Appendix I2
Accessibility Audit Report - Finglas Alignment

BUSCONNECTS –C4 Finglas to Phibsborough Corridor

Accessibility Audit Report

TABLE OF CONTENTS

1 INTRODUCTION

1.1 General Project Information

Técnica y Proyectos S.A (TYPSA) has been commissioned by the National Transport Authority to carry out a Disability Access Audit of the existing Kimmage to City Centre Bus Corridor (CBC). A Disability Access Audit is an assessment of a building, the external environment or a service to benchmark its accessibility for disabled people.

The Disability Act 2005 places a statutory obligation on public service providers to support access to services and facilities for people with disabilities. This report will assess the existing access support along the Scheme route, identify any existing Shortcomings, and make recommendations to address any such Shortcomings. The report will also set out any design criteria considered imperative to maintaining the dignity of people with disabilities as they interact with the external environment, including structures, people and services.

1.2 Project Description

In June 2018 the National Transport Authority (NTA) published the Core Bus Corridors Project Report. The report was a discussion document outlining proposals for the delivery of a core bus corridor network across Dublin. It set out the vision for the provision of 230kms of dedicated bus lanes and 200km of cycle lanes/tracks on sixteen key bus corridors.
The overall BusConnects Core Bus Corridors Programme (The Programme) has been sub-divided into four design Projects. Each Project is made up of three Schemes. The Schemes are either stand-alone Core Bus Corridors (CBCs) or a combination of two contiguous CBCs. In total there are 16 CBCs which have been combined into 12 Schemes and are divided into four Projects.
The four Projects are:

Project A: Clongriffin to City Centre CBC plus Lucan to City Centre CBC plus Greenhills to City Centre combined with Clondalkin to Drimnagh (a combined CBC) - (3 Schemes);
Project B: Swords to City Centre CBC plus Liffey Valley to City Centre CBC plus Bray to City Centre CBC - (3 Schemes);
Project C: Blanchardstown to City Centre CBC plus Rathfarnham to City Centre combined with Tallaght to Terenure (a combined CBC) plus UCD Ballsbridge to City Centre combined with Blackrock to Merrion (a combined CBC) - (3 Schemes); and
Project D: Ballymun to City Centre combined with Finglas to Phibsborough (a combined CBC) plus Kimmage to City Centre CBC plus Ringsend to City Centre CBC - (3 Schemes).
This document has been developed to be implemented in BusConnects Core Bus Corridors - Project D. In this case, route 04 corresponding to Finglas to Phibsborough Corridor is specifically studied in terms of accessibility.

- Route 3: Ballymun to City Centre;
- **Route 4: Finglas to Phibsborough;**
- Route 11: Kimmage to City Centre;
- Route 16: Ringsend to City Centre.
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The Finglas to Phibsborough Core Bus Corridor commences on the Finglas Road at its junction with St. Margaret's Road. It Continues to Mellowes Road in a three traffic lanes road to Finglas Village and in South direction pass through Wellmount Road;

Finglas Place; Glenhill Road; The Griffith Junction; Tolka Valley Road; Old Finglas Road; Ballyboggan Road; Slaney Road.
And from Slaney Road goes to Prospect Way to the intersection with the route 3 Ballymun to City Centre. (Finglas Road and Ballymun Road).

1.2.1. Objective of the Scheme

The objectives of the Proposed Scheme are to:

- Enhance the capacity and potential of the public transport system by improving bus speeds, reliability and punctuality through the provision of bus lanes and other measures to provide priority to bus movement over general traffic movements.
- Enhance the potential for cycling by providing safe infrastructure for cycling, segregated from general traffic wherever practicable.
- Support the delivery of an efficient, low carbon and climate resilient public transport service, which supports the achievement of Ireland's emission reduction targets.
- Enable compact growth, regeneration opportunities and more effective use of land in Dublin, for present and future generations, through the provision of safe and efficient sustainable transport networks.
- Improve accessibility to jobs, education, and other social and economic opportunities through the provision of improved sustainable connectivity and integration with other public transport services.
- Ensure that the public realm is carefully considered in the design and development of the transport infrastructure and seek to enhance key urban focal points where appropriate and feasible**Report Structure**

The overall Finglas to Phibsborough Bus Corridor (CBC) scheme can be broken down in two distinct sections, namely the 1) R104 St. Margaret's Road Junction to Slaney Road Junction-Finglas Road and 2) Slaney Road Junction to Prospect Way-Finglas Road.
These two sections form the macro-level basis of the report structure.

Each two sections are also divided into different drawing sheets which correspond to the Corridor design project.

Every sheet contains the information of images with shortcomings in terms of disabled user and brief recommendations in order to solution and comply with universal Design.

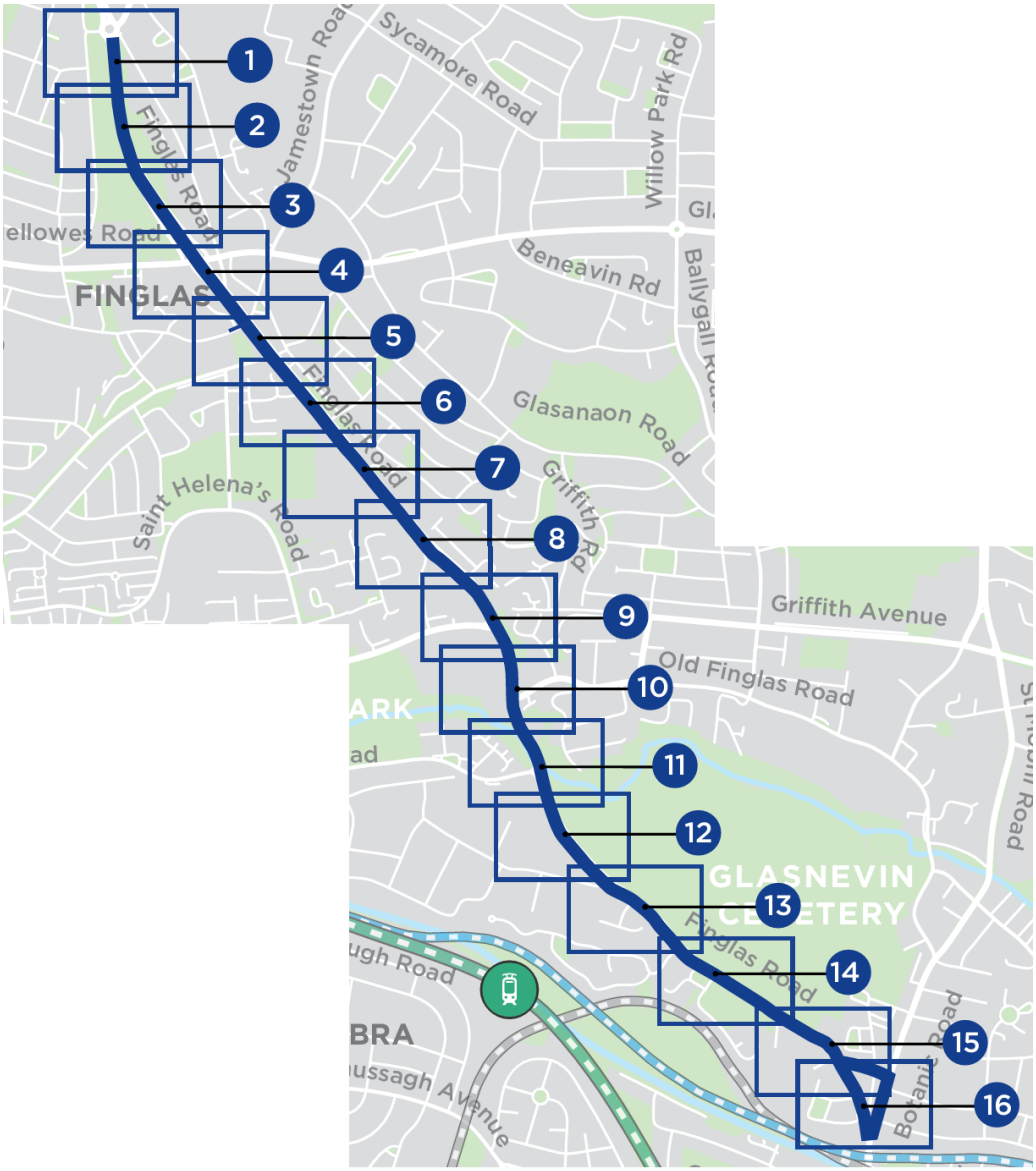
Within each of the three sections the recommendations for assessing the existing street infrastructure and its ability to support access for disabled users have been adopted mainly from the following documents:

- Irish Wheelchair Association [IWA] 'Best Practice Guidelines, Designing Accessible Environments'
- The National Disability Authority's [NDA] Shared Spaces, Shared Surfaces, and Home Zones from a Universal Design Approach for the Urban Environment in Ireland; and
- The National Disability Authority's [NDA] 'Building for Everyone: A Universal Design Approach'.

The National Disability Authority *Shared Space, Shared Surfaces and Home Zones from a Universal Design Approach for the Urban Environment in Ireland* report provides the following definitions for Universal Design and Vulnerable Pedestrians:

Universal Design – Universal Design is the design and composition of an environment so that it can be accessed, understood and used to the greatest extent possible by all people, regardless of their age, size, ability or disability.
Vulnerable Pedestrians – Vulnerable pedestrians is a term used to identify pedestrians such as older people, those with mobility, sensorial, or cognitive difficulties or children.
This report assesses the existing external environment as it affects the various vulnerable pedestrians and concludes with universal design considerations to be adopted for the detailed design of the Finglas to Phibsborough Core Bus Corridor.

The report will be structured following the sheet distribution provided in the PRO drawings produced for the 2nd Public consultation, which is shown in the image below:



2. R104 ST. MARGARET'S ROAD JUNCTION TO SLANEY ROAD JUNCTION-FINGLAS ROAD

2.1 Description of the Route

The northern end of the proposed Finglas core bus corridor starts at the roundabout on Finglas Road at the junction with St. Margaret's Road. To improve pedestrian connections in the vicinity of the roundabout, additional signal-controlled pedestrian crossings and footpaths are proposed around the roundabout on all sides.

There is an existing bus lane on the southbound carriageway of the Finglas Road where it bypasses Finglas Village centre in this section. However, in the northbound direction the existing bus lane terminates 450m south of the roundabout where there is a merge ramp from Mellowes Road. From the merge ramp northward there are two existing traffic lanes, whereas there is only one traffic lane south of there. For the Proposed scheme it is proposed to convert the left traffic lane to a bus lane from the Mellowes Road merge ramp northward over a length of 450m to the roundabout at St. Margaret's Road. A pair of new bus stops will be provided just south of the roundabout on Finglas Road where there is an existing footbridge over the dual carriageway. New footpath links will be provided to these bus stops from the local streets to the east and west. The proposed new signal-controlled pedestrian crossing between the proposed bus stops and the roundabout will enable bus passengers to cross the dual carriageway road.

There are no existing facilities provided for pedestrians and cyclists along the Finglas Bypass dual carriageway over the 0.75km length north of the Mellowes Road grade-separated junction where there is no frontage access. Instead, pedestrians and cyclists will continue to use the parallel local streets to the east and west of the bypass.

South of the Mellowes Road Bridge there will be a new northbound cycle track along the western side of the Finglas Road, which will follow the existing footpath over a length of 380m from Wellmount Road past the junction with Church Street and along the diverge ramp to Mellowes Road. Between Wellmount Road and Church Street the existing verge on the western side is quite narrow and it will be necessary to remove 4 existing trees to accommodate the proposed cycle track.

In the southbound direction, rather than follow the merge ramp from Mellowes Road, cyclists will be directed along Finglas Main Street for a length of 160m and then turn right (southwest) along Church Street for another 80m to join Finglas Road where a new cycle track will commence on the eastern side of the dual carriageway. A gap will be provided in the existing wall that closes off Church Street where it was bisected by the Finglas Bypass at the existing footbridge. The verge on the eastern side of Finglas Road is wider than on the western side and the proposed 1.5m wide cycle track can be accommodated outside the existing trees that will be retained.

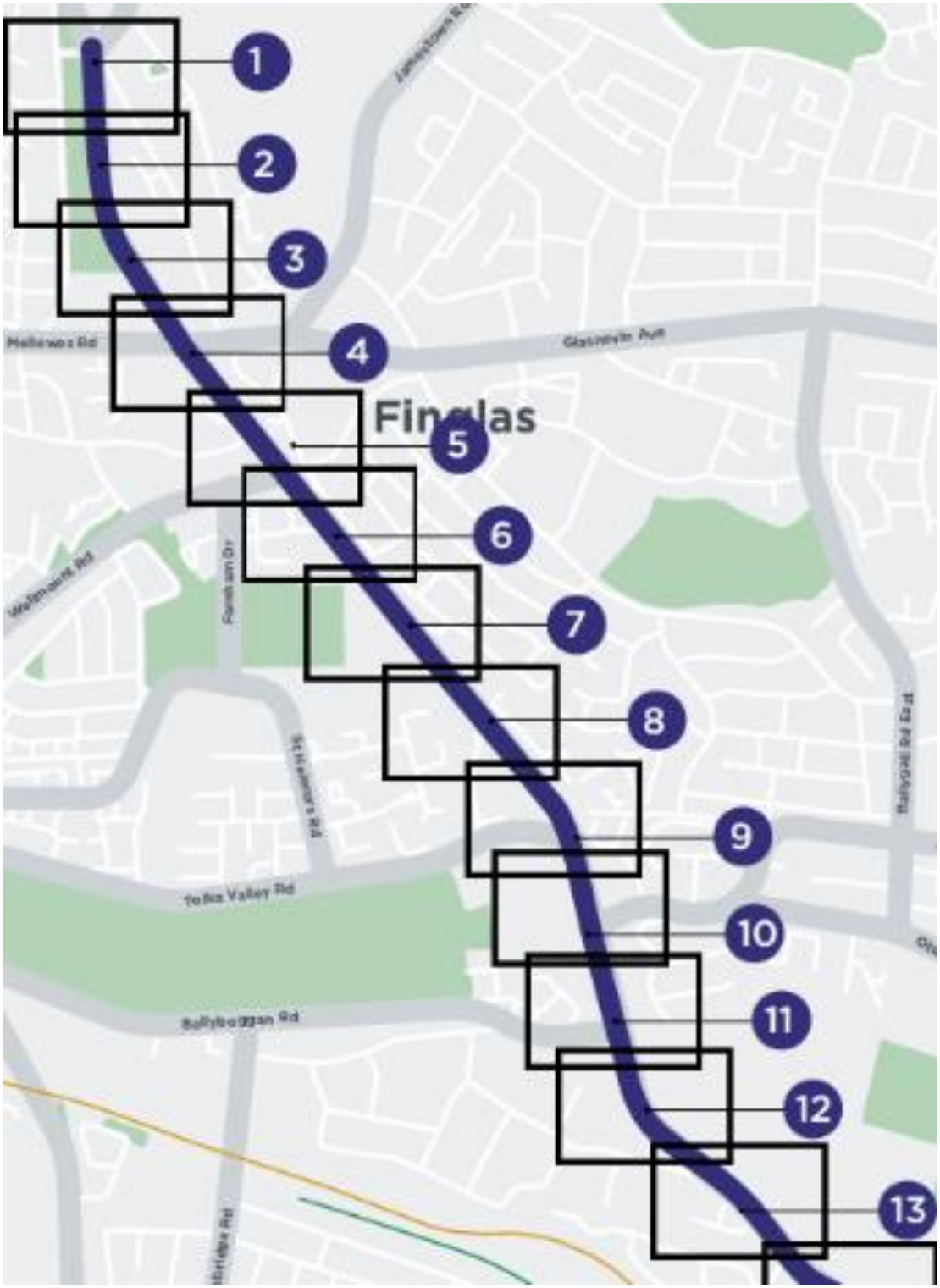
At the junction of Church Street with Finglas Road a pair of new bus stops will be provided just south of the junction where there is an existing footbridge over the dual carriageway. These bus stops will provide direct access to Finglas Village centre from bus services along the Finglas Bypass. New footpath links will be provided to these bus stops from the local streets to the east and west. A proposed new signal-controlled toucan crossing between the proposed bus stops and the Church Street junction will enable bus passengers to cross the dual carriageway road. It will also enable cyclists to cross the road at this point.

At the staggered junction between Wellmount Road on the western side and the Finglas Village link on the eastern side there are 3 southbound traffic lanes at present, comprising two straight ahead lanes and a left-turn lane. The existing left-turn lane will be retained which will enable segregated signal operations between turning traffic and buses and cyclists. The southbound bus lane will be extended by 170m through the staggered junction with one of the two straight ahead traffic lanes converted to a bus lane. In the northbound direction there is no existing left-turn lane and left-turn traffic will continue to share the left lane with buses over a short length of 30m within the junction. Signal segregation will be provided for

northbound cyclists at this junction to avoid conflicts with the large volume of left-turning traffic.
Cycle facilities will be extended through this pair of junctions, and corners will be tightened to shorten the road crossing distances for pedestrians. Signal crossings will be provided for pedestrians at the two side streets, as well as an additional pedestrian crossing of the Finglas Road dual carriageway on the southern side for more direct access to the bus stops on each side. A wider opening is proposed in the wall of the car parking area beside this junction on the eastern side with a short ramp to give access for cyclists to the centre of the village.
The northbound bus stop will be moved 30m further north to be closer to the junction which will shorten the walking distance to the road crossing for access towards Finglas Village. It is also proposed to open the boundary wall on the western side to enable direct access from the residential area of Finn Eber Fort.
Along Finglas Road in this section the standard cross-section is proposed with 2m wide raised cycle tracks along between the bus lanes and the grass verges. Careful excavations will be undertaken near trees to avoid damage to the roots where the cycle tracks will overlap by about 0.5m into the verge. Bus stops will be upgraded to island bus stops. A small number of trees will need to be removed in various locations to accommodate the proposed improvements. The existing footpaths between the verges and boundaries will be reconstructed at 2m width where they are in poor condition.
At the Finglas Place junction there will be modifications to provide protected corners and shelter islands for cyclists. The existing left-turn lane will be retained which will enable segregated signal operations between turning traffic and buses and cyclists.
At the Clearwater Shopping Centre, the exit slip lane northbound will be removed to reduce traffic interactions with pedestrians and cyclists. This will provide a larger landscaped area. A northbound left-turn traffic lane will be provided on Finglas Road to replace the existing slip lane and corner island to enable segregated signal operations between turning traffic and cyclists. In the southbound direction there is no existing left-turn lane into Glenhill Road on the eastern side, and there is no space to provide a segregated left-turn lane. The signal operations will be arranged to release the bus lane and cycle tracks in advance of general traffic, followed by a signal stage where the small number of left-turn vehicles will cross the cycle track on a flashing amber and will be required to give way to any cyclist crossing through the junction at the same time. The junction will be provided with protected corners for cyclists and the pedestrian crossings will be shortened.
The Tolka Valley Road junction will be modified with removal of the northbound left-turn slip lane, shortened pedestrian crossings and providing protected corners for cyclists. A northbound left-turn traffic lane will be provided to enable segregated signal operations between turning traffic and buses and cyclists.
Old Finglas Road junction will be modified to provide protected corners and cyclist turning pockets. A southbound left-turn traffic lane will be provided to enable segregated signal operations between turning traffic and buses and cyclists. The existing southbound right-turn lane in the median will be removed to enable provision of the left-turn lane, and a short turning pocket will be provided instead for the Tolka Vale apartments on the western side. The northbound right turn lane will be extended to cater for increased traffic coming from Hart's Corner, which will be directed along this route and onward via Old Finglas Road to continue to north Ballymun. This is a result of the bus gate proposal at St. Mobhi Road north on the Ballymun Section.
A Toucan crossing will be provided at the Tolka Rover bridge, to provide for the proposed future Tolka Valley Cycle Route.

Ballyboggan Road junction will be tightened for shorter pedestrian crossings, with cycle facilities, protected corners and turning pockets. A northbound left-turn traffic lane will be provided on Finglas Road to replace the existing slip lane and corner island to enable segregated signal operations between turning traffic and cyclists.

From Ballyboggan Road to Slaney Rd there are no verges at the road edges, apart from a short section on the eastern side. Due to the narrower cross-section along this part of Finglas Road, the proposed segregated cycle tracks will be 1.5m wide rather than 2m as provided further north, and they will be separated from the adjoining footpaths by a step in level.



2.2 Problem Identification

The different sheets indicated in each of the points studied refer to the drawings in which is divided the conceptual project to facilitate their location.

2.2.1 Accessible Parking

There are hardly any parking areas during this first stretch.

The desirable minimum width of parallel parking spaces is to be 2.1m and bays should be indented as standard. Where accessible parking bays are proposed, these should be a minimum of 3.6m in width and 7m in length with the appropriate dropped kerb and tactile paving in accordance with the requirements of the Building Regulations TGD Part M.

Where parallel parking spaces are provided alongside a cycle track a buffer must be provided to allow space for opening car doors. This buffer should be a minimum of 0.75m in width.

a) Sheet 05

There are provision of accessible car parking bays in the public parking areas parallel to the footpath at the junction of Wellmount Rd and Finglas Rd.

Off Street car parking space in Finglas Rd-Wellmount Road

Shortcomings: The direct access from the public car parking to the footpath is only provided by a stair without warning tactile paving.
Recommendations: It should be consider improving the access of the car parking to the footpath. A ramp should make easier the access for the people with mobility impairment.
For Off-Street (Perpendicular) designated parking spaces should be: 2400mm wide x 4800mm long, with 1200 mm wide access zones to both sides and end of space.
These parking bays should comply with the standards of signs and colour contrasts in such a way that they can be easily identified.

2.2.2 Access Routes-General

This first section of the route, from the roundabout in Margaret´s road to intersection of Finglas Road with Mellowes Rd, has no residential areas adjacent to the traffic lanes. There is no pedestrian footpath but a grass central reservation.
No consideration in terms of disability for this part.

a) Sheet 04

From Finglas Village, through Mellowes Road to Finglas Road, the section of the footpath parallel to the carriageway at this first part of the route has a slope.
In terms of the Technical Document Guidance, this footpath could be a gently sloped access route (a gradient steeper than 1:50, but less steep than 1:20) or considered as ramped access route (if gradient is steeper than 1:20).

Footpath to Finglas Village in gradient-east side

Recommendations: In the east side of the footpath parallel to Finglas Road a guardrail is considered to protect from landscaping. Gradient of the path should be checked if steeper than 1:20. In this case if would be considered as a ramped access route and handrails should be provided.

Footpath in Finglas Road west side

Recommendations: In the west side of the footpath parallel to Finglas Road the gradient of the path seems to be steeper than 1:20. In this case, if would be considered as a ramped access route and handrails should be provided.

b) Sheet 05

This part combines green areas parallel to the carriageway and footpath sections of in-situ concrete where the clear of 2m.

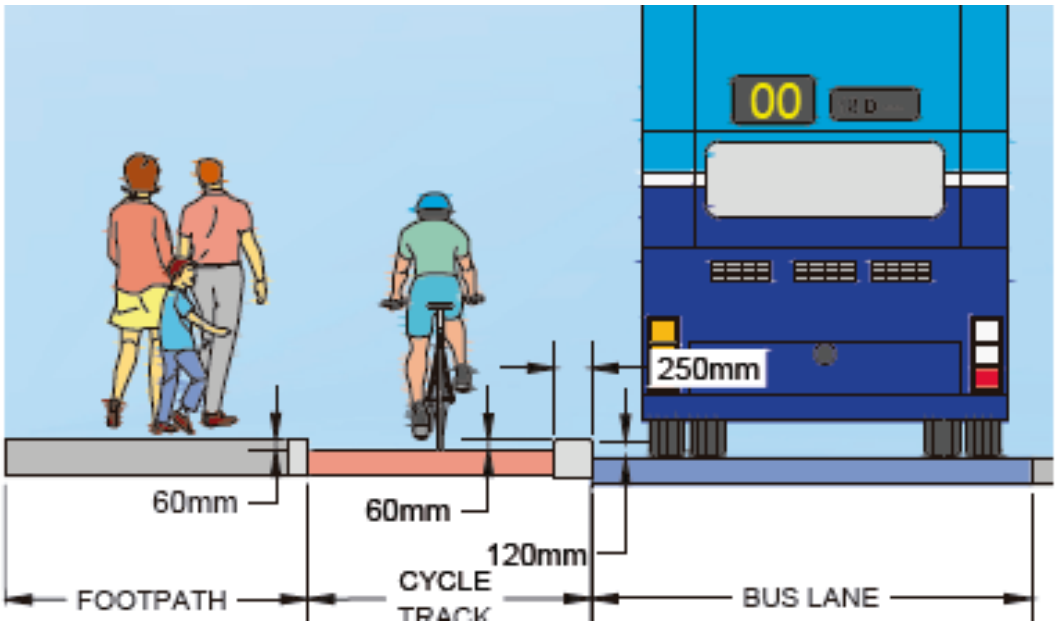
Footpath in Finglas Road east side

Shortcomings: Where existing trees constrain the route, the footpath clear width may be reduced to 1200mm only over a maximum distance of 2000 mm.
Recommendations: There are specified points of the footpath where the width constraint due to vegetal and urban elements. Designers have to take into account that the recommended width would be 2000mm, and a minimum of 1500mm. where existing obstacles that cannot be removed.

The footpath and cycle track continues in a shared surface.

Footpath in Finglas Road east side

Shortcoming: The existing situation poses a hazard because of the little differentiation of surfaces between the footpath and the cycle track.
Recommendations: They should be differentiated in colour or divided by a painted central delineator or kerb. The people with visual impairment can have difficulties to notice the separation.
The 'optimum cross-section' developed for the CBC project consists of raised adjacent cycle tracks, providing vertical segregation from the carriageway to the cycle track and vertical segregation from the cycle track to the footway.



Preferred CBC Cycle facility segregation

c) Sheet 07

Shared route of pedestrian path and cycle track in Finglas Road-Glenhill Rd

Shortcomings: In this part of the route it is observed that pedestrian path and cycle track are adjacent, in a share route. In general, in the current state, many of the sections go down by 2 meters.
Recommendations: For the new design, these path widths should be taken into account as much as possible for people with impaired mobility. The width could be 1500mm. where existing obstacles that cannot be removed but is recommended a clear width of 2000mm.
Where segregated bicycle tracks meet the footpath to share facilities there is no corduroy and tramline tactile paving.

More examples about this issue are the following:

Shared route of pedestrian path and cycle track in Finglas Rd-Glenhill Rd

Shortcoming: Narrow section of footpath. In the current situation, there is not enough width for mobility impaired people in a share route with the cycle track.
A narrow shared path can lead to conflict between vulnerable pedestrians and fast moving cyclists and should be avoided where possible.
Recommendation: Full segregation should be considered with careful consideration of any resultant criss-crossing maneuvers that may manifest from the implementation of full segregation of cyclists and pedestrians.

d) Sheet 10

Footpath in Finglas Road East-Close to Old Finglas road

Shortcomings: Narrow width of footpath in a share surface with the cycle track.
Recommendations: 2 meter wide should be recommended so that mobility impaired people can travel comfortbly.

2.2.3 Access Routes-Drainage

The crossfall gradient of the footpaths within this section of the scheme was not considered too steep at any particular point.

In other points, the badly construction of this slopes can provoke an inappropriate drainage and make the mobility of disabled people difficult.

The complete sections if footpath should be constructed in their place with minimum cross fall gradients of 1:50.

Drainage gratings should be positioned beyond the boundaries of the access route. Where this is not feasible they should be flush with the surrounding surface. It is important to minimise the risk of trapping canes or wheelchair wheels.

Poor drainage at some crossing points was also noted. The gradients of the road carriageway at the crossing points shall be designed to ensure water drains away from the line of travel.

a) Sheet 08

Crossfall in Glenhill Road

Shortcomings: A gradient of the path poorly constructed can provoke water accumulation.
Recommendation: Good construction and maintenance in the sections of the footpath should be taking into account, especially where gradients can make the surface to be slippery.

b) Sheet 09

Crossfall in Tolka Valley Road

Shortcomings: The water drain in the dished kerb has been blocked by the leaves.
Recommendations: A good maintenance should be advisable in crossing points where the dished kerb join to the carriage way. Due to the gradient this is hazard point to have accumulated water and slippery ground.

2.2.4 Access Routes-Guardrails

In the first part of the route there are few signs of guardrails to guide and protect people with disabilities.
There is a protective guardrail in the east side of the footpath as we saw in the chapter of access route general of this report. This is due to the change in level of the footpath with the carriageway and to protect from landscaped area.

It is also observed in the staggered crossing point in Wellmount Road, that guardrails haves been provided in the long section of the crossing. A toucan crossing is in the design proposed and these guardrails probably to be unnecessary.

In Glenhill Road junction, there are to traffic islands with guardrails. In Design project, this crossing point is with only a unique refuge island and guardrails areas will be reduced.
This also occurs in Tolka Valley junction.

2.2.5 Pedestrian Crossing Points

The correct solutions for pedestrian crossing points can be checked in the article 4.3.5
We can differentiate three types of crossing points:
Uncontrolled crossing points, controlled crossing points and staggered signalized crossings.
As main pedestrian crossing points shortcomings, it is remarkable the absence in of no dropped kerbs provided or dropped kerbs with inadequate width.

We are going to locate these shortcomings through corresponding drawing sheets in design Project of Stage ii.

a) Sheet 01

Crossing point in St. Margaret's road

Shortcomings: Uncontrolled crossing point. It is noted the absence of correct tactile paving.
Recommendations: "Buff or grey" tactile paving. Depth of 1.2 m, gradient 1:12 max. Level difference of dished kerb: 6mm.

b) Sheet 03

Crossing point R103-Main Street

Shortcomings: Uncontrolled crossing point. It is noted the absence of correct tactile paving.
Recommendations: A crossing point should be considered and an island of refuge and ensure an adequate crossing time for crossing. A tactile paving should be provided if it is considered as an area for pedestrians to wait.
”Buff or grey” tactile paving. should be installed. Depth of 1.2 m, gradient 1:12 max. Level difference of dished kerb: 6mm.

Crossing point in R103-Main Street

Shortcomings: Controlled crossing point with no correct tactile paving and dished kerb.
Recommendations: Red Blister tactile paving. Gradient 1:12 max, level difference 6mm, rounded kerb edge and raised and central kerbs should be painted white yellow for the benefit of partially sighted people. At the crossing point, the tactile paving should be laid across the full width of the dropped kerb (but not the taper kerbs). This should be a minimum of 2.4m wide and should be 800mm (2 slabs) deep.

c) Sheet 05

Crossing point Wellmount Road- Finglas road

Shortcomings: Uncontrolled crossing point with no tactile paving. If the traffic island is intended to be a wait area for pedestrians, tactile paving in the refuge island should be also provided.
Recommendations: “Buff or grey” tactile paving. Depth of 1.2 m, gradient 1:12 max. Level difference of dished kerb: 6mm.

Crossing point Wellmount Road- Finglas road

Shortcomings: Lack of red blister tactile to building line or rear of footpath.
Recommendations: Repairing deteriorated pavement. The stem should be extended to the building line.

Crossing point Finglas Road- Finglas Pl

Shortcomings: Uncontrolled crossing point. It is noted the absence of the correct tactile paving in the corners.
Recommendations: A crossing point should be considered and an island of refuge and ensure an adequate crossing time for crossing. “Buff or grey” tactile paving should be considered. Depth of 1.2 m, gradient 1:12 max. Level difference of dished kerb: 6mm.

a) Sheet 07

Controlled Crossing point in Clearwater Shopping Center

Shortcomings: Controlled crossing where tactile paving slabs should need to be reviewed.
Recommendations: The stem of tactile paving surface in the controlled crossing point should extend to the rear of footpath at the crossing point .The tactile paving should be laid across the full width of the dropped kerb: this should be a minimum of 2.4m wide and should be 800mm (2 slabs) deep. The top of the dropped kerb at the crossing should be painted white for the benefit of partially sighted pedestrians. Audible "bleep and sweep" and tactile devices should be implemented.

Multi-staged Crossing in junction of Finglas Road and Clearwater Shopping Centre

Recommendations: The multi-staged controlled crossing point is reduced in the design proposed to one only stage. This should avoid the confusion for multiple audible signals and should reduce the time of crossing. Accessibility measures and red blister tactile paving should be provided in the new central refuge island.

b) Sheet 08

Staggered Crossing point Glenhill road- Finglas Road

Shortcomings: Islands in staggered crossings use to be a hazard to mobility/sensory impaired road users due to the insufficient footpath width.
Recommendations: Tactile paving for staggered crossing points should be revised. Check 4.3.5 of this report. Dimensions of width recommended of red Blister tactile paving. A staggered island crossing increases the crossing distance particularly for vulnerable pedestrians. The island also results in a constrained dwell area for potentially high volumes of pedestrians. The layout of the junction should be revised as part of the scheme to remove the staggered crossing, thereby improving the overall crossing facility and the dwell space at footpaths, and decreasing the required crossing distance.

Crossing point in the Griffith- Finglas Road

Shortcomings: Absence of tactile paving at a side road.
Recommendations: “Buff” or grey tactile paving should be installed although motorists to recognize the priority pedestrians have when crossing the side road.

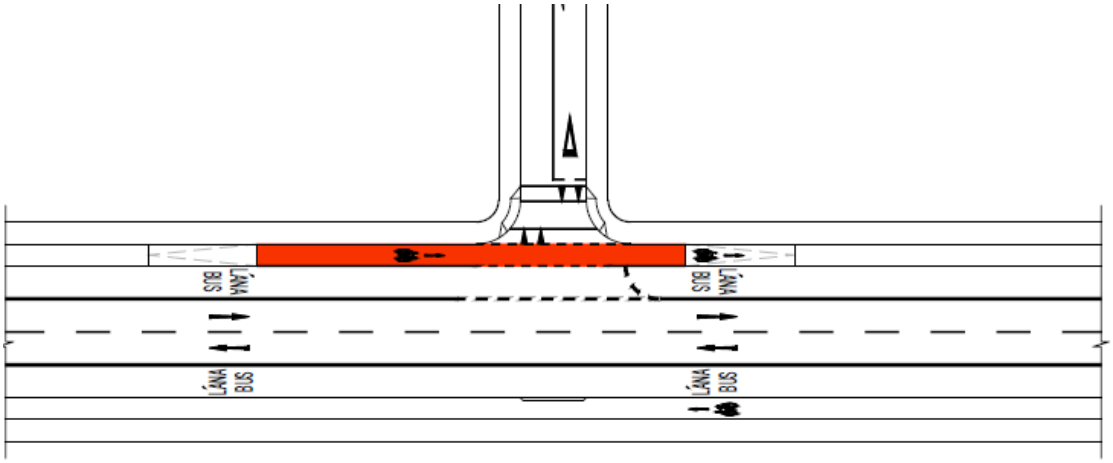
Staggered Crosswalk with fencing in Griffith road- Finglas Road

Shortcomings: Islands in staggered crossings use to be a hazard to mobility/sensory impaired road users due to the insufficient footpath width.
The width of pedestrian refuge island is minimum to guarantee the passage of mobility impaired people between the guardrails and the traffic signals. Dimensions of width of tactile paving should be checked.
Recommendations: The layout of the junction should be revised as part of the scheme to remove the staggered crossing.

Crossing point in Premier Square-Finglas Road

Shortcomings: A shared route path for cyclists and pedestrians crosses a side road with absence of tactile paving.
Recommendations: “Buff” or grey tactile paving should be provided to indicate the start/end of the route. At the flush dropped kerb it will be necessary to provide the blister surface to a depth of 1200mm, and this should be laid across the full width of the crossing point. Corduroy tactile paving of 2400mm deep should be disposed separated a length of 1200mm. from the red blister paving in the cycle track (in-line) and in the footpath (perpendicular to the direction of movement), as per the Guidance of the use of tactile paving surfaces, UK,DETR)

Other options is where the cycle road is required to be on-road for another reason where the cycle track should be ramped down to road level 20m in advance of the junction and should be coloured red across the mouth of the junction.
Whilst priority is retained for cyclists across the mouth of the junction, pedestrians will not have priority and will navigate the crossing using the uncontrolled tactile paving arrangement,



On-Road Cycle Lane Priority Junction Treatment

c) Sheet 09

Crossing point in Tolka-Valley- Finglas Road

Recommendations: It should be considered as an island of refuge and ensure an adequate crossing time for crossing. A red blister tactile paving should be provided if it is considered as an area for pedestrians to wait.

Crossing point in Tolka-Valley- Finglas Road East Side

Shortcomings: Absence of tactile paving in the intersection of shared route and carriageway.
Recommendations: Tactile surfaces should be provided to indicate the start/end of the route.

d) Sheet 10

Staggered Crossing point Old Finglas Road- Finglas Road East Side

Shortcomings: The width of pedestrian refuge island is minimum to guarantee the mobility for impaired people to pass comfortably.
Recommendations: Two-stage signalized crossings are commonly used when the carriageway is particularly wide, and people may have difficulty crossing in one stage.
It should be recommended when possible a straight through (non-staggered). Traditionally, guardrails have been used to form a central waiting area, and this may be appropriate on high-speed roads, but in low-speed situations, a kerb upstand within the refuge area may suffice.
This arrangement also allows people to ignore the stagger and cross in one movement if they feel comfortable to do so, maintaining their desire line.
The layout of the junction should be revised as part of the scheme to remove the staggered crossing.

Crossing point Tolka Vale Apartments- Finglas Road East Side

Shortcomings: Absence of tactile paving in the intersection of shared route and carriageway.
Recommendations: Tactile surfaces should be provided to indicate the start/end of the route.

e) Sheet 11

Multi-stage crossing at a junction in Ballyboggan Road- Finglas Road East Side

Shortcomings: Multi- stage and pedestrian refuge island with the absence of tactile paving.
Recommendations: Tactile paving surfaces should be provided. A controlled crossing point would be advisable with adequate signal-controlled crossings and pedestrian guardrails. Waiting areas for pedestrians should be large enough to accommodate the expected numbers of pedestrians, particularly people using wheelchairs or pushchairs who also need space to turn.
In the project design a unique stage is provided.

f) Sheet 13

Crossing point Slaney Road Finglas Road

Shortcomings: Absence of tactile paving in the intersection of shared route and access road to petrol station.
Recommendations: Tactile surfaces should be provided to indicate the start/end of the route.

Crossing point Slaney Road Finglas Road

Shortcomings: Full with of the dropped kerb and the red blister slabs in the stem should be reviewed.
Recommendations: The red blister tactile paving should be extended to the rear of footpath. The full width of the dropped kerb (but not the taper kerbs) should be a minimum of 2.4m wide.

Staggered Crossing point Slaney Road Finglas

Shortcomings: Different gradients in a narrow crossing point can cause mobility difficulties for wheelchair users to turn
Recommendations: When possible it is advisable to use a straight through (non-staggered) solution.

The layout of the junction should be revised as part of the scheme to remove the staggered crossing, thereby improving the overall crossing facility and the dwell space at footpaths, and decreasing the required crossing distance.

Crossing point the willows Finglas Road

Recommendations: As in some parts of the scheme, in a shared route of cyclists and pedestrians, tactile surfaces must be taken into account at junctions with side roads.

2.2.6 Tactile Paving Surfaces

Of all the things seen in the previous section of Pedestrian Crossing Points where along the route it has been possible to observe the absence of tactile surfaces in some of the crossings.
Any crossing locations within the proposed scheme shall be upgraded to provide the necessary tactile paving surfaces.

2.2.7 Change in Level

The gradient in some sections of footpath in the route should be checked. If gradient is steeper than 1:20 (5%) as per Technical Guidance Document M, the footpath should be considered as a ramped access route and it would have to be taken into account the measures for accessibility of a ramp.

2.2.8 Shared Spaces, Share Surfaces

The most remarkable share surfaces in the route are the corresponding to the cycle track and footpath that run parallel to the carriageway.
A cycle facility segregation (horizontal and vertical is recommended).

2.2.9 Surface Material

It is observed during the audit walking that many of the footpaths are deteriorated. With fractured concrete slabs that cause differences in level and hazard for the comfortable transition of people with disabilities.
The footpaths shall be homogenous in material, however, and where concrete footpaths have been patch repaired with asphalt, and vice versa, full sections of the footpaths shall be broken out and replaced to provide a smooth finish along the footpath.
Special care should be taken with sunken chamber covers, cracked or loose paving.

Some examples of shortcomings about surface materials in the route are:

a) Sheet 04

Footpath Finglas-Road to Wellmount Rd

Shortcomings: Uneven surfaces, cracked paths and loose elements pose a hazard to mobility of impaired people.
Recommendations: Consider a level and homogenous footpath pavement. Avoid gaps and vertical deviations between paving slabs greater than 5 mm.
Regular and effective maintenance should prevent or replace cracked and uneven paving slabs and those with loose joints.

b) Sheet 05

Pavements of the footpath in the junction Finglas-Road to Wellmount Rd

Shortcomings: Deteriorating pavement patched with asphalt.
Recommendations: Renovate and level surface of footpath and kerbs.

c) Sheet 06

Crossing point Finglas-Road to Wellmount Rd

Shortcomings: Deteriorating pavement patched with asphalt.
Recommendations: Renovate and complete tactile paving to the rear of footpath.

Footpath Finglas-Road to Wellmount Rd-West side

Shortcomings: Fallen leaves can be a hazard for people with mobility problems.
The pedestrian path is completely covered which forces the cycle track to be invaded.
Recommendations: A good maintenance and checking of the state of paths should be advisable. Regular cleaning of the pedestrian routes, particularly where located next to deciduous trees, will be required and any landscaping plans to be cognizant of proposed tree types next to footpaths.

Footpath Finglas-Road to Glenhill Road-East Side

Shortcoming: Cast iron covers on the shared route can make vertical deviations of more than 5mm in the paving surfaces.
Recommendation: When possible, chambers and inspection travels should be located out of the direct line of travel.

d) Sheet 08

Footpath and cycle track in Finglas- The Griffith

Shortcomings: Where segregated bicycle tracks meet the footpath to share facilities, there is no corduroy and tramline tactile paving.
Recommendations: Maximum segregation should be considered as part of the design of the scheme.

e) Sheet 09

Pavement on shared route in Finglas- Prospect Hill

Shortcomings: Raised pavement on cycle track and end of footpath route by a vegetal element. Separation lines are not correctly delimited.
Recommendations: Both pavements on a shared route should need to be reviewed in order to force to invade the contiguous path and pose a hazard.

f) Sheet 10

Footpath Finglas- Old Finglas Road

Shortcomings: Uneven surfaces, cracked footpath with level difference.
Recommendations: Consider a level and homogeneous footpath pavement.

g) Sheet 11

Footpath Finglas- Old Finglas Road

Recommendations: Some cast iron grid should be revised if are placed in the line of travel of pedestrian path.
If gratings are located in walking surfaces, then they should have spaces no greater than 13 mm wide in one direction. If gratings have elongated openings, then they should be placed so that the long dimension is perpendicular to the dominant direction of travel.
Some parts of paths for pedestrians and cyclists need to be repaired in terms of their surface materials, with contrast, delimitation and regularized paving.
As examples:

h) Sheet 12

Footpath and cycle track in Finglas- Glasnevin Cemetery

Shortcomings: Cracked paving in both paths, deterioration in the paint.
Recommendations: Renovate pavement and irregularities on the pavement.

2.2.10 Street Furniture

Some examples about street furniture can been remarkable during the walking audit:

a) Sheet 05

Street furniture crossing point –Finglas Rd-Wellmount Rd

Shortcomings: The placement of certain street furniture may hinder or constitute a barrier to the movement for disabled people.
Recommendations: Access to park areas should be made with appropriate dished kerb and free of obstacles.

b) Sheet 08

Traffic signals in the travel of a staggered crossing point –The Griffith

Shortcomings: The measures for separating the traffic signals from the edge of the pedestrian refuge island should be taken into account for not reducing the passage width.
Recommendations: Distance of 500mm. maximum from the traffic signals to the edge boundary.The space provided within the islands of staggered crossings is generally constrained and difficult for vulnerable pedestrians to navigate. Single stage crossings should be provided to improve dwell space, crossing legibility and to reduce crossing distances.

It is also remarkable about street furniture: the provision of appropriate seating should be considered, especially on sloped site and long routes. Check distances in chapter 4.6.6.

2.2.11 Bus Stop Design

a) Sheet 05

Bus Stop Finglas-Road to Finglas road-East Side

Shortcomings: The access pavement at many bus stops along the route must be checked. Free of obstacles, firm surface and non-slip.
Recommendations: The location of bus stop should be such that there is 1.2m clear width in its front. It should be provided smooth, level footpaths; safe, accessible, road crossing facilities; good lighting; and convenient drop-off and pick-up facilities for people with disabilities.
Easy access kerbs (Kassel kerbs) should be installed at all bus stops.

b) Sheet 06

Bus Stop Finglas-Road to Wellmount Rd

Shortcomings: Access to some island bus stop is poor, particularly for mobility and visually impaired pedestrians.
Recommendations: Access from the sides of the bus stop shelter should be guaranteed with a minimum clear space of 1200mm to the boundary edge. For the bus stops placed almost in the middle of the path, their location should be such that there is 1.2m clear width in front of them, placed to the back of the path and out of the direct line of travel.

c) Sheet 07

Bus Stop Finglas-Road –Clear Water Shopping centre

Recommendations: an adequate width of passage should be left on all sides of the bus stop. 1200mm. minimum.

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d) Sheet 08

Bus Stop Finglas-Road –The Griffith

Shortcomings: Reduced pick-up point. It is noted an insufficient area for pedestrians and people with mobility impairment.
Recommendations: The paved waiting area should be increased and provide a kerbside supported with textured surface and with the enough length, height fixed and curved profile. When possible a passenger shelter should be placed.

e) Sheet 10

Bus Stop Finglas-Road and Old Finglas-West side

Shortcomings: More examples where it is observed the lack of optimum kerbs for bus stop and street furniture obstructing the passage for disabled people and wheelchair users.
Recommendations: The location of bus stop should guarantee a 1.2 clear width in its front.
A “Kassel Kerb” should be provided with textured surface, height fixed to suit kneeling suspension of modern buses, curved profile to enable accurate bus positioning at the stop and also to reduce lateral impact between wheel and kerb.

f) Sheet 11

Bus Stop – Finglas on Tolka River

Shortcomings: Problems for pedestrians and disabled people to access to bus without a hazard crossing the cycle track. Lack of optimum kerbs
Recommendations: Consider measures to adapt the current bus stop to an island bus stop option. An easy access kerb (Kassel kerbs) should be incorporated.

g) Sheet 12

Some more examples of bus stops where the path need to be updated:

Bus Stop in Finglas Road close to Petrol Station

Shortcomings: Inappropriate edge kerb in Bus Stop and lack of textured surface.
Recommendations: An easy access kerb (Kassel kerbs) should be incorporated.

h) Sheet 14

Bus Stop in Finglas Road close to Glasnevin Cemetery

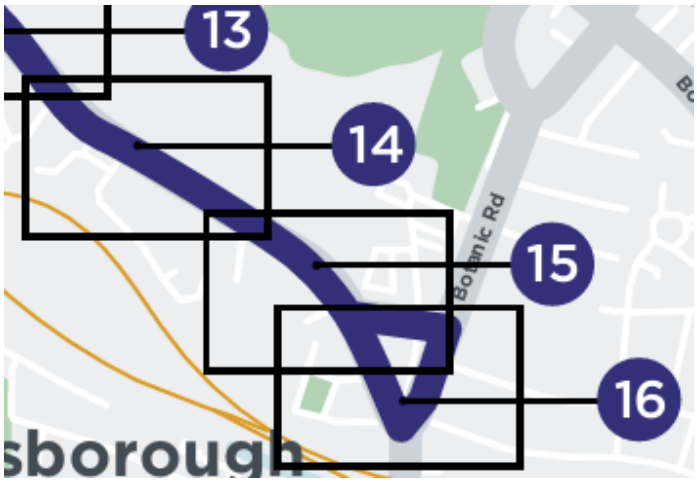
Shortcomings: Inappropriate edge kerb in Bus Stop and lack of textured surface.
Recommendations: An easy access kerb (Kassel kerbs) should be incorporated

For more graphic information on the shortcomings in the route, drawings in the Appendix A of this report should be consulted.

3. SLANEY ROAD JUNCTION TO PROSPECT WAY - FINGLAS ROAD

3.1 Description of the Route

South of Slaney Road there are no verges at the road edges, apart from a short section on the eastern side. Due to the narrower cross-section along this part of Finglas Road, the proposed segregated cycle tracks will be 1.5m wide rather than 2m as provided further north, and they will be separated from the adjoining footpaths by a step in level.
The existing bus stops will be upgraded to island bus stops, requiring some minor land-take at the disused petrol station on the western side just north of the Slaney Road corner.
There are 4 priority-controlled side streets along the western side of Finglas Road in this section at The Willows, Claremont Court, Claremont Lawns and Tower View Cottages where the corners will be tightened and raised platform crossings provided for pedestrians and cyclists.
South of Claremont Lawns alongside Glasnevin Cemetery the road will be widened for the addition of a northbound bus lane and a southbound cycle track. The existing on-street car parking will be removed and replaced with a new parking facility with the same number of spaces, which will encroach into the open public space at Claremont Lawns.
Opposite the southern end of Glasnevin Cemetery there will need to be road widening with land-take along the front of St. Vincent's School to accommodate an additional bus lane. Replacement planting of trees and shrubs will be provided behind a new boundary railing for the school. To the south of the school the widening and land-take will transition to the eastern side of the street for a short length at the front gardens of 3 houses (No.34, 36 and 38 Bengal Terrace) until the existing road is wide enough to fit bus lanes and cycle tracks in both directions. It will be necessary to remove 5 small street trees in this section, which will be replaced in new positions within the outer edges of the footpaths.
Reaching Hart's corner, the southbound traffic turns left into Prospect Way, which is the northern side of the one-way triangular gyratory traffic system at Hart's Corner. The road carriageway will be narrowed on Prospect Way to accommodate a two-way cycle track along the northern side. There will be no change to the kerbs on the southern side of this street and the existing trees will be retained on both sides.
On the southern end of Finglas Road, which is one-way in the northbound direction, the street layout will be modified within the boundaries to provide a segregated northbound cycle track. It will be necessary to remove 7 street trees in this section, which will be replaced in new positions within the outer edges of the footpaths.



3.2 Problem Identification

The different sheets indicated in each of the points studied refer to the drawings in which is divided the conceptual project to facilitate their location.

3.2.1 Accessible Parking

There are hardly any provisions for accessible parking along the route.

a) Sheet 14

In front of the Glasnevin Cemetery a parking space for the people with disabilities is provided on the existing route.

Accessible car parking bay in Finglas Road with Glasnevin Cemetery.

Shortcomings: Absence of dished kerb for disabled people.
Recommendations: The dimensions for off-streets (perpendicular) designated parking spaces should be: 2400mm wide x 4800mm long.
Each space should have a recommended 1200mm clear access zone to both sides and the end of the space.
A dished kerb should be provided with a slip-resistant surface and a minimum width of 1200mm and minimum gradient of 1:12. The accessible parking space should be on firm and level ground with no variation of surface exceeding 5 mm.

3.2.2 Access Routes-General

Most of this route is adjacent to Glasnevin Cemetery. In the existing state there are parts of a shared route (pedestrian, cyclist) and others where the cycle track is at carriageway level.
A physical segregation between carriageway, cycle track and footpath should be recommended.

For the width of the footpath, designers has to take into account that the recommended width would be 2000mm., and a minimum of 1500mm. where existing obstacles that cannot be removed.

a) Sheet 14

Footpath adjacent to Glasnevin Cemetery in Finglas Road

Shortcomings: Footpaths and cycle tracks should be updated as per the design project with a clear delimitation of the spaces.
Recommendations: segregated cycling facilities are one of the core objectives of the CBC project. Physical segregation (horizontal and vertical) would be recommended with a full height 120mm upstand kerb between the carriageway and the cycle track and 60mm with the footpath.

3.2.3 Access Routes-Drainage

The crossfall gradient of the footpaths within this section of the scheme was not considered too steep at any particular point while sometimes due to the construction of this slopes can be badly repaired and provoke an improper drainage and difficulties for people with mobility impairment.
The complete sections if footpath should be constructed in their place with minimum cross fall gradients of 1:50.
The proposed scheme should, as a minimum, accurately identify all areas of failed or badly repaired footpath surfaces to be broken out, and homogenous, complete sections of footpath to be constructed in their place with minimum cross fall gradients of 1:50. Paved footpaths where foundations have failed shall be reconstructed, and paviours replaced in areas where asphalt patchwork has been used instead.

b) Sheet 14

Drainage in Finglas Road-De Courcy Square

Shortcomings: The drainage canal is located at the intersection line of the footpaths.
Recommendations: There must be a dropped kerb at the crossing point and it must guarantee the evacuation of water without the hazard of it becoming wet and slippery.

3.2.4 Access Routes-Guardrails

We find hardly any guardrails along the route except those that have been used for crossings, both island and staggered.
Some of them tend to change by changing the crossing points proposal in the design.

3.2.5 Pedestrian Crossing Points

The correct solutions for pedestrian crossing points can be checked in the article 4.3.5
The standard of existing pedestrian crossing points through this section of the scheme varies with no dropped kerbs provided in some locations and dropped kerbs with inadequate width preventing wheelchair users and pushchairs from navigating the crossings comfortably.
Some examples of these Shortcomings through corresponding drawing sheets in design Project of Stage ii. are:

a) Sheet 14

Uncontrolled crossing point Claremont Court-Finglas Road

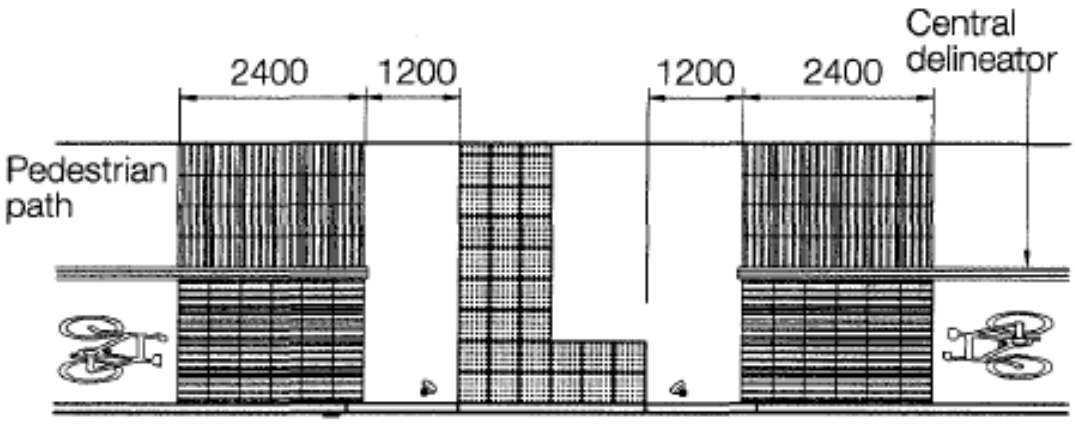
Shortcomings: Uncontrolled crossing point. It is noted an absence of the correct tactile paving.
Recommendations: “Buff or grey” tactile paving. Depth of 1.2 m, gradient 1:12 max. Level difference of dished kerb: 6mm.

Crossing point Claremont Lawns -Finglas Road

Shortcomings: A Shared route path for cyclists and pedestrians crosses a side road with absence of tactile paving.
Recommendations: “Buff” or grey tactile paving should be provided to indicate the start/end of the route. At the flush dropped kerb it will be necessary to provide the blister surface to a depth of 1200mm, and this should be laid across the full width of the crossing point.

Crossing point Claremont Lawns -Finglas Road

Shortcomings: A Shared route crosses a controlled crossing point with absence of corduroy tactile paving.
Recommendations: Where a controlled crossing is situated on a shared route the blister tactile should be installed to indicate the presence of a dropped kerb.
The cycle track/footpath surface should also be installed to a depth of 2400mm at the start/end of the shared route.



Layout at controlled crossings along a shared route.

b) Sheet 15

Crossing point in Towerview Cottages -Finglas Road

Shortcomings: A Shared route crosses a side road with the absence of corduroy tactile paving.
Recommendations: Where a controlled crossing is situated on a shared route the blister tactile should be installed to indicate the presence of a dropped kerb. The cycle track/footpath surface should also be installed to a depth of 2400mm at the start/end of the shared route.

Crossing point- Finglas Road-St. Philomena's Road

Shortcomings: Uncontrolled crossing point. It is noted an absence of the correct tactile paving.
Recommendations: "Buff or grey" tactile paving. Depth of 1.2 m, gradient 1:12 max. Level difference of kerb: 6mm.

Multi stage crossing point- Triangular Refuge Island Finglas Road-Prospect way

Shortcomings: Multi-stage in a pedestrian refuge island. Desire lines of crossing are interrupted by street furniture (cement planter box).
Recommendations: It would be advisable take into account the direct movement of the disabled people in the refuge island. Some of street furniture has been used as protective elements but some of them block the pass. Waiting areas for pedestrians should be large enough to accommodate the expected numbers of pedestrians, particularly people using wheelchairs or pushchairs who also need space to turn.

c) Sheet 16

Uncontrolled crossing point in Finglas Road-Dalcassian Downs

Shortcomings: Uncontrolled crossing point. Absence of the correct tactile paving
Recommendations: “Buff or grey” tactile paving. Depth of 1.2 m, gradient 1:12 max. Level difference of dished kerb: 6mm. The tactile paving should be extended the whole width of the dished kerb.

Crossing point- Finglas Road-Prospect Ave

Shortcomings: Uncontrolled crossing point. It is noted an absence of the correct tactile paving and dropped kerb.
Recommendations: “Buff or grey” tactile paving. Depth of 1.2 m (direct line), gradient 1:12 max. Level difference of dished kerb: 6mm.

3.2.6 Tactile Paving Surfaces

Along the route, it has been possible to observe the absence of tactile surfaces in some of the crossings. Tactile paving surfaces are in relation with the previous chapter, pedestrian crossing points.
Any crossing locations within the proposed scheme shall be upgraded to provide the necessary tactile paving surfaces. Check chapter 4.3.6

3.2.7 Change in Level

There are no significant changes in level within the majority of this section of the scheme.
Not enough level changes are developed on routes to have public access ramps.
Or having to develop external ramps or external steps

3.2.8 Shared Spaces, Share Surfaces

The most remarkable share surfaces in the route are the corresponding to the cycle track and footpath that run parallel to the carriageway.
A cycle facility segregation (horizontal and vertical is recommended).

3.2.9 Surface Material

It can be observed during the route kerbs, loose or cracked paving and sunken chamber covers.
The footpaths are predominantly constructed in concrete.
In some locations asphalt was used for patch repair in the concrete footpaths, creating undulations in the surface and potential trip hazards due to poor finishing.

Some of the shortcomings about surface materials are the following:

a) Sheet 14

Pavements in junction of Finglas Rd and Claremont Court

Shortcomings: in-situ concrete pavement is broken in the joint with the concrete manholes covers.
Recommendations: Pavement should be repaired at this point. The stem of tactile paving should extend to the rear of footpath. Chamber and inspection covers should be located outside the crossing.

b) Sheet 16

Footpath and cycle track in Finglas road parallel to Glasnevin Cemetery

Shortcomings: Uneven surfaces, cracked footpath with level difference in the junction of the footpath and an old side road.
Recommendations: Consider a level and homogenous footpath pavement. Gaps and vertical deviations between paving slabs greater than 5 mm should be avoided.

Footpath and pavement of commercial area in Finglas Rd –Dalcassian Downs

Shortcomings: Deteriorated and uneven floor paving at the entrance of commercial area. Cobbles and concrete slabs join in an irregular surface at the same level of
Recommendations: The different surfaces should match in a smooth transition. Concrete pavement in the area of footpath should be repaired.

3.2.10 Street Furniture

a) Sheet 15

Street furniture in Finglas Road – De Courcy Square

Shortcomings: Reduced width between bollards that prevent the correct transition of a wheelchair user or people with mobility impairment.
Recommendations: The width between bollards should be minimum of 1200mm. It is also recommended using bollards only if necessary. Instead it could be used street furniture or landscaping.

3.2.11 Bus Stop Design

a) Sheet 14

Bus stop –Finglas Road-junction Claremont Lawns-East Side

Shortcomings: The cycle track is using the bus stop and can be a hazard for pedestrians and disabled people that are waiting and want to access the bus. It is remarkable the absence of an optimum kerb, the reduced height of kerb for buses and the lack of textured surface.
Recommendations: An alternative system of bus stop should be taking into account A kerbside in the bus stop should be supported, with textured surface and follow the characteristics: Height fixed to suit kneeling suspension of modern buses, curved profile to enable accurate bus positioning at the stop and also to reduce lateral impact between wheel and kerb.

Bus stop–Finglas Road-junction Claremont Lawns-West side

Shortcomings: In the existing situation, the cycle track is interfering the flow of persons that want to cross to access to the bus stop.
Recommendations: Design features of bus stop bypasses should be considered encouraging people cycling to slow down and make them more likely to ride single file such as chicanes, ramps or a narrowing of the cycle track.

b) Sheet 15

Bus stop –Finglas Road-Saint Vincent's Secondary School

Shortcomings: Lack of optimum kerbs for bus stop .
Recommendations: A "Kassel Kerb" should be provided with textured surface, height fixed to suit kneeling suspension of modern buses, curved profile to enable accurate bus positioning at the stop and also to reduce lateral impact between wheel and kerb.

Bus stop –Finglas Road-De Courcy Square-East Side

Shortcomings: Reduced pick-up point. It is noted an insufficient area for pedestrians and people with mobility impairment. The pole narrows the width of the path possibly causing a constraint to passing wheelchair users or buggies, or that the location of the pole may coincide with the location of the bus door
Recommendations: The paved waiting area should be increased and provide
kerbside bus stop should supported with textured surface and with the enough length, height fixed and curved profile. Where possible a passenger shelter should be placed.

c) Sheet 16

Bus stop –Finglas Road-Dalcassian Downs

Shortcomings: Inappropriate edge kerb in Bus Stop.
Recommendations: A ”Kassel kerb” solution should be provided with the appropriate height and textured surface. They should contrast in colour with the footway.
The optimum kerb height at a bus stop to cater for these persons should be around 180mm. All new bus stops and improvements to existing ones should be designed to this height.

For more graphic information on the shortcomings in the route, drawings in the Appendix A of this report should be consulted.

4. SCHEME WIDE DISABILITY ACCESS DESIGN CONSIDERATIONS

4.1 Design Issues

This point establishes in a summarized way the points dealt with in the previous sections, so that the designers can know the criteria that have been taken into account. This scheme follows the guidelines of the Building for Everyone - A Universal Design Approach (2012) guide.

Table 01 Design Issues

DESIGN ISSUES
Consider access routes, levels, gradients and site layout at earliest design stage
Locate car parks and access route to promote safety and convenience.
Ensure pedestrian environments are logical and clear to understand.
Match dished kerbs on opposite sides of the road at crossing points

4.2 Accessible parking

4.2.1 Design Criteria.

Table 02 Accessible parking

ACCESSIBLE PARKING
Locate as close as possible to main entrance maximum .Distance **25 m**.
Minimum one accessible bay, then **one** accessible bay for every **15 parking bays**.
Firm level surface with white markings on **blue** background. **Dished kerb** to access pavements.
Size of **standard** accessible bays should be **4800 x 6000 mm**. This include 1200 mm. wide access zone on both side and rear
Size of bay for **multi-purpose** vehicles should be 5400 x 7800 mm. This includes 3000 mm. access zone to one side and rear.
Minimum **2600 mm**. **height clearance** to be maintained throughout.
Provide **clear signage** to highlight location of designated parking spaces within the park.
Ensure off-street spaces are 2400 mm(min) x 4800 mm (min) with 1200 mm wide access zones to both sides and end of space
Provide on-street spaces 3600mm. wide x 7000mm long.
Be careful that no street furniture is obstructing the pavement side
Cross-fall gradient not exceeding 1 in 50.

4.2.2 Off Street Parking Spaces

Off-Streets (Perpendicular) designated parking spaces should be: **2400mm wide x 4800mm long.**
Each space should have a recommended **1200mm clear access** zone to both sides and the end of the space.
Adjacent spaces may share a side-access zone. The access zones to the side of the space enable car doors to be fully opened and drivers and passengers, including infants carried in removable car seats, to transfer in and out of the vehicle without being obstructed by an adjacent car. The access zone to the end of the space provides a safe area for access to the car boot and for cars with rear hoists.

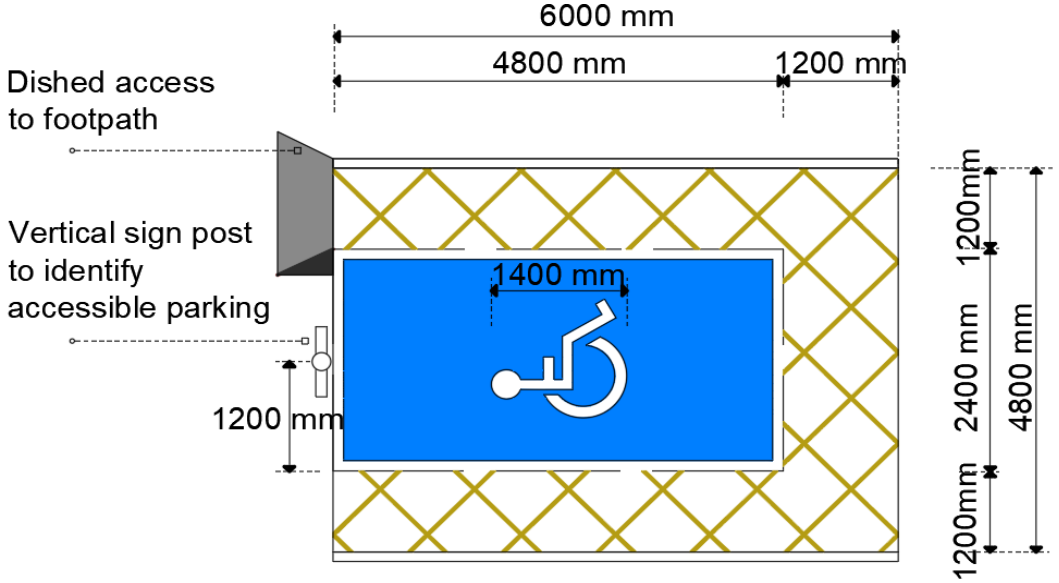


Figure 1. Example of Perpendicular parking. Cars and small vans

There should be adjacent dished access to the footpath. The kerb dish should have a slip-resistant surface with a minimum width of 1200mm and minimum gradient of 1:12.

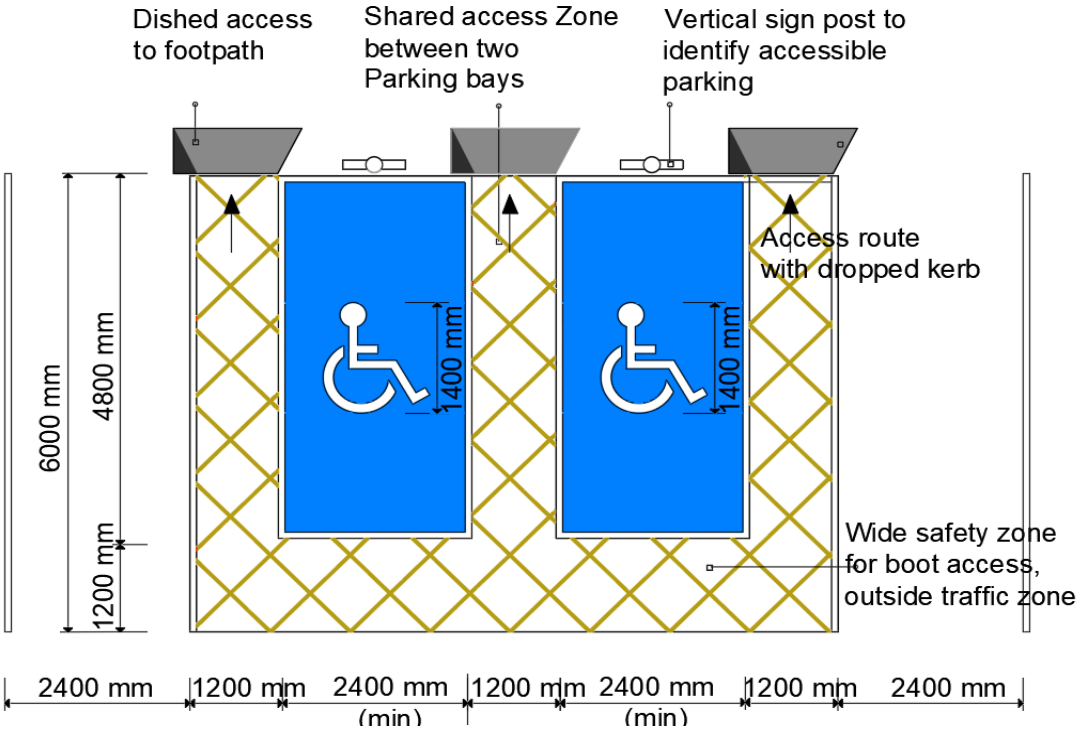


Figure 2. Accessible parking showing shared access zone

4.2.3 On-Street Parking Spaces

On-street (or parallel) designated parking spaces should be: **3600 mm wide x 7800mm** in length

These dimensions enable a driver or passenger to safely transfer in or out of a car where there is passing traffic and to access the rear of the vehicle using a ramp or tail lift.
In some situations, particularly where the pavement width is restricted, it may be appropriate to lower the pavement to road level for the full length of the parking space. There should be no street furniture obstructing egress on the pavement side.

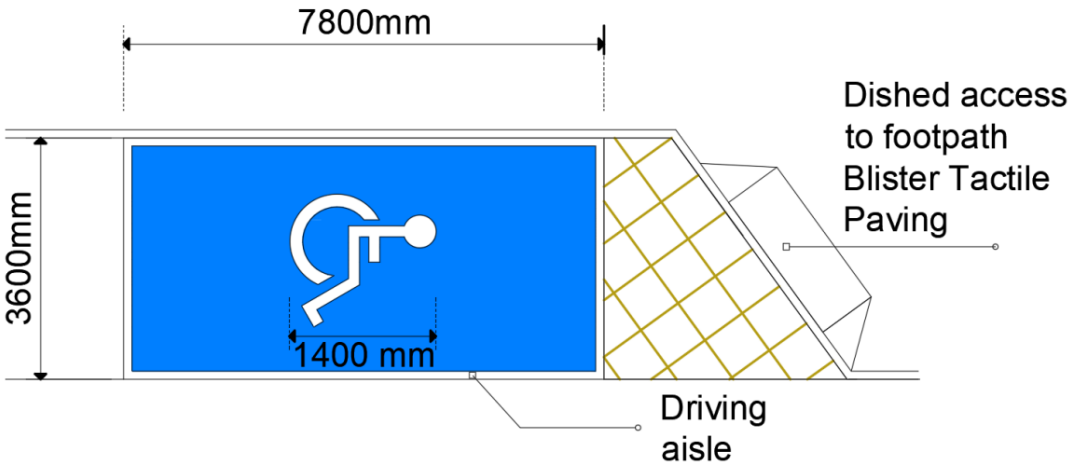


Figure 3. Example of Parallel parking

On-street bays should be located where the road gradient and camber are no greater than **1 in 50.**

Wherever possible, a number of car parking spaces that are larger than the standard dimensions should be provided

Where designated bays are at a different level to an adjacent path or pavement, a dropped kerb should be provided to facilitate easy access for wheelchair users. A **dropped kerb** should incorporate the appropriate tactile marking

4.2.4 Surface and markings.

The surface of the bay and adjacent accessibility zone should be **firm, durable** and **slip-resistant**. with no variation in surface profile exceeding 5mm.
A **1-in-50** maximum cross-fall gradient is acceptable where necessary to ensure water run-off.
Examples of inappropriate materials are loose sand, cobbles or grave.
The colouring used for accessible parking bays should be **white markings** on a **slip-resistant blue** surface. The adjacent accessibility zone should be cross-hatched in yellow.

All parking spaces should be firm, level and even, with no variation in surface profile exceeding 5mm. An uneven surface or an inclined bay makes transfer into and out of a car very difficult and may present a hazard to some pedestrian.

4.2.5 Number of accessible car parking bays required

Where public parking is provided, a minimum of one, and then **one in 15 spaces** should be designated for drivers and passengers with disabilities.
Of these designated spaces, **one in four** should be designed to accommodate large multi-purpose vehicles. The recommendation is that these 1:4 bays would be of the largest size (5400mm x 7800mm) to accommodate vehicles using all entry/exit options i.e. hoist/lift/ramp

A perpendicular arrangement is characteristic of off-street parking facilities such as large car parks and parallel parking more typical of on-street parking spaces. In both arrangements, there should be sufficient space for a person to alight from a car and to safely move around parked vehicles to an accessible, understandable and useable pedestrian route.

4.2.6 Location of Car and Multi-Purpose Vehicle Bays

The designated accessible parking spaces should be located at the same level as and no more than 25m from the principal entrance to the building or buildings served by the car park.

Approach routes should be **level** and accessible in their design with **dished kerbs** and adequate l**ighting**. In multi-storey car parks, the route to accessible parking bays should be **signposted** at the entrance and on all levels.

Ideally accessible bays should be at the same level as the principal entrance.

A suitable passenger lift or ramp should be installed to facilitate access from the parked vehicle to any level where facilities are located.

4.2.7 Car parking signage and wayfinding

Designated accessible parking spaces should be **clearly marked** both on the **roadway** surface and with a **post-** or wall-mounted sign at the end of the bay.

Roadway markings are insufficient on their own as they are not easy to see when the bays are in use and can be covered by snow or leaves.

Post- or wall-mounted signs should be at least **300mm wide x 450mm high** and positioned 1500 to 2500mm to the centreline from ground level. Painted roadway symbols should be at least **1400mm** in plan height.

The location of designated spaces should be clearly signed from the car park entrance.

Signage indicating the location of designated spaces should incorporate the International Symbol of Access.

Figure 4. Example of the international symbol of access.

In addition to the public parking, 'setting down' and 'picking up' points should be provided adjacent to high use **public buildings** and places of interest such as bus/train terminals, hospitals, busy shopping areas and tourists sites, etc. These should be clearly sign-posted and should be located on firm and level ground.

The surface of the setting-down point should be **level with the carriageway** or provide dished access (gradient no steeper than**1:12**) to the adjacent path.

This will allow for convenient access to and from the building entrance for people with walking difficulties or people using a wheelchair. Seating and shelter should be provided within the setting down point.

The setting-down point should include both side and rear access zones with provision for the use of passenger lift/hoist/ramp at the rear and to the side of all vehicles. The required additional rear and side space for the use of passenger hoist/lift/ramp is 3000mm.

Wherever a kerb adjacent to a drop-of bay is dished in the direct line of pedestrian travel allowing flush access between footpath and road, corduroy-type tactile paving (hazard warning) must be installed for the safety of people who are blind or have a visual impairment.

4.2.8 Setting -down points and Pick up point facilities

Table 03 Setting down points and pick up point facilities

SETTING DOWN POINTS
Provide **setting-down** point close to **building service**
Ensure a canopy height clearance of 2600 mm.
Make sure the road surface is **flush** with the **path**, with the appropriate tactile surface
Avoid dished **gullies**, **grilled** and **manhole** covers.

4.2.9 Taxi ranks

Table 04 Setting down points and pick up point facilities

TAXI RANKS
Provide taxi ranks in **appropriate locations**
Orientate taxi ranks to enable passengers to alight and board on the nearside of a taxi
Ensure **pavement width is 4040mm** to allow for wheelchair ramp and maneuvering space
Size of standard accessible bays should be **4800 x 6000 mm**. This include 1200 mm. wide access zone on both side and rear
Provide undercover queuing areas with seating
Provide taxi ranks in **appropriate locations**

Taxi ranks should be provided in appropriate town and city centre locations. Where taxi ranks serve a specific venue, they should be located as close as possible to the entrance and be **clearly signposted**, both within the venue and outside.

Taxi ranks should be orientated so that passengers can alight and board on the nearside of the taxi. Pavements should be at least 4040mm wide to allow adequate space for a wheelchair user to maneuver and for a wheelchair ramp, which can extend 2000mm from the side of the vehicle.

When designing a taxi rank, consideration should also be given to parents with strollers; guide dog users; people with visual difficulties; and those with walking aids when designing a taxi rank.

A pedestrian crossing-point with dropped kerb and the appropriate tactile markings should be provided close to the taxi rank.

Wherever possible, queuing areas should be undercover and incorporate seating, or provide seating close by.

4.3 Access routes

Table 05 Access route

ACCESS ROUTE
Ensure access route has sufficient width for expected number of people.
Provide recommended clear width **2000mm** wherever possible.
Provide **passing places** where clear width is less than 2000mm.
Include **resting places** at intervals on long routes
Ensure width is not less than **1200mm**, on short constricted sections of an access route
Widen pavements in front of shops and where there are bus stops
Use **firm, smooth** and even surface on access routes, with **maximum crossfall** gradient of **1 in 50**
Avoid gaps and vertical **deviations** between paving slabs greater than **5 mm.**
Keep any break in surface or gap such as **drainage gulley** no greater than **10 mm**. and perpendicular to line of travel.
Prevent accidents at changes in level to side of access route with kerb upstands, barriers or guardrail.
Ensure access route has sufficient width for expected number of people.
Provide recommended clear width **2000mm** wherever possible.
Provide **passing places** where clear width is less than 2000mm.

Access routes in the external environment include paths, pavements and other rights of way, such as pedestrian routes through a public space. An access route may be a path through a rural location; a pavement alongside a city centre street; or a route of travel between a car park and building entrance.

All access routes where possible should be designed for use by everyone.

Existing wayfinding signage, such as information signs and nameplates, shall be reviewed to ensure adequate provision for all pedestrian users. Refer to the Road Infrastructure Audit report for further information.

2.0m is the desirable minimum width for a pedestrian footpath. This width should be increased in areas catering for significant pedestrian volumes where space permits. DMURS defines the absolute minimum footway width for road sections as 1.8m based on the width required for two wheelchairs to pass each other

4.3.1 Passing spaces

The design of the scheme should strive for a minimum footpath clear width of **2000 mm**, and a minimum **1500 mm** clear width where existing **obstacles** cannot be removed.

Where **existing trees** constrain the route, the footpath clear width may be reduced to **1200mm** only over a maximum distance of 2000 mm

Where the clear width of an access route is **less than 2000mm**, passing places should be provided.

Passing places should be **2000mm** wide x **2500mm** long, at a reasonable frequency and located within sight of another passing place, subject to a maximum distance of **25m**.

This will allow groups of people to pass each other, particularly on busy routes. On **long routes,** level resting places should be provided off the path of travel at intervals of no more than **30 metres.**

The recommended variations in widths of footpaths in urban environments are demonstrated in the illustration below.

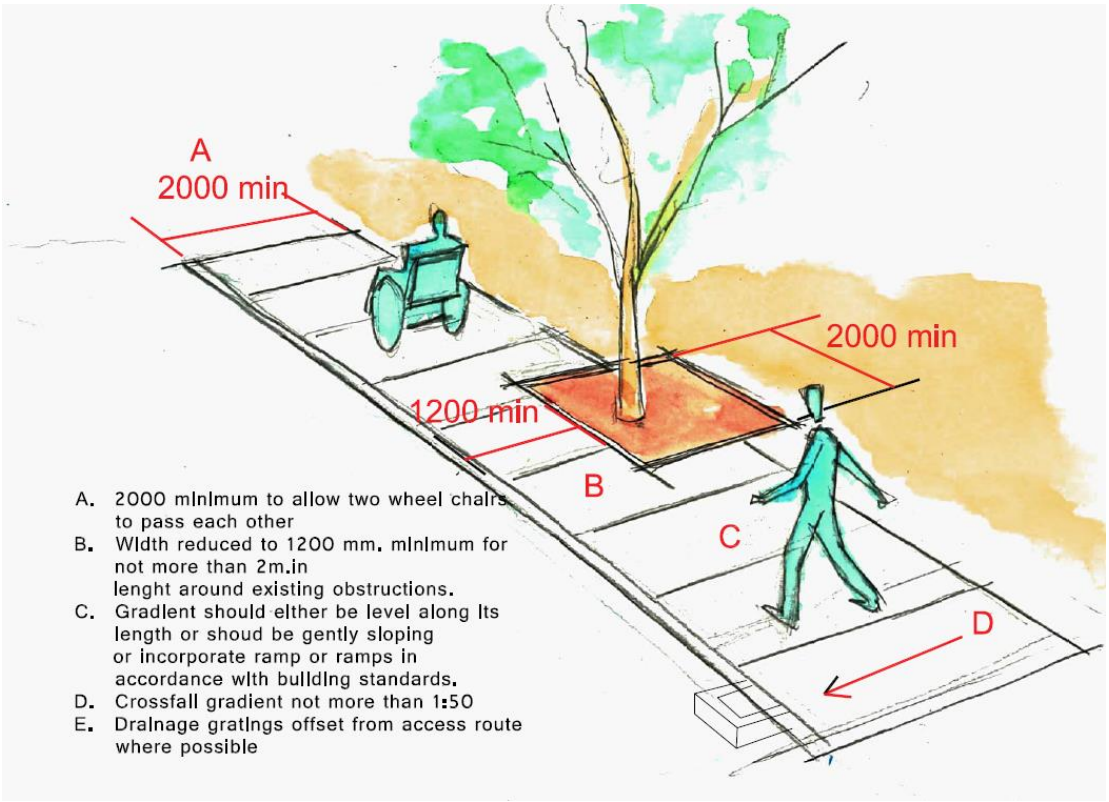


Figure 5. Urban environment pavement layout

At bus stops in front of **shops,** the pavement should be increased to a recommend width of **3000mm** and **3500 to 4500mm**, wherever possible. This will help to minimise congestion and the inconvenience that it can cause. The pavement width should be sufficient to enable people to pass in the opposite direction without stepping into the path of a passing vehicle.

Pavements should be **separated** from the traffic by a **kerb,** a railing or barrier, or by using tactile paving surfaces.

4.3.2 Drainage

The proposed scheme should, as a minimum, accurately identify all areas of failed or badly repaired footpath surfaces to be broken out, and homogenous, complete sections of footpath to be constructed in their place with minimum cross fall gradients **of 1:50.**

Access routes **should be laid** to even falls to allow proper drainage and prevent the formation of puddles.

Where the cross-fall is insufficient, silt may accumulate after rain and cause the surface to become slippery. Puddles can also cause the surface to become slippery; lead to glare in bright sunshine after other parts of the path or pavement have become dry; and become a hazard in frosty weather.

The gap between paving slabs and The gap between paving slabs and any vertical deviation between slabs should not exceed 5mm

Any **break** in the surface, for example drainage channels, or gaps between boards on a walkway, should not be greater than **10mm wide** and should be perpendicular

to the direction of movement. This will prevent walking sticks, heels of shoes and wheels getting caught in the gaps.
In grilles or mesh covers, the mesh size should be maximum **10mm x 20mm.**

The long side of the mesh should be used in the direction of travel for easier use by guide dogs.

Service covers to manhole and inspection chambers should **not** be positioned on pavements, particularly at **crossing points**. They can be dangerous when opened for inspection, forming a trip hazard and reducing the clear width.
If there is a change in level to either side of a path or to the rear of a pavement, **edge protection** should be provided to prevent people from falling.

Edge protection may take the form of an **upstand kerb, 150mm** high and **visually contrasting** with the path or pavement, where the change in **level** is **between 200mm and 600mm**. A **guardrail** or barrier can be used where the change in level is greater than **600mm.**

4.3.3 Guardrails

Guardrails or barriers should be **1200mm high** and should **visually contrast** with the surrounding surfaces so that they are readily identifiable by all pedestrians and road users.
Galvanised railings are **not acceptable.** Metal handrails should be avoided as they can become very cold in winter weather conditions.
Preferred materials that are not cold to the touch include timber and plastic-coated steel.
Handrails can be used by some people not only for support but also to pull themselves up and to reduce speed of descent when going down when using a ramp or stair.

Handrails whose surface is of a low thermal conductivity, such as timber or **nylon sleeved** steel tube, are the **most comfortable** to touch in extremes of temperature.

Handrails fabricated from metals with a relatively low thermal conductivity, such as **stainless steel**, are more suitable in locations where resistance to **vandalism** and/or low maintenance are key factors.
Guardrails should be designed so that people with a lower eye level, including children, people of smaller stature, and wheelchair users, can see and **be seen through the railings**, and to prevent assistance dogs from walking underneath.

If the top of the guardrail is intended to provide support to pedestrians, it should comprise a tubular rail, **40 to 50mm in diameter**. An oval rail 50mm x 40mm can also be used.

Where the ground level to the side of an access route is flush with the path or pavement surface, a **change in the surface treatment** at the edge of a path, such as grass or a ground flora verge, will help prevent people from straying off the path, in order to safely negotiate a ramp

4.3.4 Dished kerbs

Table 06 Dished kerbs

DISHED KERBS
Dished kerbs should be provided at **pedestrian crossing** points and **parking bays**.
These dished kerbs should be painted **white/yellow** for the benefit of people with **vision impairment**.
The **central kerb** dishing should **be flush** with the road/carriageway and have a width of **1200mm**.
The gradient on the dished kerb should be no steeper that **1:12 (max)**.
The kerb dishing should be located **away** from **corners** and always at opposing sides of the street.
The dished crossing should also be located **away** from any **drainage gratings**/manholes.
Colour and **layout** of tactile paving to be determined by **type of crossing**.
Central kerb area to be max. **6 mm**. above carriageway surface.
Standard kerb height generally **125 mm** above carriageway.
The correct tactile paving must be laid along the **full width** of any dished kerb
The **depth** of the tactile paving into the footpath will depend on whether the crossing is **in line** with the pedestrian travel route **or not**.

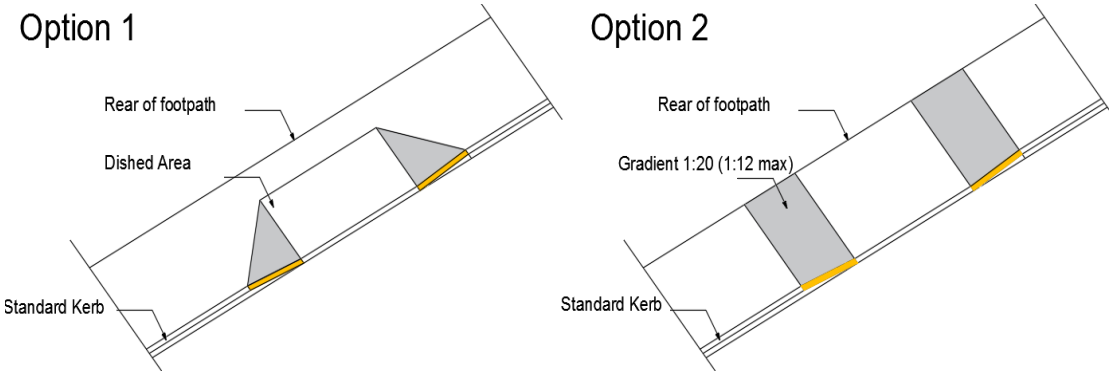


Figure 7. Dished Kerb Options

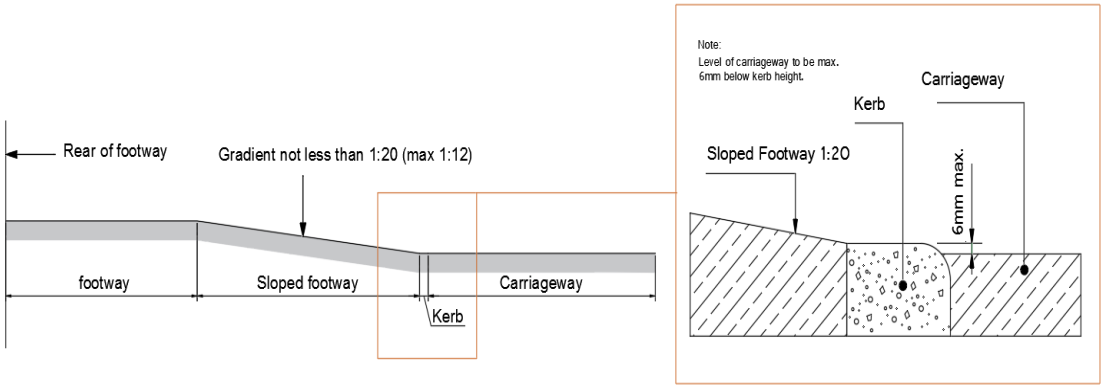


Figure 8. Dished Kerb Section Detail

4.3.5 Pedestrian Crossing Points

Table 07 Pedestrian crossing points

PEDESTRIAN CROSSING POINTS
Provide crossing points following **consultation** with relevant roads authority.
Location crossing points **where they are safe** and convenient for all road users.
Provide level or **flush crossing** points **at all controlled crossing points**, junctions at side roads and other access points.
Ensure crossing points incorporating a dropped kerb
Ensure recommended **1200mm**. width of level surface to the rear of pavement at crossing point.
Make sure crossing points are well drained, with a maximum **cross-fall gradient of 1 in 50**.
In **busy streets**, controlled crossing points with **traffic lights** should be provided.
Audible crossing signals being essential for people with **visual difficulties**.
In **residential areas**, dropped kerbs should be provided at least **every 100 metres**
6mm rounded kerb edge is acceptable
Pavement should be **ramped perpendicular** to the road with a recommended gradient of **1 in 20,** where practicable, but not exceeding **1 in 12**
Crossing point in the direct line of travel. Dropped kerb and red blister paving surface at controlled crossing points.

Pedestrian crossing points should be provided with a tactile paving in each direction of approach, as indicated in the publication 'Guidance on the use of Tactile Paving Surfaces' by the UK DETR Nov 98.also Section 13.3 of the Traffic Management Guidelines (DTO 2003).

We can differentiate two types of crossing points:
Uncontrolled crossing and controlled crossing points

4.3.5.1 Uncontrolled crossing points

At an uncontrolled crossing the **pedestrian** does **not** have **priority** over vehicular traffic.
The pedestrian must decide whether it is safe to cross.
Blister tactile paving must be used when the **kerbing is dished** at uncontrolled crossing the blister tactile paving should be "Buff" or grey. **(not red)**

Blister tactile paving must be **laid along the full width** of any dished kerb. Depth of paving will depend on whether the crossing is in line with pedestrian travel.

Uncontrolled Crossing. In Line

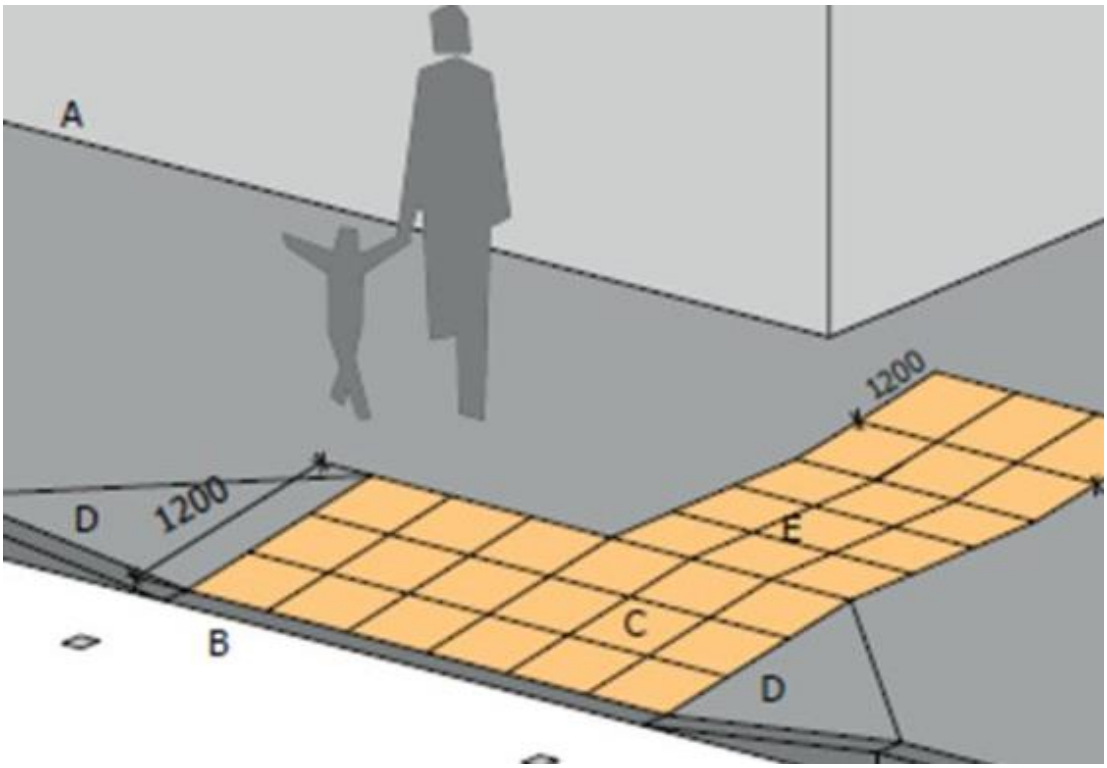


Figure 9. Uncontrolled Crossing. In line
A: Rear of pavement or building line
B: Dropped kerb to flush with carriageway, or subject to a max 6mm. level difference, rounded kerb edge.
Buff blister paving to full width of dropped kerb.
C: Ramped section of pavement perpendicular to crossing to be 1 in 20 (max 1 in 12)
D: Flared sides to be max 1 in 11.
E: L-Shaped stem of blister paving to guide people to crossing points

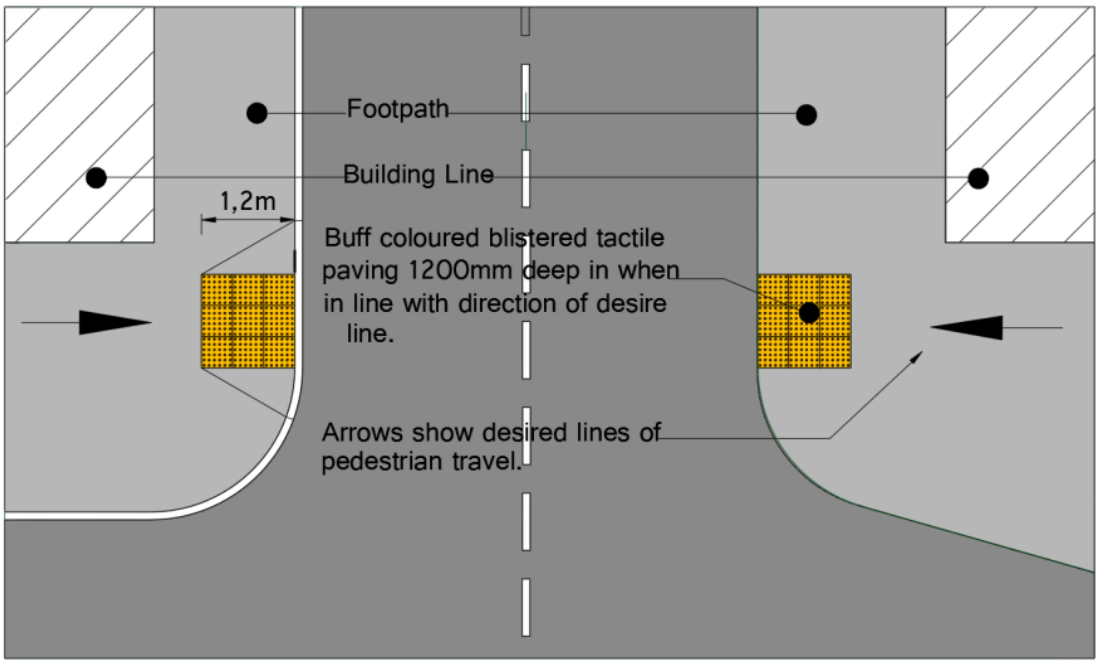


Figure 10. Uncontrolled Crossing. Direct Line of travel

Uncontrolled Crossing. Not In Direct Line

Blister tactile paving should be installed to a depth of **800 mm.**

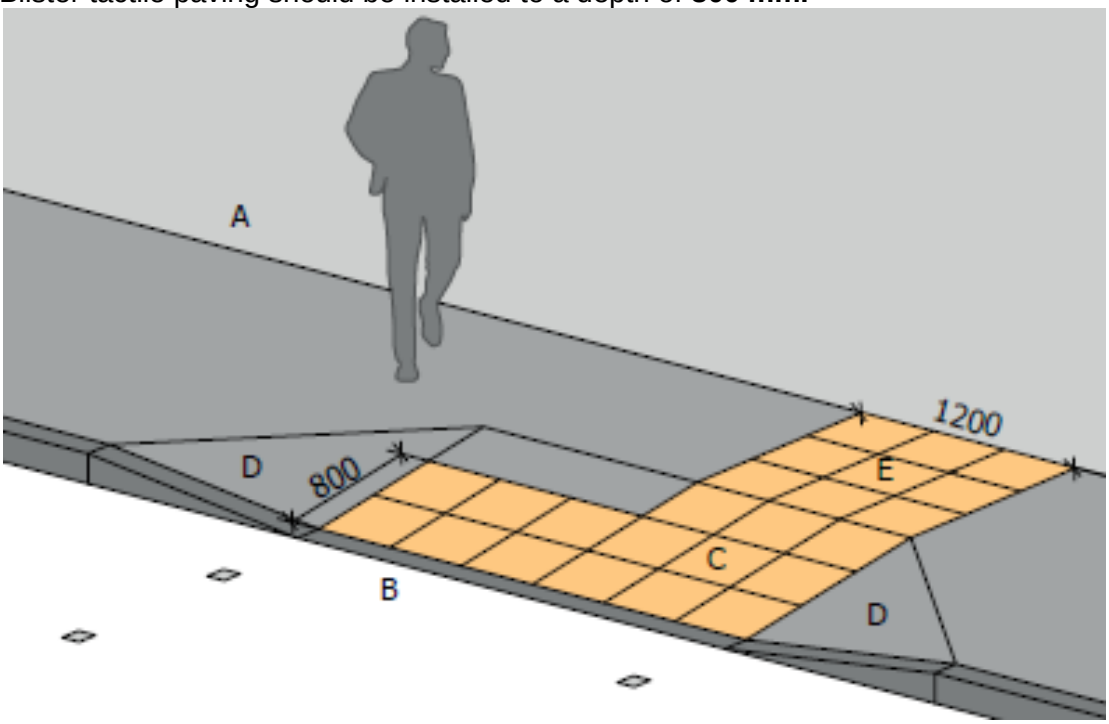


Figure 11. Uncontrolled Crossing at Side Road
A: Rear of pavement or building line
B: Dropped kerb to flush with carriageway, or subject to a max 6mm. level difference, rounded kerb edge.
Buff blister paving to full width of dropped kerb.
C: Ramped section of pavement perpendicular to crossing to be 1 in 20 (max 1 in 12)
D: Flared sides to be max 1 in 11.
E: L-Shaped stem of blister paving to guide people to crossing points

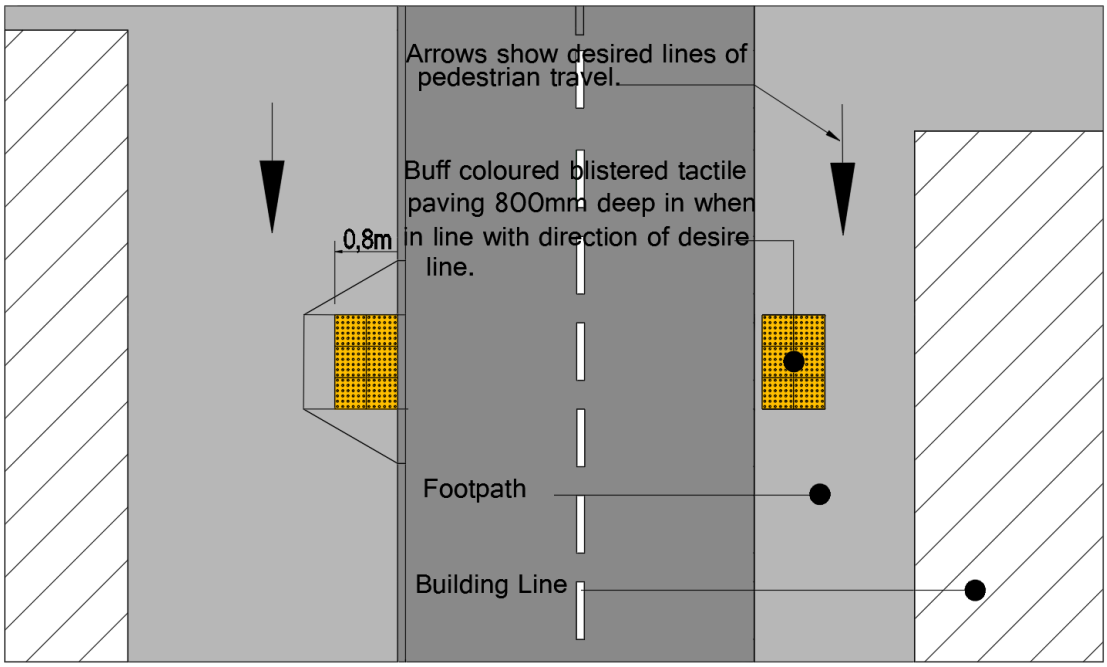


Figure 12. Uncontrolled Crossing. Not in Direct Line of Travel

Uncontrolled Crossing at Angled Junction

Blister tactile paving should be installed to a depth of **800 mm**.

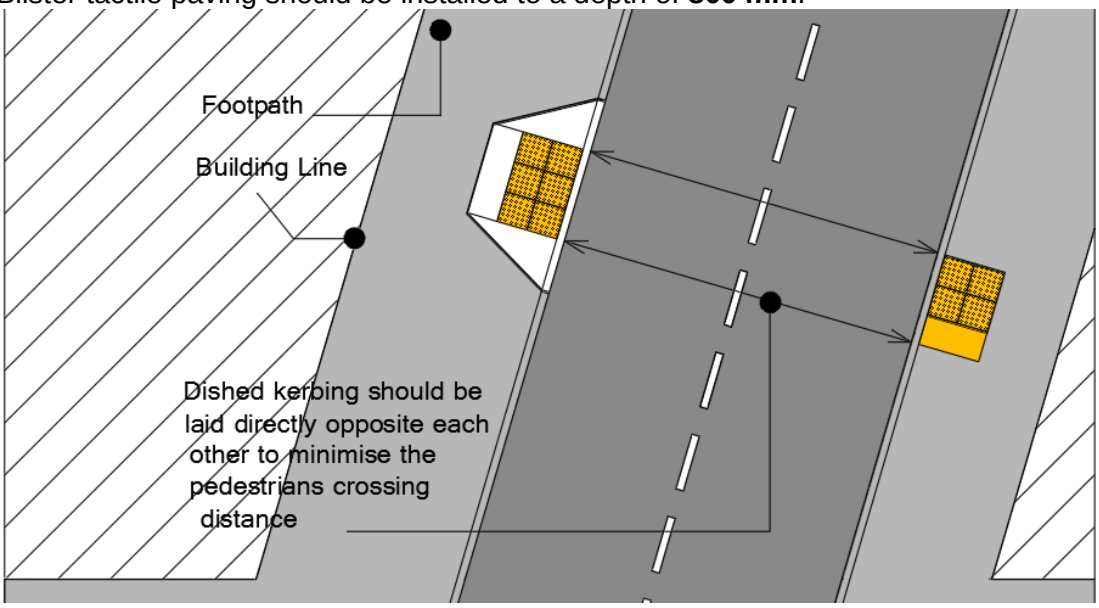


Figure 13. Uncontrolled Crossing. Angled Union

Uncontrolled Crossing. Island of Refuge

Blister tactile paving should be installed to a depth of **800 mm** at each part of the crossing.
Tactile Paving used to alert and enable to continue to cross.
If Island is 2m wide or less then the tactile paving should continue all the way across it.
If the island is **greater than 2 m**. wide then a **gap** should be left between adjacent strips of tactile paving (800 mm. deep)
Consider the provision of an Island of refuge where the carriageway is wider than 7 m.

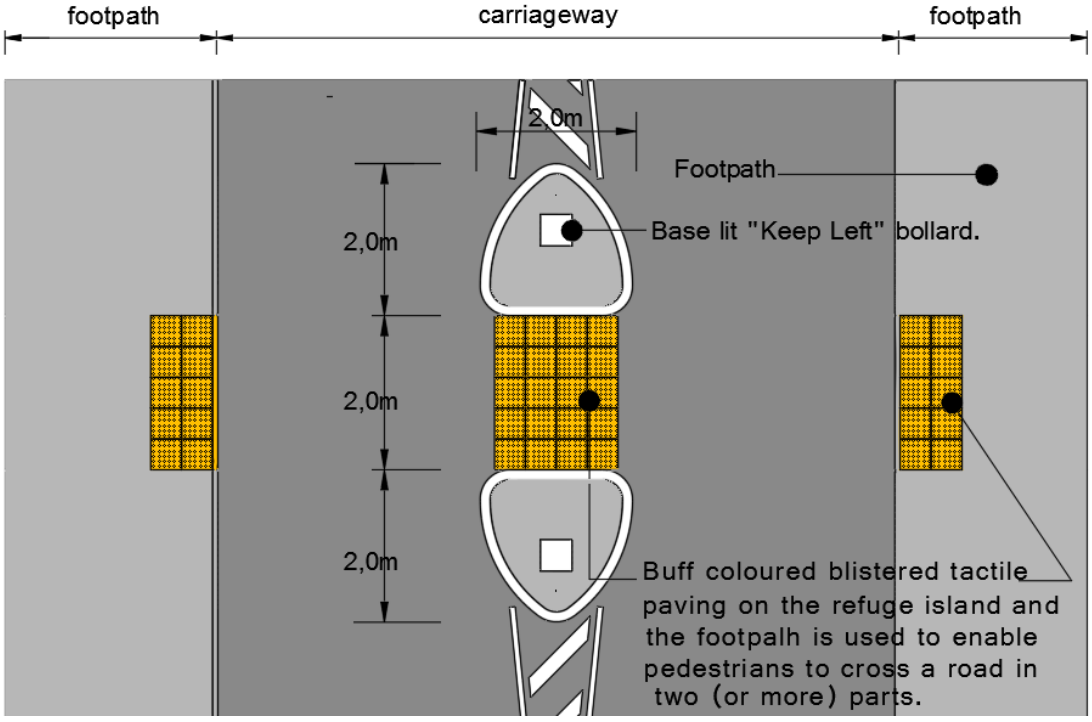


Figure 14. Uncontrolled Crossing. Island of Refuge.

4.3.5.2 Controlled crossing points

Controlled crossing points give positive **signal control** to both pedestrians and drivers and are generally used in the following circumstances:

- Where traffic speeds are 60 Km/ h or less
- Where traffic volumes warrant it
- Where pedestrian flows warrant it.

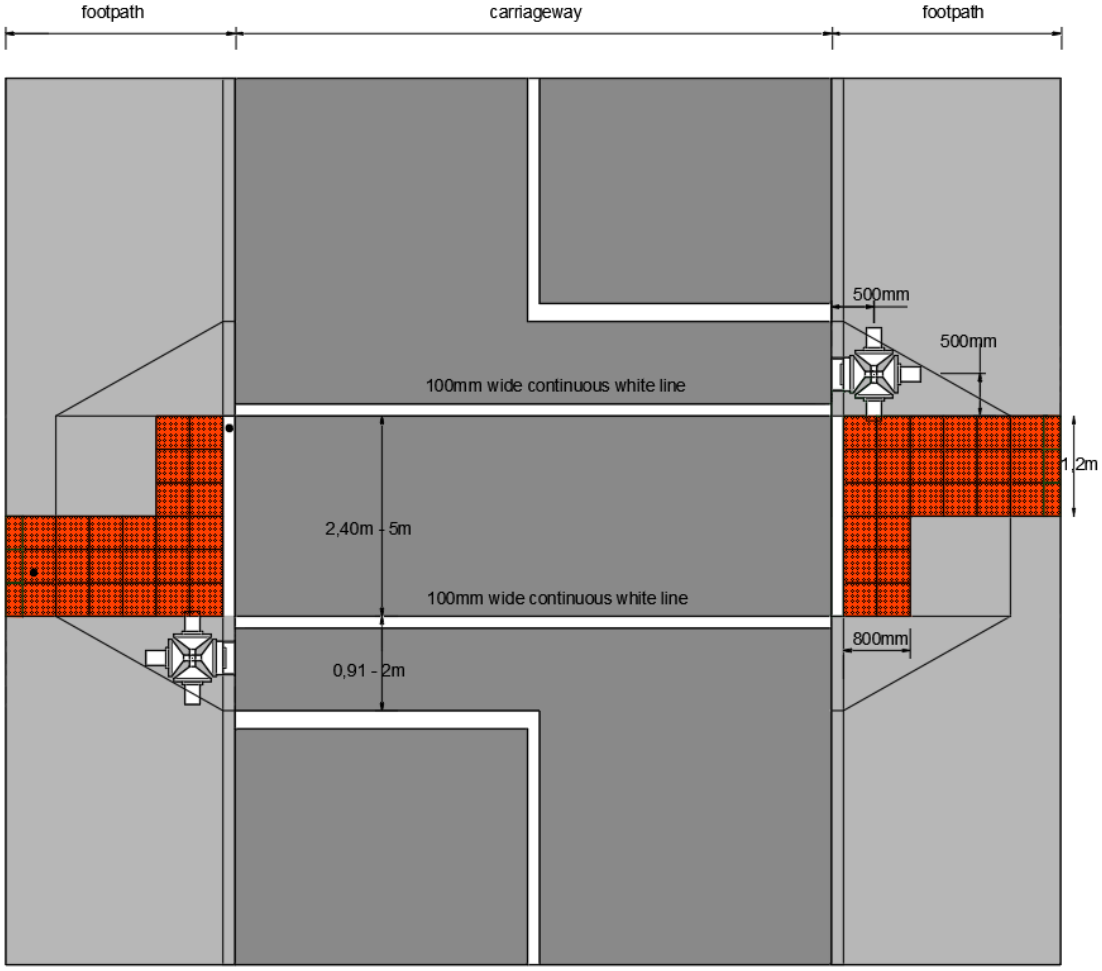


Figure 15. Controlled Crossing. Not in Direct Line of Travel

Central dished max. gradient **1:20;(5%)** to be above carriageway surface and painted white for the benefit of partially sighted people.

The Stem must extend back from the tactile paving adjacent to the push button control box, forming an “L” arrangement in red Blister tactile paving slabs

The Stem can then be followed to the **push button** control which should be at the **right hand side** of the approach to the crossing.

900mm. is the optimum level surface to back dished kerb to provide safe carriage to pedestrians not using crossing.

Where the surround footway or carriageway material is also red then it should be necessary to provide contrasting border with a minimum 150 mm. wide around the tactile surface.

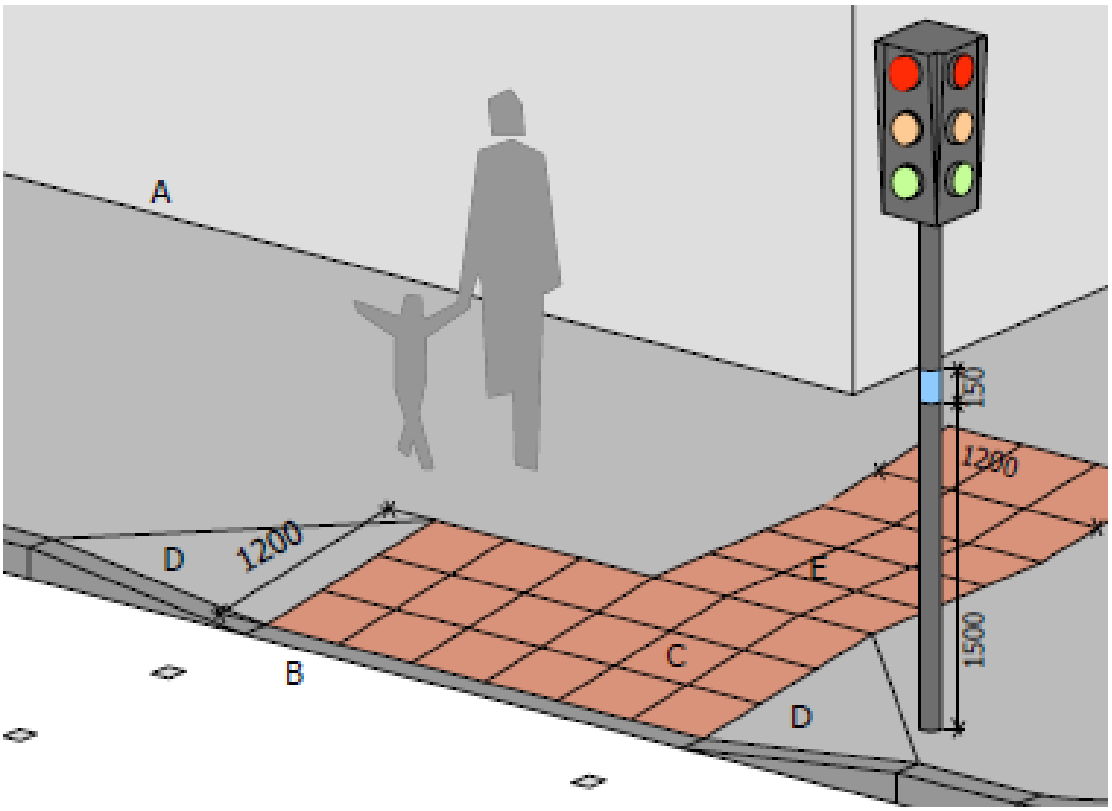


Figure 16. Controlled Crossing. In Direct Line of Travel

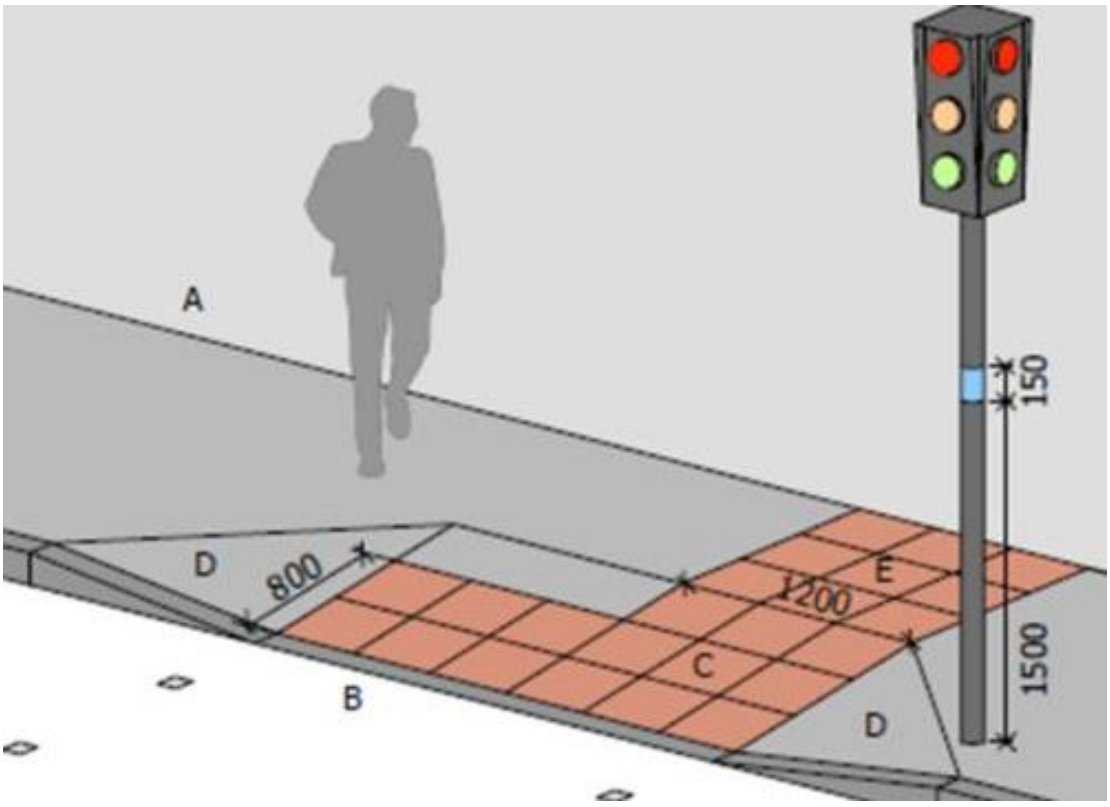
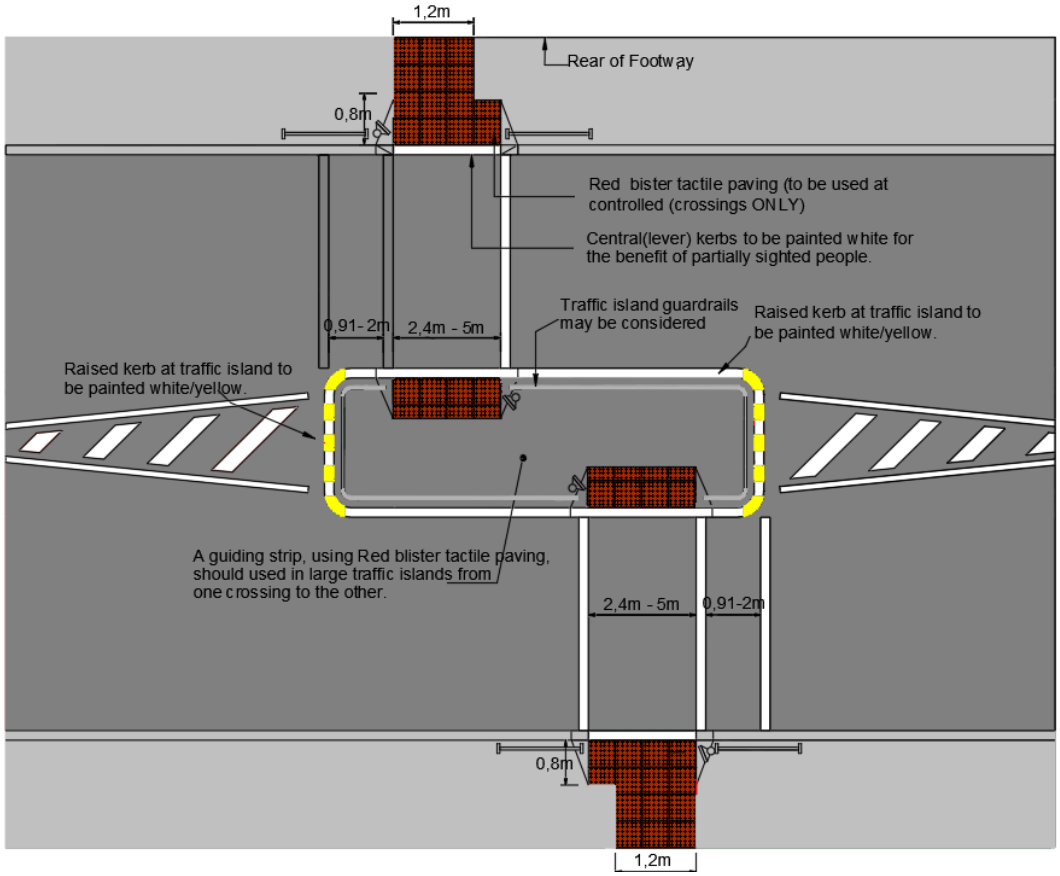


Figure 17. Controlled Crossing. Not in Direct Line of Travel

A: Rear of pavement or building line
B: Dropped kerb to flush with carriageway, or subject to a max 6mm. level difference, rounded kerb edge.
Buff blister paving to full width of dropped kerb.
C: Ramped section of pavement perpendicular to crossing to be 1 in 20 (max 1 in 12)
D: Flared sides to be max 1 in 11.
E: L-Shaped stem of blister paving to guide people to crossing points
Note: Red blister paving to full width of dropped kerb. All dimensions in millimeters.

4.3.5.3 Staggered signasized crosssing

Staggered signalised crossing gives positive **signal control** to both pedestrians and drivers and are generally used in the following circumstances:
Where the carriageway is **wider** than **10m**.
When crossing at dual carriageways.
Where traffic **volumes** are **high**
Where **pedestrian** volumes are **high.**



Staggered pedestrian crossings, and particularly staggered toucan crossings where they exist, shall be designed out as per the Design Manual for Urban Roads and Streets [DMURS]. The space provided within the islands of staggered crossings is generally constrained and difficult for vulnerable pedestrians to navigate. Single stage crossings should be provided to improve dwell space, crossing legibility and to reduce crossing distances.

Figure 18. Controlled Crossing. Staggered Signalized Crossing

Guardrails are required and must provide a minimum 50% Transparency from all angles.
Where the ramped section abuts the carriageway, the road camber should be no more than 1 in 20 for a **horizontal distance of 600mm**. This is to prevent the front wheels of a wheelchair or footrest becoming caught.

The pavement should be sufficiently wide to provide a **recommended 1200mm** width of level surface to the rear of the ramped section for people to pass without having to traverse the inclined surface.
Where a raised road crossing is provided, the width of the raised area should be at least **2400mm** and the surface should be flush with the pavement on both sides.
Where uncontrolled crossing points are provided at road junctions, **dropped kerbs** should be located **away from the curve** of the road.
Dropped kerbs should be located **perpendicular** to the **line of travel** of a person crossing the road and directly opposite a dropped kerb on the other side.
People with visual difficulties risk being misdirected by the orientation of the kerb if it is located on the curve of the road.
In street and roadway environments, **kerbs** are an essential indicator for people with visual difficulties to detect the **edge** of the pavement.
Where dropped kerbs are provided at crossing points, they should incorporate tactile paving surfaces to highlight the absence of a kerb and to orientate pedestrians to the direction of the crossing.
The provision of double yellow line markings or other form of parking restriction should prevent cars parking either side of a dropped kerb and will help to ensure the area remains unobstructed.
Crossing points should always be **well drained**. If puddles form at the base of a ramped slope, it can render the crossing impassable. Adequate drainage should be achieved using cross-fall gradients (maximum 1 in 50) and materials that are themselves pervious or are laid to enable water to drain through joints.
Rainwater gullies should never be positioned in the immediate area of the crossing as they may present a trapping hazard for wheels or sticks.

Table 08 Details tactile layouts at crossing points

DETAILS OF TACTILE LAYOUTS AT CROSSING POINTS			
USE	COLOUR	SHAPE	WIDTH OF BLISTER PAVING
Controlled crossing facility	Red	Varies (see below)	
1.On footways at either side of road		L shape	Stem 1200 mm wide kerbside 800mm/1200mm ay inset or 1200mm at in line
2. On central islands (refuges)		Kerbside	800mm wide at each side if greater than 2m wide or full width if less than 2m wide
Uncontrolled crossing points	Grey or Buff	Varies (see below)	
3. On footways at either side of road to the rear of pavement at crossing point.		Kerbside	800mm wide at inset crossing point 1200mm wide at in-line crossing point
4. On central islands(refuges).		Kerbside	800mm wide at each side if greater than 2m wide or full width if less than 2m wide

4.3.6 Tactile Paving Surfaces

Table 09 Tactile paving surfaces

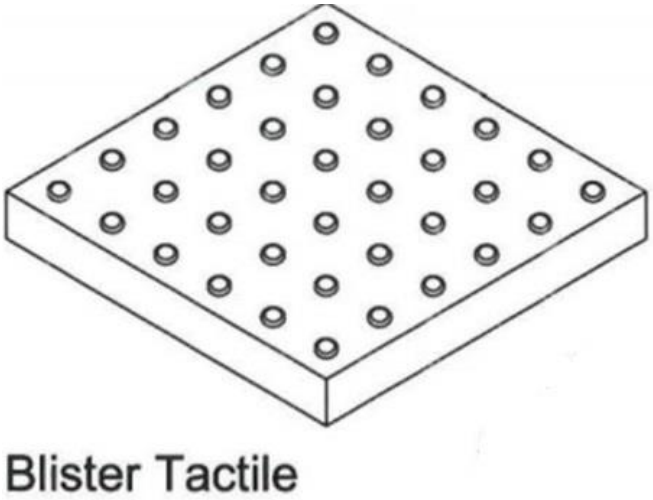
TACTILE PAVING SURFACES
Use tactile paving surfaces sparingly and after consultation with groups representing people with visual difficulties.
Use tactile paving consistently and strictly in accordance with detailed recommendations.
Use blister tactile surfacing to highlight the **absence of a kerb**.
Use **red blister** surfaces at **controlled crossings.**
Use **buff blister** surfaces at **uncontrolled crossings.**
Use **corduroy hazard** warning surface at top and bottom of external steps.

The **colour and layout** of tactile paving is determined by the **type of crossing** or to give a hazard warning.

Tactile paving should contrast as strongly as possible with the background pavement.
Smooth, shiny metal tactile paving is not acceptable, as it is slippery when wet.
People with vision impairment also report that in bright sunlight shiny **metal paving** creates a very unhelpful **dazzling** effect

Different tactile paving surfaces have prescribed meanings and all convey important information about the external environment. Some tactile paving surfaces provide guidance and others indicate the presence of a potential hazard such as an approaching change in level or the absence of a kerb at a road crossing.
The back edge of all blister surfacing, whether at controlled or uncontrolled crossing points should be perpendicular to the line of travel. This will help people who align themselves with the rear edge of the tactile paving to orientate themselves correctly with the direction of the crossing.
Can difference between two main tactile paving:

4.3.6.1 Blister Tactile Paving



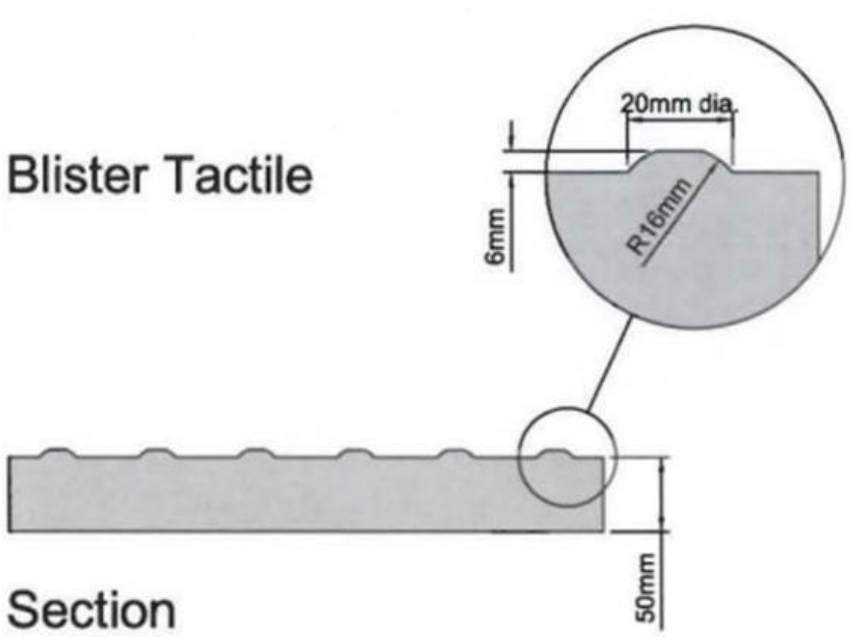


Figure 19. Blister tactile paving tile and studs dimensions.

The blister tactile surface should be installed in the **absence of an upstand** at both controlled and uncontrolled crossing points.

- Where the **footway** has been **dropped** flush with the **carriageway.**
- Where the **carriageway** has been raised to the level of the **footway**.

Tactile paving with a blister surface is used to warn pedestrians with visual difficulties where a pavement **ends** and a **carriageway begins**, in locations where there is **no kerb.**

It may be used at road crossing points with dropped kerbs, raised road crossings and in partially pedestrianised areas where the pavement and carriageway is only differentiated using different colours or materials.

Controlled Crossings:

At controlled crossings the pedestrian is able to establish priority over vehicular traffic.
For the purpose of this advice the following crossing types are described as controlled:

Zebras, Toucans and traffic signalized junctions with pedestrian phases.

The RED blister surface should be used at controlled crossings only.

Example of red blister surface at controlled crossing and offset blister used to indicate the edge of the platform at rail and tram stations.

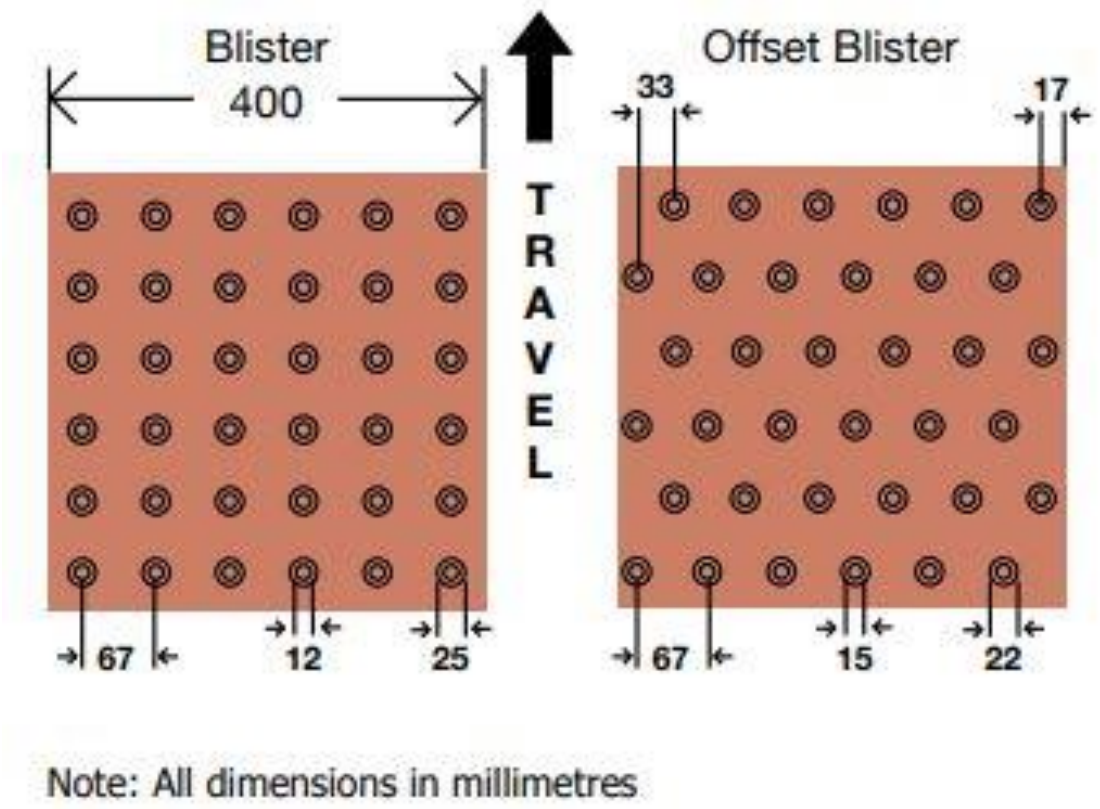


Figure 20. Red blister surface at controlled crossing and offset blister

The **Offset Blister** units are used to indicate the **edge** of the platform at **Rail** and Tram stations, also referred to as off-street applications. Note that the orientation of the offset blister units is critical - the rows of blisters MUST be parallel to the platform edge, and they are generally placed approximately 500mm back from the edge.

Uncontrolled Crossings:

At **uncontrolled** crossings the pedestrian does **not** have **priority** over vehicular traffic and must make a decision about whether it is safe to cross.
For the purposes of this advice the following locations are described as uncontrolled crossings:

Side road crossings, busy crossovers (**vehicle crossings**), crossings away from junctions,
kerb to kerb flat top road humps, signal controlled junctions without pedestrian phases (traffic lights), including those where studs indicating a pedestrian crossing place are provided.

The blister surfaces should be **BUFF** or **any colour** (**other than red**) which provides a contrast with the surrounding footway surface.

Partially sighted people will be assisted by **strong colour contrast** this can be achieved by painting or marking the kerb edge white/yellow.

4.3.6.2 Corduroy Tactile Paving

Can be used for any situation (**except** for **pedestrian crossings**) where visually impaired people need to be warned of a **hazard** and advised to proceed with caution.

Use to warn visually impaired people of the **presence of steps** and is also used **where a footway joins a shared route**, i.e. cycle lanes. at level crossings and at the bottom of ramped approaches to on street light rapid transit platforms.

Corduroy hazard warning paving should **visually contrast** with the adjacent paving surfaces, but it should not be red, as this colour is restricted to blister paving at controlled crossing points.
The raised bars of the corduroy paving should be laid **perpendicular** to the direction of travel in all situations.

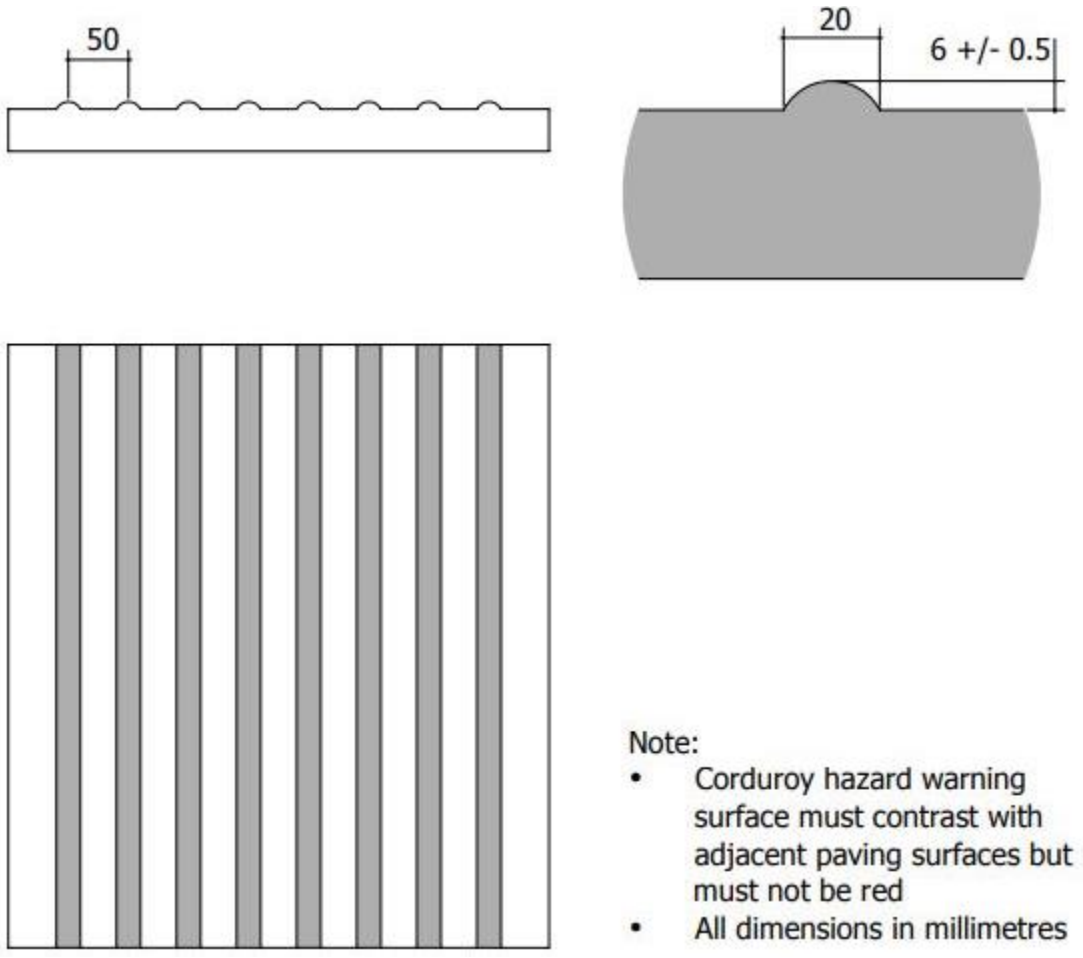


Figure 21. Corduroy tactile paving tile and raised bars dimensions.

Hazard Warning units use continuous half-rods**, raised 6mm** higher than the surface of the paving, to denote a hazard, such as the top/bottom of a flight of steps. Again, the rods should be **parallel** to the edge of the **hazard**.

Cycleway paving uses continuous flat bars to indicate a cycle lane. The **bars run parallel** to the direction of **travel** so as not to impede cycles.

Where a cycleway and a footpath are adjacent, these pavings may also be used for the pedestrian section, with the bars running transversely, and a demarcation strip between the two.

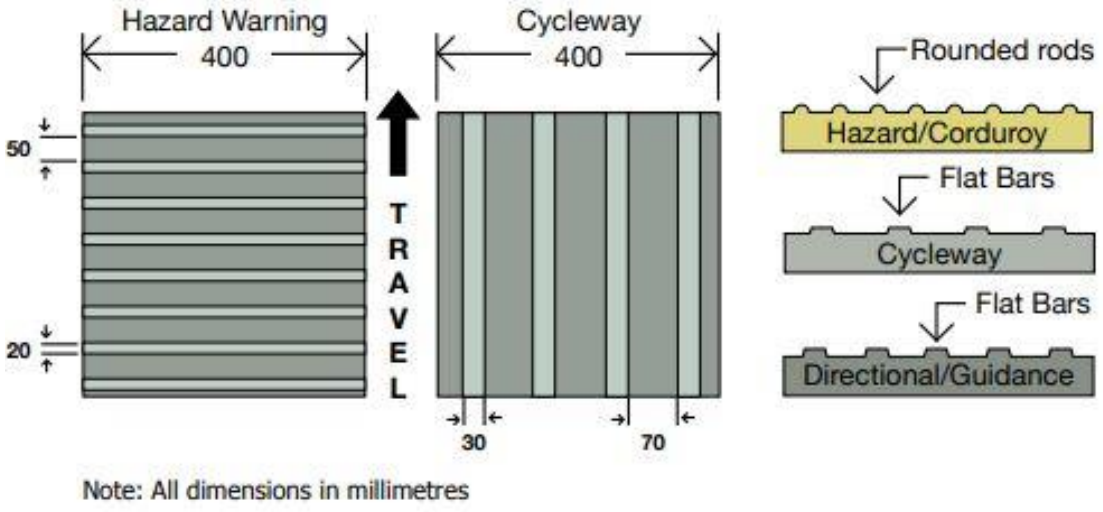


Figure 22. Examples of hazard warning and cycle way paving

Where used to warn of an approaching **flight** of steps, corduroy paving should extend to the **full width** of the steps, plus at least **400mm** to either side wherever possible.

However, the corduroy paving must **not extend** across an adjacent **ramp**, access **route** or facility such as a lift.

Corduroy paving should be positioned **400mm from** the **first step** and extend to a depth of **800mm** if the steps are **in the direct line of travel** or **400mm** if a deliberate turn through **90 degrees** is required. The dimensions and positioning are critical to alert people to the approaching hazard and to give adequate time for people to adjust their walking speed

4.3.7 Route finding (colour, contrasts and textural changes in paving)

Clearly defined logical routes can be identified with the use of **colour contrasts** and **textural changes** in paving. Planting can assist in defining routes or identifying hazards through scent and colour but should not obstruct or present an overhead hazard.

4.3.8 (Lighting) Signage and wayfinding,

Lighting columns and signs should be mounted on buildings or walls wherever possible to **reduce** the frequency of **interruption at path** or pavement level.

Where this is not possible, they should be placed as close as possible to the back of the pavement, subject to a maximum distance of **275mm** from the outer face of the post or column to the **property line**.

Where they are placed on the road side of a pavement, they should be **at least 500mm** from the **kerb** edge, or 600mm if the road has a steep camber or cross-fall. Posts and columns should be at least 1000mm apart.

Overhead signs and any item suspended above a path or pavement such as wall mounted lights or overhanging trees should provide a vertical **clearance** of at least **2300mm** to the footway surface.

In some instances, such as on pedestrian-only areas within rail or bus stations, signs may be mounted to provide a clearance of 2100mm, but in any areas where cyclists are likely to use a route, a clearance of at least 2300mm must be maintained. Where trees or shrubs overhang a footway, they should be cut back to provide a clearance of 3000mm to allow room for new growth.

Lighting in crossings: it is important that all **crossings** are **well lit**. The lighting should highlight pedestrians and cyclists both approaching the crossing and on the crossing. The best way to achieve this is to provide specific lighting for this purpose at both sides of the crossing to ensure that people can be seen.

4.3.9 Traffic and Audible Signals

For traffic signals pole has to be located 500 mm max from tactile paving edge and with audible and tactile signals at controlled crossing points.

At signal **controlled crossings**, audible bleepers emitting a pulsed tone are normally used during the pedestrian green period. There are two types of push button unit in common use.

However, there are **difficulties** using audible signals in the following situations:

- at a staggered crossing facility with each side having independent operation
- at traffic signals with split pedestrian phases (operating on a "walk with traffic" basis)

It may be difficult for the vision impaired or people with hearing deficiencies to establish exactly which crossing movement the audible signal applies to. This could lead to pedestrians stepping into live traffic. "Bleep and sweep" crossings have been used in these circumstances. These produce separate distinctive tones and the audible range is restricted to minimize any potential confusion.

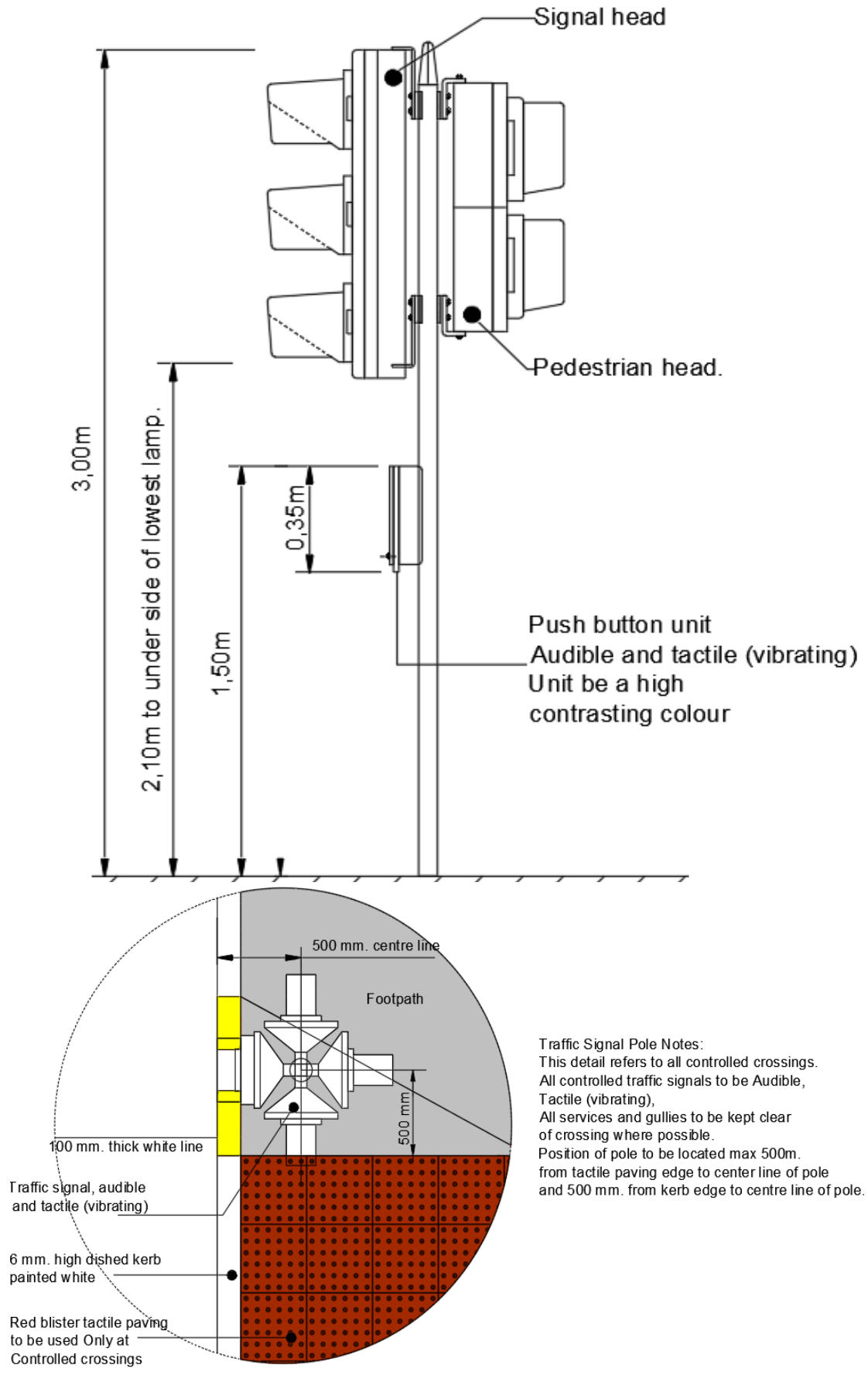


Figure 23. Plan and Elevation of traffic Signal

4.3.9.1 Push buttons

Push buttons are used to call **pedestrian phases** and can incorporate tactile indicators for blind or partially sighted people.

Push button units should be located close to the point where pedestrians will cross (ideally 0.5m from the kerb and 0.5m from the edge of the crossing guidance lines).

Push button units should be mounted at a **height of 1m** to the bottom of the push button unit.

Two types of push-button unit are now commonly used in new installations in Ireland:

The **first** is a unit where the entire electronic front panel area acts as a push-button. A **direction indicator** on top of the unit should point in the direction of travel for the pedestrian. A **vibrator** is located under the direction indicator and allows **blind** or partially sighted pedestrians to know when to cross.

The second type has a **large push-button**, a small flashing light and audible indicator. The audible indicator "ticks" slowly whilst a red pedestrian aspect shows. It then ticks more quickly and vibrates when a green pedestrian aspect shows.

An earlier type of push-button unit was subject to vandalism in some areas but some of that type are still in use.

Additional push-button units should be provided on any central islands in the signal layout. This is to cater for slower moving pedestrians who may be unable to cross the full road width in the time allocated.

Figure 24. Pedestrian push button

4.3.10 Bus Stop Design

Appropriate location of bus stops is essential as they automatically generate pedestrian crossing demands on the roads served by the bus. It is preferable that bus stops are located in **advance** of **crossing points** from a traffic and safety viewpoint.

4.3.10.1 Parking

Good design can discourage parking in areas that would restrict access for buses. A programme of **upgrading existing conventional kerbside** bus stops on principal bus routes will help to encourage increased use particularly by those groups that find access difficult at present.

4.3.10.2 Passenger Access Arrangements

As a general rule, all bus stops should be designed to **accommodate** the current generation **of low-floor buses**.

For ease of access, buses should be able to maneuver the entry/exit platforms right up to the kerbside.

Gaps of 100mm or more can present access difficulties for some users such as the elderly; people with push chairs or wheelchairs and people with sight impairment or with walking difficulties.

The **optimum kerb** height at a bus stop to cater for these persons should be around **180mm**. All new bus stops and improvements to existing ones should be designed to this height. Special kerb units such as "**Kassel Kerbs"** (or similar) are available which give this upstand. They should contrast in colour with the footway.

It should be provided smooth, level footpaths to and from stops and station entrances and exits with dished pavements at road crossing points; safe, accessible, road crossing facilities; good lighting; and convenient drop-off and pick-up facilities for people with disabilities at bus stations.

4.3.10.3 Kerbside bus stops

They should be supported with textured surface and taking to account the following characteristics:

Height fixed to suit **kneeling suspension of modern buses**, curved profile to enable accurate bus positioning at the stop and also to reduce lateral impact between wheel and kerb.

4.3.10.4 Lighting

Each bus stop should be immediately adjacent to high quality street lighting such as high-pressure **sodium lamps**. This gives a better feeling of security to waiting passengers during the hours of darkness. It can also assist safe boarding and alighting for passengers. Where bus boarders or promontories are provided, reflective bollards and lighting will be required to highlight the kerb extension into the carriageway.

4.3.10.5 Passenger shelters

High quality shelters are essential, as the majority of journeys will start with passengers having to wait at the roadside for a period.

Shelters do **not** have to be **fully enclosed** but, where possible, should be sited so as to provide protection from the prevailing wind and rain. The side of the shelter on the bus approach side should provide good visibility of buses.

Seats or a form of **"resting rail"** should be provided for passengers to lean on. They should be constructed from materials that are vandal resistant and can be cleaned easily. For security reasons shelters should be illuminated and should be located in highly visible areas well away from dense planting.

The structure should stand clear of the ground to avoid drainage Shortcomings and to ease cleaning. High capacity **litterbins** should be provided as people often eat, drink and smoke, while waiting for their bus.

4.3.10.6 Street Furniture

The street furniture around bus stops must be carefully considered. Where footway **widths** are **restricted** it is easy for them to become **cluttered**. This can cause Shortcomings for wheelchair and pushchair users and people with visual impairment.

Careful design could lead to the integration of the many essential elements that should be at each stop. For example lighting, service information, sitting/resting facilities, litterbins, even public telephones could be incorporated into one passenger shelter structure.

Bus poles have bus stop number sign in Braille and large font to aid visually impaired people, this number can be used to get information

4.4 Changes in Level

Table 10 Changes in Level

CHANGES IN LEVEL
Ensure the **routes** are **accessible**.
Consider the design of routes and levels at **early planning stages**.
Design **access routes** so they are understandable, **easy to use**, and offer choice
Provide inclined routes with a gradient between **1 in 33 (3%)** and **1 in 25 (4%)** with level landings at regular intervals.
Ensure ramped and stepped routes are **clearly visible** or well signed.
Ensure the **routes** are **accessible**.

4.4.1 External Ramps

Table 11 External ramps and handrails

EXTERNAL RAMPS AND HANDRAILS
Shallowest possible gradient or any sloped approach
Gradient **1:20 (5%),** maximum rise **500 mm** and **maximum length 10m.**
Ramp width **1500 mm**, with **1800 x 1800 mm. level landing at top and bottom.**
Non-slip surface, with **1:50 (2%)** cross-fall to ensure drainage, and 150 mm high edge protection.
Provide a continuous handrail on both sides at a height between **900-1000mm**. extending **300mm**. beyond the ramp and terminating in a close end.
Design **access routes** with a gradient **exceeding 1 in 25 as a ramp**
Make the gradient of a **ramp slope constant** and consistent with consecutive ramp slopes.
Provide an **alternative means of access** where the overall rise of a **ramp exceeds 2000mm**.
Design **surfaces to drain water** effectively
Avoid curved rams. Ramps slopes **to be straight**.
Plan for top and bottom landings to be 2400mm x 2400 mm and intermediate landings 2000mm. long (multiplied by) ramp width.
Provide a **kerb upstand of guarding** to the side of a ramp where the adjacent ground is at lower level.
Illuminate ramp and landing surfaces to **150 lux.**

4.4.1.1 Gradient

The preferred gradient of a ramp is **1:20** and the length of individual sections should be **no more** than **10m**. with a maximum **rise of 500mm.**

Intermediate **landings** should be provided after each 10m slope. In very exceptional circumstances, where site constraints require it, slopes no steeper than 1:12 may be provided.
Individual sections in these circumstances should be no longer than 2m.

These measurements change with the different ramp gradients as follows:

When the ramp gradient is **1:20**, there should be a maximum rise of **500mm** and a maximum length of 10m between landings.

- When the ramp gradient is **1:15**, there should be a maximum rise of 333mm and a maximum length of **5m** between landings.
- When the ramp gradient is **1:12**, there should be a maximum rise of **166mm** and a maximum length of **2m** between landings

All ramps, steps and landings should be kept **clear** of **obstacles** such as bins and bicycles and should be regularly swept clean of **fallen leaves** and any litter.

Where the gradient of an access route **exceeds 1 in 25**, the route should be designed as an **external ramp.**

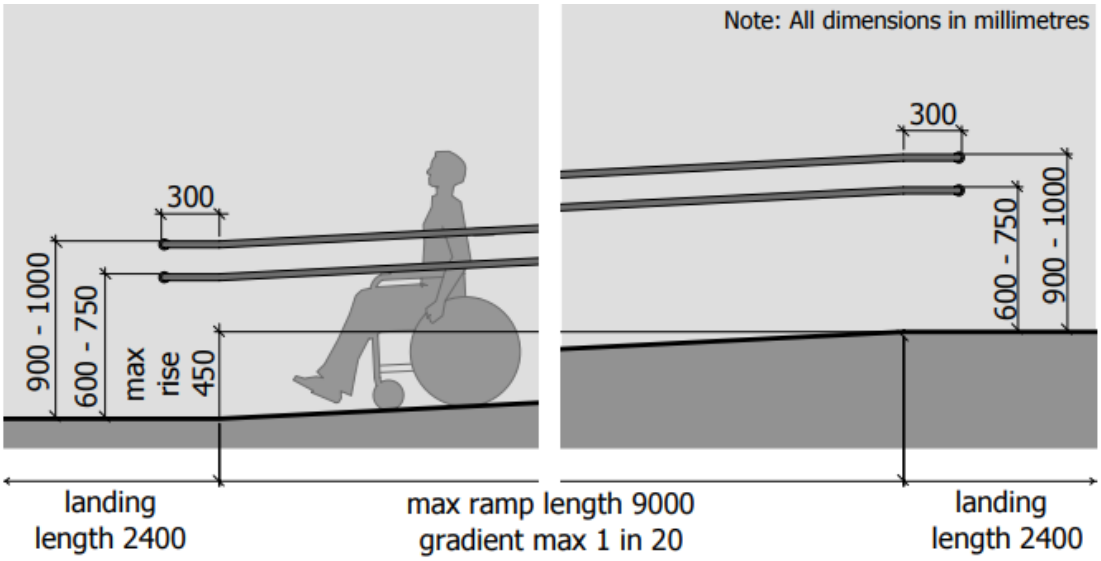


Figure 25. Examples of external ramp

All ramp slopes and landings exposed to the weather should be detailed and constructed to drain water.

Changes in the direction of travel should occur at an intermediate landing.
Landings should be provided at the top and bottom of a ramp and should be **2400mm x 2400mm** to provide turning space for wheelchair users and parents with strollers

4.4.1.2 Width

The **clear width** of a ramp should be determined by the **expected level of use** and whether people are likely to be using the ramp in both directions simultaneously.

In any case, the clear width should **not be less than 1500mm.**

Where a large number of people are expected to use the ramp at any one time and in **both directions**, a clear width of **1800mm** or more may be appropriate.

4.4.1.3 Edge Protection

In addition to the handrails, a raised **kerb** of at least **150mm in height** should be provided on any **open side** of a ramp.

A kerbed upstand should be **100mm high** (above the ramp and landing surface) and **contrast visually** with the ramp surface.

If a balustrade or guarding is provided to the side of a ramp, this is able to provide appropriate edge protection, as long as the gap between the ramp surface and lower edge of the balustrade or guarding is no more than 50mm.

4.4.1.4 Surface Finish

The **approach** to the ramp should be highlighted by the use of **colour contrast**, tone and texture change, to facilitate use by people with vision impairment.

The surface of the ramp should be non-slip.
Rainwater lodgment must be avoided by ensuring appropriate drainage cross-fall of 1:50.

The floor surface of the ramp should **be flush at the top and bottom** of the ramp where the level begins to change. Where there are different materials along the access route, they must have similar frictional characteristics.
The difference in level at joints between paving units should be no greater than **5mm** and the gap between paving units should be no wider than 10mm, with the joins filled flush. If unfilled.

4.4.1.5 Lighting

Lighting for ramps should come from the sides to **avoid shadow**. Lighting should be consistent along the length of the ramp and have non-glare illumination of **200 lux.**

4.4.1.6 Handrails

Handrails should be provided to **both sides** of the ramp and should be continuous to the full length of the flight and around intermediate landings.

Handrails should be positioned with the upper surface **900 to 1000mm** above the ramp slope and 900 to 1100mm above landings.

The provision of a **second lower handrail**, with the upper surface positioned **600 to 750mm** above the ramp and landing surface is **desirable** and will benefit people of different heights.

It is recommended that handrails should extend 300mm beyond the top and bottom of the ramp.

Handrails should be easy to grip and be either circular in cross-section or noncircular with a broad horizontal face, with a diameter of 40 to 50mm.

Where a second lower handrail is provided, the diameter may be 25 to 32mm in recognition that it is likely to be used predominantly by children and that a smaller profile will make it easier to grip.

For both rails, a **clearance of 50to 75mm** between the rail and any support wall or mounting surface should be maintained along the full length of the rail

The ends of handrails should terminate in a way that signifies that the top or bottom of the ramp has been reached. Handrails should **visually contrast** with the surfaces they are viewed against so that they are readily apparent to all users.

Metal handrails should be avoided as they can become very cold in winter weather conditions. People who need to firmly grip handrails in order to safely negotiate a ramp will find a cold handrail extremely uncomfortable and possibly painful to use. Preferred materials that are not cold to the touch include timber and plastic-coated steel.

4.4.2 External Steps

Table 12 External steps

EXTERNAL STEPS
Steps should be provided **in conjunction with a ramp**. Avoid single steps
1500 mm. stairway width recommended.
Risers to be between **150-180mm** and goings between **300-450mm**.
Provide **corduroy tactile warning** on **top** and at **bottom** of the staircase running across full width of steps.
Provide a continuous handrail on both sides, at a height between **900-1000mm**, extending **300mm** beyond the last step and terminating in a close end. Central handrail required when the stair width more than **2000mm**.
Step edges should **contrast** with the rest of the surface. Provide adequate **lighting**. Avoid confusing shadows.
Provide **steps** in conjunction with a ramp
Visually highlight each step edge.
Ensure that the clear width of steps suits expected level of use but is **not less than 1200mm**.
Provide consistent number of steps in consecutive flights.
Include clear landings at top and bottom of steps, with the length equivalent to the step width.
Protect any area below steps which has headroom less than 2100mm.
Light step and landing surfaces adequately to **150 lux**.

4.4.2.1 Gradient

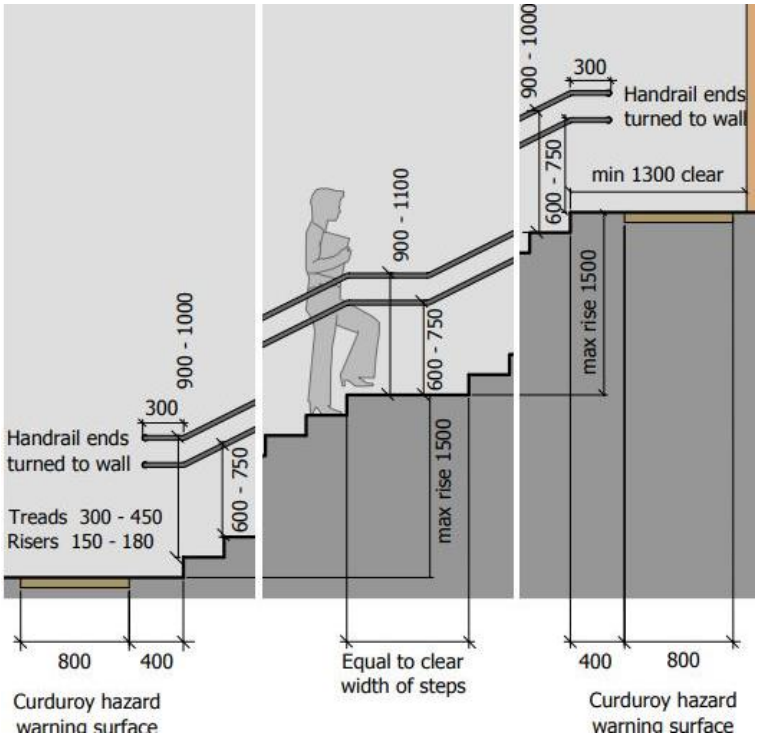


Figure 25. Examples of external steps

4.4.2.2 Tactile Surface

Top and bottom landings should be provided with a **corduroy-type hazard**-warning tactile surface in a ridged pattern to give advanced tactile warning of the change in level.

This tactile surface should comprise rounded bars running **transversely** to the direction of pedestrian **travel**.

The bars should be **6mm** (+/− 0.5 mm) in **height**, **20mm** in **width**, and **spaced 50mm** from the centre of one bar to the centre of the next.

This ridged surface should extend the full width of the stairs at both the top and bottom of the flight.

This surface should be of a contrasting colour to the surrounding area, but should not be red.

The ridged surface should start 400mm from the first step nosing, where possible.

When steps are in the direct line of travel, a depth of 800mm for the tactile surface is needed.
This depth can be reduced to 400mm if a pedestrian has to make a conscious turn to encounter the stairs.

Where one flight of stairs is followed immediately by a second flight, there is no need for additional tactile surface areas, as the handrails should give warning of another flight.
However, if the stairs are accessed by a landing, then tactile warning will also be required on that level.

4.4.2.3 Stair Design

Level landings with at least a **1500mm length** free from **any door swings** should be provided at the top and bottom of each flight of steps.

Single steps should be avoided as they present a tripping hazard even if there is visual contrast provided. In the design of stairs, the **rise** of each step should be consistent and between **150–180mm**. The **going** of each step should be consistent and between **300–450mm**.

Tapered treads and open risers should not be used.
Nosings should be integral with the step and **distinguishable** in tone and colour.

The **surface** material of the steps should be **non-slip.** The outer edges of all steps in each flight must provide a permanent visual contrast with the rest of the steps, known as ‘edge stair marking’. The edge stair marking should be 50–65mm on the tread and 30–55mm is recommended.

4.4.2.4 Lighting

Lighting for steps should come from the sides to avoid shadow. **Lighting** should be **consistent** along the **full flight** and adjoining landings and have non-glare minimum illumination of 200 lux.

4.4.2.5 Handrails

People using wheelchairs do not normally use handrails while using ramps, but they may find handrails useful to **steady** themselves on a long/steep ramp.

People with disability who are ambulant and people who have visual impairment find it easier to negotiate steps and ramps with a handrail.

Therefore, handrails should be provided on both sides of every ramped and stepped access route.
There should be a continuous handrail on each side of the ramp and steps including landings.

The top of the handrail should be **900–1000mm** above the pitch line of the stair flight/ramp and 900–1100mm above the surface of any landings.

To accommodate people of different stature, provision of a second handrail should be considered on each side at 600mm height from the pitch line of steps/ramp surface.
Both **handrails** should **extend** at least **300mm** beyond the outer edge of the top and bottom steps/ramp, and terminate in a closed end which does not project into a route of travel.
Handrails on **intermediate landings** should be **continuous**, to guide people who are blind or have a visual impairment. When the **width** of the steps/ramps exceeds **2000mm**, a **central handrail** should be provided.

This allows users to be within easy reach of a support especially when many people are using a wide ramp/steps.

The handrail should follow the exact pitch line or contour of the steps/ramp. In this way, information about the steps/level change is communicated through the person's hand.

Handrails should be **distinguished** from the **backgroun**d environment in contrasting colour and/or tone. A round or oval profile of handrail is preferred.
Round handrails should be 32–45mm in diameter, and oval handrails should be 38mm in depth and 50mm in width.

Any wall-mounted handrail should have a clearance of **60–75mm** from the **wall.**

A support connection located at the bottom of the handrail permits uninterrupted use.

The materials used for the handrail can include wood and nylon-sleeved steel tubing and should have a smooth finish with no sharp edges.

4.4.2.6 Signage And Wayfinding

Steps can present a **hazard** to people with visual difficulties, particularly when they are located in the **direct line of travel**.

The use of a **tactile hazard warning** surface at the **top and bottom** of a flight of steps provides a means of highlighting the approaching change in level.

However, it must be of the appropriate type and be installed correctly in order to convey the right message and to provide adequate warning to pedestrians.

The hazard warning surface should be positioned sufficiently in advance of the steps to give adequate time to stop.

It should also extend a sufficient distance in the direction of travel to ensure it is detectable to all pedestrians. If only a narrow strip is provided, a person may step over it with a single stride and be unaware of the approaching hazard.

External steps with corduroy hazard warning surface at top and bottom of stairs.

Hazard warning surfacing should **not generally** be **used** on **intermediate landings** as this can give the false impression that the end of a flight has been reached.

The exception to this is if the stepped route can be joined at intermediate landing level from another direction, such as via a doorway or adjoining path. Also, if an intermediate landing is significantly longer than would otherwise be expected and the handrails are not continuous, the use of tactile warning surfacing could be used on the basis that there were two separate flights of steps.

4.5 Surface Materials

Table 13 Surface materials

SURFACE MATERIALS
Ensure logical and creative use of materials to enhance legibility of external environment.
Ensure all surfaces are **firm, hard and slip-resistant**.
Avoid uneven and **loose** surfaces.
Be aware that some surfaces are a potential source of glare.
Avoid surfaces with a strong pattern or contrasting lines that may be visually confusing.
Consider the ease and cost of future repairs.

Surface materials should be carefully selected, designed and detailed to provide safe and robust environments for everyone to use. The logical and creative selection of materials can make it easier to demarcate different zones, for example, to clearly delineate between pedestrian and vehicular zones in a typical street profile.

The surface of all access routes should be hard and firm with a good grip.

Smooth paving surfaces are easier for everyone to navigate and are particularly valued by people pushing prams and pushchairs and by people who use wheelchairs and walking aids.

Uneven surfaces such as cobbles and bare earth and surfaces such as **loose gravel** and **sand** should be **avoided**. These are difficult and uncomfortable for many people to cross and may present a tripping hazard. Surfaces should be slip resistant when wet and dry, with a dry friction coefficient between 35 and 45.

Surface materials should be selected to reduce the potential for **glare** from bright sunlight or other light sources such as street lights.

The ground surface should not have a strong pattern as this can be a source of visual confusion.

The use of contrasting lines or bands should be avoided in locations where they may be perceived by some people as highlighting a step edge.

Regular and **effective maintenance** should prevent or replace cracked and uneven paving slabs and those with loose joints, as they become tripping hazards and are difficult to walk on, cause puddles to form and become slippery.

4.5.1 Natural and Tempered Landscapes

Gravel, currently a common surfacing material in natural and tempered landscapes, should be used only if it is of a grade which is well compacted, with **no** loose stones **greater** than **5mm**. Regular maintenance will be required to repair potholes and erosion.

Alternatively, a bound gravel surface, where a top dressing of gravel is applied to a bitumen layer, gives the feel and appearance of gravel on a firm base. This surface will wear with use, requires regular maintenance and is not suitable for intense vehicular movement.

Epoxy bound gravel is a more expensive surface that gives the appearance of gravel. Bound in a clear resin, the colour of the gravel comes through but the surface is very firm, non-slip and requires little maintenance. Bitumen macadam has the effect of 'suburbanising' a landscape but may be necessary where paths are used intensively or where maintenance is sporadic.
Different colours are available, made from clear bitumen coloured with a dye and mixed with stone chippings of a similar colour.

Buff and red colours are readily available and the source should be local so that repairs are easy to implement. **Red** is typically used for **cycle paths** and it may be appropriate to use the same material as a continuation of a wider network of cycle paths in the environs in order to avoid confusion.

Sustainable solutions to hard landscapes should specify **permeable surfaces** to allow direct percolation of water to the soil substrate.

Where **grass tracks** are used, a reinforcing system can be used below the surface to give a firm but free-draining layer on which grass can grow. It should be installed so that the **edges** do not become a **tripping hazard**.

The disadvantages of grass surfaces are that they inhibit the use of wheelchairs, prams and pushchairs and present a further disadvantage to people with visual difficulties who will find it difficult to orientate themselves in the space.

4.5.2 Urban environments

The unit size of materials used in surfacing is often related to the function or load it is expected to handle.

Large slabs can be employed for light pedestrian use, although the **larger** the surface area of the slab, the **thicker** it should be to prevent it from cracking.

Large slabs can be unwieldy and difficult to lay evenly.

The **smaller** the unit size, the **more resistant** the paving unit will be to vehicular loads. However, the surface itself may become distorted through use, unless a strong enough bed has been laid.
Shortcomings can be **rectified easily** when the units are bedded **in sand** but are more difficult when the joints are mortared.

Light traffic on small modular paving bedded on sand can encourage **grass** and moss to **grow** in the **joint**s which may present a **tripping hazard** and be a hindrance for wheelchair users; parents with strollers; people with walking difficulties; and those using walking aids.
This type of surface requires **regular maintenance**. Differential settling can result in an uneven surface that becomes a trip hazard.

Polished surfaces cause glare and are not suitable in a damp climate, as they remain slippery in a moist atmosphere, even after rain has passed.
Likewise, fine-grained stones with **high calcium** content can **erode quickly** with use, forming a polished surface that will be slippery in wet weather.

There are numerous mechanical finishes to stone paving, from a simple cleaving or sawing, to pin- and bush-hammering, which produces a non-slip textured finish. Different finishes will also draw out different qualities in the stone.

4.6 Street furniture

Table 14 Street Furniture

STREET FURNITURE
Place items of street furniture at or **beyond boundary** of access route
Ensure overhead signs and fixtures provide clearance of **2300mm**. to the path or pavement.
Ensure all street furniture **contrasts visually** with background.
Incorporate a **visually contrasting band** in all free-standing posts and columns.
Provide tapping rail where post-mounted items present a hazard to pedestrians with visual difficulties.
Never link **bollards** with **chain** or ropes.
Ensure gates are easy to operate and provide clear space adjacent to latch.
Position drinking **fountains** to **suit seated** and standing use.
Provide **seating at regular intervals**, away from line of travel.
Design picnic **tables** for easy approach with **clear path** to full **perimete**r.

Furniture in the external environment consists of a variety of elements such as lighting columns, junction boxes, electrical pillars, mini pillars, seats, picnic tables, litter bins, information panels, traffic signs, parking meters and post boxes, often installed independently over time and without coordination.

The placement of these elements can result in an obstacle course for most people and present particular difficulties for people with visual difficulties, wheelchair users, people using walking aids, those with walking difficulties and people pushing strollers and buggies.

In both rural and urban situations, **furniture** should be placed at or **beyond the boundary** of an **access route**.

Elements should be placed **in straight lines**. For instance, where lighting columns define the main zone of street furniture, other objects such as bollards, traffic signs and post boxes can follow this line.

Existing traffic sign poles shall be reviewed as to their necessity and moved out of the direct line of travel along footpaths if they must be retained
Any new public lighting poles should be placed to the front of the path where possible and kept out of the direct line of travel

All bus stops signs and infrastructure shall be rationalised to prevent clutter at stops and to ensure sufficient space for wheelchair users to access the bus doors. Where bus stop islands are proposed or being retained, they shall be reviewed in the context of appropriate dwell areas for the expected volumes of patrons and shall be easily located and accessible by vulnerable pedestrians in particular. The safety of all users shall be considered, particularly where pedestrians are required to cross any cycle track. Refer to the Bus Stop Usage Survey report for more information.

All signage and traffic signal heads shall be mounted with a head height clearance of 2.3m minimum.

Bulky objects such as parking meters and post boxes should **not be placed** where they will become a visual obstruction, for example at **crossing points**.

All street furniture should visually contrast with the background against which it is seen. **Grey posts** and **columns should be avoided** as they tend to blend into the general background.

Items such as free-standing posts and columns should be highlighted by means of a 150mm-high feature, such as a crest or band, positioned 1500mm above ground level, which visually contrasts with the furniture itself.

Bollards can be effectively highlighted by incorporating a light into the top.

Furniture should be continuous to ground level. Pedestal-mounted objects such as litter bins, telephones and letter boxes should be avoided as the pedestal can obstruct access. Items attached to posts should face in the direction of travel so that they do not interfere with the line of movement.

Where eye-level signs, such as **maps**, are supported on **two vertical posts**, a **tapping rail** located between the posts at 250 to 400mm above ground level will help

prevent an unsuspecting pedestrian colliding with the sign. The sign should not extend more than 150mm beyond the posts and the rail and posts should contrast visually with the background surfaces.

Street furniture and signage should always be located either close to, or recessed into, the inner shoreline (that is, a wall, fence or building), or alternatively, on the kerb edge, leaving the middle of the pavement clear.

A clear path width of preferably 2000mm should be maintained along the circulation route.

Cycle parking must be kept clear of pedestrian routes.

All existing and proposed street furniture should be reviewed and designed in the context of improved visibility. High contrast colours shall be considered, and the use stainless steel shall be restricted unless considered absolutely necessary to prevent glare in bright sunshine.

4.6.1 Public Lighting

The NDA guidance recommends that where public lighting cannot be mounted on walls or buildings they should be placed to the back of the footpath. Where they are proposed on the road side of the footpath they shall be placed at least 500mm from the kerb edge, or 600mm if the road has a steep cross-fall or camber. Preferably the scheme design shall place the public lighting in build-outs as a means of completely removing them out of any line of travel by pedestrians.

Specifics of existing public lighting infrastructure have been identified in the Road Infrastructure Audit report, such as the use of LED lanterns or not. LED lanterns provide improved visibility over SOC lanterns and all older lanterns shall be upgraded to LED lanterns as identified in the Road Infrastructure Audit.

4.6.2 Bins

Litter bins should have an overall height of approximately **1300mm** and a bin opening at 1000mm above ground level.

4.6.3 Bollards

Bollards should only be installed where absolutely necessary, e.g. to prevent cars parking on pavements. Bollards, if used, should be a minimum of **1000mm in height**, **200mm in width** and contrast in colour and tone with the background. Adjacent bollards should **not be linked with a chain** or rope, and should be a minimum of 1200mm apart.

4.6.4 Gates

Gates are sometimes hinged or sprung in such a way as to be self-closing. These should be adjusted so as not to slam shut on an unsuspecting pedestrian or to prevent wheelchair or pushchair access. The opening mechanism should be robust but easy to grip and maneuver.

The path should extend **500mm** to the side of the gate with the latch to make it easier to approach and open the gate.

The approach to the gate should be a recommended 2000mm long and free of obstructions**.**

4.6.5 Drinking Fountains

Where drinking fountains are provided, they should be **clearly identified**, understandable, useable and accessible to all users.

They should provide a clear knee-space for seated users and have a projection from the wall to the front of the fountain of **430 to 500mm** and a **spout height** above the floor within the range **750 to 915mm.**

The provision of two drinking fountains, one with a height at each end of the suggested range, is likely to meet the needs of most people.

A **clear area of 800mm x 1300mm away** from any **access route** should be provided in front of each drinking fountain to provide convenient and unobstructed approach. One solution is to locate a drinking fountain in an **alcove** so that it does not present an obstruction or hazard to other pedestrians.

The water spout should be positioned towards the front of the fountain and have a recommended 100mm height of water flow to enable a cup to be filled.

Controls should be easy to operate, positioned towards the front of the unit and to both sides to enable operation by a person using either hand.

A drain should be located under the drinking fountain to prevent the ground surface from becoming waterlogged or muddy. Consideration should be given to providing a shallow tray or bowl to enable assistance and other dogs to get a drink of water.

4.6.6 Seating

Seating should be **provided at regular intervals** along access routes and, wherever possible, in conjunction with changes in level such as external steps and ramps.

In recreational or countryside environments, seating should be located in sheltered places and where people can enjoy a good view.

Table 15 Recommended maximum distances without rest

Recommended maximum distances without rest	
USERS	DISTANCE (meters)
People with visual difficulties	150 m
People using wheelchairs	150 m
People who are ambulatory without walking aids	100
People using walking sticks or mobility aids	50

Seats should be placed **600mm** (to the front of the seat) back from the line of movement so they do **not obstruct** adjacent **access routes**.

The surface on which seats are placed should be flush with surrounding levels and be firm and stable. **A 900mm square of firm paving** beside a seat will enable a wheelchair user to sit alongside other people. It will also allow a parent with a stroller to safely park the stroller beside the seat.
Seats should be at least **450mm high** and a recommended **500mm wide.** Perching seats with a height of 500 to 750mm are easier for some people to use and may be provided as an alternative in some locations. A heel space at least 100mm deep makes it easier for people to stand up off the seat or perch.

Seats with backrests are useful for additional support, and **armrests**, positioned approximately **200mm above seat level**, are also useful to lean against, as well as assisting in getting in and out of the seat.
Seats positioned or linked in a row should all be of the same style, such as all with armrests or all without.
A mixture of seat styles in a single row can cause confusion for some people with visual difficulties.

Picnic tables should be placed on level sheltered sites and served by accessible paths. The design of the table and seats should be such that they do not topple when unbalanced. A clearance of **700mm** to the **underside** and a table top surface 750 to 850mm above ground level should enable universal use.
A firm, **level surface 2000mm** wide around the perimeter of the picnic table and seats will provide comfortable, convenient, understandable and useable access for all users regardless of their age, size, ability or disability.

4.6.7 Hazard protection into access route

The **swing of doors**, windows and the location of vending machines, public telephones, etc should **not extend into any access route**. If this intrusion is unavoidable, then hazard protection should be provided where objects project more than 100mm into an access route and their lower edge is more than 300mm above ground.
Hazard protection on the ground can be provided by a **solid kerb** or fixed element between **100–300mm** above floor level under the protruding obstacle so that it is detectable by a cane.
The hazard protection should not extend beyond the front edge of the object, nor should it be set back more than 100mm from its front edge.

4.7 Shared Spaces, Shared surfaces

The predominant form of shared spaces throughout the scheme require the interaction of pedestrians and cyclists, particularly at junctions. Shared spaces should not be used in areas where space in constrained. Shared spaces should be confined to areas
Where there is ample room for cyclists and pedestrians to maintain a wide berth.
Instances of crossover pedestrian / cycle facilities should be carefully considered, and other design alternatives implemented instead where possible.

Existing constrained shared areas identified within the report should be designed out as part of the scheme. At signalised junctions, particularly those with high volumes of both pedestrians and cyclists, cyclists should not be forced off-road to merge with pedestrians in shared spaces. Improved junction design should seek to maximise segregation by adopting Dutch style cycle layouts or similar at junctions. Where it is not possible to eliminate shared spaces, pedestrian priority zones should be created to minimise potential conflict with fast moving cyclists and shared spaces should only be considered at junctions where the volume of cyclists is low.

Existing road marking shall be reviewed to ensure it is clearly understood and legible by all road users, particularly in the context where the road layout has dramatically changed from existing. Refer to the Road Infrastructure Audit report for further information.

4.8 Protection of Outdoor Works

The process of **construction work**, whether maintenance, repair or new build, can cause significant **risk** to passers-by unless it is carried out properly.

Work to premises on privately-owned land may require the erection of **scaffolding** or the **temporary use** of areas of the **footpath** or roadway for storage purposes.

Maintenance and repair work to underground services, such as drains, water mains, gas mains and telephone and electrical cables, often involves the excavation of public rights of way and frequently the **storage of spoil and construction materials** in the vicinity of the works.
The erection of scaffolding or hoarding on pavements and public rights of way can narrow the walking space and can, unless **properly protected**, increase the risk of collision with protruding objects.

Where scaffolding is positioned over the pavement, clear headroom of 2200mm should be maintained. An overhead platform should be erected to the full width and length of any pavement to protect people below from falling objects.
The use of cross-bracing should be avoided below 2200mm, unless it is located away from the route of pedestrian travel. Where cross-bracing is used, a tapping rail or board should be provided.

It is **preferred** that **scaffolding** in public areas is **enclosed** within a **hoarding** as this reduces the potential for collision. The hoarding should have no protruding parts, sharp edges or outward opening-doors and be well illuminated during darkness.

Any scaffolding that is not enclosed should be highlighted in a **contrasting colour** or tone so that it is clearly visible to all pedestrians.

Where a hoarding or scaffolding is erected on the footpath, and passage is restricted, a **1800mm unobstructed width** should be maintained in **busy areas** or a recommended width of **1200mm** in **less populated** areas to enable pedestrians to pass safely. Protruding parts such as pole ends should be minimised, but where they do occur, should be sleeved or boxed in. Hoardings should be highlighted with a contrasting band, at least 150mm deep, and positioned 1400 to 1600mm above ground level.

The provision of a continuous **handrail** 900 to 1000mm above ground level will assist pedestrians with visual difficulties in finding **a safe route** through scaffolding and to locate any public entrance.

If it is not practical to provide a safe route through the scaffolding, an **alternative route** should be provided. If pedestrians are diverted onto the roadway, the pedestrian route should be separated from the traffic and any site vehicles or equipment by a physical barrier on either side.
The name and address of the scaffolding company and of the authority which granted the hoarding licence should be clearly displayed.

4.8.1 Roadway and pavement maintenance

Work on pavements and roads, such as the renewal of surfaces, buried cables and pipes also present an inconvenience and a potential hazard to pedestrians.

All work should be **protected** to the full extent by a **continuous barrier**, which should be between 1000mm and 1200mm high and incorporate a tapping rail, 150mm to 200mm deep, with its lower edge on the ground or up to 200mm above the ground surface.

The barrier should be a rigid hoarding that cannot be knocked over and it should **visually contrast** with the surrounding surfaces.

Where temporary paths are located on the carriageway, dropped kerbs or raised footways should be provided. If people must use the public roadway it should be clearly marked and signalled to motorists

5. REFERENCES

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- Best Practice Access Guidelines, Designing Accessible Environments, Irish Wheelchair Association. www.iwa.ie
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- Guidance on the use of tactile paving surfaces. Gov.UK
- Good Practice Guidelines on Accessibility of Streetscapes. Mayo County Council.
- Shared Space Full Report. National Disability Authority.
- Design Manual for Urban Roads and Streets. (2013) Department of Transport, Tourism and Sport.
- Design of Buildings and their Approaches (2010), British Standards 8300:2001 and BS 8300:2009+A1:2010.
- Bus Stop Design Guide. Road Service Transportation Unit. UK

APPENDIX A
DRAWINGS

THE STAGGERED CROSSING IS GOING TO BE UPGRADED AS PER THE DESIGN PROJECT. ACCESSIBILITY MEASURES FOR CONTROLLED CROSSINGS SHOULD BE PROVIDED AND A PATH OF MINIMUM 1500MM. IF OBSTACLES CAN NOT BE REMOVED. 2000MM WIDTH RECOMMENDED.

CONTROLLED CROSSING POINT.
RED BLISTER TACTILE PAVING NEEDS TO BE REPAIRED AND EXTENDED TO THE WALL.

OFF STREET ACCESSIBLE CAR PARKING SPACE.
A COMFORTABLE ACCESS FROM THE PARKING TO THE FOOTPATH SHOULD BE IMPLEMENTED.
A RAMP COULD BE WITH THE STAIR.
TACTILE PAVING FOR WARNING TO BE INCORPORATE IN THE START /END OF THE EXTERNAL STAIRS.
DIMENSIONS OF 2400x4800 FOR THE ACCESSIBLE PARKING BAY AND A 1200 MM CLEAR ACCESS ZONE TO BOTH SIDES AN D THE END OF SPACE.

ON STREET CAR PARKING SPACE,
NO DISHED KERB AND DIMENSIONS 3,6 x7m.
MEASURES FOR ACCESSIBILITY PARKING BAYS IN PARALLEL SHOULD BE IMPLEMENTED..

FALLEN LEAVES CAN BE A HAZARD
HIDDEN THE LINE THAT LIMITATES THE CYCLE TRACK AND FOOTPATH.
AN ADEQUATE AND REGULAR MAINTENANCE SHOULD BE RECOMMENDED. THESE ELEMENTS MADE SURFACES TO BE MORE SLIPPERY.

UNCONTROLLED CROSSING. A DISHED KERB AND "BUFF" OR GREY TACTILE PAVING SHOULD BE CONSIDERED .
DEPTH OF 1.2 M, GRADIENT 1:12 MAX.
LEVEL DIFFERENCE OF DISHED KERB: 6MM.
IN THE DESIGN PROJECT A CONTROLLED CROSSING IS PROPOSED.
ACCESSIBILITY MEASURES FOR THIS TYPE OF CROSSING SHOULD BE IMPLEMENTED.
.

A CLEAR WIDTH DIMENSIONS FOR ACCESSING TO BUS STOP SHELTER SHOULD BE CHECKED IN BOTH SIDES WITH A MINIMUM DISTANCE OF 1200 MM. IN BOTH SIDES.
A KASSEL KERB SHOULD BE INCORPORATED AND TEXTURED SURFACE TO WARN PEOPLE WITH VISUAL IMPAIRMENTS AND AN OPTIMUM KERB HEIGHT SHOULD BE AROUND 180MM.
FOR THE DESIGN PROPOSED AN ISLAND BUS OPTION SHOULD BE CONSIDERED FOR AVOID THE PEDESTRIAN/CYCLIST CONFLICT, WITH AN ON-DEMAND SIGNALISED PEDESTRIAN CROSSING (TACTILE PAVING; PUSH BUTTON, LED WARNING STUDS) AND A SECONDARY UNCONTROLLED CROSSING ON THE DOWNSTREAM OF THE ISLAND.
.

IN SOME PARTS OF THE SEGREGATED CYCLE TRACK AND FOOTPATH. PEDESTRIAN AND DISABILITY PEOPLE IS FORCED TO INVADE CYCLETRACK DURE TO UNEVEN SURFACES.
A SEGREGATED ROUTE IS RECOMMENDED.

MAP 06

FINGLAS ROAD

FINGLAS PL

0 5.0 10.0 20.0 30.0 40.0 50.0m

BAR SCALE

Project Ireland 2040
Building Ireland's Future

Rev	Date	Drn	Chk'd	App'd	Description

Client: NTA — Údarás Náisiúnta Iompair, National Transport Authority
Engineering Designer: ROD Roughan & O'Donovan TYPSA

Date	Scale	Drawn	Checked	Approved
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Project Code	Originator Code	QMS Code
BCID	----	

Project Title: BUSCONNECTS INFRASTRUCTURE DUBLIN

Drawing Title: ROUTE 4: FINGLAS TO PHIBSBOROUGH ACCESSIBILITY AUDIT

Drawing File Reference	Sheet Number	Status	Rev
0004-FINGLAS	06 of 18	S0	P01

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MAP 07

STAGGERED CROSSING POINT SHOULD BE REVIEWED.
A SOLUTION OF A FULL-WIDTH CROSSING IN ONE STAGE SHOULD BE CONSIDERED TO AVOID PEOPLE WITH DISABILITIES GET STUCK IN THE NARROW AREA OF CENTRAL REFUGE.

THE MULTI-STAGED CONTROLLED CROSSING POINT IS REDUCED IN THE DESIGN PROPOSED TO ONE ONLY STAGE. THIS SHOULD AVOID THE CONFUSION FOR MULTIPLE AUDIBLE SIGNALS.
RED BLISTER TACTILE PAVINGS SHOULD BE PROVIDED IN THE NEW CENTRAL REFUGE ISLAND.

THE STEM OF TACTILE PAVING SURFACE IN THE CONTROLLED CROSSING POINT SHOULD EXTEND TO THE REAR OF FOOTPATH.
AT THE CROSSING POINT, THE TACTILE PAVING SHOULD BE LAID ACROSS THE FULL WIDTH OF THE DROPPED KERB. THIS SHOULD BE A MINIMUM OF 2.4M WIDE AND SHOULD BE 800MM (2 SLABS) DEEP.
THE TOP OF THE DROPPED KERB AT THE CROSSING SHOULD BE PAINTED WHITE FOR THE BENEFIT OF PARTIALLY SIGHTED PEDESTRIANS. AUDIBLE "BLEEP AND SWEEP" AND TACTILE DEVICES SHOULD BE IMPLEMENTED.

CONFLICT IN THE SHARE ROUTE (PEDESTRIAN/CYCLIST).
NO SEGREGATION AND ENOUGH WIDTH BETWEEN THEM IN THIS PART OF THE ROUTE.
WIDTH OF 1500 MM WHEN OBSTACLES CAN NOT BE REMOVED. A CYCLING FACILITY SEGREGATION (HORIZONTAL AND VERTICAL) IS RECOMMENDED.

CONFLICT IN THE SHARE ROUTE (PEDESTRIAN/CYCLIST).
NO SEGREGATION AND ENOUGH WIDTH BETWEEN THEM IN THIS PART OF THE ROUTE.
WIDTH OF 1500 MM WHEN OBSTACLES CAN NOT BE REMOVED. A CYCLING FACILITY SEGREGATION (HORIZONTAL AND VERTICAL) IS RECOMMENDED.

UNCONTROLLED CROSSING OF A SHARED ROUTE.
CORDUROY TACTILE SURFACE SHOULD BE INSTALLED FOR A DEPTH OF 2400MM ON EITHER SIDE OF THE JUNCTION.
FOR PEDESTRIANS (PERPENDICULAR) AND CYCLISTS (PARALLEL), TO INDICATE THE START/END OF THE ROUTE.
A BLISTER SURFACE OF 1200 mm DEPTH. SHOULD BE LAID ACROSS THE FULL WIDTH OF THE CROSSING POIN

BUS STOP. A CLEAR WIDTH DIMENSIONS FOR ACCESSING TO BUS STOP SHELTER SHOULD BE CHECKED IN BOTH SIDES WITH A MINIMUM DISTANCE OF 1200 MM. IN BOTH SIDES.
A KASSEL KERB SHOULD BE INCORPORATED AND TEXTURED SURFACE TO WARN PEOPLE WITH VISUAL IMPAIRMENTS. THE OPTIMUM KERB HEIGHT AT A BUS STOP TO CATER FOR THESE PERSONS SHOULD BE AROUND 180MM.
AN ISLAND BUS OPTION SHOULD BE CONSIDERED FOR AVOID THE PEDESTRIAN/CYCLIST CONFLICT, WITH AN ON-DEMAND SIGNALISED PEDESTRIAN CROSSING (TACTILE PAVING; PUSH BUTTON, LED WARNING STUDS) AND A SECONDARY UNCONTROLLED CROSSING ON THE DOWNSTREAM OF THE ISLAND.
DESIGNERS SHOULD NARROW THE CYCLE TRACK TO LESS THAN 2.0 M.

FINGLAS ROAD

GLENHILL ROAD

CLEARWATER SHOPPING CENTRE

0 5.0 10.0 20.0 30.0 40.0 50.0m

BAR SCALE

Project Ireland 2040 Building Ireland's Future

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Drawing File Reference	Sheet Number	Status	Rev
0004-FINGLAS	07 of 18	S0	P01

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MAP 08

FINGLAS ROAD

ARDMORE HOTEL

THE GRIFFITH

PREMIER SQUARE

THE GRADIENT SHOULD BE CHECKED TO BE LESS THAN 1:20 (5%).
WHERE A GENTLY SLOPED ACCES ROUTE IS PROVIDED:
(GRADIENT STEEPER THAN 1:50 AND LESS THAN 1:20) PASSING PLACES FOR WHEELCHAIR USERS SHOULD BE PROVIDED (2000MMx1800MM). IF THE ACCESS ROUTE IS MORE THAN 25M. SOME RESTING PLACES OR BENCHES SHOULD BE ALSO RECOMMENDEDT SHOULD BE REPAIRED WITH A PROPER PAINT MARKS.

CONFLICT IN THE SHARE ROUTE (PEDESTRIAN/CYCLIST).
NO SEGREGATION AND ENOUGH WIDTH BETWEEN THEM IN THIS PART OF THE ROUTE.
WIDTH OF 1500 MM WHEN OBSTACLES CAN NOT BE REMOVED. A CYCLING FACILITY SEGREGATION (HORIZONTAL AND VERTICAL) IS RECOMMENDED.

STAGGERED CROSSING POINT.
CHECK CORRECT WIDTH OF ISLAND AND TACTILE PAVING WITH ADEQUATE SIGNAL POSTS POSITION FOR THE CORRECT MOBILITY OF IMPAIRED PEOPLE.
THIS TYPE OF CROSSING SHOULD BE REVISED.
A CENTRAL REFUGE ISLAND IN ONE STAGE WITH PROPER RED BLISTER TACTILE PAVING SHOULD BE RECOMMENDED TO AVOID PEOPLE TO GET STUCK BECAUSE OF THE NARROW WIDTH.

UNCONTROLLED CROSSING OF A SHARED ROUTE.
CORDUROY TACTILE SURFACE SHOULD BE INSTALLED FOR A DEPTH OF 2400MM ON EITHER SIDE OF THE JUNCTION.
FOR PEDESTRIANS (PERPENDICULAR) AND CYCLISTS (PARALLEL), TO INDICATE THE START/END OF THE ROUTE.
A BLISTER SURFACE OF 1200 mm DEPTH. SHOULD BE LAID ACROSS THE FULL WIDTH OF THE CROSSING POINT

UNCONTROLLED CROSSING OF A SHARED ROUTE.
CORDUROY TACTILE SURFACE SHOULD BE INSTALLED FOR A DEPTH OF 2400MM ON EITHER SIDE OF THE JUNCTION.
FOR PEDESTRIANS (PERPENDICULAR) AND CYCLISTS (PARALLEL), TO INDICATE THE START/END OF THE ROUTE.
A BLISTER SURFACE OF 1200 mm DEPTH. SHOULD BE LAID ACROSS THE FULL WIDTH OF THE CROSSING POINT

THE SEPARATION BETWEEN THE TWO IS PRACTICALLY IMPERCEPTIBLE. A CLEAR SEGREGATION IN THE FOOTPATH SHOULD BE PROVIDED AND ACCESSIBILITY MEASURES OF WIDTHS SHOULD BE COMPLIED . 1500 MM. MINIMUM WIDTH WHEN OBSTACLES CAN NOT BE REMOVED. 2000 MM. RECOMMENDED.

0 5.0 10.0 20.0 30.0 40.0 50.0m

BAR SCALE

Project Ireland 2040 Building Ireland's Future

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Project Code: BCID	Originator Code: ----	QMS Code		
Drawing File Reference: 0004-FINGLAS	Sheet Number: 08 of 18	Status: S0	Rev: P01	

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MAP 09

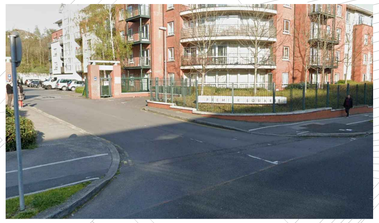
CRACKED PAVEMENT IN THE SHARED ROUTE.
NO VISUAL DISTINCTION BETWEEN PEDESTRUAN AND CYCLIST PATH.
PAVEMENT SHOULD BE REPAIRED WITH A PROPER
PAINT MARKS.

THE GRADIENT SHOULD BE CHECKED TO BE LESS THAN 1:20 (5%).
WHERE A GENTLY SLOPED ACCES ROUTE IS PROVIDED:
(GRADIENT STEEPER THAN 1:50 AND LESS THAN 1:20) PASSING
PLACES FOR WHEELCHAIR USERS SHOULD BE PROVIDED
(2000MMx1800MM). IF THE ACCESS ROUTE IS MORE THAN 25M.
SOME RESTING PLACES OR BENCHES SHOULD BE ALSO
RECOMMENDEDT SHOULD BE REPAIRED WITH A PROPER
PAINT MARKS.

PROSPECT HILL

MULTI STAGE CONTROLLED CROSSING POINT
SHOULD BE REVIEWED ACCORDING TO THE
DESIGN PROPOSED. AND MEASURES OF ACCESSIBILITY
FOR THIS TYPE SHOULD BE APPLIED.
IN THE DESIGN THE FOOTPATH IN THE CORNER BECOMES
WIDER AND ONLY A CENTRAL REFUGE ISLAND WILL BE
THE AREA INTENDED TO WAIT. RED BLISTER TACTILE PAVING,
DISHED KERBS AND AUDIBLES DEVICES SHOULD BE IMPLEMENTED.

TOLKA VALLEY RD



UNCONTROLLED CROSSING OF A SHARED ROUTE.
CORDUROY TACTILE SURFACE SHOULD BE INSTALLED
FOR A DEPTH OF 2400MM ON EITHER SIDE OF THE JUNCTION.
FOR PEDESTRIANS (PERPENDICULAR) AND CYCLISTS (PARALLEL),
TO INDICATE THE START/END OF THE ROUTE.
A BLISTER SURFACE OF 1200 mm DEPTH. SHOULD BE
LAID ACROSS THE FULL WIDTH OF THE CROSSING POINT

CONFLICT IN THE SHARE ROUTE (PEDESTRIAN/CYCLIST).
NO SEGREGATION AND ENOUGH WIDTH BETWEEN
THEM IN THIS PART OF THE ROUTE.
WIDTH OF 1500 MM WHEN OBSTACLES CAN NOT BE REMOVED.
A CYCLING FACILITY SEGREGATION
(HORIZONTAL AND VERTICAL) IS RECOMMENDED.

CRAIGIE COURT

CHECK CROSSFALL IN
STAGGERED CROSSING POINT:
LEAVES, ACCUMULATED WATER AND
SLIPPERY GROUND CAN RESULT A HAZARD.
DRAINAGE SYSTEM SHOULD BE REVISED.
THIS TYPE OF CROSSING SHOULD HAVE ALSO
TO BE REVIEWED.
A CENTRAL REFUGE ISLAND IN ONE STAGE
WITH PROPER RED BLISTER TACTILE PAVING SHOULD BE
RECOMMENDED TO AVOID PEOPLE TO GET STUCK BECAUSE
OF THE NARROW WIDTH.

FINGLAS ROAD

CONFLICT IN THE SHARE ROUTE (PEDESTRIAN/CYCLIST).
NO SEGREGATION AND ENOUGH WIDTH BETWEEN
THEM IN THIS PART OF THE ROUTE.
WIDTH OF 1500 MM WHEN OBSTACLES CAN NOT BE REMOVED.
A CYCLING FACILITY SEGREGATION
(HORIZONTAL AND VERTICAL) IS RECOMMENDED.

0 5.0 10.0 20.0 30.0 40.0 50.0m

BAR SCALE

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MAP 10

BUS STOP SHOULD BE UPDATED.
A CLEAR WIDTH DIMENSIONS FOR ACCESSING TO BUS STOP SHELTER SHOULD BE CHECKED IN BOTH SIDES WITH A MINIMUM DISTANCE OF 1200 MM. IN BOTH SIDES.
A KASSEL KERB SHOULD BE INCORPORATED WITH AN APPROPIATE LENGTH OF EDGE BOUNDARY FOR A COMFORTABLE ACCESS. AND TEXTURED SURFACE TO WARN PEOPLE WITH VISUAL IMPAIRMENTS.
THE OPTIMUM KERB HEIGHT SHOULD BE AROUND 180MM.
FOR THE DESIGN PROPOSED AN ISLAND BUS OPTION SHOULD BE CONSIDERED FOR AVOID THE PEDESTRIAN/CYCLIST CONFLICT, WITH AN ON-DEMAND SIGNALISED PEDESTRIAN CROSSING (TACTILE PAVING; PUSH BUTTON, LED WARNING STUDS) AND A SECONDARY UNCONTROLLED CROSSING ON THE DOWNSTREAM OF THE ISLAND.

STAGGERED CROSSING POINTS IN THE DESIGN PROJECT TO BE REVIEWED.
A CENTRAL REFUGE ISLAND IN ONE STAGE WITH PROPER RED BLISTER TACTILE PAVING SHOULD BE RECOMMENDED TO AVOID PEOPLE TO GET STUCK BECAUSE OF THE NARROW WIDTH.

A CLEAR WIDTH DIMENSIONS FOR ACCESSING TO BUS STOP SHELTER SHOULD BE CHECKED IN BOTH SIDES WITH A MINIMUM DISTANCE OF 1200 MM. IN BOTH SIDES.
A KASSEL KERB SHOULD BE INCORPORATED AND TEXTURED SURFACE TO WARN PEOPLE WITH VISUAL IMPAIRMENTS AND AN OPTIMUM KERB HEIGHT SHOULD BE AROUND 180MM.
FOR THE DESIGN PROPOSED AN ISLAND BUS OPTION SHOULD BE CONSIDERED FOR AVOID THE PEDESTRIAN/CYCLIST CONFLICT, WITH AN ON-DEMAND SIGNALISED PEDESTRIAN CROSSING (TACTILE PAVING; PUSH BUTTON, LED WARNING STUDS) AND A SECONDARY UNCONTROLLED CROSSING ON THE DOWNSTREAM OF THE ISLAND.

UNEVEN SURFACES IN THE FOOTPATH SHOULD BE CHECKED AND VERTICAL DEVIATIONS OF MORE THAN 5MM. IN CONCRETE SLABS TO BE AVOIDED.

OLD FINGLAS ROAD

TOLKA VALLEY APARTMENTS

A CONTROLLED CROSSING POINT IS PROPOSED IN THE PROJECT DESIGN. MEASURES OF ACCESIBILITY FOR THIS TYPE OF CROSSING SHOULD BE IMPLEMENTED.
RED BLISTER TACTILE PAVING. DISHED KERBS.
A FULL WIDTH OF DROPPED KERB WITH A MIINIMUM OF 2400 MM WIDE AND 800 MM (2 SLABS) DEEP.
THE 'DIMPLES' IN THE TACTILE PAVING UNITS SHOULD BE ALIGNED AND TOP OF THE DROPPED KERB SHOULD BE PAINTED IN WHITE

CHECK CORRECT WITDH OF FOOTPATH IN THE SHARED ROUTE. MINIMUM 1500 MM. WIDTH WHEN OBSTACLES CAN NOT BE REMOVES.
A CYCLING FACILITY SEGREGATION (HORIZONTAL AND VERTICAL) IS RECOMMENDED.

TOLKA RIVER

0 5.0 10.0 20.0 30.0 40.0 50.0m

BAR SCALE

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Project Title: BUSCONNECTS INFRASTRUCTURE DUBLIN

Drawing Title: ROUTE 4: FINGLAS TO PHIBSBOROUGH ACCESSIBILITY AUDIT

Drawing File Reference	Sheet Number	Status	Rev
0004-FINGLAS	10 of 18	S0	P01

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MAP 11

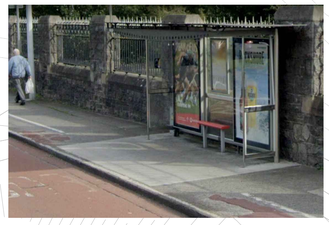
BUS STOP. A KASSEL KERB SHOULD BE INCORPORATED AND TEXTURED SURFACE TO WARN PEOPLE WITH VISUAL IMPAIRMENTS. THE OPTIMUM KERB HEIGHT AT A BUS STOP TO CATER FOR THESE PERSONS SHOULD BE AROUND 180MM.
AN ISLAND BUS OPTION SHOULD BE CONSIDERED FOR AVOID THE PEDESTRIAN/CYCLIST CONFLICT.
IN THE DESIGN PROPOSED THIS BUS STOP IS MOVED CLOSE TO TOLKA VALLEY APARTMENTS.

UNCONTROLLED CROSSING POINT IN THE CURRENT STATE.
THE PROPOSED DESIGN SUGGEST FOR AN UPGRADED SIGNALISED JUNCTION WITH IMPROVED PEDESTRIAN AND CYCLE FACILITIES TO BE PROVIDED.
TACTILE PAVING SURFACES SHOULD BE PROVIDED IN A TOUCAN CROSSING. REFUGE ISLANDS SHOULD BE MODIFIED AND TRAFFIC SIGNALS AND AUDIBLE AND TACTILE DEVICES "BLEEP AND SWEEP" SHOULD BE RECCOMENDABLE.

UNCONTROLLED CROSSING AND CONTROLLED CROSSING SHOULD BE UPDATED AND MEASURES FOR ACCESSIBILITY TO BE INTRODUCED.
RED TACTILE PAVING SURFACES SHOULD BE PROPORCIONATED WITH STEMS TO THE REAR OF THE FOOTPATH AND TRAFFIC SIGNALS AND AUDIBLE DEVICES.

ADVERTISING BOARD BLOKING THE FOOTWAY.
A SUITABLE SPOT FOR THIS ELEMENT SHOULD BE RECOMMENDED.

UNEVEN SURFACES AND IRON GRIDS IN FOOTPATHS SHOULD BE CHECKED WHEN THEY ARE IN THE DESIRE LINE OF TRAVEL FOR PEDESTRIANS WITH MOBILITY IMPAIRMENTS.



BUS STOP. A KASSEL KERB SHOULD BE INCORPORATED AND TEXTURED SURFACE TO WARN PEOPLE WITH VISUAL IMPAIRMENTS. THE OPTIMUM KERB HEIGHT AT A BUS STOP TO CATER FOR THESE PERSONS SHOULD BE AROUND 180MM.
FOR THE DESIGN PROPOSED AN ISLAND BUS OPTION SHOULD BE CONSIDERED FOR AVOID THE PEDESTRIAN/CYCLIST CONFLICT, WITH AN ON-DEMAND SIGNALISED PEDESTRIAN CROSSING (TACTILE PAVING; PUSH BUTTON, LED WARNING STUDS) AND A SECONDARY UNCONTROLLED CROSSING ON THE DOWNSTREAM OF THE ISLAND.
DESIGNERS SHOULD NARROW THE CYCLE TRACK TO LESS THAN 2.0 M.

TOLKA RIVER

BALLYBOGGAN ROAD

GLASNEVIN CEMETERY

0 5.0 10.0 20.0 30.0 40.0 50.0m

BAR SCALE

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Drawing File Reference	Sheet Number	Status	Rev
0004-FINGLAS	11 of 18	S0	P01

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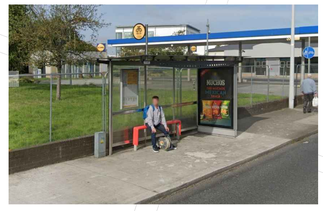
MAP 12

LONG AND SLOPED FOOTPATH.
THE GRADIENT SHOULD BE CHECKED TO BE LESS THAN 1:20 (5%).
WHERE A GENTLY SLOPED ACCES ROUTE IS PROVIDED:
(GRADIENT STEEPER THAN 1:50 AND LESS THAN 1:20)
PASSING PLACES FOR WHEELCHAIR USERS SHOULD BE PROVIDED (2000MMx1800MM) IF THE ACCESS ROUTE IS MORE THAN 25M. SOME RESTING PLACES OR BENCHES SHOULD BE ALSO RECOMMENDED.

UNEVEN PAVING IN CYCLE TRACK AND FOOTPATH.
SURFACES OF THE PATH (PEDESTRIAN /CYCLIST) SHOULD HAVE A CLEAR SEGREGATION AND VISUAL CONTRAST FOR PEOPLE WITH VISION IMPAIRMENTS.

LONG AND SLOPED FOOTPATH.
THE GRADIENT SHOULD BE CHECKED TO BE LESS THAN 1:20 (5%).
WHERE A GENTLY SLOPED ACCES ROUTE IS PROVIDED:
(GRADIENT STEEPER THAN 1:50 AND LESS THAN 1:20)
PASSING PLACES FOR WHEELCHAIR USERS SHOULD BE PROVIDED (2000MMx1800MM) IF THE ACCESS ROUTE IS MORE THAN 25M.
SOME RESTING PLACES OR BENCHES SHOULD BE ALSO RECOMMENDED.

GLASNEVIN CEMETERY



BUS STOP. A KASSEL KERB SHOULD BE INCORPORATED AND TEXTURED SURFACE TO WARN PEOPLE WITH VISUAL IMPAIRMENTS. THE OPTIMUM KERB HEIGHT AT A BUS STOP TO CATER FOR THESE PERSONS SHOULD BE AROUND 180MM.
AN ISLAND BUS OPTION SHOULD BE CONSIDERED FOR AVOID THE PEDESTRIAN/CYCLIST CONFLICT, WITH AN ON-DEMAND SIGNALISED PEDESTRIAN CROSSING (TACTILE PAVING; PUSH BUTTON, LED WARNING STUDS) AND A SECONDARY UNCONTROLLED CROSSING ON THE DOWNSTREAM OF THE ISLAND.
DESIGNERS SHOULD NARROW THE CYCLE TRACK TO LESS THAN 2.0 M.

ABSENCE OF TACTILE PAVING IN INTERSECTION OF SHARED ROUTE AND ACCESS ROAD TO PETROL STATION

LIDL

PETROL STATION

0 5.0 10.0 20.0 30.0 40.0 50.0m

BAR SCALE

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Drawing File Reference	Sheet Number	Status	Rev
0004-FINGLAS	12 of 18	S0	P01

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MAP 13

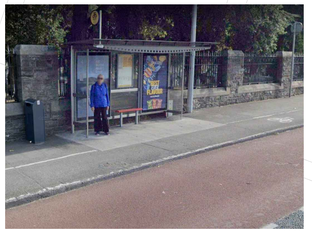
PETROL STATION

ABSENCE OF TACTILE PAVING IN INTERSECTION OF SHARED ROUTE AND ACCESS ROAD TO PETROL STATION

STAGGERED CROSSING POINT SHOULD BE REVIEWED. A SOLUTION OF A FULL-WIDTH CROSSING IN ONE STAGE SHOULD BE CONSIDERED TO AVOID PEOPLE WITH DISABILITIES GET STUCK IN THE NARROW AREA OF CENTRAL REFUGE.

THE STEMS OF THE CONTROLLED CROSSING SHOULD EXTEND TO THE REAR OF THE FOOTPATH FOR THE CORRECT ORIENTATION OF PEOPLE WITH VISUAL IMPAIRMENTS

SLANEY RD



BUS STOP. A KASSEL KERB SHOULD BE INCORPORATED AND TEXTURED SURFACE TO WARN PEOPLE WITH VISUAL IMPAIRMENTS. THE OPTIMUM KERB HEIGHT AT A BUS STOP TO CATER FOR THESE PERSONS SHOULD BE AROUND 180MM.
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DESIGNERS SHOULD NARROW THE CYCLE TRACK TO LESS THAN 2.0 M.

THE POSITION OF THE SIGNAGE SHOULD BE REVIEWED TO FACILITATE THE MANEUVERING OF PEOPLE WITH DISABILITIES. MINIMUM WIDTH OF FOOTPATH 1200 MM. IN A DISTANCE OF 2000MM.

CHURCH OF JESUS CHRIST OF LATTER DAY SAINTS

GLASNEVIN CEMETERY

THE WILLOWS

UNCONTROLLED CROSSING POINT IN A SHARED ROUTE. TACTILE PAVING TO BE CONSIDERED TO WARN DISABLE PEOPLE OF A ROAD JUNCTION. CORDUROY TACTILE PAVING SHOULD BE CONSIDERED BEFORE "THE "BUFF" OR GREY" PAVING. THIS ONE WITH DEPTH OF 1.2 M, GRADIENT 1:12 MAX. LEVEL DIFFERENCE OF DISHED KERB: 6MM.

SURFACES OF THE PATH (PEDESTRIAN /CYCLIST) SHOULD HAVE A CLEAR SEGREGATION AND VISUAL CONTRAST FOR PEOPLE WITH VISION IMPAIRMENTS.

UNCONTROLLED CROSSING POINT . BUFF OR GREY" TACTILE SHOULD BE CONSIDERED . DEPTH OF 1.2 M, GRADIENT 1:12 MAX. LEVEL DIFFERENCE OF DISHED KERB: 6MM.

0 5.0 10.0 20.0 30.0 40.0 50.0m

BAR SCALE

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Drawing File Reference	Sheet Number	Status	Rev
0004-FINGLAS	13 of 18	S0	P01

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MAP 14

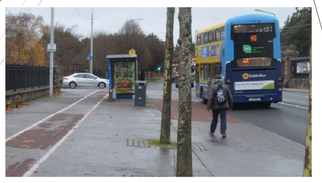
THE STEM OF THE RED BLISTER TACTILE PAVING IN THE CONTROLLED CROSSING SHOULD EXTEND TO THE REAR OF THE FOOTPATH AND UNEVEN SURFACES OF THE CONCRETE IN THE FOOTPATH SHOULD BE REPAIRED.

ADEQUATE TACTILE PAVING SURFACE (CORDUROY) SHOULD BE PROVIDED BEFORE THE INTERSECTION WITH THE STEM OF THE CONTROLLED CROSSING, IN THE CYCLE TRACK AND IN THE FOOTPATH.

ABSENCE OF DISHED KERB FOR DISABLED PEOPLE.
A DISHED KERB SHOULD BE PROVIDED WITH A SLIP-RESISTANT SURFACE AND A MINIMUM WIDTH OF 1200MM AND MINIMUM GRADIENT OF 1:12.
THE ACCESSIBLE PARKING SPACE SHOULD BE ON FIRM AND LEVEL GROUND WITH NO VARIATION OF SURFACE EXCEEDING 5 MM.

UNCONTROLLED CROSSING OF A SHARED ROUTE.
CORDUROY TACTILE SURFACE SHOULD BE INSTALLED FOR A DEPTH OF 2400MM ON EITHER SIDE OF THE JUNCTION.
FOR PEDESTRIANS (PERPENDICULAR) AND CYCLISTS (PARALLEL), TO INDICATE THE START/END OF THE ROUTE.
A BLISTER SURFACE OF 1200 mm DEPTH. SHOULD BE LAID ACROSS THE FULL WIDTH OF THE CROSSING POINT

BUS STOP. A KASSEL KERB SHOULD BE INCORPORATED AND TEXTURED SURFACE TO WARN PEOPLE WITH VISUAL IMPAIRMENTS.
AN ADEQUATE UPSTAND HEIGHT (180 MM) SHOULD BE ENSURED TO ADAPT FOR A KNEELING SUSPENSION OF LOW-FLOOR BUSES.



BUS STOP. A KASSEL KERB SHOULD BE INCORPORATED AND TEXTURED SURFACE TO WARN PEOPLE WITH VISUAL IMPAIRMENTS.
THE OPTIMUM KERB HEIGHT AT A BUS STOP TO CATER FOR THESE PERSONS SHOULD BE AROUND 180MM. AN ISLAND BUS OPTION SHOULD BE CONSIDERED FOR AVOID THE PEDESTRIAN/CYCLIST CONFLICT, WITH AN ON-DEMAND SIGNALISED PEDESTRIAN CROSSING (TACTILE PAVING; PUSH BUTTON, LED WARNING STUDS) AND A SECONDARY UNCONTROLLED CROSSING ON THE DOWNSTREAM OF THE ISLAND.
DESIGNERS SHOULD NARROW THE CYCLE TRACK TO LESS THAN 2.0 M.

SEGREGATED CYCLING FACILITIES AS ONE OF THE CORE OBJECTIVES OF THE CBC PROJECT.
PHYSICAL SEGREGATION (HORIZONTAL AND VERTICAL) WOULD BE RECOMMENDED WITH A FULL HEIGHT 120MM UPSTAND KERB BETWEEN THE CARRIAGEWAY AND THE CYCLE TRACK AND 60MM WITH THE FOOTPATH.

CLAREMOUNT COURT

CLAREMOUNT LAWNS

GLASNEVIN CEMETERY

FINGLAS ROAD

0 5.0 10.0 20.0 30.0 40.0 50.0m

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Project Code	Originator Code	QMS Code	Drawing File Reference	Sheet Number	Status	Rev
BCID	----		0004-FINGLAS	14 of 18	S0	P01

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MAP 15

UNCONTROLLED CROSSING OF A SHARED ROUTE.
CORDUROY TACTILE SURFACE SHOULD BE INSTALLED
FOR A DEPTH OF 2400MM ON EITHER SIDE OF THE JUNCTION.
FOR PEDESTRIANS (PERPENDICULAR) AND CYCLISTS (PARALLEL),
TO INDICATE THE START/END OF THE ROUTE.
A BLISTER SURFACE OF 1200 mm DEPTH.
SHOULD BE LAID ACROSS THE FULL WIDTH OF THE CROSSING POINT

FINGLAS ROAD

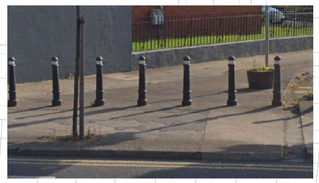
TOWERVIEW COTTAGES

SAINT VINCENT'S SECONDARY SCHOOL

REDUCED WIDTH IN BUS STOP IN THE AREA
OF THE EDGE BOUNDARY OF WAITING. KASSEL KERBS
SHOULD BE PROVIDED AND TEXTURED SURFACES.
LOCATION OF SIGNAL POLE AND LITTERBIN SHOULD BE
RECONSIDERED FOR A COMFORTABLE PICK UP POINT
FOR PEOPLE WITH DISABILITIES.

KASSEL KERB AND TEXTURED SURFACE TO BE
PROVIDED IN THE EDGE BOUNDARY OF THE
BUS STOP. AN OPTIMUM UPSTAND
HEIGHT OF 180 mm. SHOULD BE GUARANTEED FOR
ADAPTING TO KNEELING SUSPENSION OF MODERN BUSES.

UNCONTROLLED CROSSING POINT. DISHED
KERB AND "BUFF" OR GREY TACTILE PAVING
SHOULD BE CONSIDERED. DEPTH OF 1.2 M,
GRADIENT 1:12 MAX. LEVEL DIFFERENCE OF
DISHED KERB: 6MM



DISTANCE MINIMUM OF 1200 mm.
BETWEEN BOLLARDS. VERTICAL DEVIATIONS
FOR DRAINAGE SHOULD BE REVISED.

ST. PHILOMENA'S ROAD

PROSPECT WAY

PROSPECT AVENUE

STREET FURNITURE IN REFUGE ISLAND
SHOULD BE REVISED.
PLANTER BOX IN DESIRE LINE FOR TRANSITION OF
PEOPLE WITH MOBILITY IMPAIRMENT.

0 5.0 10.0 20.0 30.0 40.0 50.0m

BAR SCALE

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Drawing File Reference	Sheet Number	Status	Rev
0004-FINGLAS	15 of 18	S0	P01

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PROSPECT WAY

PROPOSED SCHEME
Ballymun to City Centre
CBC

PROSPECT AVENUE

IONA ROAD

BOTANIC ROAD

DALCASSIAN DOWNS

LINDSAY ROAD

THE POSITION OF THE PLANTER BOX IN THE REFUGE ISLAND SHOULD BE REVIEWED BECAUSE IT IS IN THE LINE OF MOVEMENT OF PEDESTRIAN AND PEOPLE WIT MOBILITY IMPAIRMENT. STREET FURNITURE SHOULD BE INSTALLED ALSO AS A PROTECTIVE ELEMENT CLOSE TO BOUNDARIES

SHELTER IS PLACED IN SUCH POSITION THAT THERE IS NO GOOD VISIBILITY FOR BUSES AND PEOPLE WAITING. CORRECT LOCATION OF THE SHELTER SHOUD BE REVISED. KASSEL KERB TO BE INCORPORATED. FOR THE DESIGN PROPOSAL A ISLAND BUS OPTION WOULD BE THE PREFERRED. WITH CONTROLLED/ OR UNCONTROLLED CROSSING BETWEEN FOOTPATH AND CYCLE TRACK

MAP 16

BUS STOP.
LACK OF TEXTURED SURFACE AT THE EDGE BOUNDARY AND ABSENCE OF A KASSEL KERB FOR ADAPTING MODERN BUSES AND THEIR KNEELING SUSPENSION.

UNCONTROLLED CROSSING POINT.
BUFF OR GREY" TACTILE P SHOULD BE CONSIDERED .
DEPTH OF 1.2 M, GRADIENT 1:12 MAX.
LEVEL DIFFERENCE OF DISHED KERB: 6MM

THE FOOTPATH IS INTERRUPTED BY AN OLD SIDE ROAD CURRENTLY CLOSED:
VERTICAL DEVIATIONS LESS THAN 5MM SHOULD BE ENSURED.

CRACKED FOOTPATH IN THE TRANSITION WITH THE COMMERCIAL AREA SHOULD BE REPAIRED AND DIFFERENTIATED OF THE CARRIAGEWAY

REVIEW MINIMUM WIDTH OF FOOTPATH:
-1500MM. WHEN OBSTACLES CANNOT BE REMOVED AND 1200MM. IN A DISTANCE OF 2000MM.

CRACKED CONCRETE FOOTPATH AND HARDLY SEPARATED FROM CARRIAGEWAY.
A FULL HEIGHT 120MM UPSTAND KERB BETWEEN THE CARRIAGEWAY AND THE FOOTPATH SHOULD BE PROVIDED AND SURFACE SHOULD BE RENOVATED

UNCONTROLLED CROSSING POINT .
NO DISHED KERBS AND TACTILE PAVING. A BUFF OR GREY TACTILE PAVING SHOULD BE PROVIDED WITH A WIDTH OF 1.2 m. (3 SLABS)

0 5.0 10.0 20.0 30.0 40.0 50.0m

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