

Part 8 of the Traffic Control Devices Manual (TCD Manual)

Code of Practice for Temporary Traffic Management (CoPTTM)

(CoPTTM) - (SP/M/010)

Fourth Edition – Technical Note: Revised requirements for high visibility garments

Prepared By:	Stuart Fraser for National Traffic and Safety Manager
Date of Issue:	27 September 2017

Circulation	Regional Operations Managers, holders of the Code of Practice for Temporary Traffic Management and NZTA website. Please forward to your consultants and contractors.
Objective	To update the February 2017 version of the Fourth Edition of the CoPTTM.
Effective Date	<p>In order to provide manufacturers and suppliers sufficient time to incorporate design changes, effective immediately and for a period until February 28th 2019, garments complying with CoPTTM Edition 4 2017 and this Technical Note will be adjudged equally compliant.</p> <p>From 1st March 2019, all garments manufactured must comply with the specifications in this Technical Note.</p>
Status	This document is a guideline for use by the roading industry, road controlling authorities, network utility operators and event holders.
Implications	Includes changes to the manufacturers specifications for high visibility garments.
Reminder for all holders	<p>It is important to keep holders of our documents up to date. Holders can update by copying the relevant sections from the NZTA website:</p> <p>www.nzta.govt.nz/copttm</p>
Additional copies	These may be downloaded from NZTA's website, free of charge or purchased direct from our distributor either via the website, or directly to NZ Print, PO Box 2491, Wellington, 6140.

Key to changes	Additional text	Highlighted in yellow
	Deleted text	Red strike through
	Comments about the change	<i>Italic text</i>


Reference in 4 th Edition	Current CoPTTM Section B3	Change	Reason
THROUGHOUT Section B3	On label Garment compliance for the 4 th Edition 2017 has been confirmed using TTMC-W	On label Garment compliance for the 4 th Edition 2017 should become TTMC-W17	<i>This change is significant enough to warrant recognition of the change by adding the 17 to make W17.</i>
B3.1.2 Retro-reflectivity <i>1st paragraph</i>	The retro-reflective material must comply with the specification for Class 'R' material as noted in Section 3 and Table 3.2 of AS/NZS1906.4:2010.	The All retro-reflective material must comply with the specification for Class 'R' material as noted in Section 3 and Table 3.2 of AS/NZS1906.4:2010.	<i>Test laboratory technicians request change from 'The' to 'All' to add weight and to be consistent.</i>
B3.2 Logos <i>1st paragraph</i>	Garments must not display any lettering, symbols or logos on any compliant high visibility material except within an area located on the upper front left side of the garment.	Garments must not display any lettering, symbols or logos on any compliant high visibility material except within an area located on the wearer's upper front left side of the garment.	<i>Test laboratory technicians request this to avoid confusion between labs re the referred to side.</i>
Clause B3.2 Logos <i>4th paragraph</i>	Where required for related safety reasons a fabrics technical recognition I.D. may be added in an area not exceeding 30mm x 30mm (900mm ²) to the upper front right side of a garment.	Where required for related safety reasons a fabrics technical recognition I.D. may be added in an area not exceeding 30mm x 30mm (900mm ²) to the wearer's upper front right side of a garment.	<i>Test laboratory technicians request this to avoid confusion between labs regarding how to decide the referred to side.</i> <i>Positioning on the right separates this from the logo section and avoids it being adjoined to the logo.</i>
B3.3 Garment compliance <i>1st paragraph</i>	Garment compliance is based on the Australian and New Zealand Standard AS/NZS 4602.1:2011 <i>High visibility safety garments Part 1: Garments for high risk applications</i> and the additional subsections that follow herein. Because all background high visibility material must comply with the wet test, as specified in subsection B3.1.1	Garment compliance is based on the Australian and New Zealand Standard AS/NZS 4602.1:2011 <i>High visibility safety garments Part 1: Garments for high risk applications</i> including Amendment 1:2016 and the additional subsections and Figures that follow herein. Because all All background high visibility material must comply with the wet test, as	<i>This confirms that this Technical Note includes Amendment 1:2016.</i>


Reference in 4 th Edition	Current CoPTTM Section B3	Change	Reason
	<p>Colour, new compliance letters 'TTMC-W' of a practicable size must be included on the garment label to confirm that the garment meets the requirements and is compliant with section B3.</p> <p>Note: Refer also to subsection B3.4.7 Exemption for extra small size garments.</p>	<p>specified in subsection B3.1.1 Colour, new compliance letters 'TTMC-W' of a practicable size must be included on the garment label to confirm that the garment meets the requirements and is compliant with section B3. Note: Refer also to subsection B3.4.7 Exemption for extra small size garments.</p> <p>In order to confirm compliance with Section B3 including this Technical Note new compliance letters 'TTMC-W17' of a practicable size must be included on the garment label.</p> <p>Note:</p> <ol style="list-style-type: none"> Refer also to subsection B3.4.7 Exemption for extra small size garments. Hereafter, mention of the AS/NZS 4602.1 Standard or Amendments refers to both the Standard plus amendments. 	
<p>B3.3 Garment Compliance</p> <p><i>2nd paragraph</i></p>	<p>All retro-reflective material applied to garments, including extra small size garments complying with subsection B3.4 Garment design must be in strips no less than 50mm wide. Hoops must completely encircle the torso with no breaks except for the permitted front opening. Braces or the rear cross configuration must meet at the top of the shoulder and at the hoops.</p>	<p>All retro-reflective material applied to garments, including extra small size garments complying with subsection B3.4 Garment design must be in strips no less than 50mm wide. Hoops must completely encircle the torso with no breaks except for the permitted front opening. With the exception of the Overall garment (refer to subsection B3.4.4 Overall garment) hoops must completely encircle the torso with no breaks except for the permitted front opening. The 'waist' hoop for the overall garment may include additional breaks no greater than 50mm at each side to enable pocket openings.</p> <p>Braces or the rear cross configuration must meet at</p>	<p><i>These two alterations are added to harmonise with the new specifications in the 4602.1 Amendment 1:2016.</i></p>

Reference in 4 th Edition	Current CoPTTM Section B3	Change	Reason
		the top of the shoulder and at the hoops. Vertical measurement for the positioning of the 'waist' hoop is now taken from the shoulder high point to harmonise with Amendment 1 (Refer to garment Figures).	
B3.3 Garment Compliance 3rd paragraph	Garment compliance must be achieved for a recognised small garment designed for a size 92-95cm body chest measurement. This design must remain consistent throughout the garment size range, grading increasing or decreasing proportionately with the design integrity of the compliant small size.	Garment compliance must be achieved for a garment recognised small garment designed for a size 92-95cm size designed to fit a 100-105cm body chest measurement. This design must remain consistent throughout the garment size range, grading increasing or decreasing proportionately with the design integrity of the compliant size. Hereafter, mention of the Test Size refers to the garment size designed to fit a body chest measurement 100-105cm.	<i>This is to harmonise with the sizing specified in the Amendment 1:2016.</i>
B3.4 Garment design	The Australian and New Zealand standard AS/NZS 4602.1:2011 has now been amended by Amendment 1:2016. This amendment has created a variation between CoPTTM and AS/NZS 4602.1. Only one measurement is involved and the implications of this amendment remain under discussion. We are hopeful of having a resolution by 1 May 2017. A CoPTTM Technical Note will be published in the CoPTTM section of the NZ Transport Agency website.	The Australian and New Zealand standard AS/NZS 4602.1:2011 has now been amended by Amendment 1:2016. This amendment has created a variation between CoPTTM and AS/NZS 4602.1. Only one measurement is involved and the implications of this amendment remain under discussion. We are hopeful of having a resolution by 1 May 2017. A CoPTTM Technical Note will be published in the CoPTTM section of the NZ Transport Agency website. The publication of Amendment 1:2016 to the Australian and New Zealand Standard AS/NZS 4602.1:2011 has required the addition of this technical note 7 to CoPTTM section B3 in order for CoPTTM to maintain harmony with the 4602.1:2011 Standard. In order to provide manufacturers and suppliers	<i>This gives manufacturer's sufficient time to phase out of current holdings, develop new compliant designs and change manufacturing specifications.</i>

Reference in 4 th Edition	Current CoPTTM Section B3	Change	Reason
		<p>sufficient time to incorporate design changes, effective immediately and for a period until February 28th 2019, garments complying with CoPTTM Edition 4 2017 and this Technical Note will be adjudged equally compliant.</p> <p>From 1st March 2019, all garments manufactured must comply with the specifications in this technical note.</p>	
B3.4.1.1 Sleeveless vest requirements <i>1st Paragraph</i>	The sleeveless vest design must comply with the Australian and New Zealand standard AS/NZS 4602.1:2011 and the following additional requirements:	The sleeveless vest design must comply with, based on the Australian and New Zealand Standard AS/NZS 4602.1:2011 and must include the following additional requirements:	To maintain consistency with B3.3 1st paragraph.
B3.4.1.1 Sleeveless vest requirements <i>1st bullet point</i>	<ul style="list-style-type: none"> when calculating the area of high visibility background material as specified in clause 6.4.2 in AS/NZS 4602.1:2011 the measurement rectangle shown in clause 6.4.5 and Appendix A may be extended below waist level to the bottom of the garment providing such extension for the small size does not exceed 680±5mm at the front 	<ul style="list-style-type: none"> when calculating the area of high visibility background material as specified in clause 6.4.2 in AS/NZS 4602.1:2011 Amendment 1:2016 the measurement rectangle shown in clause 6.4.5 Figure 1 and Appendix A Figure A1 may be extended below 'waist' level to the bottom of the garment providing such extension for the small size does not exceed 680±5mm at the front 100-105cm test size does not exceed 710mm at the front 	Harmonises with AS/NZS 4602.1 Amendment 1:2016 sizing and recognises that Clause 6.4.5 is deleted in Amendment 1:2016.
B3.4.1.1 Sleeveless vest requirements <i>5th bullet point</i>	<ul style="list-style-type: none"> the minimum qualifying area measurement of background high visibility material for the recognised small size vest not covered by retro-reflective material or printing must be: <ul style="list-style-type: none"> i. Front of garment 0.21m² ii. Rear of garment including the 150mm shirt tail 0.27m² 	<ul style="list-style-type: none"> the minimum qualifying area measurement of background high visibility material for the recognised small 100-105cm test size vest not covered by retro-reflective material or printing must be: <ul style="list-style-type: none"> i. Front of garment 0.21m² 0.24m² ii. Rear of garment including the 150mm shirt tail 0.27m² 0.3m² 	Approximately pro-rates high visibility area from the 92-95cm size to the larger 100-105cm size.

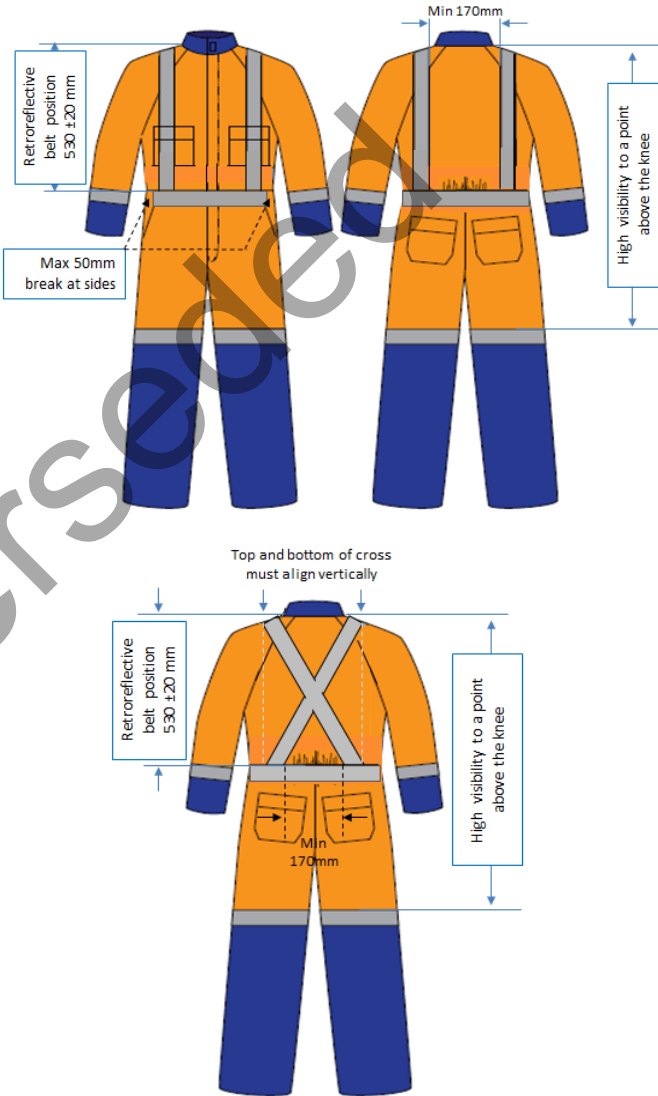
Reference in 4 th Edition	Current CoPTTM Section B3	Change	Reason
<p>B3.4.1.1 Sleeveless vest requirements <i>Figure 1</i></p>	<p><i>Previous Figure 1 referenced measurements relative to the smaller 92-95 “small size”.</i></p> <p><i>Delete in favour of the amended Figure shown.</i></p>		<p><i>New Figure 1</i></p> <p><i>Amends the positioning of the “waist” hoop or belt to a measurement from the high point of the shoulder to harmonise with Amendment 1.</i></p> <p><i>It also restates the maximum length at the front of the garment to recognise the change from the 92-95 size to the larger/longer 100-105 sizing.</i></p> <p><i>It tightens up the 25mm gap at the front to include the retroreflective hoop.</i></p>
<p><i>Also caption for Figure 1</i></p>	<p>Figure1: Sleeveless vest (small size)</p>	<p>Figure 1: Sleeveless vest (small size 100-105cm test size)</p>	
<p>B3.4.1.2</p>	<p>The effective date for the introduction of the cross</p>	<p>The effective date for the introduction of the cross</p>	<p><i>This introductory date</i></p>

Reference in 4 th Edition	Current CoPTTM Section B3	Change	Reason
5 th bullet point	configuration will be 1 October 2016.	configuration will be 1 October 2016.	has passed.
B3.4.2.1 STMS Sleeveless vest	<p>Previous Figure 1 referenced measurements relative to the smaller 92-95 “small size”.</p> <p>Delete in favour of the amended Figure shown.</p>	 <p>Figure 2A: STMS Sleeveless vest (small size 100-105cm test size)</p>	All the comments here are as for Figure 1.
Also Caption for Figure 2A	Figure 2A: STMS Sleeveless vest (small size)	Figure 2A: STMS Sleeveless vest (small size 100-105cm test size)	

Reference in 4 th Edition	Current CoPTTM Section B3	Change	Reason
B3.4.2.2 Optional MTC Garment Sleeve	<p><i>Previous Figure 1 referenced measurements relative to the smaller 92-95 “small size”.</i></p> <p><i>Delete in favour of the amended Figure shown.</i></p>		<i>All comments here are as for Figure 1.</i>
<i>Also caption for Figure 2B</i>	Figure 2B: Optional MTC sleeve for Stop/Go operator	Figure 2B: Optional MTC sleeve for Stop/Go operator (100-105cm test size)	
B3.4.3 Long-sleeve coat <i>2nd bullet point</i>	<ul style="list-style-type: none"> the minimum qualifying area measurement of background high visibility material for the recognised small size coat not covered by retro-reflective material or printing must be measured in the same way as the sleeveless vest specified in subsection B3.4.1 Sleeveless vest except that the measurement rectangle must extend a minimum of 830mm at the front and back. Sleeves are not included in this area 	<ul style="list-style-type: none"> the minimum qualifying area measurement of background high visibility material for the recognised small 100-105cm test size coat not covered by retro-reflective material or printing must be measured in the same way as the sleeveless vest specified in subsection B3.4.1 Sleeveless vest except that the measurement rectangle must extend a minimum of 830mm at the front and back. Sleeves are not included in this area 	<i>Recognises new size and maximum length change for larger size.</i>
B3.4.3 Long-sleeve coat <i>3rd bullet point</i>	<ul style="list-style-type: none"> the area of background material must be determined as follows: <ul style="list-style-type: none"> i. Front of garment 0.3m² 	<ul style="list-style-type: none"> the area of background material must be determined as follows: <ul style="list-style-type: none"> i. Front of garment 0.3m² 0.35m² 	<i>Approximately pro-rates high visibility area from the 92-95cm size to the larger 100-105cm size.</i>

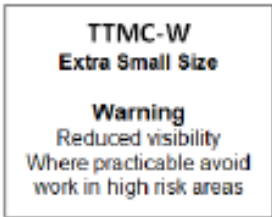
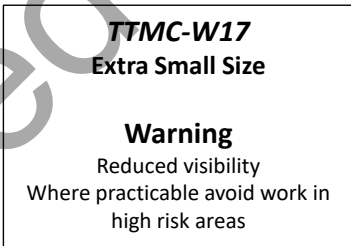
Reference in 4 th Edition	Current CoPTTM Section B3	Change	Reason
	ii. Rear of garment 0.3m ²	ii. Rear of garment 0.3m² 0.35m ²	
B3.4.3 Long-sleeve coat <i>NEW bullet point</i> <i>Bullet point 11</i>	New final bullet point to recognise use of black eyelets in place of a full underarm gusset approved via AS/NZS 4602.1:2011. <i>It is very difficult to find coloured eyelets.</i>	<ul style="list-style-type: none"> The long sleeve coat which may incorporate an underarm gusset as described in AS/NZS 4602.1:2011 may alternatively form a gusset using up to three 10mm (max) eyelets per sleeve to provide underarm ventilation for garments designed for wet weather. Gusset fabric need not be a compliant fabric but must be same colour as the garment. Eyelets should preferably match the colour of the garment. 	<i>The underarm gusset described in Clause 6.4.4 AS/NZS 4602.1:2011 is unsuitable for wet weather garments hence use of gussets. Gussets typically limited in colour to black, bronze and white, hence the “preferably” colour matched.</i>
B3.4.3 Long sleeve coat. <i>Figure 3</i>	<i>Previous Figure 1 referenced measurements relative to the smaller 92-95 “small size”.</i> <i>Delete in favour of the NEW amended Figure shown.</i>		<i>All comments here are as for Figure 1.</i>

Reference in 4 th Edition	Current CoPTTM Section B3	Change	Reason
<i>Also caption for Figure 3</i>	Figure 3: Long sleeve coat (small size)	Figure 3: Long sleeve coat (small size 100-105cm test size)	
B3.4.4 Overall garment <i>2nd bullet point</i>	<ul style="list-style-type: none"> the minimum qualifying area measurement of background high visibility material for the recognised small size garment not covered by retro-reflective material or printing must be measured in the same way as the sleeveless vest specified in subsection B3.4.1 Sleeveless vest except that the measurement rectangle must be extended to a point on the leg above the knee. Sleeves are not included in this area 	<ul style="list-style-type: none"> the minimum qualifying area measurement of background high visibility material for the recognised small 100-105cm test size garment not covered by retro-reflective material or printing must be measured in the same way as the sleeveless vest specified in subsection B3.4.1 Sleeveless vest except that the measurement rectangle must be extended to a point on the leg above the knee. Sleeves are not included in this area 	<i>This change recognises the larger test size.</i>
B3.4.4 Overall garment <i>3rd bullet point</i>	<ul style="list-style-type: none"> the minimum area of background material must be determined as follows: <ol style="list-style-type: none"> Front of garment 0.3m² Rear of garment 0.3m² 	<ul style="list-style-type: none"> the minimum area of background material must be determined as follows: <ol style="list-style-type: none"> Front of garment 0.3m² 0.35m² Rear of garment 0.3m² 0.35m² 	<i>Approximately pro-rates high visibility area from the 92-95cm size to the larger 100-105cm size.</i>
B3.4.4 Overall garment <i>5th bullet point</i>	<ul style="list-style-type: none"> compliant retro-reflective material on the torso must be positioned to comply with the pattern in Figure 4 	<ul style="list-style-type: none"> compliant retro-reflective material on the torso must be positioned to comply with the pattern in Figure 4. <p>Note: A break in the 'waist' hoop of no more than 50mm on each side is permitted. (refer subsection B3.3 Garment compliance)</p>	<i>Draws attention to this option.</i>

Reference in 4 th Edition	Current CoPTTM Section B3	Change	Reason
<p>B3.4.4 Overall garment</p> <p>Figure 4</p>	<p>Figure set not posted.</p> <p>Previous Figure 1 referenced measurements relative to the smaller 92-95 “small size”.</p> <p>Delete in favour of the amended Figure shown.</p>	 <p>The diagrams show two views of an orange high-visibility overall garment with blue lower legs. The front view (top) includes callouts for: 'Retroreflective belt position 530 ±20 mm', 'Max 50mm break at sides', and 'High visibility to a point above the knee'. The back view (top) includes a callout for 'Min 170mm' across the shoulders. The bottom view shows the back of the garment with callouts for: 'Top and bottom of cross must align vertically', 'Retroreflective belt position 530 ±20 mm', 'High visibility to a point above the knee', and 'Min 170mm' across the lower back.</p>	<p>All comments here are as for Figure 1.</p>
Also caption for	Figure 4: Overall garment (size small)	Figure 4: Overall garment (size small 100-105cm test)	

Reference in 4 th Edition	Current CoPTTM Section B3	Change	Reason
Figure 4		size).	
B3.4.5 Miscellaneous garment 1 st bullet point	<ul style="list-style-type: none"> the minimum qualifying area measurement of background high visibility material for the recognised small size garment not covered by retro-reflective material or printing must be: <ol style="list-style-type: none"> Front of garment 0.21m² Rear of garment including the 150mm shirt tail is 0.24m² <p>Note: Sleeves are not included in this area</p> 	<ul style="list-style-type: none"> the minimum qualifying area measurement of background high visibility material for the recognised small 100-105cm test size garment not covered by retro-reflective material or printing must be: <ol style="list-style-type: none"> Front of garment 0.21m² 0.24m² Rear of garment including the 150mm shirt tail is 0.24m² 0.3m² <p>Note: Sleeves are not included in this area</p> 	Approximately pro-rates high visibility area from the 92-95cm size to the larger 100-105cm size.
B3.4.5 Miscellaneous garment Figure 5	<p>Previous Figure 1 referenced measurements relative to the smaller 92-95 “small size”.</p> <p>Delete in favour of the amended Figure shown.</p>		All comments here are as for Figure 1.

Reference in 4 th Edition	Current CoPTTM Section B3	Change	Reason
<i>Also caption for Figure 5</i>	Figure 5: Miscellaneous garment size small Long Sleeve Polo	Figure 5: Miscellaneous garment size small Long Sleeved Polo (100-105cm test size).	
B3.4.6 Fire Service Garments <i>2nd paragraph</i>	Whilst carrying out routine maintenance operations such as hydrant testing for a local council high visibility garments must be TTMC-W compliant.	Whilst carrying out routine maintenance operations such as hydrant testing for a local council high visibility garments must be TTMC-W ¹⁷ compliant.	<i>Example of where the sewn in label will change.</i>
B3.4.6 Fire Service Garments <i>6th paragraph</i>	Fire Service personnel attending such emergencies within the roading network are exempted from wearing TTMC-W compliant high visibility vests in the following circumstances:	Fire Service personnel attending such emergencies within the roading network are exempted from wearing TTMC-W ¹⁷ compliant high visibility vests in the following circumstances:	<i>Example of where the sewn in label will change.</i>
B3.4.7 Exemption for extra small size garments <i>1st paragraph</i>	Dispensation for an extra small fitting garment will be permitted provided it meets the requirements of the compliant recognised small size garment with the following exceptions:	Dispensation for an extra small fitting garment will be permitted provided it meets the requirements of the compliant recognised small 100-105cm test size garment with the following exceptions:	<i>Amends to the correct sizing reference. NOTE: The extra small size remains as less than 92cm body chest measurement as before.</i>
B3.4.7 Exemption for extra small size garments <i>1st bullet point</i>	<ul style="list-style-type: none"> if on an extra small sized garment designed to fit a chest size of less than 92cm where it is not possible to accommodate the minimum specified area of high visibility background material, the garment must be deemed to comply provided the garment design grading decreases proportionately without affecting the design integrity of the compliant small size of the garment range 	<ul style="list-style-type: none"> if on an extra small sized garment designed to fit a chest size of less than 92cm where it is not possible to accommodate the minimum specified area of high visibility background material, the garment must be deemed to comply provided the garment design grading decreases proportionately without affecting the design integrity of the compliant small size of the garment range if any extra small garment in a compliant design range is unable to meet the minimum 0.21m² (front) and 0.24m² (rear) area of compliant high visibility background material the garment will be deemed to comply provided the design grading decreases proportionately 	<i>Re-edited to be in keeping with changed sizing.</i>

Reference in 4 th Edition	Current CoPTTM Section B3	Change	Reason
		without affecting the design integrity of the compliant 100-105cm test size of the garment range.	
B3.4.7 Exemption for extra small size garments <i>2nd bullet point</i>	<ul style="list-style-type: none"> such extra small size garment must maintain the same configuration of compliant retro-reflective material as specified for the recognised small size of the design. 	<ul style="list-style-type: none"> such extra small size garment must maintain the same configuration of compliant retro-reflective material as specified for the recognised small 100-105cm test size of the design. 	<i>Aligns with new test size.</i>
B3.4.7 Exemption for extra small size garments Figure 6			<i>Update reference for this label to TTMC-W17.</i>