

# Case Study

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## Full Fleet Seat Refurbishment



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# Our Client

Arriva Rail North, was a train operating company in Northern England which began operating the Northern franchise on 1 April 2016. A subsidiary of Arriva UK Trains, Northern is the largest train franchise in the United Kingdom in terms of the size of the network and the number of weekly services run. Its 2,600 daily trains call at 528 stations, about a quarter of all the stations in the country.

Northern has an extensive geographic reach, right across the North of England, operating across most rail routes from Carlisle and Newcastle at its northern extremities, to as far south as Crewe, Stoke on Trent and Nottingham. It is a complex operation that is resourced from 22 Traincrew depots and 7 train maintenance depots with a fleet of 333 trains.

On 1 March 2020, Arriva Rail North Limited ceased to operate the franchise and all operations were handed to HM Government's Directly Operated Railways company.



**333  
Trains**



**6,500+  
Employees**



**477  
Managed Stations**

Map Key

- Northern Services
- ..... Infrequent Service
- Other Operator's Service



# Project Purpose

Arriva Rail North (trading as Northern by Arriva) embarked on a complete fleet refurbishment at the start of their franchise in 2016. This encompassed a large mixed fleet of legacy British Rail built trains, post privatisation built trains and additional cascaded units of similar types.

In delivering the ambitious franchise plans to transform the journey experience for customers across the north, the refurbishment was specified to ensure that the customer experience on board the legacy fleet was comparable to that of the new trains that were being procured for the franchise.

Refurbishment and recovering of seats was a key element of this. Diamond Rail Services (DRS) were selected to be the supplier of all new cushions (where required) all new interliners and covers. In addition, DRS were selected to remove and refit cushions from some fleets and to also ensure full compliance and certification for the changes.



# Scope of Work

The Northern fleet is fitted with several seat designs, ranging from those installed by British Rail when the units were built, through numerous examples of seat makes and models fitted to the trains during refurbishment. Or as new into rolling stock that was built post privatisation.



**The scope of work applied to all the seat design variations across the fleets.**



## The Trains

The scope of work covered the full Northern Train fleets. Consisting of a varied mix of DMU and EMU unit types, in 2, 3 and 4 car formations.

Class 150 (2 car)  
Class 156 (2 car)  
Class 158 (2 car)  
Class 319 (4 car)  
Class 333 (4 car)

Class 155 (2 car)  
Class 158 (3 car)  
Class 170 (3 car)  
Class 323 (3 car)  
Class 769 (4 car)



**231**  
Trains



**553**  
Vehicles



**50K+**  
Seats



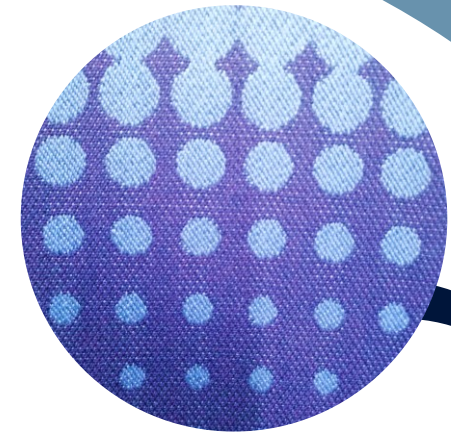
# Scope of Work

Initially contracted by Northern to supply cushions, interliners and covers from the refurbishment schedule of finishes, we embarked on covering multiple fleets simultaneously in flat cloth.

During the project, the feedback on the use, longevity and ability of their in-house train presentation teams to clean properly was brought into question by the client.

Diamond Rail Services (DRS) suggested an alternative product a moquette and through trials, samples and proposals it was decided to change to the new material. An alternative design was put forward from DRS for the covers and accepted. This was a brave move by the client to change mid-way through the project and deviate from the initial designer's vision but ultimately the challenges on keeping the flat cloth clean was identified early enough and the change was made.

From this point DRS procured and supplied moquette to cover the entire fleet to various seat types with multiple foam designs, interliners and internal frames. DRS procured moulds for seat cushion and back foam, jigs for frames and cover templates.



*Mid-project change of scope from flat cloth to moquette*



**This scope also involved managing the compliance aspect to provide full fire test data, reports and certificates to GMRT/2130 iss4. Multiple seat types were constructed as samples for testing together with sample panels and test blocks - covered to the proposed composite and tested in accordance with the Group Standard at various labs.**

**The results were collated and presented to the client for review and a third party NOBO was contracted to review and give validity to the reports.**

# Materials

The clients' seats were initially specified with a flat cloth top cover. This relied on various interliners to support the fire compliance and called up **GMRT/2130 iss4**, which further calls upon tests;

**BS 476: Part 6,**  
**BS 476: Part 7,**  
**BS 6853: 1999 Annex B Clause B.2 and,**  
**BS 6853: 1999 Annex D Clause D.8.5.**

We were able to produce samples and commission tests to support these and following the change to moquette, support a revised test strategy, and amended or rerun test profile.

Ultimately, we sourced various interliners and constructed seats to meet all the relevant compliance and certification elements to this project and present this in a way that the clients engineering change body could sign off on the build.

The quantity of seats per roll was varied over the multiple seat types for this project. We reduced the waste to the bare minimum and made specific layout decisions to enable a cost-effective use of the design and roll width.

The DRS new design which was proposed and ultimately chosen for this project made the usage even greater and saved the customer 25% on the material costs.

DRS selected Camira Fabrics to supply the covers for specific fleets for this project, this included Class 333s, 323s, 158s (MTBs) and 156s. These were supplied on time and with minimal defects to a very demanding timetable. DRS supplied all the covers for the remaining fleets.

**camira**

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Materials Used  
**Moquette**  
**Flat Cloth**



Material Volume  
**1,254 Rolls**  
**(48,252 Sq Meters)**



Material Output  
**Approx. 39.9**  
**Seats Per Roll**

# Project Delivery

Full production saw several units being completed at multiple depots simultaneously. Our on-site teams strip out the unit and bring the cushions to our site for re-work.

We attended to all aspects of the seats before returning to re-fit into the unit. A full sign off process was completed with the client checking all aspects of the work to achieve the desired finish and a full quality check was completed before we left site.

All delivery personnel were fully trained and inducted. A swift load and unload process following depot risk assessments and method statements was affected to allow the fitting team to maintain a light footprint on the clients site.

During the project we were able to provide comprehensive project reviews, regular meetings and onsite support. Any issues were quickly responded to with supervisor or manager attendance and client engagement.

**231 trains of various types  
were refreshed by DRS.**





# Project Logistics

Resources were mobilised over multiple depots for this project. This involved our transport planner using our dedicated vans together with our chosen haulage partners daily to collect and deliver the seats from sites across the country.

Our fleet of vehicles is tracked in real time and journey updates are sent to the client, so the on-site stakeholders are notified of arrivals and departures daily.

Tracking information shows time, speed, course, arrival time and incident reports. This information can be viewed by the client for a period of time, specific to the delivery of their goods, allowing the client to align onsite resources if required.



Lead time from collection to return delivery at required sites:

**1-4 WEEKS**

*Depending on depot location and unit availability*



This contract required logistics management and transportation across eight geographic locations

# Contract Details



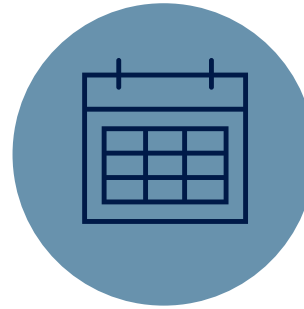
Contract Value  
at Award

**£ 5.3 Million**



Contract Value  
on Completion

**£ 5.7 Million**  
Ongoing



**Contract  
Delivered**

**01/10/17-Ongoing**



**Client Contact  
for this Contract**

Following completion of the initial refurbishment scope of works, DRS have an ongoing contractual relationship with Northern Trains Limited (now operated by Directly Operated Railways)



This relationship includes the provision of floats of spares of seat coverings and liners, repairs to, and replacements of seat foams and our Front of House service maintaining the aesthetic condition of seat covers, seating components (such as grab handles) and other vehicle interior fixtures and finishes.

Please contact us at Diamond for details of references and/or testimonials about this project.

# Gallery

## Example fleet interiors



Pre  
Refurbishment



Post  
Refurbishment

