

## NAVIGATIONAL ADVISORY PANEL REPORT

<b>NAP Date:</b>	4 Jan 2011	<b>Owner:</b>	HMU	<b>NAP Ref:</b>	NAP 38	<b>NAP Title:</b>	Cable Car – Risk Assessment
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### Panel Members:

Name	Organisation	Name	Organisation	Name	Organisation	Name	Organisation
David Snelson	PLA	Richard Flynn	PLA	John Pinder	PLA	Steve Rushbrook	PLA
Julian Parkes	PLA	Terry Lawrence	PLA	David Phillips	PLA	Kevin Gregory	PLA

Detail / Terms of Reference	Observation/Recommendation
<ol style="list-style-type: none"> <li>1. Examine the remaining risk to vessels and the river from having a cable car pylon in the water, vulnerable to the consequences of large ship impact.</li> <li>2. In particular, examine the risk of steering gear or other mechanical failure leading to contact, bringing down the pylon on top of the ship and possibly blocking the river also.</li> <li>3. Examine: <ul style="list-style-type: none"> <li>o Impact on air draft limits of the cable catenary.</li> <li>o Impact on river operations of cable car emergencies.</li> <li>o Impact on river operations of the construction phase.</li> </ul> </li> <li>4. Consider the risk mitigation procedures necessary.</li> <li>5. Consider what operational procedures need to be implemented.</li> <li>6. Detail the precise conditions that need to be placed upon the licence.</li> <li>7. Estimate rough order magnitude costs of any RCMs</li> </ol>	<p>This report should be studied in conjunction with the detailed Terms of Reference:</p> <p><u>Side Impact Protection (SIP):</u> The NAP agreed that noting the following factors, the risk of contact between ship and SIP is almost at ALARP:</p> <ul style="list-style-type: none"> <li>o The pylon footprint in the river is just a few meters width, across the face of the SIP.</li> <li>o The pylon is well towards the river bank and outside the Authorised Channel.</li> <li>o Incident analysis support a contention that the probability of steering failure is low, and the probability of a vessel having a steering failure at exactly the point that it is able to collide with a structure of such small dimensions is remote.</li> <li>o To be of any significance for a "worst case" scenario, the steering gear failure would have to be such that the vessel sheers out of the channel and hits the structure relatively end on without having managed to take any way off with anchors or engines.</li> <li>o The more likely scenario would be for the way to be nearly taken off, and/or just making leeway and so reducing the consequences of contact very significantly.</li> <li>o The NAP sought assurance that the S-I-P would protect sufficiently against contact with motorised barges up to 2000 tons displacement, such as those likely to be used during the Crossrail and Tideway Tunnel constructions</li> </ul> <p>In order to be certain that the risk of contact is at or below ALARP, the NAP agreed on the following additional risk control measures:</p> <ul style="list-style-type: none"> <li>o When large ships over 130 metres in length are planned to pass underneath the Cable Car the cable car is to</li> </ul>

be stopped for the duration of the passage of the ship underneath; at the discretion of the harbour master, other vessels may also be subject to this condition. This RCM prevents any danger to cable car passengers from contact between a ship and the pylon, the residual risk remaining now is to the passengers and crew of the ship, who might remain at some risk of the pylon falling onto the ship.

- VHF Reporting along the following lines:
  - VTS obtains and monitor ETA reports, commencing 24hours in advance with confirmatory ETAs at key points, for example the Thames Barrier or Victoria Deep Wharf, in time to enable the cable car to amend or stop its operations.
  - Direct VHF communication between the cable car operators and the ship adds risk, due to inexperience/lack of VHF practice of the cable car operators and, importantly, takes control away from the PLA. If TBNC conduct the VHF function, they have wider knowledge of the current traffic situation, and may plan and interact with the vessel well in advance to ensure a safe transit. Liaison with the cable car operators is likely to be more controlled, leaving the Pilot/Master free to attend to navigational/Thames Barrier transit matters. Additionally TBNC has full visual overview of the cable car area itself and the PLA retains control.
- Vessels requiring a tug under the Ship Towing Code, and those with handling characteristics that in the Pilot's or Harbourmaster's opinion demand it, are required to have an escort tug when passing the Cable Car.
- Associated Costs – CHM to discuss the policy question of where the additional cost of escort towing (where necessary) lies, with CE.
- Vessels required to take a tug under the Ship Towing Code, and those with handling characteristics that in the Pilot's or Harbourmaster's opinion demand it, are additionally required to undertake one way transit with the Harbour Service present.

#### Air Draft Issues

Noting that a clearance of 58.05 metres above ordnance datum is equivalent to 54.1m above MHWS at Blackwall Point, NMT was concerned that occasional visits by ships with especially high air drafts such as MALTESE FALCON (Air draft of 59 metres with burgee masts removed and draft 6.0 metres) could no longer be accommodated; these ships are able to pass under the QE2 Bridge by careful balancing of the height of tide against air draft and draft. The NAP agreed:

- Provided the removal of the gondolas or cable cars actually achieves an additional 4 metre on the air draft stated by TfL then occasional visitors such as the MALTESE FALCON could be accommodated
- Once constructed, the catenary heights should be physically measured and its geometry known precisely in order to know the actual maximum tolerances.
- The depth profile along a swathe, following the course of the cable should be accurately depicted and juxtaposed with the actual cable catenary geometry, in order to see where the maximum depth and air draft

tolerances were located and identify the definitive navigational envelope.

#### Emergency Procedures

NAP agreed that details of potential cable car emergencies must be known in order that emergency response and recovery actions to both cable car and vessel emergency situations could be worked up that would not prejudice navigational safety; currently detail of potential cable car emergency situations is inadequate.

#### Construction

The NAP considered the Preliminary Construction Methodology, dated October 2010 at Revision 0:

- The paper above did explain the method, but did not detail measurements, timings or locations with sufficient precision.
- It appears that the pylon construction and erection could be accommodated with RCMs such as traffic control.
- More precise detail is necessary to establish the impact on the Victoria Dock Upper Barge Road mooring of the construction of the Northern Pylon.
- The NAP was concerned that the method of running the cable across the river appeared very short on detail and the statement ‘... river closure will be required to allow this operation ...’ is somewhat glib, what is the duration of the river closure, can the operation be staged with river open and river closed periods, etc? Very much more detail here is necessary.

#### NAP 38 Verdict

- The ‘big question’ items 1 and 2 of the Terms of Reference (ToR) concerning the Side-Impact-Protection and Air were fully considered by the NAP and subject to the issues above being addressed satisfactorily, the risk to the cable car proposal from contact with a large ship is at ALARP.
- Items 3 – 6 inclusive of the ToRs were fully discussed and in principle only the NAP concluded that subject to the issues above being addressed satisfactorily and the provision of more detail:
  - Occasional visits from high air draft vessels such as the MALTESE FALCON were feasible.
  - Cable car emergencies procedures should be worked up in close consultation with the PLA to identify potential methodologies and to ensure that navigational safety is not compromised.
  - Much more detail of the construction phase is required before full consent may be granted.
- More detail is necessary to answer fully ToR items 5 and 6, although much of what is necessary is described above.
- ROM costs (Item 7) will be addressed separately.

Recommendation

NMT is asked to note progress on this project to date and to endorse the NAP's conclusions and actions.

Panel Chairman:

David Snelson

Signature:

Date:

4 Jan 2011