

Associated Professional Ergonomists

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**AN ERGONOMICS AND OHS
COMPARISON OF
THE ALTERNATIVE
MODES OF DELIVERY
FOR SEPARATE BUNDLE
DELIVERY**

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AN ERGONOMICS AND OHS COMPARISON OF THE ALTERNATIVE MODES OF DELIVERY FOR SEPARATE BUNDLE DELIVERY

This report compares the three alternative modes of delivery (as shown below) from ergonomics and OHS perspectives in order to provide guidance to the CEPU about these modes of delivery which is assumed AP intend employing on mail rounds using the SBD method of delivery.

The three modes are referenced to the current Honda 110 motorcycle which was used in the SBD trials and was the subject of the report *Reviewing the OHS consequences of Motorcycle Separate Bundle Delivery* (2010).

AMB & E-AMB

E-TRIKE

ALL TERRAIN
BUGGY

PT200
WALK BUGGY

MOTORCYCLE



Three documents are appended as attachments. They are:

Attachment 1: Comparing the ergonomics and OHS factors of each of the modes of delivery.

Attachment 2: The modes of delivery against the National Code of Practice (manual tasks).

Attachment 3: The modes of delivery against the summary in the motorcycle/SBD review (report).

Some of the judgements and comments in the attachments are necessarily conditional as apart from the motorcycles, which we have been examined in detail, we had only limited information about the alternative modes of delivery. The E-trike was sighted in Queensland but was not examined due to pressure of time. The buggies have not been sighted by us at all. However this has not prevented us from offering comments on the basis of the type of conveyance being considered, and while some of the comments may be more general in nature (and may be subject to revision if the actual delivery mode can be observed) we assert that they are appropriate at least for the general type of conveyance under discussion.

CONCLUSIONS ARISING FROM THE COMPARISONS

On the basis of the comparisons of the three alternative modes of delivery (referenced against the motorcycle), the following tentative conclusions can be drawn.

1. The motorcycle has already been identified (in the report on the SBD trials) as presenting numerous manual handling and other hazards when used for the Separate Bundle Delivery method. Additionally, the motorcycle has a poor safety record, particularly on the road, as indicated in a report by MUARC (2008).

2. The bicycle, whether powered or pedal-assisted, is a little more flexible than the motorcycle but has many of the same manual handling hazards when using the FLC and when getting new bundles of mail from the panniers. As with the motorcycle, there are reaching and twisting problems when getting and handling the bundles from the panniers, and when reaching forward to get bundles from the large front basket which could be as hazardous as reaching back to the panniers.

Being able to support the bicycle while stationary is a potential problem. Even though the rider can dismount and stand straddling the cross bar, the extra time and effort involved makes this action unlikely as a regularly applied risk control. Consequently, acute and chronic leg and hip strains or injuries can be expected as a result of PDOs extending their left leg to the ground every time they stop, as well as the sustained leaning that will inevitably occur. This point was noted in the report by Latrobe University.

The bicycle will also be hazardous on the road in mixed traffic and although the exposure may be less than for a motorcycle due to the shorter distances ridden, the level of risk may in fact be greater. We do not have any accident data from AP in respect of PDOs using bicycles for delivery work, but cyclists are a known at-risk group amongst road users so this will apply as much to PDOs on bicycles as any other cyclist on the road.
3. The E-trike provides little in the way of advantages for safe manual handling over either the motorcycle or the bicycle and tends to have many of the same problems as each of the other two. One problem will be its width which will restrict easy access to letterboxes, and its stability on steeply sloping surfaces. The example shown in the picture (above) has a very low sitting position which would make pedalling biomechanically inefficient and thus arduous and fatiguing, as well as being uncomfortable. While this may not be the intended riding position for the E-trike, it is clear that the seat tube is quite short and there will only be limited height adjustment. A low sitting position would make the use of the FLC even worse than with the motorcycle.

It is assumed that the bundles in the plastic bin at the rear of the trike will not practicably be accessible from the seat and the PDO will have to dismount and walk around to get bundles. This will lessen the risk of this part of the delivery process although it will necessarily add time to the round.

On the road the E-trike is likely to present similar level of hazard to PDOs as does the bicycle.
4. The buggies potentially present fewer manual handling hazards than the other three types of conveyance as the PDO is not constrained by being seated, although PDOs will be doing more bending during posting as most letterboxes are low. Working standing has considerable benefits, the greatest of which is the freedom to position the body in the easiest and least hazardous work postures.

Walking is potentially good exercise providing the PDOs do not have hip, knee or ankle weaknesses. But being constantly on the feet will be fatiguing and opportunities for rest and relief stops where PDOs can sit will be vital to the management of fatigue due to sustained standing.

The designs of the two buggies being considered by AP are difficult to assess without closer inspection, but we have concerns about the manner of carrying the mail and the presentation of the SBD carriers to the PDO. The illustrations of the buggies suggest that they may have been cobbled together as there is an ad hoc look about them.

CONCLUSIONS

In summary, we are not very enthusiastic about any of these modes and particularly in the form they presently take. Our conclusions about the alternative delivery modes are these:

- The motorcycle has already been judged to be deficient in many important respects and is known to be hazardous in the workplace. Its continued use for this work should be accompanied by a thorough re-evaluation of the machine and its layout.
- We cannot offer a recommendation about whether one or other of the three alternative modes of delivery is acceptable at this stage because of a lack of information about them. We can only offer the view that the buggies appear to be less contentious than the other modes simply because they are relatively simple, are pushed along by walking PDOs, and offer some useful potential advantages in respect of the manual handling of mail. But there are many questions about the design and use of the offered examples that remain unanswered at the moment.
- We do not believe that any of the modes of delivery (including the motorcycle) are sufficiently well developed to be fully acceptable in the workplace. Our overriding impression of all of all of the modes is that they are partial adaptations of equipment that may or may not have application in mail delivery, and they all require further development work in order for them to be considered high quality design. We are not confident that AP has engaged in a thorough and exhaustive evaluation process when initially selecting them as potential items of equipment, nor are we confident about any subsequent work to develop them to be acceptable equipment for use in an Australian workplace.
- Additional to our concerns about the equipment, we have serious concerns about the design and management of the system of work for SBD which, from our observations of the SBD trials we have reported to be deficient in important respects. AP have only given their attention to equipment design (and even then not very well) but a poor and/or unsafe system of work will always negate any benefits that might otherwise have accrued from good equipment.

Attachments:

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