



# PORT PLANNING FINDING THE FLEXIBILITY

Interview with Sean Barker, Global Practice Leader - Ports, Coastal & Offshore, and Peter Mallin, Senior Ports Project Manager, Mott MacDonald Ports Team

Today's evolving market means flexibility and agility is more important than ever and is key for ports looking to overcome challenges presented by shocks to the global economy.

This of course has an impact on port planning and how ports can restructure their operations for new purposes to meet the change in market demands and anticipate future shocks.

Speaking to Port Technology International, Sean Barker, Global Practice Leader - Ports, Coastal & Offshore, and Peter Mallin, Senior Ports Project Manager at Mott MacDonald described some of the ways in which the company is assisting ports with their major planning efforts.

The ports team at Mott MacDonald covers all aspects of port developments, from the initial inception of an idea, through masterplanning, they then design projects and assist to procure contractors and finally supervise construction and administer delivery through to asset management.

The company works across the spectrum of marine and port facilities. Most recently

they have predominantly been working with container ports but they also work extensively with ro-ro, cruise, energy, and bulk ports.

With teams around the world Barker ensures that they are all linked efficiently and bring the most suited resources to the project for the client's benefit to fulfil project requirements.

## **FLEXIBILITY AND PREDICTING THE FUTURE**

Speaking on flexibility Barker said that ports want to be able to alter their purpose in order to meet evolving market demands.

"COVID-19 is a prime example of this and of market shocks, you need to be able to respond to those issues by changing purposes," he explained. "Some businesses are succeeding or growing as a result [of the COVID-19 crisis] and others are failing, their requirements within ports are changing."

Changes are also coming in the shape of equipment types as well as vessel sizes and configuration, which all need to be accommodated within the design on day one so

that the facility does not become redundant in the future when technology changes.

"Being able to adapt to future changes in technology and equipment is also an important requirement in terms of a terminal's flexibility," Mallin said.

Future-proofed expandability needs to be considered also because whatever is being planned today needs to be able to accommodate potential future requirements, be that quayside expansion or deepening or demand to provide a new landside part of a terminal in the layout.

In terms of infrastructure that is being acquired by ports there is a growing demand for it to be more highly optimised and therefore utilised than ever before.

"This is in terms of making sure that it is the right size and for the absolute right purpose. This is to do with minimising initial expenditure and deferring additional expenditure into the future," said Barker. "They only want to pay for anything that is necessary right now and defer the option to modify or expand until it is needed."

According to Barker this can create conflict with the need for flexibility, because to be flexible you need to invest more in order to cover a wider range of potential outcomes and future uses.

“That sort of conflict between flexibility and minimal cost is a key challenge,” Barker said.

On the planning side he said there is also a high demand for optimal business case planning which considers the need for keeping initial costs down and certainty over the demand for assets.

### **MAKING WAY FOR MEGA SHIPS**

As we see ships getting larger with the HMM Algeciras, the biggest container vessel in the world, launching this year with a capacity of 23,964 TEU there is a structural and operational strain on ports who wish the be a part of the ship’s trade routes.

The approaches to the port need to be bigger and dredge channels need to be deeper, wider, and longer to accommodate such large vessels.

“We are seeing a number of cases where approaches are becoming deeper,” Barker said.

In the UK for example the Harwich Haven Approach Channel is being deepened from its current depth of 14.5mCD to potentially 16mCD, this will ultimately allow larger ships into the Port of Felixstowe’s container terminals. Container vessels are the largest ships to use the Channel.

“What we are seeing at the berth infrastructure is a significant number of cases where ports are looking to deepen their alongside depths, and that has an impact on the berth structure itself. The cranes that are being used are also having to increase in size in terms of outreach and air draft which in turn increases their weight and the loads they impart onto the quay. In terms of the port’s ability to receive

these larger vessels there is quite a number of impacts.”

In addition, landside yard operations are being affected during these vessel calls as more container movements are necessary because of the increase in ship capacity.

“Ports are increasingly looking at whether it is possible to relocate the less critical operations, within the immediate back-of-quay area, can these be moved to the back of the port or even off of the port to create a bit more operational space?” Barker said.

Mallin added, “Arguably you could say over the last ten years there’s been some step changes in the size of the vessels but what we are seeing now is more incremental changes in vessel size. Increases in capacity these days seems to be coming in smaller design changes as the designs become more and more efficient. The rate of change in the physical dimensions of the vessel has been relatively constant.”

It should be noted that these mega-ships tend to be visiting the major hub ports. However, while these ports strive to provide or obtain financial backing to implement these changes, they are still commercially driven and it is only when they know that there will be a steady stream of visits from such vessels that they are likely to invest.

“If you don’t have to spend money on a big quay then why would you,” Barker points out.

### **USING THE LATEST AND GREATEST IN TECHNOLOGY**

There is no doubt that technologies, such as automation, 5G and the Internet of Things, is reshaping how ports approach operations and planning but Mott MacDonald is also exploring how it can serve its customers with new tech.

“We are increasingly using digital design processes that help us achieve optimization and ports are also looking at the use of

## **“IF YOU DON’T HAVE TO SPEND MONEY ON A BIG QUAY THEN WHY WOULD YOU?”**

technology to optimise their operations as well. In things that we are planning we are building in this use of technology to allow optimised processes in terms of layout and operations,” Barker noted.

Mallin noted one project he is working on is concentrating on the implementation of automation and keeping the need for manual labour down. As well as keeping the operational expenditure down it also allows for more streamlined operations of the terminal itself.

As noted by Barker, technology is having an impact on the layout of ports to accommodate particular technologies.

In operations the increasing demand for technology measures to capture data. Those that are rolling out 5G networks to give them greater capacity to integrate those live feed streams.

“We are using a lot more technology to optimise those plans, and part of the planning work we are doing is building in present technologies and having more discussions with clients around the use of technology to optimise their processes. We are starting to see the emergence of data capture technologies at smaller ports too.”

### **PLANNING FOR ANOTHER CRISIS?**

With the impact of COVID-19 being felt across the port industry it is yet to be seen how this may impact port planning in the future.

“That is the ultimate crystal ball question,” Barker said, noting that it may be a little early to make any solid predictions on how it may impact this element of ports. “There is a lot more data still to be sifted through.”

However, he did note that it would appear advisable for ports to be closer to both customers and the supply chain to get greater visibility. Also, there could be more stress testing of crisis situations in advance to attempt to predict the effect on port operations.

Barker did ponder the modularisation of container ports where you can easily shut-down parts of the yard to maintain efficiency especially in times of fluctuating volumes.

However, ultimately it is likely to come down to preparedness and developing scenarios for shock events in the future.

*Written by Beth Maundrill*

