



Cleaner Air for Southampton

Our Air Quality Strategy update

Port of Southampton



www.abports.co.uk

Welcome

At the Port of Southampton we are committed to taking a lead in improving air quality in the city.

In the four years since our Port Air Quality Strategy was published, local air quality has continued to improve.

We know that as a major operator and employer in Southampton, ABP has a responsibility to lead improvements in air quality. We are pleased to feature in this update our initiatives and those of some of our partners in the port community.

The past few years have been a time of strong progress for our port, despite the operational challenges brought by the COVID-19 pandemic.

In 2022, we launched the UK's first shore power facility for cruise ships. Today, ships at Horizon Cruise Terminal and Mayflower Cruise Terminal can 'plug in' for zero emissions at berth. We're happy to share that, as of 2022, around half of ABP Southampton's power is from solar generation.

Our initiatives are helping drive an overall reduction of 40% in our energy consumption since 2009 against a doubling of port throughput.

We have also worked to understand the sources of emissions generated by port activities, and to assist in research for cleaner air.

The past couple of years have been unprecedented – at the same time as us all having to adapt to the human and economic impact of the global pandemic, there is also the accelerating and critical conversation around decarbonisation. Throughout this time, we have continued our work to deliver on our strategy and continue our decarbonisation journey.

We will keep going, investing, monitoring our progress, and welcoming the valued input and collaboration of partners, experts, communities and individuals, as we all share the common objective of ever cleaner air for our city.



Alastair Welch
Director of ABP Southampton

A UK first for shore power



Having set out our plan in our Air Quality Strategy to deliver shore power for cruise ships, we were very pleased to make it a reality in Spring 2022, when the facility went live at the port.

Shore power supports our plan to improve air quality in the city. Cruise ships can now plug in for zero emissions at berth while alongside Horizon Cruise Terminal or Mayflower Cruise Terminal.

Our investment was supported with a contribution from the Solent Local Enterprise Partnership (LEP). We are proud of all the work that has gone into this UK first from our teams and partners.

Responding to industry demand



88% of new cruise ships are built shore-power ready*

“ The past few years have been a time of strong progress for our port ”



*CLIA State of the Cruise Industry Outlook Report 2020

The Port of Southampton

Gateway to the world



The UK's No.1 export port

The Port of Southampton plays a vital role in Keeping Britain Trading, handling £71 billion of manufactured goods every year. As the UK's number one export port, approximately £40 billion of these goods are for export, 90% of which are destined for markets outside the European Union.

As an island nation, a huge 95% of our trade arrives or departs by sea. We are one of the country's principal international gateways and home to the UK's most productive container terminal. This trade is dominated by the largest container vessels in the world, which can carry more than 23,000, 20-foot containers per journey. Around 80% of the vessels arriving in Southampton travel on the Far East to Europe route.

Southampton is synonymous with cruise; we are the number one cruise port in Northern Europe, as well as Europe's leading cruise turnaround port, with five terminals welcoming around two million passengers on 500 cruise calls annually. 85% of the UK cruise market is based in Southampton and we are the only UK port capable of receiving the largest cruise

ships in the world. The 2021 opening of our newest terminal, Horizon, was hugely significant – not only for shore power and the terminal's ability to generate all of its energy from its rooftop solar array, but also because of the added economic significance to Southampton; each cruise call is worth around £2.7 million to the local economy.

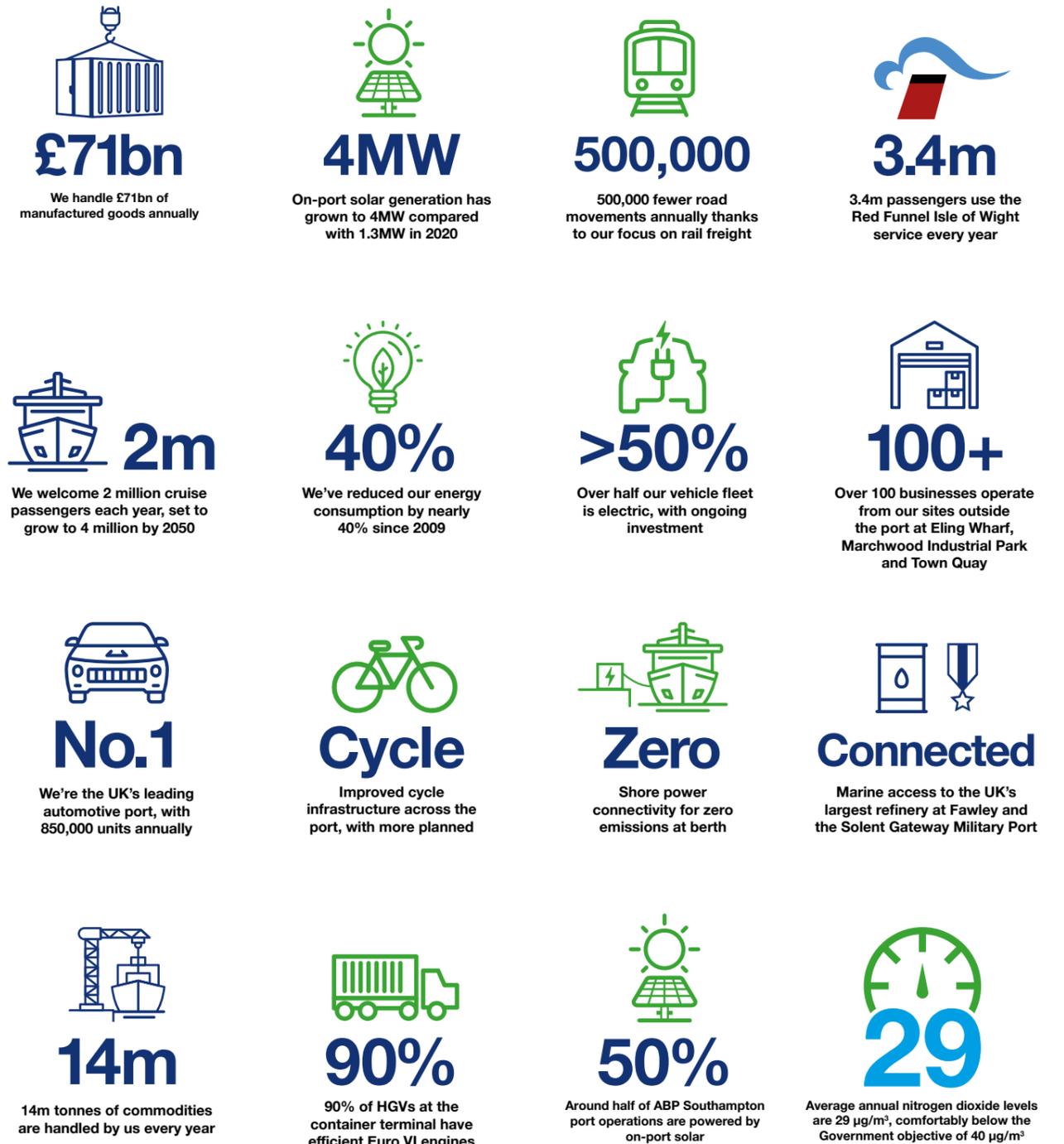
The Port of Southampton is also a key automotive hub in Europe, served by 11 shipping lines providing direct access to over 40 countries every month. We handle around 850,000 automotive units every year, including heavy plant and machinery. Two-thirds of this volume is for export to the global marketplace.

More rail freight (by %) is accommodated here in Southampton than any other UK port. We're able to reduce the number of road movements by more than 500,000 every year through our four dedicated rail terminals, with up to 30 trains able to use the port every day.

The Port is also home to the UK's largest refinery – Fawley. Its mile-long marine terminal handles around 2,000 ship movements and 22 million tonnes of bulk liquids and other products every year.

The Port of Southampton at a glance

The port contributes **£2.5 billion** to the UK economy annually, supporting **15,000 jobs** in the Solent and **45,600** across the UK



The quality of our air

Nitrogen oxides (NOx) emissions

The work we and our partners are doing is having a positive impact in keeping NOx levels below the national objective.

The national objective is **40µg/m³**
 Our annual levels in the port are **29µg/m³**

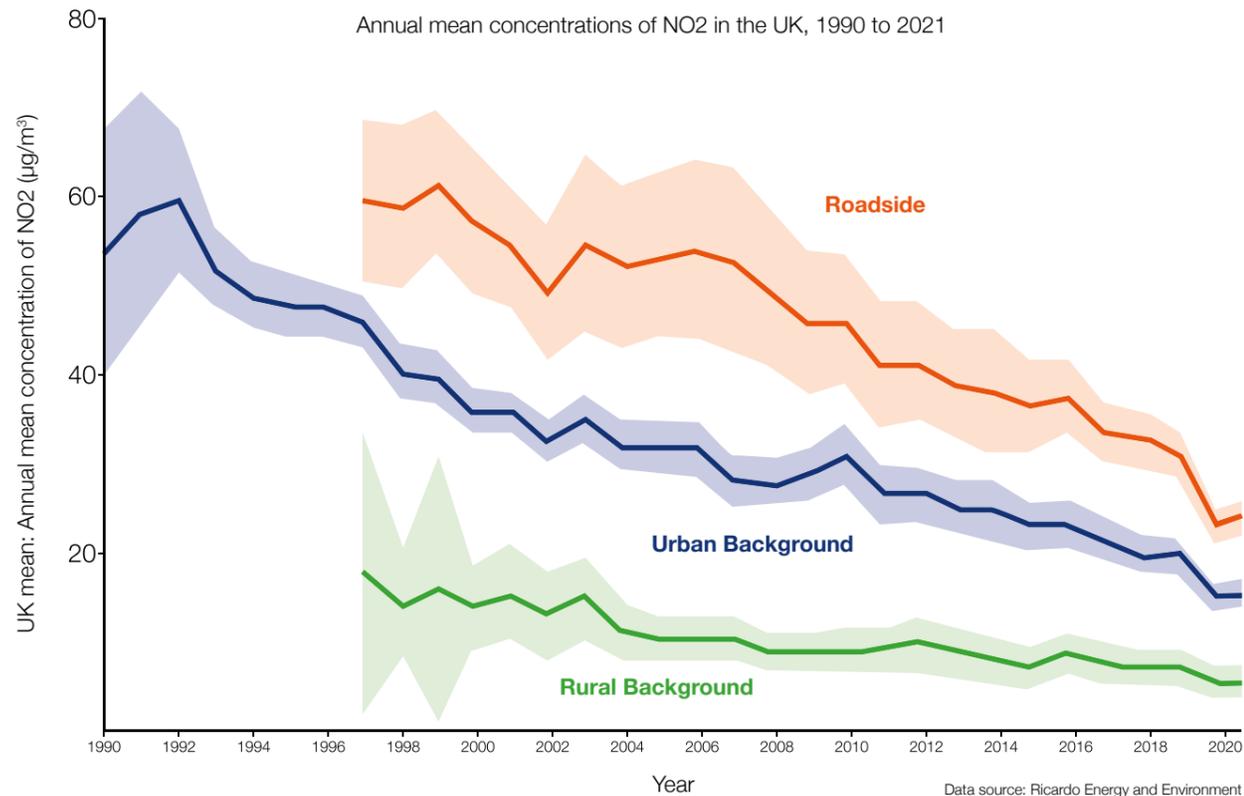
It's widely known that the air we breathe affects our health and wellbeing.

Air quality in the UK has continued to improve since Government monitoring began in the 1970s. Despite this positive trend, there is always more we can do to drive down emissions.

The European Union Ambient Air Quality Directive sets legal limits for concentration of air pollutants. For nitrogen dioxide (NO₂) there are two limits to protect health:

- The average annual concentration of nitrogen dioxide should not exceed 40 micrograms per cubic metre (µg/m³). The port is averaging 29 µg/m³.
- The average hourly concentration of nitrogen dioxide should not exceed 200 micrograms per cubic metre (µg/m³) more than 18 times per year. No exceedances of this level occurred within the port.

The graph below shows a continuing decline in the concentrations of NO₂ for roadside, urban background and rural background over recent years.



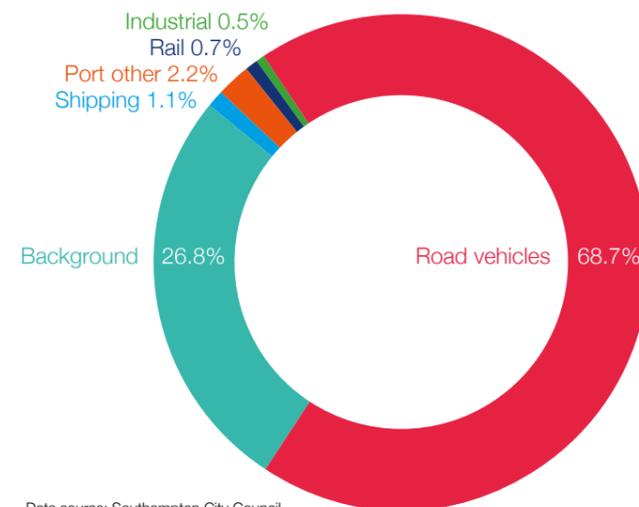
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Southampton City Council monitors air quality in the city. Its Draft Action Plan 2022-2027 sets out how it will go beyond statutory compliance and continue to make progress in the city's air quality.

The Council's research shows road vehicles are the biggest contributor to NOx levels, and it has identified a number of city road hotspots where traffic congestion is highest.



Breakdown of emission sources



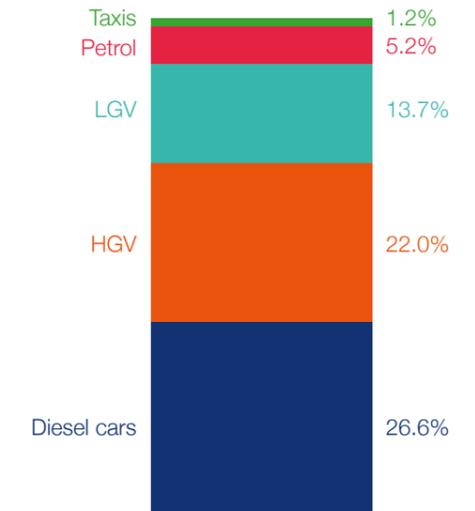
While port and shipping activity account for just 3.3% of NOx levels, we recognise that some vehicles are travelling to the port.

Part of our port operations include areas close to the New Forest. Information shared by New Forest District Council via the Air Quality England website shows pollution levels are well below the national objective.

Our air quality monitors located across the port are real time and record a range of pollutants.

We actively monitor nitrogen oxides (NOx) emissions – our annual levels are around 29µg/m³, which compares well with national objective of 40µg/m³.

Road vehicle % breakdown



In 2022, we upgraded our monitors to provide even better data analysis across the port estate.

Emissions generated by port activity can be classed into three main areas – shipping, surface access (road and rail) and port equipment.

Some of these sources we are able to tackle on our own, and for others, we need to work in partnership with the people and businesses using the port on a daily basis.

Shipping

As one of the UK's primary gateway ports, the vessels we see on a daily basis are some of the newest in the global fleet. Shipping has the lowest CO₂ emissions per km for freight transportation.

With increasing discussions at international levels to decarbonise vessel miles, the engine technology in vessels is changing rapidly.

The main source of emissions from ships has historically been marine diesel, used to power the engines as they enter and leave the port, and to operate them when they are alongside.

Here we talk about how the shipping sector is tackling emissions.

Sulphur Emission Control Areas

All commercial vessels arriving in Southampton must run on low sulphur fuel or be fitted with an exhaust gas cleaning system to meet the requirements of the port. This is a standard not required by all UK ports. The Sulphur Emissions Control Area (SECA) applies to all commercial vessels entering the UK's South West Approaches. The SECA extends through the English Channel into the North Sea in order to ensure vessels meet the strict sulphur emission limits set by the International Maritime Organization.

Reducing the use of sulphur in fuels has had a significant benefit for coastal populations.

Liquefied Natural Gas

In recent years, there has been a widespread adoption of Liquefied Natural Gas (LNG) across different shipping sectors. LNG is seen as a transition fuel on the roadmap to decarbonisation as LNG is still a fossil fuel.

LNG has an improved energy efficiency over fuel oil, with lower emissions. In comparison to marine gas oil, LNG results in:

- 20% reduction in CO₂ emissions
- 90% reduction in nitrogen emissions
- 99% reduction in sulphur emissions
- 100% reduction in particulate matter emissions

A number of ships in the automotive, container and cruise sector which regularly visit Southampton operate on LNG.

Shore power

Shore power is where compatible vessels can connect to the Port's power supply and shut down their engines while alongside. We are pleased that our shore power facilities in Southampton are making a positive contribution to local air quality.

Hydrogen

At ABP we are looking at the future potential of hydrogen across our UK operations to drive a reduction in carbon emissions within the maritime industry. We have commenced a feasibility study around the production of green hydrogen, which will help develop its vision to decarbonise the Port of Immingham in the Humber, in partnership with Uniper, Siemens Energy, Toyota Tsusho, and funded by the Department for Transport. With this funding, we plan to develop circa 20MW of green hydrogen production for use at the port, either as a direct replacement to diesel and heavy fuel oil, or for the production of clean shipping fuels. This work at Immingham could be the first step in the uptake of hydrogen as an alternative to fossil fuels across the whole maritime sector. In Southampton we are working with Fawley Refinery to build hydrogen capacity.

Battery cell and hybrid technologies

These options represent an exciting development for our sector. It is our aim to work with the sector to deliver these technologies.

The future

The International Maritime Organization (IMO) is introducing new baseline levels for how much fuel a vessel uses. These levels will become more challenging over the years. An Energy Efficiency Design Index means that new build container ships must be up to 50% more fuel efficient from 2022. Existing vessels will also have to develop energy efficiency management plans, which could include measures to improve voyage planning, hull and propeller cleaning in order to reduce drag through the water.

What the longer-term future looks like is less clear at the moment. There are numerous discussions within the engineering and scientific communities as to what the future fuel source will be. Ports around the world, including Southampton, will continue to invest and adapt to the requirements of the future.

The IMO's Green House Gas Strategy identifies levels of ambition for international shipping sector. Measures include:

1. Carbon intensity of the ship to reduce through energy efficiency design index for new vessels
2. Carbon intensity of international shipping to reduce CO₂ emissions by at least 40% by 2030, pursuing efforts towards 70% by 2050, compared to 2008; and
3. GHG emissions from international shipping reduce by at least 50% by 2050 compared to 2008.

“ All commercial vessels arriving in Southampton must run on low sulphur fuel or be fitted with an exhaust gas cleaning system to meet the requirements of the port ”



A cleaner future

our progress so far



The £55m Horizon Cruise Terminal features more than 2,000 roof-mounted solar panels and provides shore power for cruise ships.

Thanks to its rooftop solar array, Horizon Cruise Terminal generates more power than it uses

Our support vessel fleet

ABP has invested in a new fleet of pilot launches that deliver 25% more fuel efficiency. Mayflower, the first of three launches for Southampton, went into service in Spring 2022. We have also invested in Swift, our new vessel for Southampton Patrol, again delivering greater fuel economy.

Cycling

With cycling cutting emissions, congestion and providing significant health benefits, we have installed cycle stores, bike lockers and on-site showers at our offices. As part of our cycling strategy, which is being rolled out in phases over the next three years, we have begun enhancing our on-port cycle lanes to provide safe, segregated lanes connecting the city's roads with workplaces within the port.

Renewable energy

We continue to review our energy consumption across our operations. We've reduced our energy consumption by nearly 40% compared with 2009.

Solar generation is now 4MW across the port. That provides enough renewable electricity for nearly 50% of our operations.

We are exploring the potential of additional solar generation of between 2-3MW from solar-covered car ports.

Construction

Our new Horizon Cruise Terminal opened to passengers in July 2021. Horizon was built to the BREEAM Excellent standard and, thanks to its rooftop solar array, generates more power than it uses. As we approach engineering projects in the port, we are mindful to reuse materials where we can and install solar where appropriate.

Images clockwise from top left: Cycle lanes in the Western Docks; Southampton is the leading UK port for access by rail; the naming of our new pilot launch, Mayflower, delivers 25% more fuel efficiency; electric vehicles now make up over half our fleet.

Rail

With a investment of £17 million by ABP and Solent Stevedores, we are delivering longer sidings at one of the port's rail terminal increasing capacity for containers and strengthening our rail offering for customers.

We will continue working with freight owners, Network Rail, government and rail freight operators to increase rail options and remove even more freight from our roads.

HGV activity and reducing traffic congestion

It's estimated that 90% of the vehicles accessing the DP World container terminal are the newest Euro VI engines. DP World has introduced a vehicle booking system green charge on trucks with a licence plate of '13' or older.

DP World continues to promote its 'no idling' campaign, cutting emissions by encouraging drivers to switch off engines when vehicles are not moving and working to ensure drivers only turn up for their allocated booking slot and not earlier, thereby reducing congestion.

Away from HGV, on busy cruise days in the Western Docks we now route traffic through Dock Gate 20 to minimise the impact on roads leading into the City Centre.

Our vehicle fleet

We have replaced our small vehicle fleet with electric equivalents. Electric vehicles now account for over half of our vehicle fleet.

We have also purchased electric crew buses to trial in support of automotive operations. The e-crew buses take team members to and from ships as they transport new vehicles into the port.

Our next objective is to replace the larger vans which we use around the port in support of maintenance activities.

We wanted to encourage our colleagues to make the switch to electric vehicles and we offer our staff and visitors the ability to charge their electric vehicles on site. We also offer a salary sacrifice scheme to enable our employees to make the switch to electric vehicles.



A shared vision

our port partners

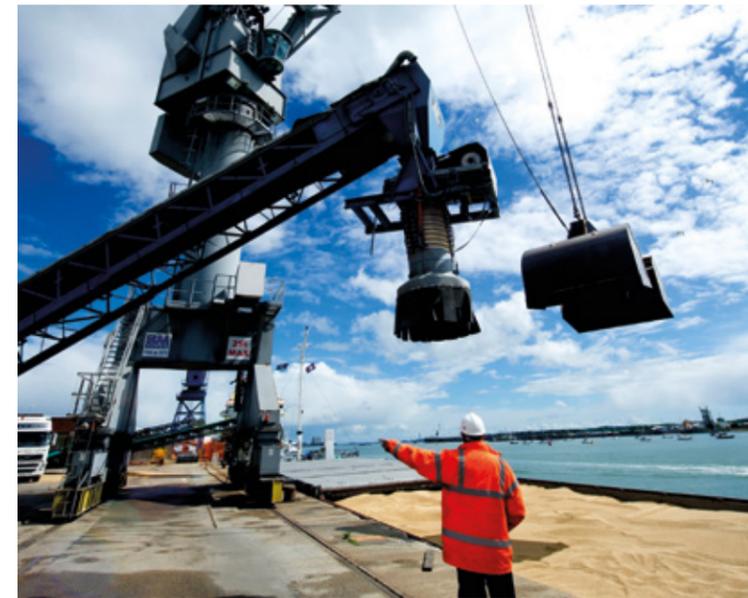
Across the port, our partners are driven by a shared vision for cleaner air.



Southampton container port operator DP World has cut diesel from its operations by switching to hydrogenated vegetable oil (HVO), a biofuel produced entirely from organic waste material.

This is one of a range of initiatives DP World has put in place across its operations. The company recently invested in a range of electric straddle carriers, used to lift containers moved by the quay cranes and then service onward forms of transport via road and rail.

DP World's new vehicle booking system used by HGVs is already proving very effective in managing traffic levels in the port. The system enables DP World to minimise port traffic at peak hours, which, together with a green scheme imposing a vehicle levy on older HGVs, is contributing positively to the port's air quality.



Solent Stevedores operates rail and bulk terminals in the Port's Western Docks and also provides cruise stevedoring to a number of lines. A substantial investment to upgrade infrastructure and equipment at the rail terminal means more cargo is travelling by rail than road, therefore contributing to improved air quality. The company has also seen a 40% improvement in loading and unloading times thanks to new equipment, including side loaders and reach stackers, that enables the team to service trains more efficiently. This time saving means fuel saving and less machine wear and tear.

Solent Stevedores' 35 forklifts used to load cruise luggage and stores are all electric, and all other vehicles and equipment in its cruise operations run HVO. This cuts CO₂ emissions by a substantial 90%. The company has also invested in eight new telehandlers with Euro VI reduced emission engines.

Meanwhile, Solent Stevedores has invested in electric pool vehicles for its staff to use in the port.



Freightliner runs a number of multimodal freight terminals and a depot from Southampton's Western Docks. Freight expansion is core to the UK Government's Net Zero ambitions, with rail generating 76% lower emissions than road haulage. Freightliner is committed to being a Net Zero business, recognising the role it plays in helping its customers reduce their supply chain emissions.

The company has invested in fitting all its class 66 locomotive fleet with start-stop technology, used in conjunction with its loco idling policies to minimise energy consumption. This cuts emissions, improves air quality and reduces noise. Other technologies, such as Freightliner's emissions calculation tool, provide valuable data and insight to its customers, informing discussions with government about electrification and the wider decarbonisation of the rail network.

Acknowledging that some freight must go by road, Freightliner works to optimise its rail and road offering to deliver the most practical solution to customer requirements. Freightliner's entire HGV fleet meets Euro VI emission standards



SVITZER

Leading global towage operator Svitzer, part of A.P. Moller - Maersk, provides towage to vessels at the Port of Southampton and a number of ABP ports. Located within Southampton's Eastern Docks, Svitzer's entire fleet serving the Port now runs entirely HVO.

Called Svitzer EcoTow, the switch to HVO reduces CO₂ emissions by 90% when compared with fossil derived marine gas oils previously used. Its Southampton operation is also being added to its global service offering for clients who want to directly purchase HVO for their business.

Svitzer is working towards operating a 100% carbon neutral operation by 2040. While the introduction of HVO is considered a crucial first step of the journey, Svitzer is in parallel committed to continuing the exploration of further technologies that can be utilised to support this effort.



Our action plan for reducing emissions

What we've achieved to date

	Initiative	What we've achieved to date	Status
Shipping 	Shore Power	Be the first UK port to install shore power for cruise vessels	Achieved
	Rail Freight Subsidy	Work with government to restore rail freight subsidy	Achieved
	Rail Infrastructure	Work with Network Rail to extend rail capacity into the Port	Achieved
	Electric Vehicles	Run 100% electric fleet for small vans and cars	Achieved
	Electric Vehicle Charging	Install electric charging points for cruise passenger vehicles	Achieved
	Reduce Emissions	Assess options for non Euro VI vehicle tariff to enter container terminal	Achieved
	Vehicle Infrastructure	Explore the installation of an GTL fuel station for commercial and on-dock vehicles	Achieved
Transport & Access 	Energy Efficiency	Complete LED high mast lighting programme	Achieved
	Energy Efficiency	All street lights within the Port to be LED	Achieved
	Solar Roads	Commission research into feasibility options	Achieved
Plant & Equipment 			

What we're working on

	Initiative	What we're working on	Status
Management & Monitoring 	Port Consultative Committee	Bring together members of the port community and external stakeholders quarterly to promote best practice	Ongoing
	Port-wide Emissions Monitoring	Reach our target of nitrogen dioxide levels of 25 µg/m³	Ongoing
Shipping 	Shore Power	Grow our shore power facilities	Ongoing
	Modal Shift Scheme	Maintain Modal Shift Scheme	Ongoing
	Cleaner Vehicles	All dock use vehicles to be of the lowest emissions	Ongoing
	Sustainable Transport Options	Promote the My Journey sustainable transport initiative to the wider port community	Ongoing
	EV Charging for HGVs	Roll out EV charging for HGVs, starting at the container port	2023
Transport & Access 	Cycling Strategy	Continue rolling out our cycling strategy and complete cycling infrastructure works across the port	2025
Plant & Equipment 	Solar	Maximise solar energy schemes within the port estate to reduce carbon footprint	Ongoing



Looking ahead together

Clean air is important to all of us for our way of life.

We are proud of what we have done so far and recognise the huge amount of work from our partners in decarbonising operations. We look forward to continuing our journey together.

The Port is included within the Solent Freeport – an initiative designed to energise economic growth. We know that demand for port facilities and services is strong over the medium and long term. Development provides an excellent opportunity to innovate and adopt low and zero technologies while we're Keeping Britain Trading.

Get involved

We would really like to hear your views on our work to improve air quality and your ideas for new initiatives, technology and partnerships.

If you live locally and want to be involved, please get in touch and share your thoughts.

Here's how to contact us:

Email contactus@abports.co.uk

Follow our progress online at www.abports.co.uk

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