

Junction Design Compliance – DMRB CD123 (Revision B)

Section/Paragraph	Standard	Priority Junction Design Compliance	Signal Controlled Junction Design Compliance
Chapter 1: Scope			
1.1	This document shall be used for the geometric design of at-grade priority junctions and signal-controlled junctions.	Accepted.	Accepted.
1.2	This document shall be used for the geometric design of the priority junction element of a compact grade separated junction.	Not relevant.	Not relevant.
1.3	This document shall be implemented forthwith on all schemes involving the geometric design of at-grade priority and/or signal controlled junctions on the Overseeing Organisations' all-purpose trunk roads according to the implementation requirements of GG 101 [Ref 6.N].	Accepted.	Accepted.
Chapter 2: Junction Selection			
2.1	Priority junctions shall not be used on motorways or all-purpose dual three lane carriageways.	Not relevant.	Not relevant.
2.1.1	Priority junctions should not be located on a sharp curve on a major road.	Not relevant.	Not relevant.
2.1.2	Priority junctions should only be located on level ground or where any approach that is on a downhill gradient does not exceed 2% over the applicable desirable minimum stopping sight distance	Accepted. Proposals seek to upgrade the recently constructed existing priority	Not relevant.

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	(SSD).	junction. The topography of the land appears to be of a flat or reasonable gradient.	
2.1.3	The number of priority junctions providing access to the all-purpose trunk roads should be minimised.	Not relevant.	Not relevant.
2.2	Priority junctions that do not form a through route shall not be provided on overtaking sections.	Not relevant.	Not relevant.
2.3	Simple priority junctions shall only be used on single carriageway roads without a climbing lane.	Not relevant.	Not relevant.
2.3.1	The selection of priority junction and major road central treatment for single carriageway roads should be determined based on the standard of major road and traffic flows on both the major and minor roads. Figure 2.3.1 illustrates approximate levels of provision for varying traffic flows.	As per the note below, traffic modelling has been completed to assess the capacity, therefore superseding the requirement to assess the junction against Figure 2.3.1. <i>NOTE: The 2-way AADT design year flows are used to determine the approximate</i>	As per the note below, traffic modelling has been completed to assess the capacity, therefore superseding the requirement to assess the junction against Figure 2.3.1. <i>NOTE: The 2-way AADT</i>

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		<i>level of junction provision prior to more detailed traffic modelling to check capacity</i>	<i>design year flows are used to determine the approximate level of junction provision prior to more detailed traffic modelling to check capacity</i>
2.4	New priority junctions shall not be sited where they encroach on the visibility requirements of adjacent priority junctions on major roads with: 1) a speed limit of greater than 40 mph; or 2) a speed limit of 40 mph or less, where the minor road forms part of a through route.	Not relevant.	Not relevant.
2.5	On WS2+1 roads, priority junctions shall only be; 1) located at changeovers; 2) located at WS2+1 to S2 interfaces; or 3) on the adjoining S2 road, at least 500 metres from the point where the road cross-section changes from a WS2+1 cross section.	Not relevant.	Not relevant.
2.6	Priority junctions on WS2+1 roads shall include either; 1) a ghost island central treatment; or 2) a physical central reserve to prevent right turn movements.	Not relevant.	Not relevant.
2.7	Left-in/left-out priority junctions shall only be provided on WS2+1	Not relevant.	Not relevant.

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	roads where they are included as part of a compact grade separated junction, with a physical central reserve instead of the middle lane.		
2.8	Where there is a physical central reserve on WS2+1 carriageways, u turns shall be prohibited at both ends of the central island.	Not relevant.	Not relevant.
2.9	An additional fourth lane for right turning vehicles shall not be provided on WS2+1 roads.	Not relevant.	Not relevant.
2.10	At priority junctions on dual carriageways, where right turns in and/or out of the minor road are to be accommodated, the central reserve shall be widened to provide waiting space for vehicles turning right (as illustrated in Figure 2.10).	Not relevant.	Not relevant.
2.10.1	Priority junctions should not be provided on rural dual carriageway roads where the minor road flows exceed 3,000 vehicles AADT 2-way.	Not relevant.	Not relevant.
2.11	Priority junctions shall be located a minimum of 1 km in both directions from the end of the central reserve where the carriageway changes from a single carriageway to dual carriageway.	Not relevant.	Not relevant.
2.12	Priority junctions shall include a major road central treatment	Accepted and provided.	Accepted and provided.

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	when the minor road flow exceeds 300 vehicles 2-way annual average daily traffic (AADT), or the major road flow exceeds 13,000 vehicles 2-way AADT.		
2.13	Ghost islands shall not be used where overtaking opportunities on adjacent links are restricted.	Not relevant.	Not relevant.
2.13.1	On new single carriageways where overtaking opportunity is limited, ghost island junctions should be sited on non-overtaking sections.	Not relevant.	Not relevant.
2.14	Ghost islands shall only be used where major road traffic flows allow traffic turning right out of the minor road to do so in one manoeuvre.	Not relevant.	Not relevant.
2.14.1	On urban roads with a speed limit of 30mph or less, where a ghost island cannot be accommodated, a passing bay as illustrated in Figure 2.14.1 may be used.	Not relevant.	Not relevant.
2.15	SLD shall not be used within 3 km of the tip of taper to a dual carriageway.	Accepted.	Not relevant.
2.16	SLD shall not be used on WS2+1 or where there is a climbing lane in one direction through the junction.	Accepted.	Not relevant.
2.17	SLD layouts shall only be used on roads with hard strips.	Accepted.	Not relevant.

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2.18	SLD shall be formed by widening the major road to provide a central reservation that includes waiting space for vehicles turning right.	Accepted and provided.	Not relevant.
2.18.1	SLD should be used in preference to ghost islands where overtaking opportunities on adjacent links are restricted, and/or where traffic turning right out of the minor road would need to make this manoeuvre in two stages.	Accepted and provided.	Not relevant.
2.18.2	On new single carriageways where overtaking opportunity is limited, SLD junctions should be sited on non-overtaking sections.	Accepted.	Not relevant.
2.19	Where right turns in or out of a minor road at SLD junctions are restricted by traffic islands, u turns shall be prohibited at both ends of the central island.	Accepted.	Not relevant.
2.19.1	Right turning movements out of the minor road at SLD and dual carriageway junctions should be restricted by traffic islands where these movements can be accommodated at a subsequent junction, such as a roundabout.	Accepted.	Not relevant.
2.20	Where the centre line of a minor road, when extended across the major road, fits within an opposite priority junction carriageway (as illustrated on Figure 2.20) the junction shall be designed as a	Not relevant.	Not relevant.

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	crossroads and not a staggered junction.		
2.21	Crossroads shall only comprise two opposing simple priority junctions.	Not relevant.	Not relevant.
2.22	The stagger distance of a junction shall be measured as the distance along the major road between the centre lines of the two minor roads.	Not relevant.	Not relevant.
2.22.1	Where staggered junctions are provided they should be right/left staggers (where minor road traffic crossing the major road first turns right, proceeds along the major road and then turns left).	Not relevant.	Not relevant.
2.23	The minimum right/left stagger distance shall be: 1) 50 m for a priority junction with no central treatment; 2) 50 m for a ghost island junction; 3) 40 m for a SLD junction; and 4) 60 m for a dual carriageway junction.	Not relevant.	Not relevant.
2.24	The minimum left/right stagger distance for a priority junction with no central treatment shall be 50 metres.	Not relevant.	Not relevant.
2.25	The minimum left/right stagger distance for a priority junction with central treatments shall be as given in Table 2.25.	Not relevant.	Not relevant.
2.26	Staggered junctions shall not be used on climbing lane sections.	Not relevant.	Not relevant.
2.27	Where the 85th percentile speed on the approach roads is greater	Not relevant.	Not relevant.

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	than or equal to 104 kph (65 mph), a signal-controlled junction shall not be provided.		
2.28	Direct accesses shall not be used on motorways, all-purpose dual three lane carriageways and on WS2+1 roads.	Not relevant.	Not relevant.
2.29	Direct accesses shall not be provided on overtaking sections.	Not relevant.	Not relevant.
2.29.1	Direct accesses should be avoided where possible.	Not relevant.	Not relevant.
2.29.2	Direct accesses on single carriageway roads should not be positioned facing each other.	Not relevant.	Not relevant.
2.30	On dual carriageways, gaps in the central reserve to accommodate right turns in and out of a direct access shall not be provided.	Not relevant.	Not relevant.
2.31	Direct accesses shall not be provided at locations where the major road gradient is greater than 4%.	Not relevant.	Not relevant.
Chapter 3: Visibility			
3.1	On a minor road approach to a priority junction, there shall be unobstructed visibility of the junction from a distance corresponding to the desirable minimum SSD for the design speed of the minor road, including the give way sign where present, as illustrated in Figure 3.1.	Accepted and provided.	Not relevant.
3.2	An approaching road user shall be able to clearly see the junction	Accepted and provided.	Accepted.

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	form, from a minimum distance of 15 metres back along the centreline of the minor road, measured from the continuation of the line of the nearside edge of the running carriageway of the major road (as illustrated in Figure 3.2a and 3.2b).		
3.3	Where a direct access crosses a footway, a visibility splay shall be provided in accordance with Figure 3.3.	Not relevant.	Not relevant.
3.4	Unobstructed visibility shall be provided at all priority junctions and direct accesses by a visibility splay formed between the following three points, as illustrated in Figure 3.4: 1) a point W corresponding to the intersection point between the minor road centreline and the major road edge of carriageway; 2) a point X setback along the minor road centreline measured from the continuation of the line of the nearside edge of the running carriageway of the major road; and 3) a point Y on the major road nearside edge of carriageway, corresponding to the desirable minimum SSD for the speed of the major road measured along the edge of the major road carriageway from point W.	Accepted and provided.	Not relevant.
3.5	The speed of the major road for determining point Y in the visibility splay shall be based on: 1) design speed only for direct	Accepted.	Not relevant.

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	accesses and priority junctions on new major roads; 2) design speed only for priority junctions that form part of a through route on existing major roads; and 3) design speed or speed measurement for direct accesses and priority junctions that do not form part of a through route on existing major roads.		
3.6	A visibility splay to the right on the minor road shall be provided: 1) at all priority junctions and direct accesses where minor road traffic can join a 2-way major road; and 2) at all priority junctions and direct accesses where minor road traffic can turn left to join a 1-way major road.	Accepted and provided.	Not relevant.
3.6.1	Visibility splays to the right on the minor road should also be provided at priority junctions and direct access where minor road traffic can turn right to join a 1-way major road and there are contraflow provisions (e.g for cyclists).	Accepted.	Not relevant.
3.7	A visibility splay to the left on the minor road shall be provided: 1) at all priority junctions and direct accesses where minor road traffic join a 2-way single carriageway major road; 2) at all priority junctions and direct accesses where minor road traffic can turn right to join a 2-way dual carriageway road and the central reserve	Not relevant.	Not relevant.

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	gap is not wide enough to accommodate a waiting design vehicle; and 3) at priority junctions and direct accesses where minor road traffic can turn right to join a 1-way major road.		
3.7.1	Visibility splays to the left on a one way road should also be provided at priority junctions and direct access where minor road traffic can turn left to join a 1-way major road and there are contraflow provisions (e.g for cyclists).	Accepted.	Not relevant.
3.7.2	On a one-way major road, visibility splays may be provided in both directions for vehicles turning out of the minor road.	Not relevant.	Not relevant.
3.8	The minimum distances used to locate point X and therefore generating the visibility splay shall be: 1) 2 metres for direct accesses; 2) 2.4 metres for simple priority junctions; and 3) 4.5 metres for all other priority junctions.	Accepted. Visibility splays of 4.5m x 180m are provided from the proposed junction.	Not relevant.
3.8.1	The distances used to locate point X and therefore generating the visibility splay should be: 1) 4.5 metres for direct accesses; and 2) 9 metres for all priority junctions.	Accepted. Visibility splays of 9m x 180m are provided from the proposed junction.	Not relevant.
3.9	Where the line between points X and Y falls partially within the major road carriageway, an additional area shall be added to the visibility splay formed by drawing a line from X to a point	Accepted. A tangential visibility splay of 4.5m x 51m is provided to the south of the junction.	Not relevant.

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	tangential to the nearer edge of the major road running carriageway, as illustrated in Figure 3.9.		
3.10	Where a priority junction is located on the outside of a major road curve, an additional area shall be added to the visibility splay in the verge on the inside of the major road curve, formed by a line between the following two points, as illustrated in Figure 3.10: 1) a point X at a set back distance of 2.4m; and 2) a point V on the major road offside edge of running carriageway, corresponding to the desirable minimum SSD for the speed of the major road.	Not relevant.	Not relevant.
3.11	The desirable minimum SSD at all priority junctions shall not be available from an X distance greater than 9 metres.	Accepted.	Not relevant.
3.12	Unobstructed visibility shall be provided in the centre of the major road, on dual carriageway and SLD junctions where right turns are permitted, by a visibility splay formed between the following three points, as illustrated in Figure 3.12: 1) the intersection point between the centre of the opening and the offside edge of major road carriageway; 2) a point 2.4 metre setback along the centre of the opening measured from the continuation of the line of the offside edge of the running carriageway of the major road; and 3)	Accepted.	Not relevant.

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	a point Y on the major road offside edge of carriageway, corresponding to the desirable minimum SSD for the design speed of the major road measured from the 2.4 metre setback point.		
3.13	Visibility splays in the central reserve of dual carriageways or SLD shall be provided in the following circumstances: 1) visibility splay A, as illustrated in Figure 3.12, where right turn into the minor road is permitted/and/or; 2) visibility splay B, as illustrated in Figure 3.12, where right turn out of the minor road is permitted.	Accepted.	Not relevant.
Chapter 4: Geometric Design of Direct Accesses			
Not relevant.			
Chapter 5: Geometric Design of Priority Junctions			
5.1	The road camber on the major road shall be retained through the junction with the minor road graded into the channel line of the major road.	Accepted. Further clarity to be provided at Detailed Design stage.	Not relevant.
5.2	Allowance shall be made for the swept turning paths of the worst case design vehicle which is expected to use the priority junction, unless: 1) the design vehicle is expected to form only a very small percentage of the total number of vehicles that will use the junction; and 2) any swept path conflicts as a result of the design	Accepted. Swept path analysis has been provided at OP3 SPA Rev A issued on 20th April 2020 demonstrating that a maximum legal 16.5 metre articulated	Not relevant.

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	vehicle encroaching into other lanes will not occur on bends.	vehicle can safely and suitably manoeuvre the junction.	
5.3	For priority junctions, the gradient on the minor road approach shall not exceed 4% over a distance of at least 15 metres, measured from the edge of the major road carriageway.	Accepted. Further clarity to be provided at Detailed Design stage.	Not relevant.
5.3.1	For priority junctions, the gradient on the minor road approach should not exceed 2% over a distance of at least 15 metres, measured from the edge of the major road carriageway	Accepted. Further clarity to be provided at Detailed Design stage.	Not relevant.
5.4	At new priority junctions, the minimum approach angle of the minor road approach, measured over 15 metres from the edge of the major road carriageway, shall be 70 degrees.	Accepted and provided in accordance with Figure 6.3D.	Not relevant.
5.4.1	At new priority junctions, the minimum approach angle of the minor road approach, measured over 15 metres from the edge of the major road carriageway, should be 90 degrees.	Accepted and provided in accordance with Figure 6.3D.	Not relevant.
5.5	At all priority junctions, corner radii shall be provided where the edge of the carriageways or kerb lines of the major and minor roads intersect at each corner where turning movements need to be accommodated.	Accepted and provided.	Not relevant.
5.6	Corner radii shall be measured for simple priority junctions, and	Accepted and provided.	Not relevant.

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	priority junctions with merge/diverge tapers or auxiliary lanes in accordance with Figure 5.6.		
5.6.1	At simple priority junctions where no provision is to be made for the design vehicle, the minimum corner radii should be: 1) 6 metres in urban areas; and 2) 10 metres in rural areas.	Not relevant. Design vehicle considered.	Not relevant.
5.6.2	At simple priority junctions where provision is made for the design vehicle, the corner radii should be: 1) 10 metres in urban areas followed by a corner taper of 1:5 over a distance of 30 metres; 2) 15 metres in rural areas followed by a corner taper of 1:10 over a distance of 25 metres; and 3) 15 metres followed by a corner taper of 1:8 over a distance of 32 metres, when part of a staggered junction arrangement.	Accepted and provided as 15 metres followed by a corner taper of 1:10 over a distance of 25 metres.	Not relevant.
5.6.3	At ghost island junctions where no diverge or merge tapers are provided the corner radii should be 15 metres followed by a corner taper of 1:6 over a distance of 30 metres.	Not relevant.	Not relevant.
5.6.4	At ghost island junctions where a diverge taper is provided the corner radii should be: 1) 15 metres followed by a corner taper of 1:6 over a distance of 30 metres at the merge; 2) a minimum of 40 metres at the end of the diverge taper where the major road	Not relevant.	Not relevant.

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	design speed is greater than 85 kph; 3) a minimum of 20 metres at the end of the diverge taper where the major road design speed is 85 kph or less.		
5.6.5	At SLD, dual carriageway priority junctions, and where there is a mainline physical central island on a single carriageway road, the diverge corner radii should be: 1) 20 metres where no diverge taper/auxiliary lane is provided; or 2) a minimum of 40 metres at the end of the diverge taper where the major road design speed is greater than 85 kph; or 3) a minimum of 20 metres at the end of the diverge taper where the major road design speed is 85 kph or less.	Not relevant.	Not relevant.
5.6.6	At SLD, dual carriageway priority junctions, and where there is a mainline physical central island on a single carriageway road, the merge corner radii should be: 1) 20 metres where no merge taper/auxiliary lane is provided; or 2) 25 metres where the major road design speed is 85 kph and a merge taper is provided; or 3) 30 metres where the major road design speed is greater than 85 kph and a merge taper is provided.	Not relevant.	Not relevant.
5.7	Where a physical traffic island is provided on the minor road, the	Accepted and provided.	Not relevant.

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Section/Paragraph	Standard	Priority Junction Design Compliance	Signal Controlled Junction Design Compliance
	minor road approach lanes shall be 4.0 metres wide at the tip of the associated hatched marking.		
5.7.1	Where no physical traffic island is provided on the minor road, the existing minor road lane width should at least continue up until the start of the corner radius, or give way line if no corner radius is to be provided.	Not relevant.	Not relevant.
5.8	Where a physical traffic island is provided on a minor road, the width of the minor road approach lane adjacent to the island at its furthest point from the major road (as illustrated in Figure 5.8) shall be: 1) 4.0 metres at simple priority and ghost junctions where there is a single lane at the give way line; 2) 4.5 metres at SLD and dual carriageway junctions where there is a single lane at the give way line; and 3) 5.5 metres where the approach widens to two lanes at the give way line.	Accepted and provided.	Not relevant.
5.9	Where a physical traffic island is provided on a minor road, the width of the minor road exit lane adjacent to the island at its furthest point from the major road (as illustrated in Figure 5.8) shall be: 1) 4.0 metres at simple priority junctions; 2) 4.5 metres for ghost island junctions; and 3) 5.0 metres for SLD and dual	Accepted and provided at 4m.	Not relevant.

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Section/Paragraph	Standard	Priority Junction Design Compliance	Signal Controlled Junction Design Compliance
	carriageway junctions.		
5.10	For curves which have a radius of 90 metres or less, minimum lane widths shall be in accordance with Table 5.10.	Not relevant.	Not relevant.
5.11	For actual curve radii that fall between two curve radius values given in Table 5.10, the minimum lane width shall be interpolated.	Not relevant.	Not relevant.
5.12	On single lane sections greater than 50 metres in length, there shall be sufficient carriageway space to allow a broken down vehicle to be passed by other vehicles.	Not relevant.	Not relevant.
5.12.1	For curves which have a radius of 90 metres or less, hard strips that provide an additional 2.5 metres minimum of carriageway space should be added to the single lane carriageway widths given in column 2 of Table 5.10 to allow a broken down vehicle to be passed by other vehicles.	Not relevant.	Not relevant.
5.13	Physical traffic islands shall have an area of at least 4.5 square metres.	Accepted and provided.	Not relevant.
5.13.1	Traffic islands smaller than 4.5 square metres should be defined by road markings.	Not relevant.	Not relevant.
5.13.2	Physical traffic islands should include features to make them conspicuous, e.g traffic bollards and signage.	Accepted. Further clarity to be provided at Detailed Design	Not relevant.

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Section/Paragraph	Standard	Priority Junction Design Compliance	Signal Controlled Junction Design Compliance
		stage.	
5.13.3	Traffic islands on minor roads should be physical islands.	Accepted and provided.	Not relevant.
5.14	Physical traffic islands shall be used on the minor road where one or more turning movements are prohibited to prevent or deter such movements.	Accepted.	Not relevant.
5.15	Junctions that form part of a compact grade separated junction shall include physical islands to prevent right turn manoeuvres in to and out of the major road.	Not relevant.	Not relevant.
5.16	Traffic islands on the minor road shall be setback a minimum of 1 metre from the edge of running carriageway or in-line with the back of major road hard strip if the hard strip is equal to or greater than 1 metre wide.	Accepted and provided.	Not relevant.
5.17	Nearside diverging tapers and auxiliary lanes shall not be provided: 1) at simple junctions; 2) where the design speed of the major road is less than 85 kph; and 3) at all other priority junctions that are on the inside of curves.	Not relevant.	Not relevant.
5.18	At non-simple junctions which are not on the inside of a curve, a nearside diverging taper or auxiliary lane shall be provided in accordance with Table 5.18a and 5.18b.	Not relevant.	Not relevant.

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Section/Paragraph	Standard	Priority Junction Design Compliance	Signal Controlled Junction Design Compliance
5.18.1	Where the major road flow exceeds 7000 AADT, auxiliary lanes should be provided instead of tapers for diverging traffic.	Not relevant.	Not relevant.
5.19	Nearside diverging tapers shall be formed by an increase in width to 3.5 metres at the start of the corner radii into the minor road.	Not relevant.	Not relevant.
5.20	Where right turns into the minor road are permitted, a give way line shall be provided at the end of the diverging taper or auxiliary lane.	Not relevant.	Not relevant.
5.20.1	Where a give way line is provided, a traffic island should be provided to segregate the give way from the major road.	Not relevant.	Not relevant.
5.21	The length of a nearside diverging taper or auxiliary lane shall be measured as the distance from the beginning of the taper up to the "Give Way" line, as shown in Figure 5.21a and 5.21b.	Not relevant.	Not relevant.
5.22	The minimum length of a nearside diverging taper or auxiliary lane shall be in accordance with Table 5.22.	Not relevant.	Not relevant.
5.22.1	For design speeds of 100 kph or less, auxiliary lane lengths should be a minimum of 80 metres, and sufficient to allow for the speed change from the major road to the turn into the minor road.	Not relevant.	Not relevant.
5.23	Merging tapers shall only be used where the major road is a dual carriageway.	Not relevant.	Not relevant.

Section/Paragraph	Standard	Priority Junction Design Compliance	Signal Controlled Junction Design Compliance
5.24	Where the major road is a dual carriageway with a design speed of 85 kph or above, merging tapers shall be provided where: 1) the volume of left turning traffic in the design year exceeds 600 vehicles AADT; 2) the volume of left turning traffic in the design year exceeds 450 vehicles AADT and the percentage of HGVs exceeds 20%; or 3) the volume of left turning traffic in the design year exceeds 450 vehicles AADT and the merging taper is for an up-gradient of greater than 4%.	Not relevant.	Not relevant.
5.24.1	Merge tapers may be provided at dual carriageway priority junctions with lesser flows and/or lesser HGV percentages.	Not relevant.	Not relevant.
5.25	Merging tapers shall be formed by a decrease in width from 3.5 metres at the end of the corner radii out of the minor road.	Not relevant.	Not relevant.
5.25.1	A traffic island should be provided to segregate the turning traffic from the major road prior to the commencement of the merging taper.	Not relevant.	Not relevant.
5.26	The minimum lengths of the merging tapers shall be as given in Table 5.26.	Not relevant.	Not relevant.
5.26.1	On dual carriageways with a design speed of 120 kph, the merging taper should be preceded by a 40 metres nose, which has a	Not relevant.	Not relevant.

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Section/Paragraph	Standard	Priority Junction Design Compliance	Signal Controlled Junction Design Compliance
	minimum back of nose width of 2 metres (as indicated on Figure 5.26.1).		
Chapter 6: Geometric Design of Major Road Central Treatments			
6.1	Carriageway widening for a central reserve treatment shall be formed using physical islands or islands defined by road markings.	Accepted and provided.	Accepted and provided.
6.1.1	Central treatments for SLD and ghost islands, on single carriageways, should be developed to their maximum width using the tapers shown in Table 6.1.1.	Accepted and provided. A taper of 1 in 20 has been provided as per Table 6.1.1.	Not relevant.
6.1.2	The tapers given in Table 6.1.1 on single carriageway roads, should be developed: 1) symmetrically on straight sections of road; 2) asymmetrically towards the outside of the curve on curved sections of road; and 3) asymmetrically away from the climbing lane on climbing lane sections.	Not relevant.	Not relevant.
6.1.3	For SLD, the central island should be introduced by means of hatched road markings until there is sufficient width to safely accommodate the keep left arrow traffic sign (at an appropriate size for the speed of the road) on the nose of the physical island.	Accepted. Further clarity to be provided at Detailed Design stage.	Not relevant.
6.1.4	Central treatments for dual carriageways should be developed to their maximum width using the tapers shown in Table 6.1.4.	Not relevant.	Not relevant.

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Section/Paragraph	Standard	Priority Junction Design Compliance	Signal Controlled Junction Design Compliance
6.1.5	The maximum island width should continue through the junction to the tangent point of the minor road radius and the edge of the major road carriageway	Accepted.	Not relevant.
6.2	On WS2+1 roads where compact grade separation is not provided, central treatments shall be formed as shown in Figures 6.2 a, b and c.	Not relevant.	Not relevant.
6.3	For all central treatments, the right turning lane shall be comprised of a turning length, deceleration length and direct taper length as shown in Figures 6.3a to 6.3e.	Accepted and provided. Arrangement to Figure 6.3d is being provided.	Not relevant.
6.4	The turning length shall be a minimum of 10 metres.	Accepted and provided.	Not relevant.
6.5	Where capacity calculations indicate that for significant periods of time there can be vehicles queuing to turn right from the major road, the turning length shall be increased to accommodate the forecast maximum queue length.	Accepted. An increased length is not considered appropriate given the low number of vehicles anticipated to make the turning manoeuvre.	Not relevant.
6.5.1	Where the turning length has been increased to the forecast queue length at a ghost island, physical islands should be provided within the hatched areas to provide greater protection to turning traffic.	Not relevant.	Not relevant.

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6.6	For right turning lanes, the direct taper length and the minimum deceleration length shall be provided in accordance with Table 5.22.	Accepted and provided.	Not relevant.
6.7	At ghost island junctions on WS2+1 roads, the through lane widths in each direction shall be 3.5 metres, exclusive of hard strips.	Not relevant.	Not relevant.
6.8	At ghost island junctions on roads other than WS2+1 roads, the through lane widths in each direction shall be a minimum of 3.0 metres and a maximum of 3.65 metres wide, exclusive of hard strips.	Not relevant.	Not relevant.
6.8.1	At ghost island junctions on climbing lanes, the through lane widths in each direction should be 3.5 metres, exclusive of hard strips.	Not relevant.	Not relevant.
6.9	The width of the right turning lanes on WS2+1 roads shall be 4.5 metres.	Not relevant.	Not relevant.
6.10	The width of the right turning lanes for new junctions, excluding WS2+1, shall be a minimum of 3.0 metres.	Not relevant.	Not relevant.
6.10.1	The width of the right turning lane at new and existing junctions should be 3.5 metres.	Accepted and provided.	Not relevant.
6.10.2	On rural roads, with design speeds above 85 kph or where hard	Not relevant.	Not relevant.

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	strips are present, the width of the right turning lane at new and existing junctions should not exceed 3.65 metres.		
6.11	The width of the right turning lanes for improvements to existing junctions, where space could be limited, shall be a minimum of 2.5 metres.	Accepted and provided.	Not relevant.
6.12	On urban roads the width of the right turning lane shall not exceed 5.0 metres.	Accepted and provided.	Not relevant.
6.13	At left/right staggered junctions, where the deceleration lengths have the potential to overlap, the width of the ghost island shall not be increased to make them lie side by side.	Not relevant.	Not relevant.
6.14	At left/right staggered junctions, where the deceleration lengths have the potential to overlap, the starting points of the right turn lanes shall be joined by a straight road marking, as shown in Figure 6.14.	Not relevant.	Not relevant.
6.15	At SLD junctions, the through lane in each direction shall be 4.0 metres wide exclusive of hard strips.	Accepted and provided.	Not relevant.
6.16	At dual carriageway junctions the through lane widths shall be the same as those either side of the junction.	Not relevant.	Not relevant.
6.17	The width of the central island at the opening adjacent to the	Accepted.	Not relevant.

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	minor road, shall be a minimum of 10 metres, including central reserve hard strips.		
6.17.1	Where use by long vehicles is expected, the width of the central island at the opening adjacent to the minor road, should be 14.0 metres or 16.5 metres including central reserve hard strips to accommodate the design vehicle and drawbar trailer vehicle respectively.	Accepted. 16.5m used.	Not relevant.
6.18	The minimum width of any part of an SLD or central reserve island shall be 3.5 metres.	Accepted and provided.	Not relevant.
6.19	The opening in the central reserve at the opening adjacent to the minor road, shall be 15.0 metres wide, as shown in Figure 6.17.	Accepted and provided.	Not relevant.
6.19.1	Sections in the central reserve opening at SLD and dual carriageway junctions should fall towards rather than away from the minor road.	Accepted. Further clarity to be provided at Detailed Design stage.	Not relevant.
6.19.2	The deceleration lengths at left/right staggered junctions on an SLD or dual carriageway may lie side by side.	Not relevant.	Not relevant.
6.20	Where deceleration lengths at left/right staggered junctions on an SLD or dual carriageway lie side by side, a physical island shall be provided to separate them, as illustrated in Figure 6.20.	Not relevant.	Not relevant.

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6.21	The through lane in each direction shall be 3.5 metres wide with a 1 metre wide nearside hard strip, as illustrated in Figure 6.21.	Not relevant.	Not relevant.
6.22	The central island shall be introduced by means of hatched road markings over a taper of 130 metres as illustrated in Figure 6.22.	Not relevant.	Not relevant.
6.23	The central island shall be 5 metres wide, made up of a 2 metre physical island and 1.5 metre hard strips either side.	Not relevant.	Not relevant.
6.24	The central reserve shall extend a minimum of 50 metres at each end, measured from the end of the nearside radius of the minor road entry lanes, to prevent right turns.	Not relevant.	Not relevant.
6.24.1	The central reserve may be extended further than 50 metres at either end to further reduce the risk of right turns and/or u-turns.	Not relevant.	Not relevant.
6.25	Dimensions for passing bays shall be based on swept path analysis and the number and size of vehicles expected to be waiting to turn right at a given time.	Not relevant.	Not relevant.
Chapter 7: Geometric Design of Signal-Controlled Junctions			
7.1	Each traffic lane shall have clear visibility of at least one primary signal associated with its particular movement, from a distance equivalent to the desirable minimum SSD of the approach road.	Not relevant.	Accepted and provided.
7.1.1	Duplicate primary signals should be provided on approaches with	Not relevant.	Not relevant.

Section/Paragraph	Standard	Priority Junction Design Compliance	Signal Controlled Junction Design Compliance
	a speed of 85 kph or above.		
7.2	Visibility to the primary signal shall be in accordance with the CD 109 [Ref 5.N] visibility envelope, but with the high object height amended to incorporate the signal head where this exceeds 2 metres, as indicated in Figure 7.2.	Not relevant.	Accepted and provided.
7.2.1	Where multiple lanes are provided on the approach, a signal-controlled junction may have offside primary, double-headed or overhead additional signals to ensure visibility of the signals from all lanes.	Not relevant.	Accepted.
7.2.2	A minimum of 2 signals should be visible from each approach arm and each stop-line.	Not relevant.	Accepted and provided.
7.2.3	Additional signal heads may be provided, where a driver's vision of the signal head could be obscured, for example, by a lorry in the lane adjacent to the signal.	Not relevant.	Accepted. Further clarity to be provided at Detailed Design stage.
7.2.4	Where separate signalling of turning movements is employed, a minimum of 2 signals should be visible from each approach lane associated with each of the turning movements and each associated stop-line.	Not relevant.	Accepted and provided.
7.2.5	Primary signal heads should be located a minimum of 1 metre	Not relevant.	Accepted and provided.

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Section/Paragraph	Standard	Priority Junction Design Compliance	Signal Controlled Junction Design Compliance
	beyond the stop-line.		
7.2.6	Primary signal heads should be located in advance of crossing studs or marks if pedestrian facilities are provided.	Not relevant.	Not relevant.
7.2.7	At junctions with angled approaches, the secondary signal should be displaced a maximum angle of 30o from the driver's line of forward sight, as indicated in Figure 7.2.7.	Not relevant.	Not relevant.
7.2.8	The distance between the stop-line and an associated secondary signal should not exceed 50 metres.	Not relevant.	Accepted and provided.
7.2.9	Where multi phased signal layouts are provided, an additional secondary signal may be utilised.	Not relevant.	Accepted and provided.
7.2.10	The desirable minimum SSD should be provided to the back of the queue.	Not relevant.	Accepted and provided.
7.3	An intervisibility zone shall be provided that incorporates an area that extends across the full carriageway width of each arm from a distance of 2.5 metres back from each stop line, as indicated in Figure 7.3.	Not relevant.	Accepted and provided.
7.4	Where an advance stop-line (ASL) is provided, the intervisibility zone shall be measured from a point 2.5m behind the cyclists' stop-line.	Not relevant.	Not relevant.

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7.4.1	Where a staggered pedestrian crossing is provided, the section of the crossing immediately adjacent to the junction should be included in the junction intervisibility zone.	Not relevant.	Not relevant.
7.5	No substantial fixed obstructions shall be located within the intervisibility zone of new junctions.	Not relevant.	Not relevant.
7.5.1	No substantial fixed obstructions should be located within the intervisibility zone of existing junctions.	Not relevant.	Accepted.
7.6	Straight ahead lane widths shall be a minimum of: 1) 3.0 metres at new junctions; 2) 2.5 metres at existing junctions where the 85th percentile approach speed exceeds 56 kph (35 mph) and/or it is necessary to make provision for HGVs; and 3) 2.25 metres at existing junctions where the 85th percentile approach speed does not exceed 56 kph (35 mph) and it is not necessary to make provision for HGVs.	Not relevant.	Not relevant.
7.6.1	At existing junctions, straight ahead lanes with widths of 2.5 metres or less should only be used where the provision of them will allow for additional lane(s) to be provided on that particular arm.	Not relevant.	Accepted and provided.
7.6.2	At existing junctions, straight ahead lanes should be a minimum of	Not relevant.	Accepted and provided.

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	3.0 metres wide.		
7.6.3	Straight ahead lanes should be a maximum of 3.65 metres wide.	Not relevant.	Accepted and provided.
7.6.4	A minimum width of 4.0 metres should be provided between physical islands where cyclist demand indicates a need.	Not relevant.	Accepted and provided.
7.7	Dedicated lanes for left or right turning traffic shall be a minimum of 3 metres wide.	Not relevant.	Not relevant.
7.8	Dedicated lanes for left turning traffic shall be developed with tapers of 1 in 5, as illustrated in Figure 7.8.	Not relevant.	Not relevant.
7.8.1	On single carriageway roads, right turn entry lanes may be accommodated by the provision of a hatched island, as illustrated in Figure 7.8.2.	Not relevant.	Accepted and provided.
7.8.2	On single carriageway roads, hatched islands for right turn lanes should be developed symmetrically from the centre line of the road with a minimum taper of 1 in 10 and a direct taper of 7.5 metres, as illustrated in Figure 7.8.2.	Not relevant.	Accepted and provided.
7.9	The storage length shall be measured from the stop line to the furthest point upstream where the total number of entry lanes are at full width, as illustrated in Figure 7.8.2.	Not relevant.	Accepted and provided.
7.9.1	The storage length of the left and right turn entry lanes should be	Not relevant.	Accepted and provided.

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Section/Paragraph	Standard	Priority Junction Design Compliance	Signal Controlled Junction Design Compliance
	designed: 1) to meet the capacity requirements of the junction; 2) to accommodate the longest queue of stopped traffic (to avoid turning traffic blocking the adjacent lane); and 3) to avoid traffic being prevented from entering the left or right turn lane where there is a high proportion of straight ahead traffic queuing in the adjacent lane.		
7.10	Where it is necessary to reduce the numbers of lanes on an exit, this shall be carried out on either the nearside or the offside depending on the prevailing traffic flows on the exit arm.	Not relevant.	Accepted.
7.10.1	Where it is necessary to reduce the number of lanes on the exit arm, a single lane should be reduced over a distance of 100 metres starting at or beyond the limit of the junction intervisibility zone, as illustrated in Figure 7.10.1.	Not relevant.	Accepted.
7.11	The design of a signal-controlled junction shall allow for the swept turning paths of the design vehicle where provision is to be made for large goods vehicles.	Not relevant.	Accepted and provided.
7.11.1	The design should incorporate turning radii to cater for the swept paths of the worst case vehicle that can be reasonably expected to use the junction on a frequent basis.	Not relevant.	Accepted and provided.

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Section/Paragraph	Standard	Priority Junction Design Compliance	Signal Controlled Junction Design Compliance
7.11.2	Where no provision is to be made for large goods vehicles, the minimum corner radii should be the same as for a priority junctions as given in Section 5.	Not relevant.	Not relevant.
7.12	Where provision is to be made for large goods vehicles, the values for corner radii and associated tapers shall be the same as for a priority junction.	Not relevant.	Accepted and provided.
7.12.1	Stop-lines on adjacent entry lanes should not be staggered.	Not relevant.	Accepted.
7.13	The nosing of central reserves and pedestrian refuges shall be set back a minimum distance of 1.5m from the edge of carriageway of the intersecting road.	Not relevant.	Accepted and provided.
7.13.1	Pedestrian crossings and any associated refuges should be located beyond the limits of the junction radii to minimise crossing distance.	Not relevant.	Not relevant.
7.14	A minimum clearance of 450mm shall be provided between the edge of carriageway and any street furniture.	Not relevant.	Accepted and provided.
7.15	Traffic islands shall be provided to separate uncontrolled traffic from controlled traffic where left turn slip lanes are provided.	Not relevant.	Not relevant.
7.15.1	Traffic islands may be provided to separate two independently controlled lanes of traffic on the same entry.	Not relevant.	Accepted and provided.

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7.15.2	Left turn slip lanes may be signal-controlled or uncontrolled.	Not relevant.	Not relevant.
7.15.3	A left turn slip lane should be provided where: 1) the left turn traffic movement is high; 2) left turn manoeuvres for large goods vehicles need to be facilitated; 3) delay for left turn vehicles would otherwise be significant; 4) left turn traffic capacity requirements would extend the green time required for the straight ahead traffic movement phase.	Not relevant.	Not relevant.
7.15.4	A single pedestrian crossing route through a signal-controlled junction should not include a mix of controlled and uncontrolled crossing points.	Not relevant.	Not relevant.
7.16	On roads with a design speed of 85 kph or higher, right turning lane(s) shall be separately signalled and segregated from the adjacent ahead-only lane(s) by a traffic island.	Not relevant.	Not relevant.
7.16.1	The central reserves on the major road may be offset to encourage right turning traffic to pass in front rather than behind each other. This is illustrated in Figure 7.16Nb.	Not relevant.	Accepted.
17.6.2	Where the 85th percentile approach speed is greater than 72 kph (45 mph), right-turns should be separately signalled.	Not relevant.	Not relevant. Speed surveys obtained from HCC demonstrate that the 85th

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Section/Paragraph	Standard	Priority Junction Design Compliance	Signal Controlled Junction Design Compliance
			percentile speeds (in accordance with DMRB) during hour of free flowing traffic are below 45mph.
7.17	The controller cabinet shall not be situated such that it causes either physical or visual obstruction to road users and pedestrians.	Not relevant.	Accepted. Further clarity to be provided at Detailed Design stage.
7.17.1	The controller cabinet should be positioned to allow visibility from the controller cabinet to the signal head and stop-line for each junction arm.	Not relevant.	Accepted. Further clarity to be provided at Detailed Design stage.

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