



MAPPER USER GUIDE

FEBRUARY 2018

Contents

1	INTRODUCTION.....	3
1.1	About the Tool.....	3
1.2	Key Features	3
2	GETTING STARTED	4
3	REPORT	5
4	RUNNING A REPORT	8
5	CUSTOMISING A MAP	9
6	CUSTOMISING USING GOOGLE MAP STYLES.....	11
7	USING THE UNSERVED DESTINATIONS FUNCTION	19

1 INTRODUCTION

1.1 About the Tool

The new OAG Mapper is a powerful tool allowing you to visualise connectivity. You can create and customise route maps for existing scheduled air services as well as hypothetical airline operations. Mapper is located on the Analyser home screen, along with the other Analyser modules.

The screenshot shows the OAG analyser dashboard with a navigation bar at the top containing icons for Schedules Analyser, Traffic Analyser, Connections Analyser, Mapper, DOT Analyser, and Logout. The main content area is a grid of six modules:

- Schedules Analyser:** Use OAG schedules data to identify commercial opportunities, monitor competitor activity, understand underlying trends and for resource planning. Version 2.0.1, Last updated 11 Apr 2017, Purchased regions Worldwide, Purchased years 1996-2018. Database: Last schedule update: 15 Jun 2017, Number of active carriers: 822, Number of active airports: 4,031.
- Traffic Analyser:** Analyse passenger traffic and average fares using MIDT data to understand where traffic originates, connects and ends, monitor competitor activity, benchmark and compare fares for different routes and analyse point of sale and point of origin. Version 2.0, Last updated 05 Jul 2017, Purchased regions Worldwide, Purchased years 2013-2018. Database load schedule table:

Dataset	Latest Travel Month	Loaded
Unadjusted - current/future pax	Mar 2018	08 May 2017
Prelim Adjusted - historical pax	Mar 2017	13 May 2017
Final Adjusted - historical pax	Feb 2017	20 May 2017
Online Fare	May 2017	13 Jun 2017
- Connections Analyser:** Build real time connections using OAG schedules data and OAG MCT exception tables. Connections Analyser includes analysis with customisable MCTs, phantom flight option and fully customisable QSI. Version 2.0, Last updated 15 Sep 2017, Purchased regions Worldwide, Purchased years 1996-2018. Database: Last updated 15 Jun 2017, Number of active carriers: 822, Number of active airports: 4,031.
- Mapper:** Visualise airline and airport route networks with options to fully customise the map, save reports and save custom formatting. Version 2.0, Last updated 30 Jan 2018, Purchased regions Worldwide, Purchased years 1996-2018. Database: Last schedule update: 15 Jun 2017, Number of active carriers: 822, Number of active airports: 4,031.
- DOT Analyser:** DOT Analyser allows easy and convenient access to US Department of Transport (DOT) statistics including T100, DB1B and Form 41. This gives comprehensive insights into US aviation data. Version: Last updated: 2018 Powerable 05 May 2016, Purchased regions Worldwide, Purchased years 1996-2018. Database: T100 Powerable 09 Aug 2016, 2018 Powerable 05 May 2016, Form 41 Powerable 17 Jun 2016.
- Reference:** Utilise OAG's reference data to find information quickly and inform your analysis. Reference currently includes: airport, airline, aircraft codes, alliances, season dates, countries by region, distance calculation, MCT reports and two quick reports - Airport Terminal and Airport by Carrier. Version 2.0, Last updated 08 Nov 2017, Purchased regions Worldwide, Purchased years 1996-2018. Database: Last schedule update: 15 Jun 2017, Number of active carriers: 822, Number of active airports: 4,031.

OAG Mapper sits within the OAG Analyser Suite of modules, each accessed via a common dashboard. Each module has been designed to have a high degree of commonality so that screens are visually comparable, and users of one will find it easy to use the other products and create outputs in similar and comparable formats where needed.

1.2 Key Features

OAG Mapper has been designed with customisation in mind and now has some new functionality. Mapper allows you to do the following

- Access historic data
- View existing routes and 'custom' routes in one map
- Plot unserved routes
- Use the range functionality to highlight opportunities
- Enhanced customisation options

2 GETTING STARTED

This short guide provides all the information you need to start using OAG Mapper. It has been designed to walk you through all of the steps involved with getting the data you need from Mapper and can be used on its own, or in conjunction with the user guide videos on our website.

If you have any log in or account issues please get in touch via ContactUs@oag.com. If you would like to give feedback on your experience of using Mapper or if you have any problems using this tool please contact your account manager and they will be able to help you or pass you on to the relevant department to help. When you log into OAG Analyser you will see a screen like this which is the dashboard for the OAG Analyser suite of products.

The screenshot shows the OAG Analyser dashboard. At the top left is the OAG analyser logo. At the top right are navigation icons for Schedules Analyser, Traffic Analyser, Connections Analyser, Mapper, DOT Analyser, and Logout. The main area contains six product tiles:

- Schedules Analyser**: Use OAG schedules data to identify commercial opportunities, monitor competitor activity, understand underlying trends and for resource planning. Version 2.0.1, Last updated 11 Sep 2017, Purchased regions Worldwide, Purchased years 1999-2018. Database: Last schedule update: 15 Jun 2017, Number of active carriers: 822, Number of active airports: 4,031.
- Traffic Analyser**: Analyse passenger traffic and average fares using MIDT data to understand where traffic originates, connects and ends, monitor competitor activity, benchmark and compare fares for different routes and analyse point of sale and point of origin. Version 2.0, Last updated 05 Jul 2017, Purchased regions Worldwide, Purchased years 2012-2018. Database load schedule table:

Dataset	Latest Travel Month	Loaded
Unadjusted - current/future pax	Mar 2018	08 May 2017
Prelim Adjusted - Historical pax	Mar 2017	13 May 2017
Final Adjusted - Historical pax	Feb 2017	20 May 2017
Online Fare	May 2017	13 Jun 2017
- Connections Analyser**: Build real time connections using OAG schedules data and OAG MCT exception tables. Connections Analyser includes analysis with customisable MCTs, phantom flight option and fully customisable QSI. Version 2.0, Last updated 18 Sep 2017, Purchased regions Worldwide, Purchased years 1999-2018. Database: Last updated 15 Jun 2017, Number of active carriers: 822, Number of active airports: 4,031.
- Mapper**: Visualise airline and airport route networks with options to fully customise the map, save reports and save custom formatting. Version 2.0, Last updated 30 Jan 2018, Purchased regions Worldwide, Purchased years 1999-2018. Database: Last schedule update: 15 Jun 2017, Number of active carriers: 822, Number of active airports: 4,031.
- DOT Analyser**: DOT Analyser allows easy and convenient access to US Department of Transport (DOT) statistics including T100, DB1B and Form 41. This gives comprehensive insights into US aviation data. Version: Last updated, Purchased regions Worldwide, Purchased years 1999-2018. Database: T100 Powerable 09 Aug 2016, DB1B Powerable 01 May 2016, Form 41 Powerable 17 Jun 2016.
- Reference**: Utilise OAG's reference data to find information quickly and inform your analysis. Reference currently includes: airport, airline, aircraft codes, alliances, season dates, countries by region, distance calculation, MCT reports and two quick reports - Airport Terminal and Airport by Carrier. Version 2.0, Last updated 08 Nov 2017, Purchased regions Worldwide, Purchased years 1999-2018. Database: Last schedule update: 15 Jun 2017, Number of active carriers: 822, Number of active airports: 4,031.

Each product you have access to is listed along the top right and also in middle of the screen. Your account number is located at the top left of the screen, where it says welcome, and you need just one account and login to access all of the OAG Analyser products you subscribe to.

To open Mapper, the module covered in this user guide, you can either click on the module name at the top of the screen, or click on the pin icon located to the left of the Mapper section.

On logging into Mapper, you will see this screen which is the home screen:



Available Reports

Mapper

Create route networks using active and custom routes, draw range filters and plot unserved markets to assess opportunities.

Saved Maps

Date Saved	Report Name	DataSet	Report Type	Parameters	View	Run	Share	Delete
15 Jan 2018	SFO	Schedules	Mapper		Open	Run	Share	
15 Jan 2018	U2	Schedules	Mapper		Open	Run	Share	
11 Jan 2018	OSL	Schedules	Mapper		Open	Run	Share	
11 Jan 2018	SFO-India	Schedules	Mapper		Open	Run	Share	

[Open Saved Maps](#)

In the central area you will see the Mapper report and below are any Saved Maps.

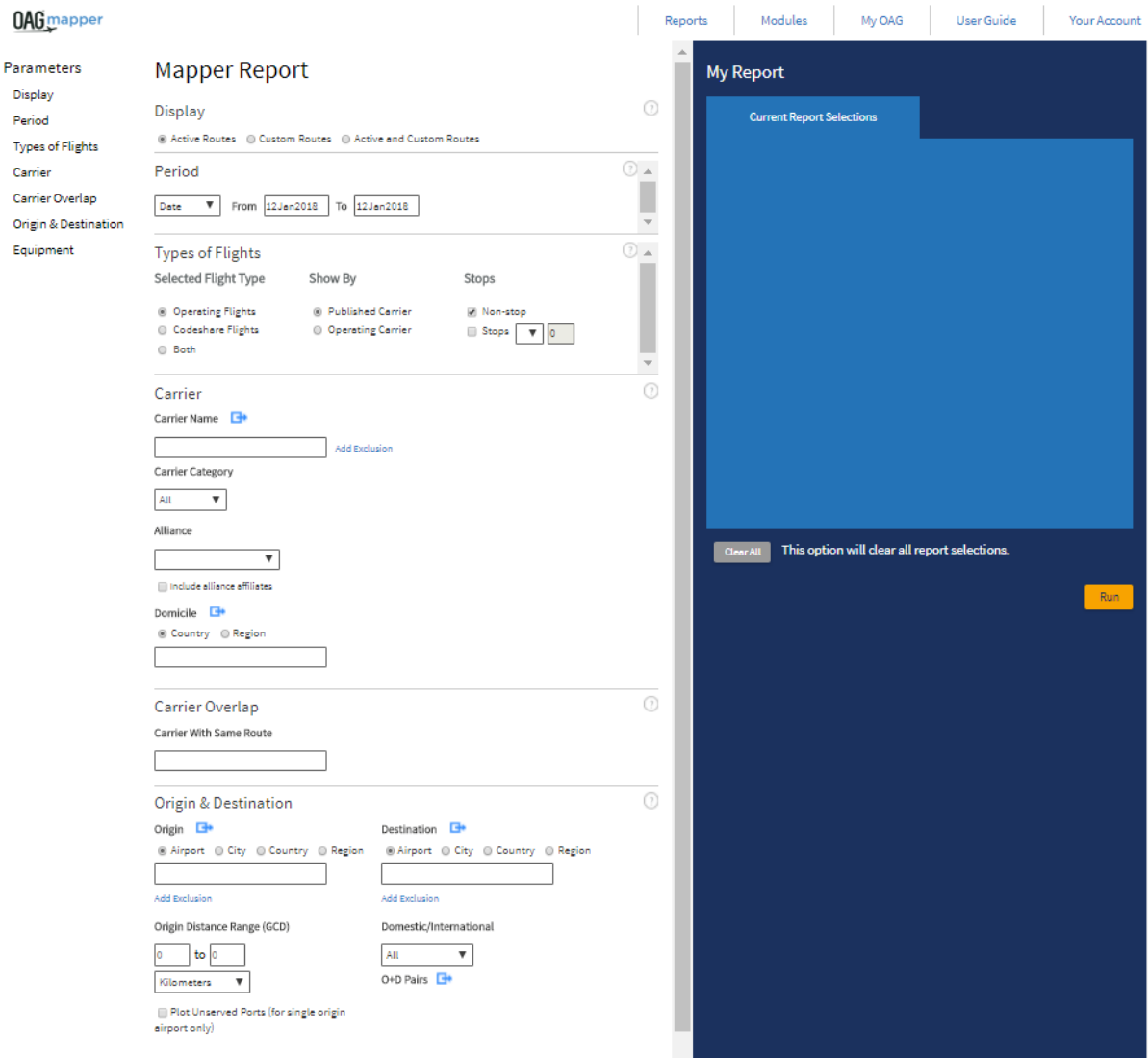
Along the top of the screen there are some additional functions. Firstly, there are quick access links to each of the modules you have access to as part of your licence.

Next is the My OAG section which also allows you to access saved maps. You can also access a feature which allows you to customise groups of data to make running reports with similar queries easier. There is also access here to User Preferences. The functions in this section, and the reference section next to it, are covered in more detail in our other user guides for Schedules and Traffic Analyser. The User Guide option links you to OAG’s help pages which include this guide, some FAQ’s, a glossary and a video to guide you through how to use this report.

In this user guide we will now take you through the Mapper Report and how to use it.

3 REPORT

There is one report available in Mapper – the Mapper Report. We describe how it works here and provide you with a worked example in this section. You can also access a short video guide from our user guide that replicates the content provided here. From the home screen you can click on Mapper under Available Reports and you will be linked to a new query screen which will look familiar if you are a user of other OAG Analyser modules. There are three distinct parts to the query screen. On the left are Parameters, in the middle the fields that you can use to refine these parameters and then on the right, your current report selections are displayed.



Most of the parameters are similar to those in other OAG Analyser modules so here we will focus on the ones that differ. Firstly, in the Display section there are three options

Display

Active Routes Custom Routes Active and Custom Routes

Selecting Active Routes will return results for all active scheduled routes for the time period you select in Period. Selecting Custom Routes opens up a different window with a box which allows you to enter the route pair, or pairs that you want to visualise. Once you've entered a pair, or pairs, you can then go onto run the report by clicking on the yellow Run box, or select the Active and Custom Routes option at the top of the screen and the routes you have entered will be added to whatever query you choose to run. This can be useful to look at hypothetical routes alongside a carrier or airport's existing network.

Parameters

Mapper Report

Display

Custom Routes

Display

Active Routes Custom Routes Active and Custom Routes

Custom Routes

The user can paste multiple route combinations provided each pair of IATA airport codes is on a new line and the origin and destination are separated by a comma or space, e.g.

AMS,ABZ
AMS,ACE

or

AMS ABZ
AMS ACE

My Report

Current Report Selections

Display: Custom Routes

Clear All This option will clear all report selections.

Run

If you now click on the Active and Custom Routes option, the Custom field appears at the bottom of the query screen.

Mapper Report

Display Active Routes Custom Routes Active and Custom Routes

Period

Date From To

Types of Flights

Selected Flight Type Operating Flights Codeshare Flights Both

Show By Published Carrier Operating Carrier

Stops Non-stop Stops

Carrier

Carrier Name

Carrier Category

Alliance

Include alliance affiliates

Domicile Country Region

Carrier Overlap

Carrier With Same Route

Origin & Destination

Origin Airport City Country Region

Destination Airport City Country Region

Origin Distance Range (ODR) to Kilometers

Plot Unserved Ports (for single origin airport only)

Domestic/International

O+D Pairs

Equipment

Search Equipment

Top 10 Manufacturers

Others

Equipment Group

Custom Routes

Please enter route pairs with a comma or space between. Please use only IATA codes

Example

AMS,ABZ
AMS,ACE

or

AMS ABZ
AMS ACE

With one pair per line.

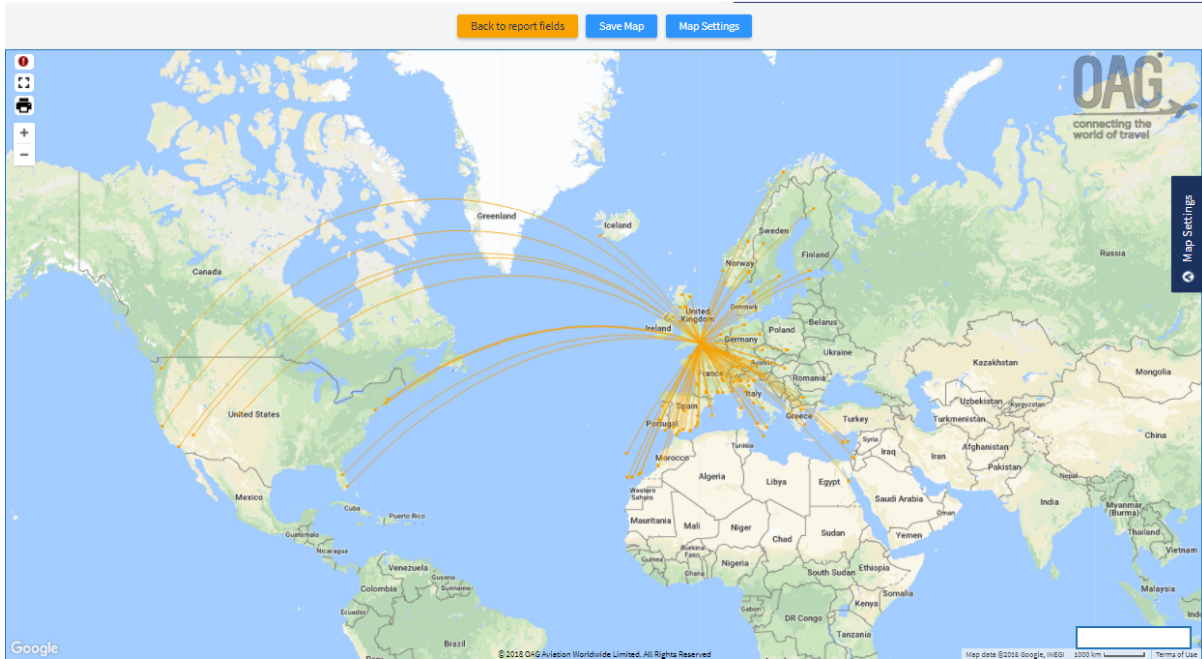
4 RUNNING A REPORT

The best way to see how to run a report is to do an example. In this example we will be combining the Norwegian and easyJet airline networks at Gatwick Airport on a single map, and adding a hypothetical route which Norwegian may choose to operate using recently acquired airport slots. The hypothetical route will be from Gatwick (LGW) to Providence (PVD) in the United States.

Start by selecting the Active and Custom routes option. The date will be January 2018. Select the two airlines Norwegian (in this example we've selected both of Norwegian's two letter codes – DY and D8) and easyJet. Select an Origin which is Gatwick Airport. Finally, type the custom route LGW PVD. The blue area to the right of the screen will show the selections made as **My Report**.

The screenshot displays the OAGmapper 'Mapper Report' interface. On the left, a sidebar lists various filter categories: Parameters, Display, Period, Types of Flights, Carrier, Carrier Overlap, Origin & Destination, Equipment, and Custom Routes. The main area is divided into sections for configuring these filters. The 'Period' section is set to 'Month' for 'Jan' 2018. Under 'Types of Flights', 'Operating Flights' and 'Published Carrier' are selected. The 'Carrier' section lists 'Norwegian (DY, D8), EasyJet (U2, E)' and 'All' as categories. The 'Origin & Destination' section has 'Origin' set to 'Airport' with 'LGW - London Gatwick Intl.' and 'Destination' set to 'Country' with 'All'. The 'Custom Routes' section contains the text 'LGW PVD'. On the right, a dark blue panel titled 'My Report' shows a summary of the current report selections, including the display type, period, flight types, carriers, and origin/destination. A 'Clear All' button and a 'Run' button are visible at the bottom of this panel.

To generate the map, click on **Run**, under **My Report**. The next image is the map which is generated as a result of the above query.



The next section looks at how to customise the map.

5 CUSTOMISING A MAP

Map Settings

Current Selections | **Customise Display** | Customise Format

Display: Active and Custom Routes

Period
Month: Jan 2018 to Jan 2018

Types of Flights
Flight Type: Operating Flights Show By: Published Carrier Non-stop

Carrier
Carrier
Included: DY, D8, U2

Origin & Destination
Origin
Include: LGW

Custom Routes
LGW-PVD

Every map can be customised in numerous ways from changing the colour and shape of the route lines, to adding labels for airports, and even changing the style of the map itself.

Customisation can be accessed through the Map Settings. **Map Settings** have three tabs, the first being Current Selections which simply lists the report criteria used to generate the map.

The second tab is **Customise Display**. The map appears in the default display mode where every route is shown in the same colour. Check boxes allow you to turn off any route or routes from the display, or highlight specific routes.

There are another 5 display options. Selecting **Equipment** displays each route according to the type of aircraft equipment operated on the route, with a different colour for each aircraft type and uses white lines for routes where more than one type of equipment is used, and

Map Settings

Current Selections | **Customise Display** | Customise Format

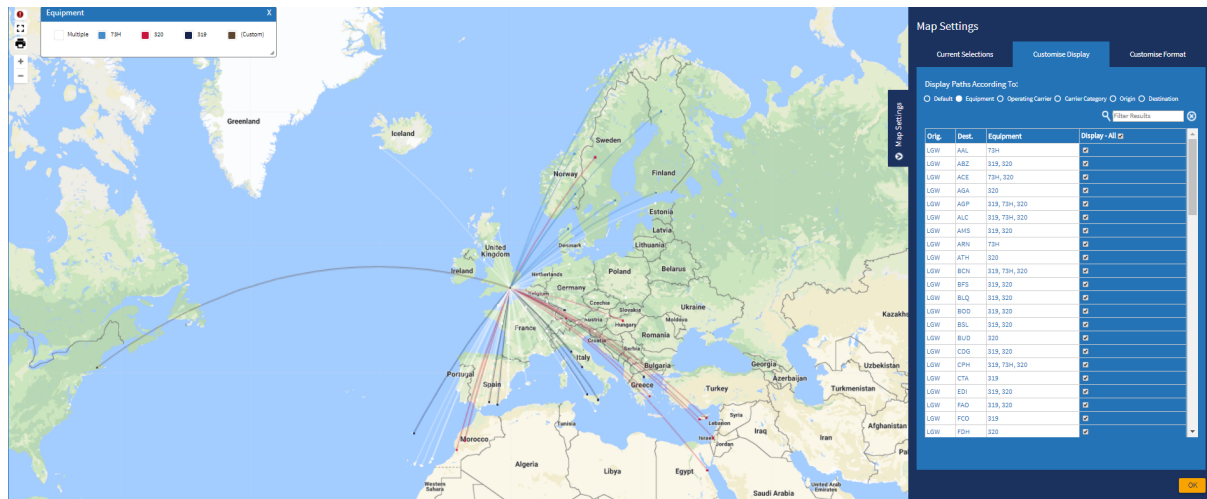
Display Paths According To:

Default Equipment Operating Carrier Carrier Category Origin Destination

Filter Results

Orig.	Dest.	Display - All	Highlight
LGW	AAL	<input checked="" type="checkbox"/>	<input type="checkbox"/>
LGW	ABZ	<input checked="" type="checkbox"/>	<input type="checkbox"/>
LGW	ACE	<input checked="" type="checkbox"/>	<input type="checkbox"/>
LGW	AGA	<input checked="" type="checkbox"/>	<input type="checkbox"/>

darker lines for the hypothetical routes for which no aircraft type has been assigned. Again, you can choose whether any particular route is displayed or not using the check boxes. You can also use the **Filter Results** feature at the top of the table to choose only routes operated with one type of aircraft. The filter option only changes what is displayed in the table, not on the map.



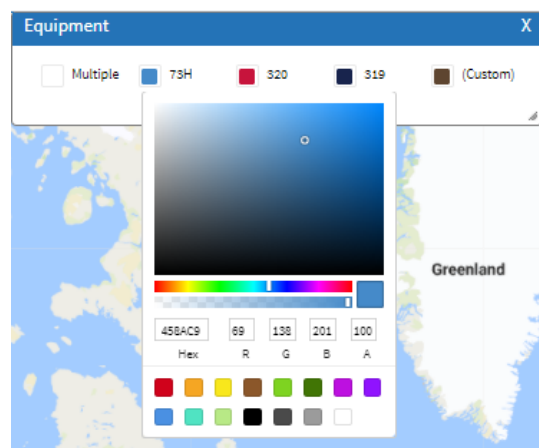
By clicking on each of the colour codes for the aircraft types a new dialogue box opens where you can make changes to the colours used, either using the colour palette, Red-Green-Blue number codes or HEX codes.

The third option along the top is to show route lines according to airline. Again, routes where multiple airlines operate are shown as white lines and the hypothetical route is shown in a darker colour.

The fourth option displays routes according to the carrier category, either mainline airline or low cost airline.

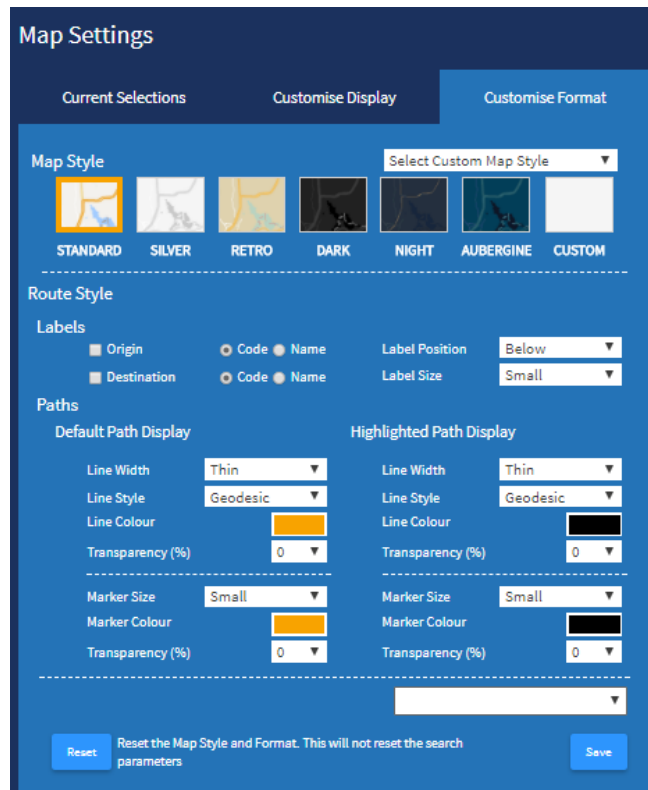
A fifth option colour codes routes by the origin, in this instance that means they are all the same colour as Gatwick is the origin for all routes. A final option colour codes routes according to the destination and in this instance that means every route is a different colour.

The third tab in **Map Settings** is Customise Format. To ensure the full functionality of this the **Customise Display** needs to be in the default option.



Customise Display provides the greatest degree of customisation and so the first of the options is one where you can save a map style you have created, and select a previously saved style. This is especially helpful if you have created a map style which matches your corporate or in-house style and want to be able to use it again, or if you have multiple maps which all need to appear with the same display features. This is where you can access Google Map Styles which provide for much more customisation of the map itself. This is described in detail in Section 6.

Below **Saved Map Styles** are options for how you wish the **Labels** at origins and destinations to be displayed, so airport names can appear as three letter codes or with the name in full. The location on the map relative to the location marker can also be changed, as can the size of the label.



The central area of the options allows customisation of the route lines, or **Paths**. This includes changing the width of the lines, the style (straight or geodesic), colour and transparency. There are also options for the location markers including size, colour and transparency.

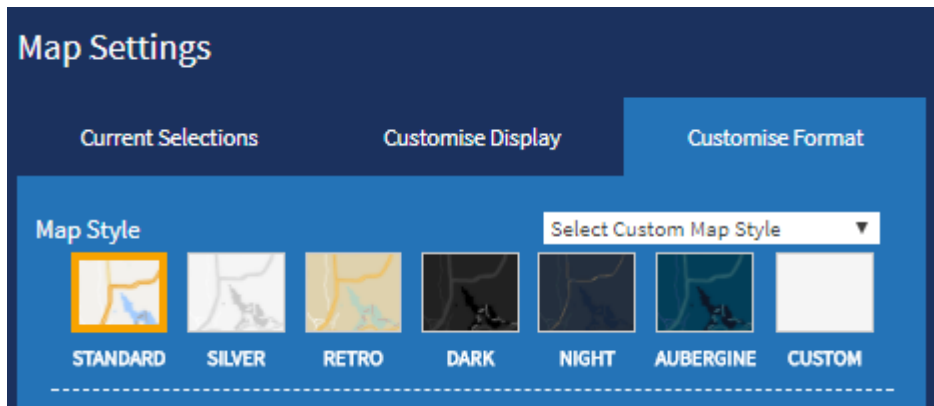
On the right of this central area are the same options but for all highlighted routes. You can customise these options and they will remain as you customise them. If you want to return to the default options, click on Reset which clears any changes made.

At the bottom the save function allows you to save the customised map and once saved, it appears in the drop-down list for future use.

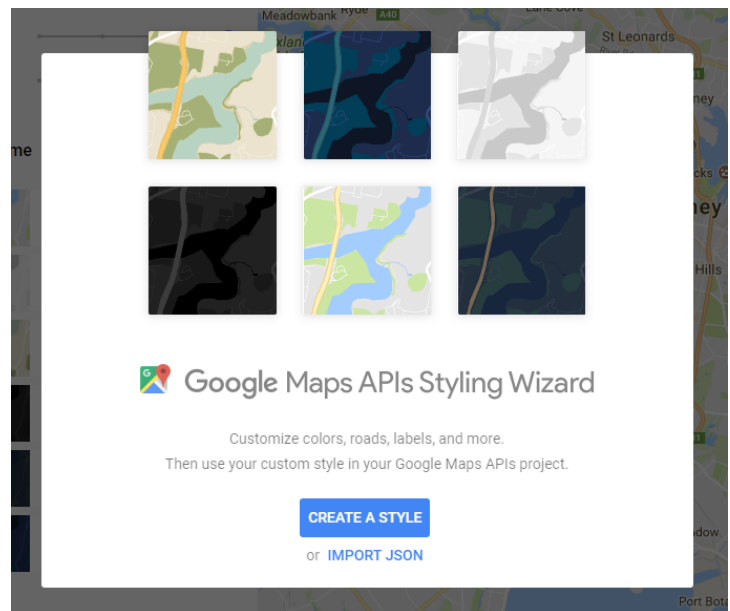
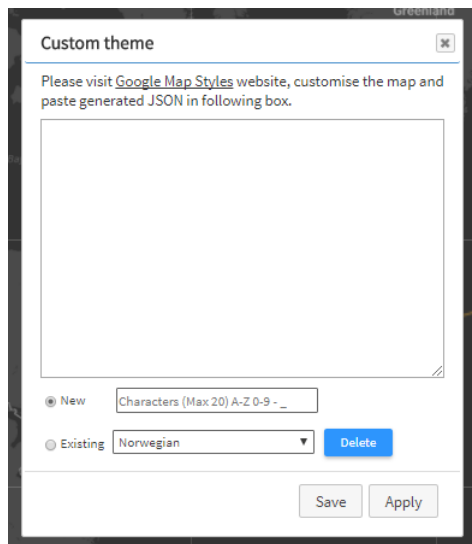
6 CUSTOMISING USING GOOGLE MAP STYLES

Mapper provides an option for users to change and customise the presentation of the standard Google map styles, so that the visual display of features like land characteristics, sea colour, and national boundaries can be changed. As well as changing the style of these features, you can hide features entirely. This means that you can emphasize particular components of the map or make the map complement the style of the surrounding page.

The **Map Theme** provides an opportunity to change from the standard google map format to the Google Silver, Google Retro, Google Dark, Google Night or Google Aubergine styles, as shown below.

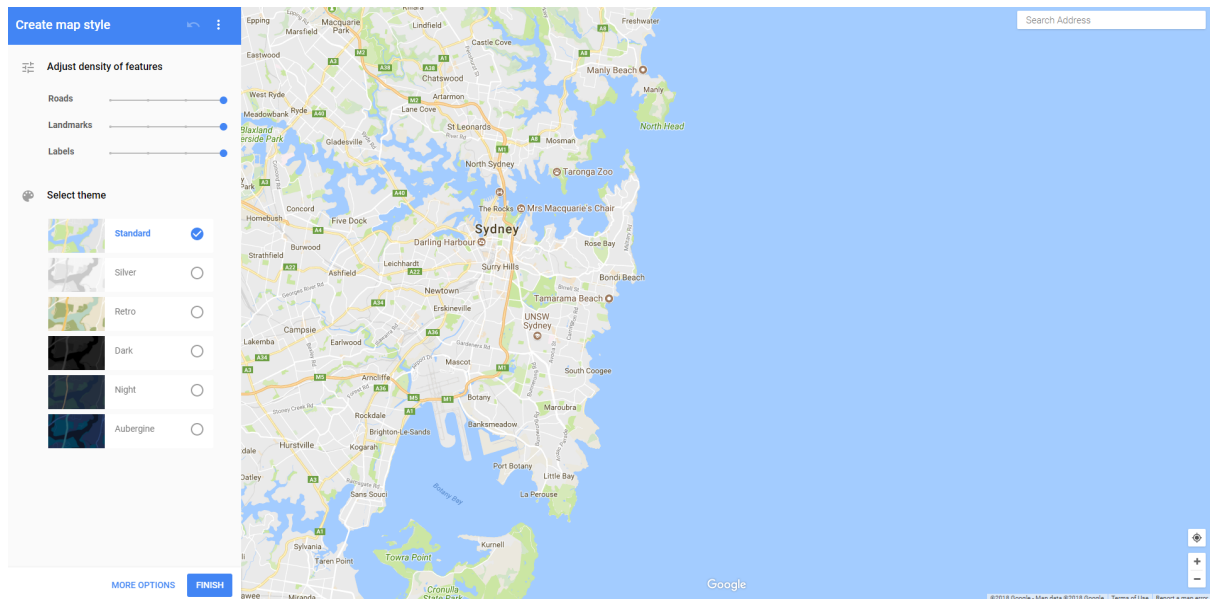


If further customisation is required select **Custom**. This immediately opens a new dialogue box which will contain the Java Script Object Notation (JSON) which will define the features of the map but now it is empty. You need to click on the link to Google Map Styles in order to customise the map, and then paste the JSON generated in to the empty box.



The **Google Map Styles** link takes you to a new window for **Google Maps APIs Styling Wizard**. Click on **Create A Style**.

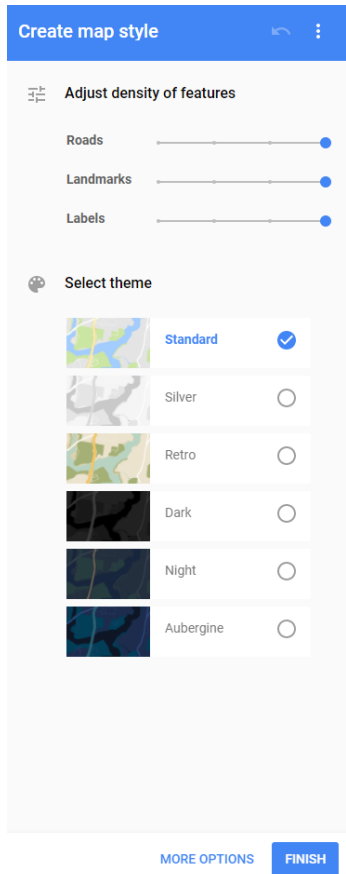
The next window repeats the various standard Google map styles that are available in Mapper. You'll need to go straight to **More Options** at the bottom of the screen.



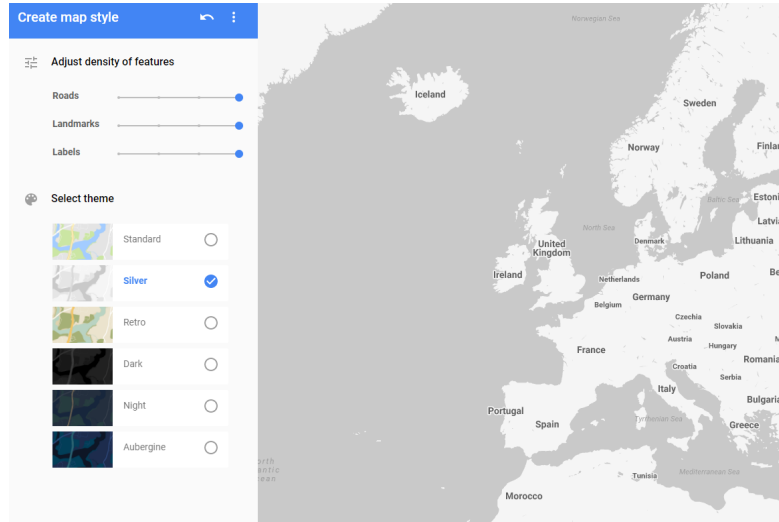
The next screen contains a long list of map features on the left, each of which provide even more levels of customisation. It may be worth, first, changing the centre point of the map and the scale. Many of the maps created for route networks cross national boundaries and involve distances in excess of 500km so it is important to see how the features selected appear on a map of the scale that is required. The map below has been centred on Europe and covers an area similar to the one used for the report query used earlier in this User Guide. As you can see, there are many administrative area boundaries displayed, as well as major roads. To create a cleaner look you may want to remove those to start with.



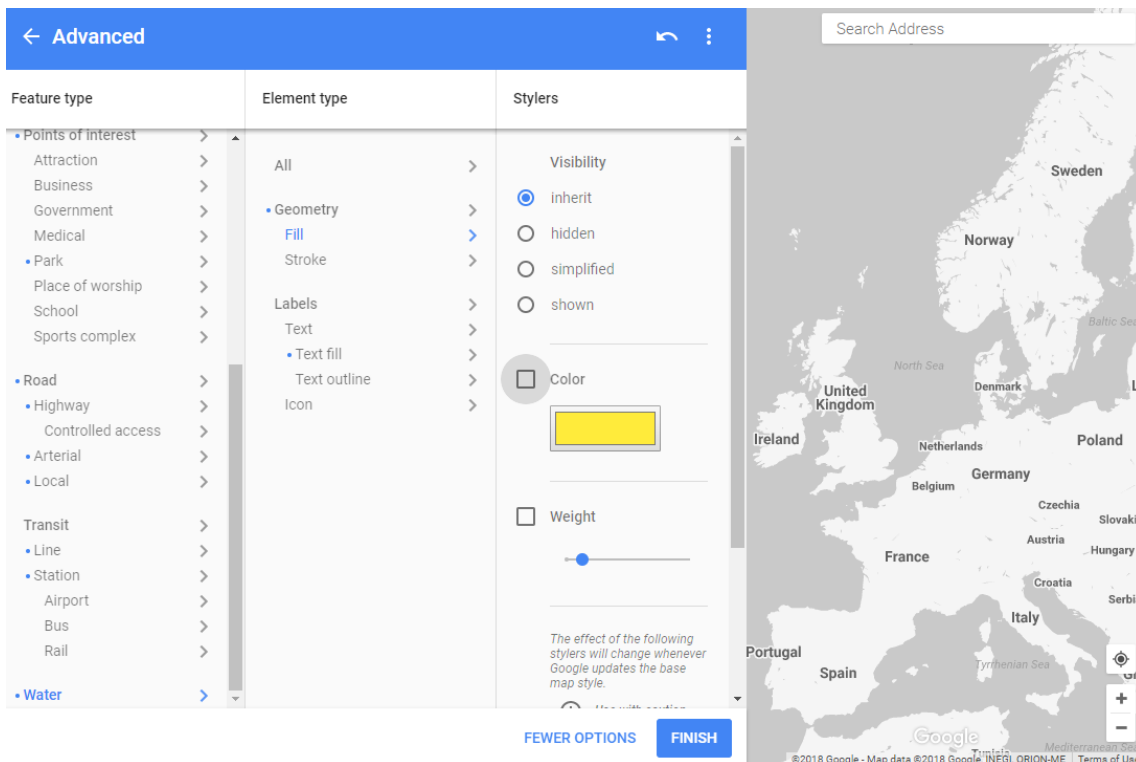
You can do this by selecting Administrative>Province> Stroke> Hidden and Road>Highway>Fill>Hidden. You might then decide to customise the colours on the map to fit with an airline’s corporate colours. In this example, we’ll continue with the worked example we used earlier, and use Norwegian.



Firstly, we'll select Fewer Options at the bottom of the window which takes us back to this page. We'll choose the Silver option here, which removes the country boundaries and changes the colour of the sea to silver.

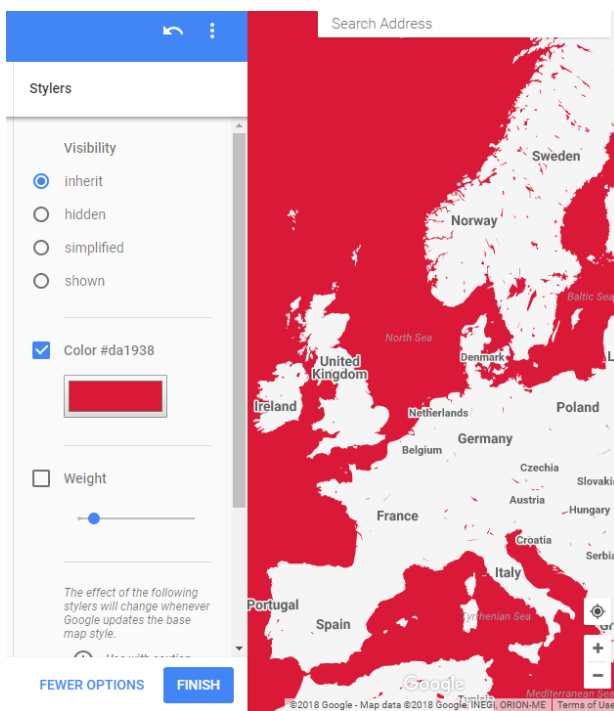
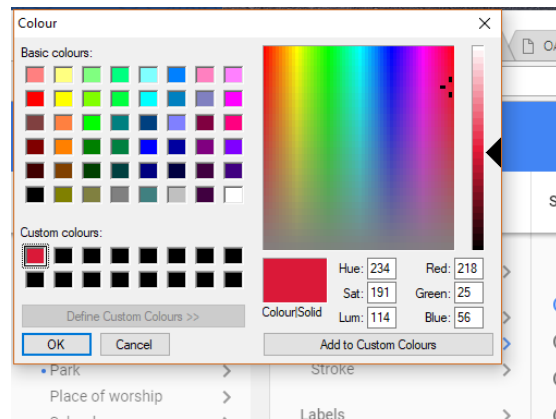


Now we'll format the sea in Norwegian red. Select More Options to open up the advanced dialogue and scroll down to water. Selecting Water opens another menu where we select Fill (highlighted in blue) and then we want to amend the colour by checking the colour box.

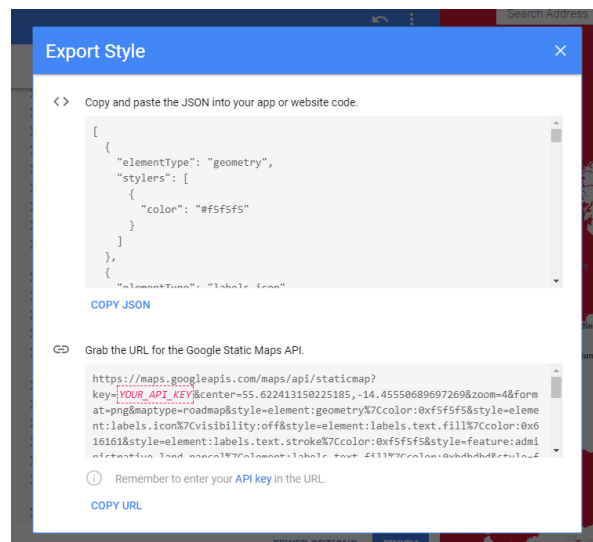


Doing this opens up a box which allows you to customise the colour. There are preset colours, or you can enter the hex code or RGB code. The Norwegian RGB colours are 218, 25 and 56 so we'll enter those, add them to the custom colours in case we want to use them again.

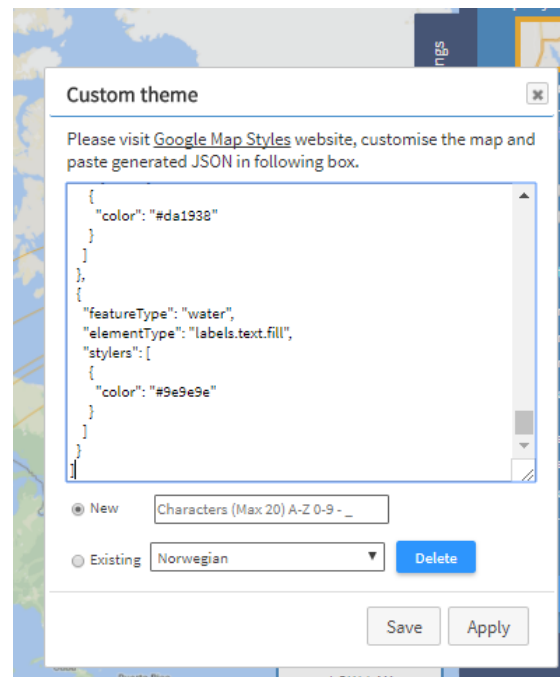
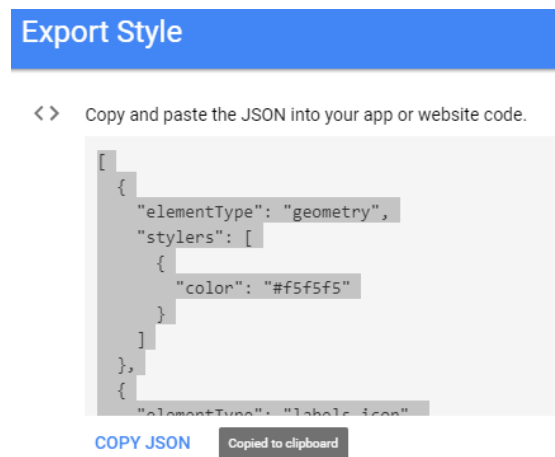
We then click on OK and the colour of the sea changes to red.



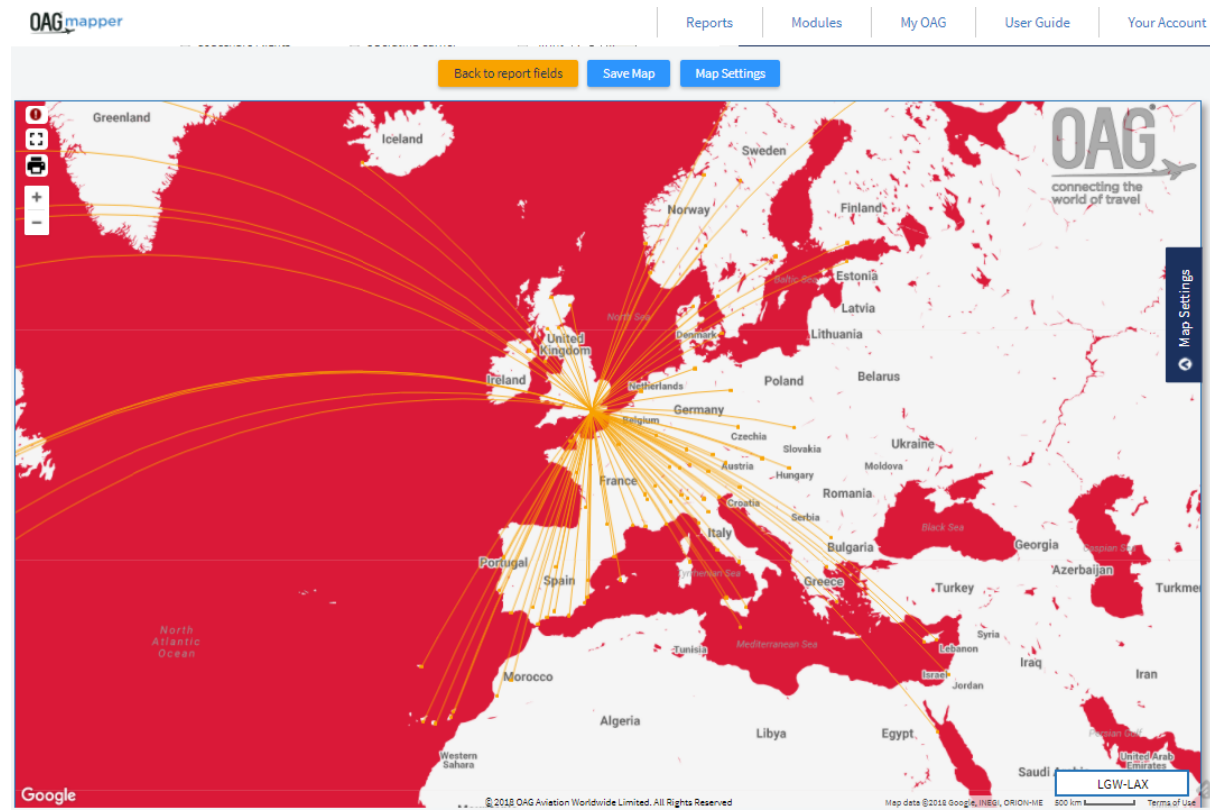
That's all we need to do here, so we select Finish and the following box opens. All we need to do now is export the JSON style directly into Mapper.



Clicking on Copy JSON highlights the JSON and copies it so you can now return to the Mapper page and copy it into the custom theme box.

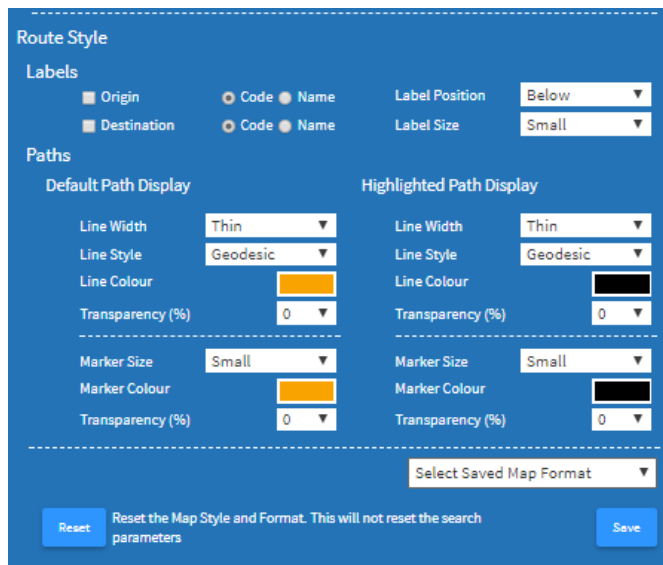


Once the JSON is copied in, you can select apply to see how it looks. Clicking on the map settings box closes it so you can review and then edit further by opening map settings again or save under an existing or new name. We could have made many more changes, adding or removing features of the map, and changing the way the map features are displayed.



Once you've saved your customised style, it then appears in the Select Custom Map Style drop-down so you can use it in future. If you have an inhouse style of map you want to use over and over again then creating it here and saving it will make the task of producing all your maps in that style simple.

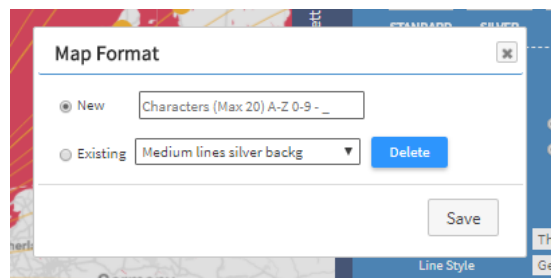
Once you've created the background map style you want, you can customise the Route Styles.



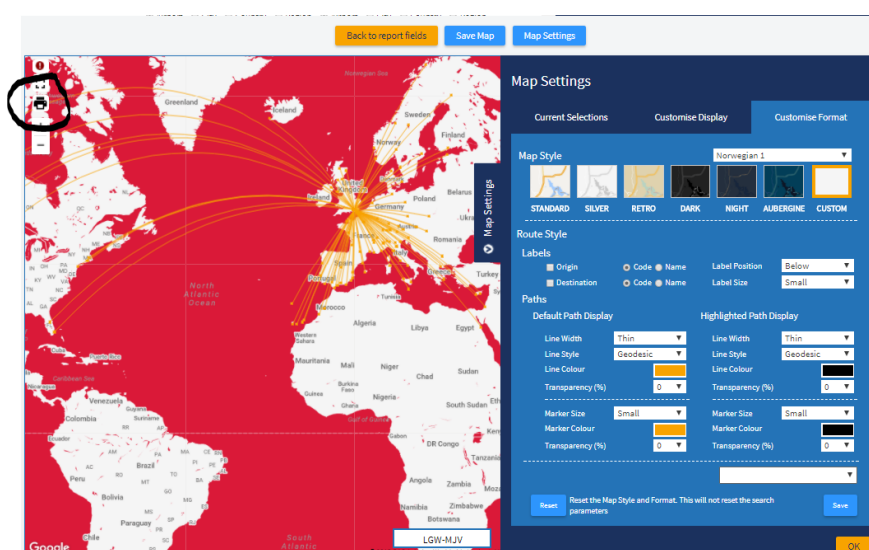
The first option relates to labels, for origin and destination. You can choose to display airport codes or names, and then amend the location of the label and its size.

The next set of options relate to the lines, or paths. You can vary the thickness, style and colour of the paths and their transparency, and also amend the marker size, colour and transparency. You can also amend the same fields for any highlighted routes that you select in the customise display field.

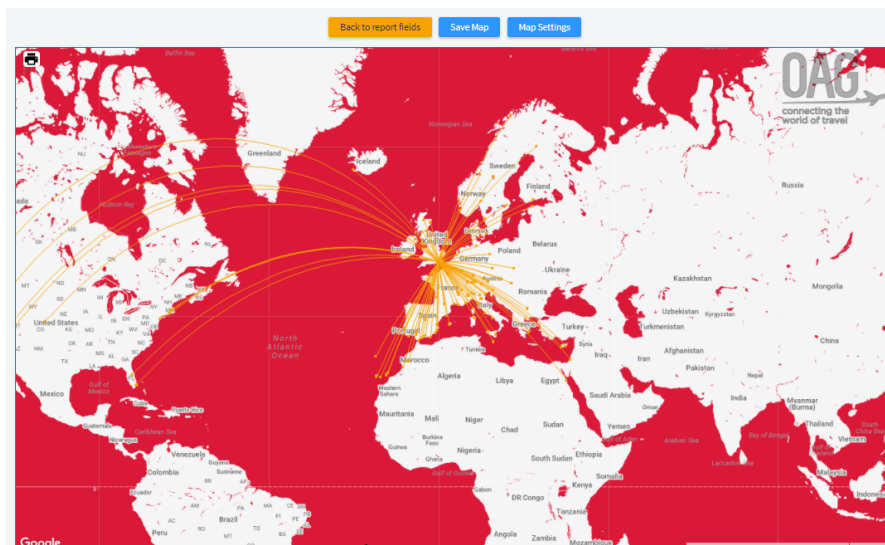
Once you've made any changes to the paths you can save these as a map format which you can then select each time you want to use that specific set of formatting options.



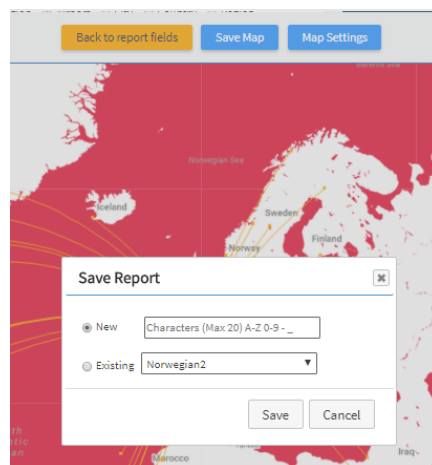
Finally, once the map is looking how you want it to, you can select a print friendly view by clicking on the printer icon on the top left of the screen



Doing this closes the map settings tab and removes the other icons from the map as shown below. Clicking on the printer icon again takes the map out of print mode.



Finally, if you want to save the map query you've generated, click on save map and then the following box opens, allowing you to enter a new name, or use an existing name.



Once you've saved a map, it appears in the My OAG drop-down, in Saved Maps. This can be accessed from the tool bar at the top of the screen or under Saved Maps in the Mapper homepage.



Available Reports

Mapper

Create route networks using active and custom routes, draw range filters and plot unserved markets to assess opportunities.

Saved Maps

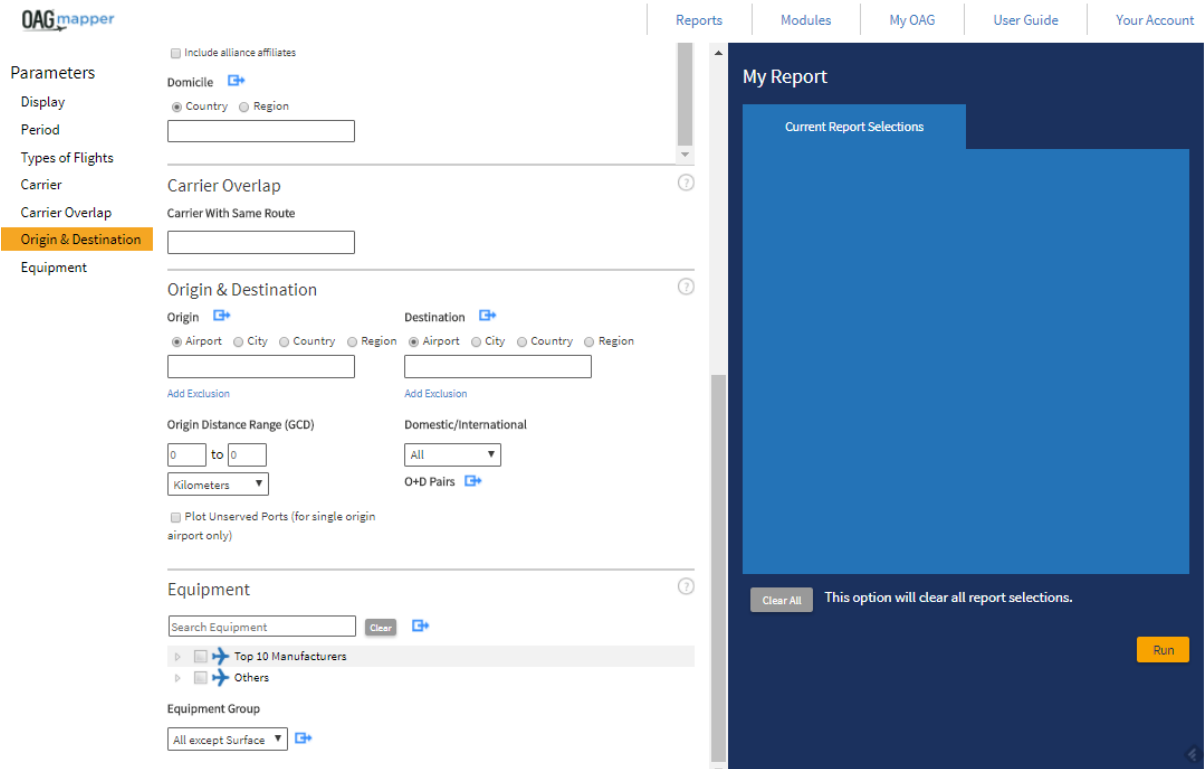
Date Saved	Report Name	DataSet	Report Type	Parameters	View	Run	Share	Delete
31 Jan 2018	Norwegian2	Schedules	Mapper		Open	Run	Share	
15 Jan 2018	SFO	Schedules	Mapper		Open	Run	Share	
15 Jan 2018	U2	Schedules	Mapper		Open	Run	Share	
11 Jan 2018	OSL	Schedules	Mapper		Open	Run	Share	
11 Jan 2018	SFO-India	Schedules	Mapper		Open	Run	Share	

[Open Saved Maps](#)

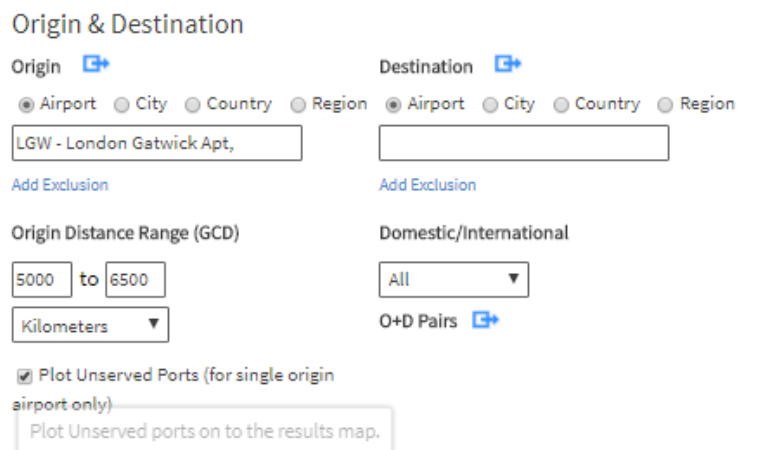
7 USING THE UNSERVED DESTINATIONS FUNCTION

There's another new feature in Mapper which is the ability to highlight unserved destinations within the range of particular aircraft types. We'll continue with the Norwegian example we used earlier and look at where else could be served in North America from London Gatwick using Norwegian's Boeing 737 MAX aircraft.

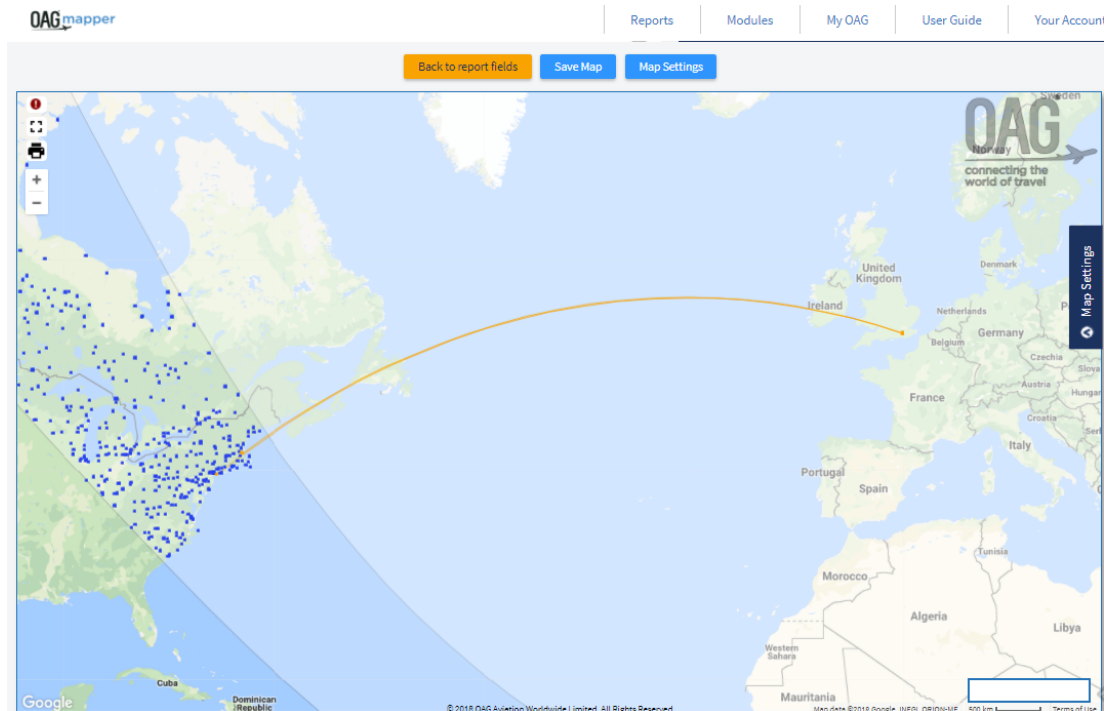
Starting back at the Mapper report, we click on Origin and Destination to move the query screen to there.



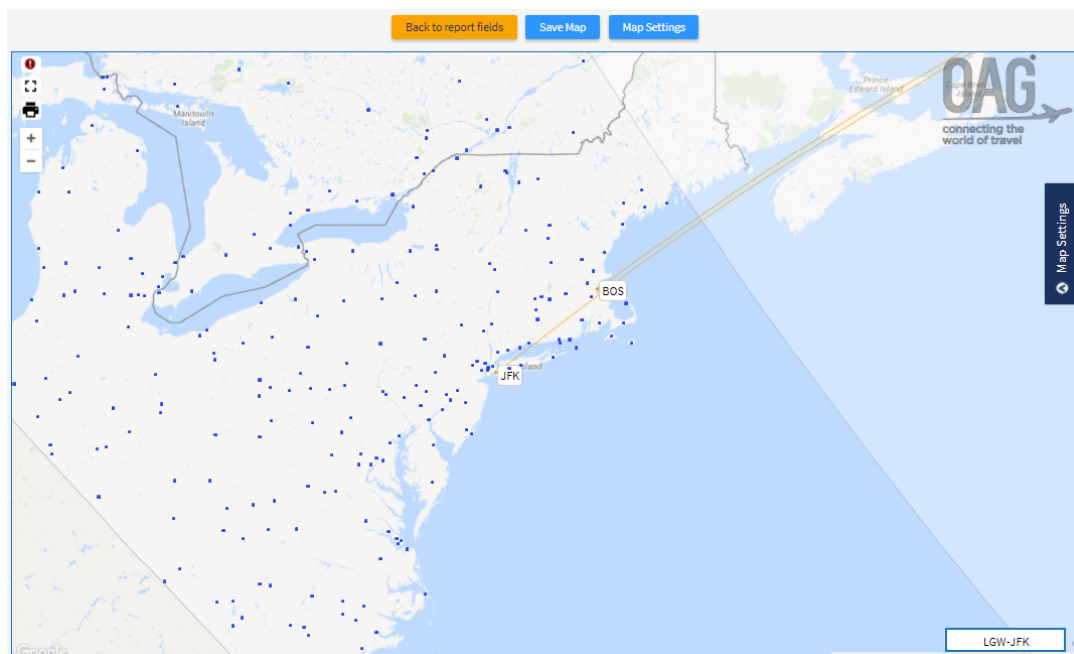
We'll add Norwegian as the carrier, Gatwick as the origin airport and in the Origin Distance range field we'll enter 5,000 to 6,500 as we're assuming the range of the Boeing 737 MAX is 6,500km. Just below the Origin Distance Range field we'll check the Plot Unserved Ports box.



Then we'll run the query. This is the result:



The map can be re-centred around the area you're interested in, in this case the north east United States and zooming in shows the current routes operated by Norwegian to the US. Each of the blue dots represents an airport in the US, with the range of the aircraft, but without service to Gatwick. The curved band is the range we've specified and so you can see from this, and the zoomed-in shot below that there are many airports which could be served with this aircraft. Hovering over the



Dot identifies the airport, and you can use map settings to turn labels on and off for destination airports (existing routes) and for the unserved destinations.

As before, the map can be saved for future use, or customised as described earlier.