

Report to:	SHAREHOLDER COMMITTEE
Relevant Officer:	John Blackledge, Director of Community and Environmental Service and Steve Thompson, Director of Resources,
Relevant Company Representatives:	Jane Cole, Managing Director and James Carney, Finance and Commercial Director, Blackpool Transport Services
Relevant Cabinet Member:	Councillor Ivan Taylor, Deputy Leader and Cabinet Member for Partnerships and Performance
Date of Meeting:	11 February 2022

TRAM COLLISION AND OVERSPEED MONITORING AND PREVENTION ASSISTANCE SYSTEM (COMPAS)

1.0 Purpose of the report:

1.1 To consider whether to purchase the Bombardier Overspeed and Collision Avoidance system for the Bombardier trams operating on Blackpool’s tramway.

2.0 Recommendation(s):

2.1 To approve that the Bombardier Overspeed and Collision Avoidance system is provided on the Bombardier trams, which meets the Rail Accident Investigation Board (RAIB) Recommendation 3 of the Croydon report and future proofs the operation as the collision avoidance is included.

3.0 Reasons for recommendation(s):

3.1 To comply with the RAIB recommendation 3 of the Croyden report in terms of overspeed management and also future proof the operation with the inclusion of the collision avoidance system.

3.2 Is the recommendation contrary to a plan or strategy adopted or approved by the Council? No

3.3 Is the recommendation in accordance with the Council’s approved budget? Yes

4.0 Other alternative options to be considered:

4.1 Other options have been considered, however the report highlights the importance of using the system Bombardier have developed for the Bombardier Flexity trams.

5.0 Council priority:

5.1 The relevant Council priority is

- The economy: Maximising growth and opportunity across Blackpool
- Communities: Creating stronger communities and increasing resilience.

6.0 Background information

6.1 Following the overturning of a tram on the Croydon network on 9 November 2016 the RAIB issued a report with a number of recommendations for all tram networks. Recommendation 3 states "UK tram operators, owners and infrastructure managers should work together to review, develop, and provide a programme for installing suitable measures to automatically reduce tram speeds if they approach higher risk locations at speeds which could result in derailment or overturning".

6.2 Bombardier have developed their Collision and Overspeed Monitoring and Prevention Assistance System (COMPAS) which would meet recommendation 3. The COMPAS system has been installed on a Blackpool Tram for over two years with information being collected by Bombardier and modifications made to the system. A successful live test of the system was conducted with the Office of Road and Rail (ORR) in attendance.

6.3 Overspeed

6.3.1 The overspeed system works by geofencing areas of the tramway into speed areas. The tram using GPS as well as wheel turn data to know exactly where it is. If a tram approached a geofenced area at a speed in excess of the posted speed, or increases speed within a geofenced area, an alarm would sound in the cab alerting the driver. If the driver does not take the appropriate action to slow the tram the system will brake and the tram will stop. The upper speed limits and the time from alarm to brake can all be adjusted to best suit the needs of our network.

6.4 Collision Avoidance

6.4.1 In addition to the overspeed system the COMPAS system will detect objects that are in the path of the tram or moving in such a manner that they will come into the path of the tram. The system uses three cameras mounted on the top of the windscreen to monitor the route in front of the tram. The system will detect the speed and direction of any moving object and will calculate if it will cause a collision. As with the overspeed the tram will sound an alarm for the driver, if the driver does not take any action the tram will brake to ensure a collision does not occur.

6.4.2 The Bombardier system is different from other systems in that it includes for collision avoidance as highlighted above at 1.4, which works in the same way as the overspeed protection. Again, if a person, cyclist or vehicle encroaches into the path of the vehicle, the

driver will get a warning and if he fails to react, the system will brake the vehicle. However, the system is also monitoring moving objects outside of the track zone and which could move into the path or across the path of the vehicle. Although this was not one of the recommendations from the Croydon accident, it would future proof the system and according to the ORR will eventually be required to be introduced. As this is identified as a risk it would be sensible to obtain this system, which effectively provides for overspeed and collision avoidance.

- 6.4.3 In terms of safety the provision of both systems would see Blackpool leading the industry and good practice. These are Bombardier trams, with successful trials of their system, which as highlighted above are different to others and therefore making sense to provide these to our trams, which in addition means avoiding any complexities or issues in relation to warranties.
- 6.4.4 Bombardier is the manufacturer of the Flexity trams and the advantage of using their COMPASS and collision avoidance systems is that the detection and warning systems will be compatible with the trams' software that oversees and executes the braking system. This will mean that the force applied to the brakes will be proportionate to the urgency of the detected hazard.
- 6.4.5 The manufacturer's warranties require that approval be gained for systems that are added to the tram that affect its performance. Procuring these safety systems from Bombardier will mean that this approval will be granted automatically.
- 6.4.6 The quote that BTS have received from Bombardier is £816K. In terms of placing an order, £163k would need to be paid within the current financial year, which can be found from within the existing tramway scheme with two 30% payments in 2023/24 (£490k) and the final payment in 2024/25 which is £163k.

6.5 Does the information submitted include any exempt information? No

7.0 List of Appendices:

7.1 None.

8.0 Financial considerations:

8.1 The cost of the system is £816k; £163k required in 2021/22, £490k in 2023/24 and £163k in 2024/25.

9.0 Legal considerations:

9.1 Rail Accident Investigation Branch and Office for Rail and Road Rail are investigating a fatal accident with a pedestrian. Taking the decision to install overspeed and collision avoidance

systems before their reports are drafted and published will show that the council and company give the highest priority to public safety.

10.0 Risk management considerations:

10.1 Blackpool's trams operate in a number of shared space areas with buses and road users. These spaces are often crowd in summer and the Illuminations when light levels are lower. During these periods there is a significant risk of collisions, which we attempt to mitigate by increased stewarding and operating a low speeds.

Outside of the areas that we steward, there have been two serious collisions with members of the public within 26 months that could have been either avoided or mitigated if a collision avoidance system had been fitted to the vehicle. Tram safety currently relies on a driver's reactions to hazards that within their 'line of sight' so if there is a misjudgement or distraction then collisions are possible. The company's motor insurance policy has an excess of £100,000 per claim and there is pressure from the underwriter to raise this to improve the accounts financial return.

11.0 Equalities considerations:

11.1 Creating a safer tramway for all.

12.0 Sustainability, climate change and environmental considerations:

12.1 The system future proofs the tram operation.

13.0 Internal/external consultation undertaken:

13.1 Rail Accident Investigation Board and Office of Road and Rail.

14.0 Background papers:

14.1 None.

15.0 Key decision information:

15.1 Is this a key decision? Yes

15.2 If so, Forward Plan reference number: 1/2022

15.3 If a key decision, is the decision required in less than five days? No

15.4 If **yes**, please describe the reason for urgency: N/A

16.0 Call-in information:

16.1 Are there any grounds for urgency, which would cause this decision to be exempt from the call-in process?

No

16.2 If **yes**, please give reason: N/A