to 48 tonne and utilising existing C&U axle allowances on loadings, permits an additional 2.65 tonne of payload to be carried without exceeding the allowable 27T tonne axle loading on the ground. New result, less truck and trailer movements, less emissions.

MALCOLM

— LOGISTICS —

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