

METROLINK

Integrated Transport. Integrated Life.



DRAFT GUIDANCE NOTE FOR DEVELOPERS

May 2023

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1. Introduction

MetroLink includes *inter alia*: construction of a railway approximately 18.8 kilometres in length which is mostly underground comprising *inter alia* 9.4 kilometres section of single bore tunnel running beneath Dublin City Centre from Charlemont to Northwood Station, 2.3 kilometres section of single bore tunnel running beneath Dublin Airport; north of Dublin Airport the railway will emerge from tunnel and will run at surface level and in cut and cover structures to Estuary Station; surface running sections and cut and cover sections will include earthworks, the use of retained cut and cover structures, elevated sections; a new 99m long bridge will be constructed over the M50 and a 261m long multi-span Viaduct over the Broadmeadow and Ward River; the construction of 16 stations, including 11 underground stations at Dublin Airport, Northwood, Ballymun, Collins Avenue, Griffith Park, Glasnevin, Mater, O'Connell Street, Tara, St. Stephen's Green and Charlemont; 4 retained cut stations at Seatown, Swords Central, Fosterstown and Dardistown and 1 at grade station at Estuary; a multi-storey 3000 space park and ride close to the M1 Motorway will be provided at Estuary Station, a maintenance depot is located near Dardistown Station.

Details of the proposed scheme are available in the MetroLink Railway Order application and the horizontal and vertical alignment of the route is provided therein.

TII must ensure the MetroLink structures:

- a) retain structural integrity,
- b) emergency management capability is not compromised,
- c) safety and free flow of users of the facility is maintained,
- d) can be safely and adequately maintained at all times, and
- e) are not put at risk by developer activities; TII as asset owner must be indemnified against any damage or disruption by any developer activity bearing potential threat to the infrastructure or its operation.

This Guidance Note forms an asset protection approach developed by TII to ensure the integrity of the structures of MetroLink are safeguarded throughout their life in the context of adjacent development which may arise from time to time.

This Guidance Note defines exclusion and protection zones, loading conditions and or/processes to help assure that the MetroLink subsurface assets are protected from the impact of third-party development activities.

At the time of preparation of this Guidance Note, MetroLink has not yet been constructed, and so this note is made publicly available by TII in order to communicate its requirements in anticipation of the new structures being in place. This Guidance Note shall be developed further as may be necessary at a later time to reflect TII requirements during construction and later post construction and during operation.

Developers will be required to examine the interface and potential interaction between any proposed development and the future construction of MetroLink and TII require that any new development proposal will be appropriately designed not to affect future construction and operation of MetroLink.

The purpose of this Guidance Note is to assist developers in understanding TII requirements for protection of MetroLink, and to provide guidance to developers on future land use development which may be undertaken without unduly affecting the structures.

Developers of any development in the vicinity of the MetroLink Protection Zones are advised to consult with TII prior to making an application to the planning authority for planning approval.

The Guidance Note details the design considerations for MetroLink. Nothing in this Guidance Note anticipates or permits a specific configuration of loading from a developer.

If there is any doubt as to whether a developer needs to undertake technical engagement with TII on development proposals, there should be a presumption for contact being necessary.

TII expect to enter into specific legal agreement with any developers hoping to undertake construction over or adjacent to MetroLink. The agreements will specify the particular requirements of TII in response to the nature of the development proposed.

TII reserves the right to modify the requirements of their asset protection approach, (and this Guidance Note) from time to time as may be necessary

The limits of deviation referred to in this Guidance Note are those sought by the Railway Order Application. Once constructed, all relevant offsets quoted will be those from the as-constructed physical limits of the tunnel and other associated infrastructure, record copies of which will be provided by TII upon request.

2. Safeguarding Requirements

2.1. Structural Protection

2.1.1 For the purposes of structural protection of MetroLink from future works or development, TII requires that boundaries of Exclusion and Protection are enforced to safeguard the structures. Any proposed works or developments encroaching either of these zones would be subject to a legal agreement with approved asset protection arrangements in place, which fully includes methods of construction and potential construction and other temporary surcharges effects. These are defined below:

- Exclusion Zone is the volume of subsoil along the bored tunnel, cut and cover tunnel and retained cut alignment in which no future works or developments are allowed to encroach. Future surface works or developments are allowed above a subsurface Exclusion Zone, provided the foundation does not intrude into the Exclusion Zone and the MetroLink structures are not adversely affected
- Protection Zone is the volume of subsoil and the area on the ground surface along the bored tunnel, cut-and-cover tunnel and retained cut alignment in which future works or developments could impact the MetroLink structures. Future works or developments are allowed in the Protection Zone with any depth of foundation, provided it does not adversely affect the MetroLink structures and is subject to written agreement with TII.

2.1.2 Exclusion and Protection Zones are set out in the following for

- a) U Section profile, retained cut profile, cut and cover profile, retained cut stations, underground stations, portals and shafts.
- b) Tunnels,
- c) Temporary Site Areas, and
- d) Wayleave / Right of Way

- 2.1.3 U Section profile, retained cut profile, cut and cover profile, retained cut stations, underground stations, portals and shafts have been designed with an imposed vertical loading of 20kN/m^2 . This imposed vertical loading for these structures is shown diagrammatically in Figures 1 and 2.

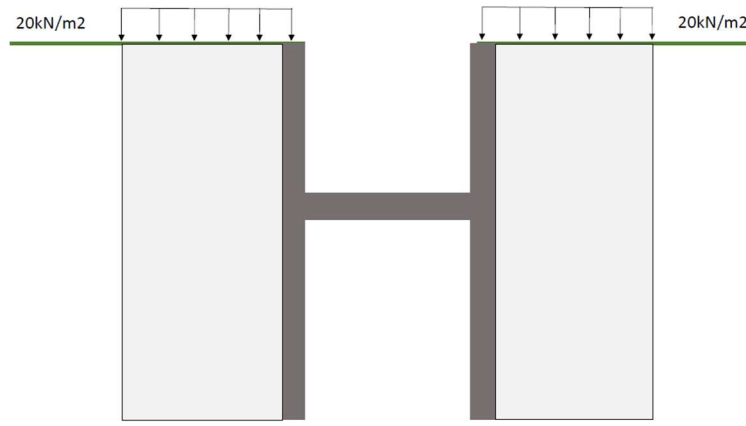


Figure 1: Imposed vertical loadings on open cut structures

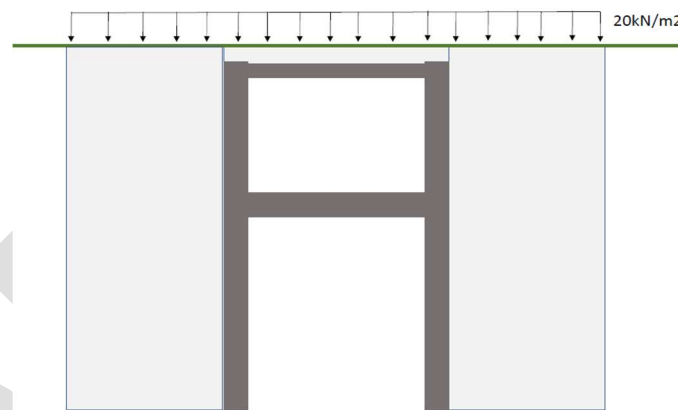


Figure 2: Imposed vertical loadings on cut & cover structures

Prior to construction no works other than works associated with the MetroLink RO may be undertaken within the proposed acquisition of land as set out in Schedule 2 of the Railway Order (which land includes for the limits of deviation).

In the case of any construction by others adjacent to and outside of the extent of the limits of deviation that could affect future designs of the MetroLink permanent works, developers are required to submit designs of proposed development works within this area.

Exclusion and Protection Zones are shown on the following drawings (exclusion zones indicated in red, protection zones are indicated in orange). The limits of deviation associated with each type of structure is indicated in blue. The extent of protection zones for Retained Cut and Cut & Cover structures varies by location. Appendix 1 describes the extent of protection zone required at the various locations along the scheme.



Figure 3: U Section Protection and Exclusion Zones

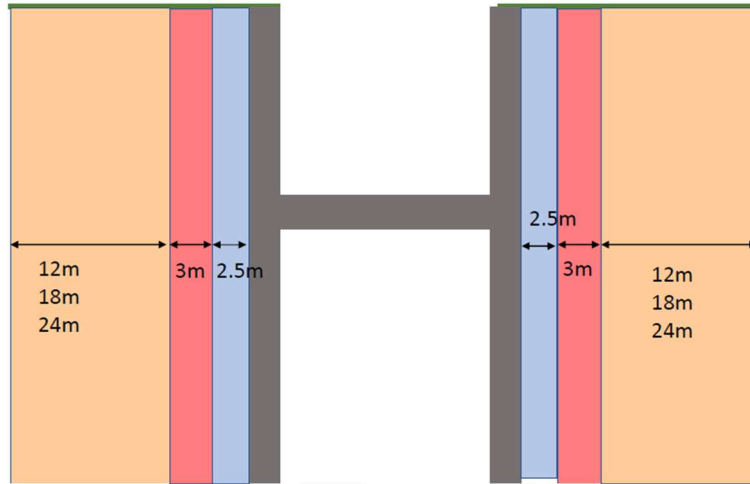


Figure 4: Retained Cut Section Protection and Exclusion Zones

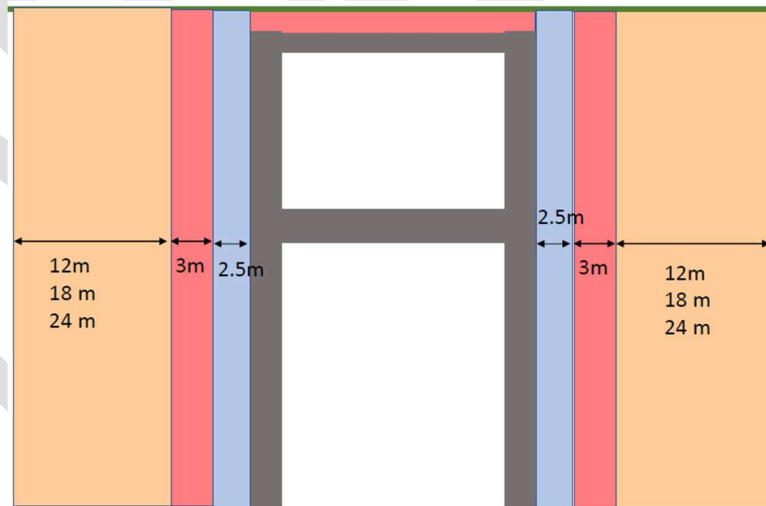


Figure 5: Cut & Cover Section Protection and Exclusion Zones

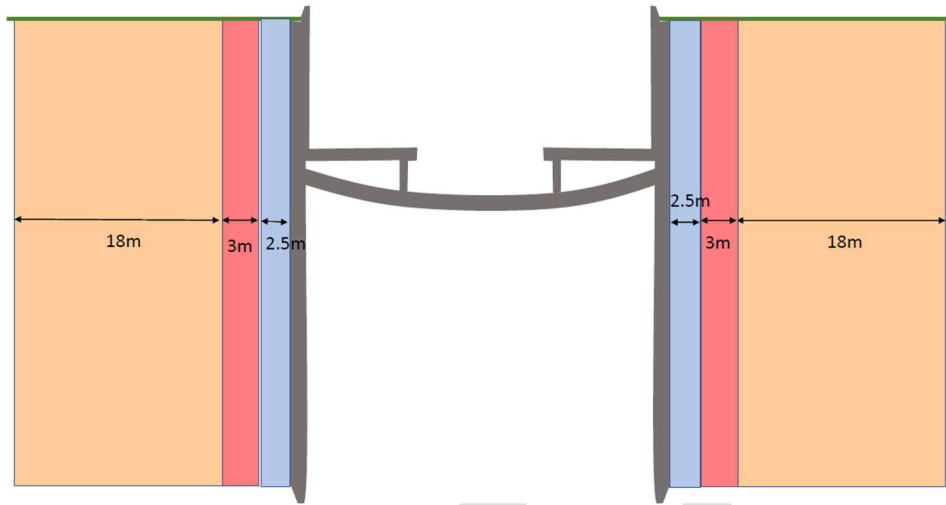
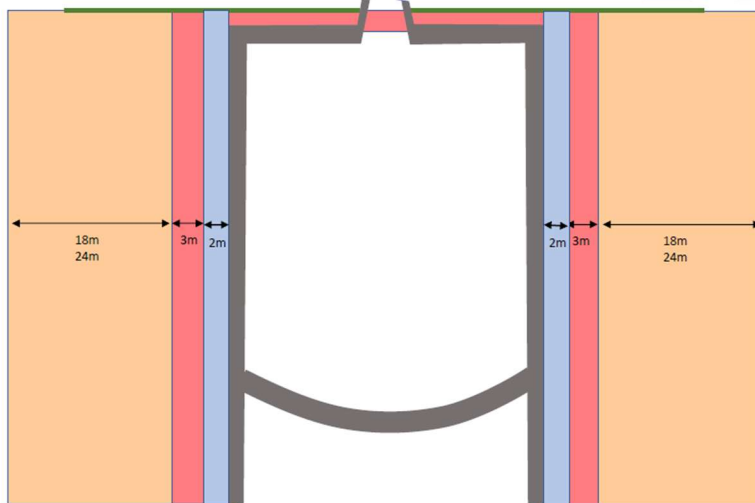


Figure 6: Retained-Cut Section Protection and Exclusion Zones



Underground Station	Protection zone (m)
Dublin Airport	18
Northwood	18
Ballymum	18
Collins Avenue	18
Griffith	18
Glasnevin	24
Mater	24
O'Connell	24
Tara	18
St. Stephen's Green	18
Charlemont	18

Figure 7: Underground Station Protection and Exclusion Zones

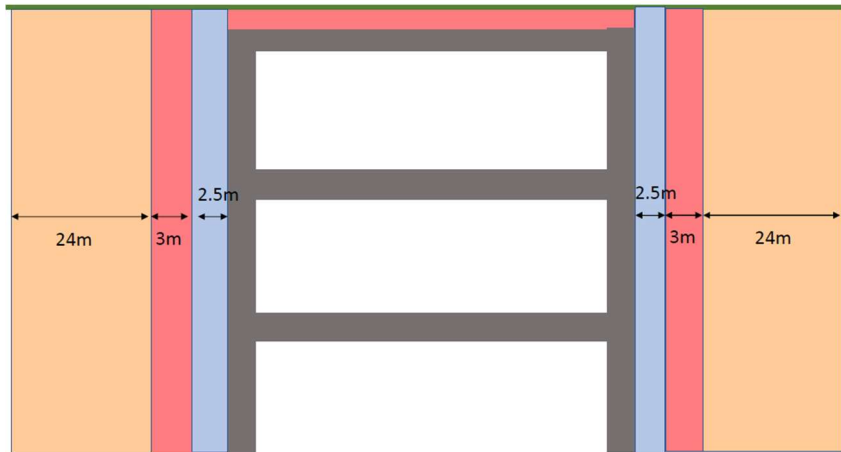


Figure 8: Portals Protection and Exclusion Zones

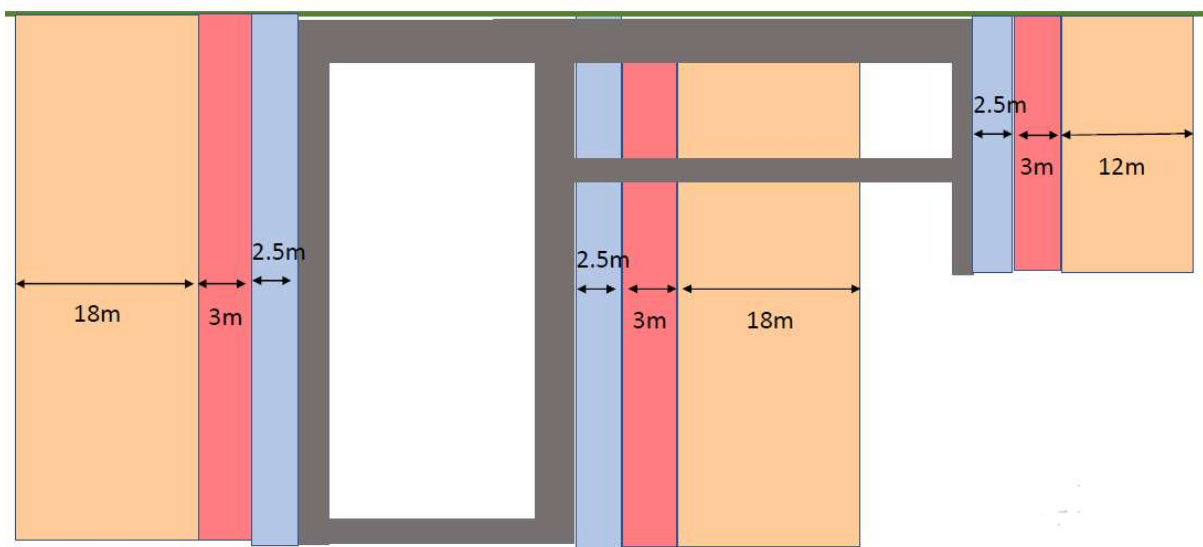


Figure 9: Shaft Protection and Exclusion Zones

2.1.4 Tunnels

The tunnel lining design has been prepared on the basis that the bored tunnels are able to carry an over site load of 75kN/m^2 . The imposed vertical loading for the tunnels is shown diagrammatically in the following.

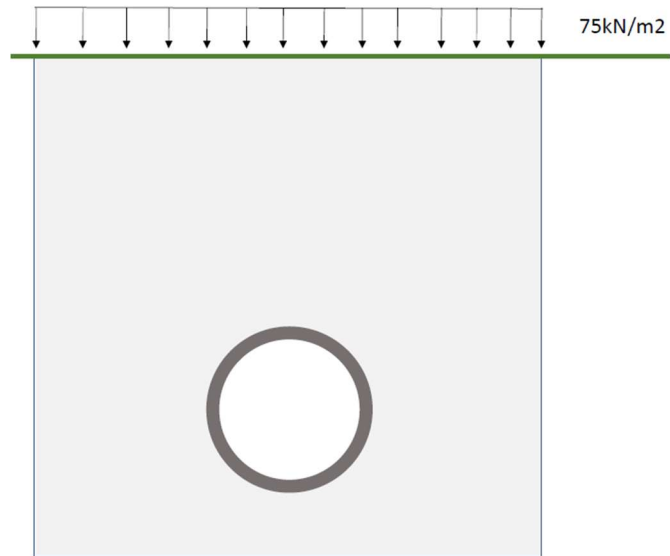


Figure 10: Imposed vertical Loadings - Bored Tunnel

At this time the bored tunnel detailed design is not finalised. Similarly, the horizontal and vertical alignment of the route has not been finalised and in areas the tunnel wall could lie at the extreme extent of the limits of deviation. Exclusion and Protection zones for the bored tunnels are shown on the following drawings.

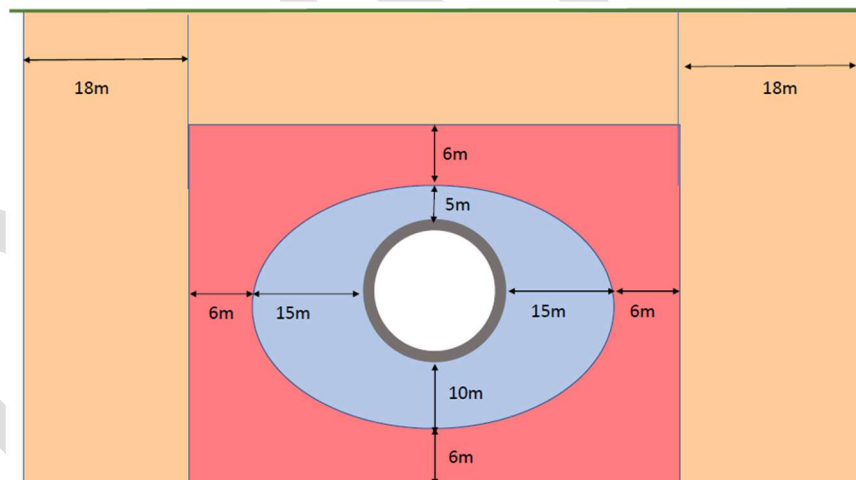


Figure 11: Bored Tunnel Protection and Exclusion Zones

2.1.5 Temporary Site Areas (Areas shown on Schedule 4 of the Railway Order)

Prior to construction no works other than works associated with the MetroLink RO may be undertaken within the Proposed Temporary Site areas.

From immediately outside of these lands, development may proceed without reference to TII

2.1.6 Wayleave / Right of Way (Areas shown on Schedule 5 of the Railway Order)

Prior to construction no works other than works associated with the MetroLink RO may be undertaken within the Wayleave / Right of Way

From immediately outside of these lands, development may proceed without reference to TII

2.2. Detailed Assessments by Developers

2.2.1 Developer Assessment Requirements, Prior to Construction of MetroLink.

Any Developer seeking permission to work in the vicinity of the proposed MetroLink infrastructure prior to construction of MetroLink will need to demonstrate that the foundations of their proposals do not obstruct the route of the tunnels if their development precedes MetroLink and that the development does not adversely affect future construction and operation of MetroLink. Developers shall take due cognisance of the Exclusion and Protection Zones

2.2.2 Developer Assessment Requirements, MetroLink already Built or under Construction.

Any Developer seeking permission to work in the vicinity of MetroLink infrastructure where MetroLink is already built or is under construction will need to demonstrate that the integrity of the tunnels and other structures is not adversely impacted. Developers shall take due cognisance of the Exclusion and Protection Zones

2.2.3 In executing any assessment TII requires that the MetroLink geology model be augmented by site investigation data gathered by the Developer where applicable.

TII further requires that the Developer considers, inter alia, and where applicable, the following variables in its analysis:

- Geological model of the site
- Depth and lateral location of the tunnel relative to the surface development
- Depth and breadth of the building excavation
- Sequencing of excavations
- Distribution and magnitude of the building loads
- Groundwater levels and any changes that may arise in the short or long term
- Tunnel lining type and profile
- Geotechnical properties of the ground
- Positioning of any ground reinforcement or piles relative to the tunnel
- Direction of all stressing loads at all stages of the works
- Effect of ground volume losses during tunnelling operations
- Construction and operational noise and vibration and affect on adjacent development
- Other relevant variables

2.2.4 In addition, Developers shall ensure that their developments do not affect the proposed MetroLink ventilation and emergency management capability. In this regard, consideration shall be made of the MetroLink fire strategy in particular in relation to smoke egress, provision of clean air, passenger escape routes, access for emergency services and the like.

3. Insurance and Indemnities Protection

TII requires that reasonable insurance be provided by the developer and indemnifies TII against any costs associated with repairs that are necessary on the MetroLink structures arising out of a developer's actions.

4. Legal Agreements

TII expect formal legal agreements to be entered into with any developer to formalise and describe the provisions set out in this Guidance Note.

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Appendix 1. Retained Cut and Cut & Cover Protection Zones Distribution

Structure	Chainage Start	Chainage End	Length (m)	Protection Zone (m)
Retained cut	1+913.229	3+120.000	60	12
U Section	1+973.229	1+995.108	21,88	
U Section	1+995.108	2+057.186	62,06	
U Section	2+057.186	2+109.608	52,44	
U Section	2+109.608	2+156.848	47,24	
Retained cut	2+156.848	2+177.932	21,08	
Retained cut	2+177.932	2+184.000	6,07	
C&C 1	2+184.000	2+196.280	12,28	
C&C 1	2+196.280	2+263.116	66,84	
C&C 1	2+263.116	2+274.000	10,88	
Retained cut	2+274.000	2+293.018	19,02	
Retained cut	2+293.018	2+373.000	79,98	
C&C 2	2+373.000	2+410.000	37	
C&C 2	2+410.000	2+600.533	190,53	
C&C 2	2+600.533	2+627.616	27,08	
C&C 2	2+627.616	2+721.955	94,34	
C&C 2	2+721.955	2+736.237	14,28	
C&C 2	2+736.237	2+798.917	62,68	
C&C 3	2+897.549	2+914.690	17,14	
C&C 3	2+914.690	2+922.338	7,65	
C&C 3	2+922.338	2+940.000	17,66	
Retained cut	2+940.000	2+998.236	58,24	
C&C 4	2+998.236	3+068.237	70	
Retained cut	3+068.237	3+120.000	51,76	
Retained cut	3+120.000	3+181.145	61,15	
C&C 5	3+181.145	3+189.173	8,03	
Retained cut	3+189.173	3+226.816	37,64	
Retained cut	3+226.816	3+245.365	18,55	
C&C 6	3+245.365	3+265.871	20,51	
C&C 6	3+265.871	3+292.457	26,59	
C&C 6	3+292.457	3+331.736	39,28	
C&C 6	3+331.736	3+390.640	58,9	
C&C 6	3+390.640	3+436.561	45,92	
C&C 6	3+436.561	3+480.000	43,44	
C&C 6	3+480.000	3+515.226	35,23	
C&C 6	3+515.226	3+612.074	96,85	
Retained cut	3+612.074	3+667.552	55,48	
C&C 7	3+667.552	3+766.800	99,25	
C&C 8	3+865.432	3+900.750	35,32	
Retained cut	3+900.750	3+980.000	59,25	
Retained cut	3+980.000	3+980.000	20	
C&C 9	3+980.000	4+028.445	48,45	
Retained cut	4+028.445	4+118.444	90	
C&C 10	4+118.444	4+138.444	20	
Retained cut	4+138.444	4+200.000	61,56	
Retained cut	4+200.000	4+240.002	40	
Retained cut	4+240.002	4+277.162	37,16	
C&C 11	4+277.162	4+442.676	165,51	
Retained cut	4+442.676	4+491.140	48,46	
C&C 12	4+491.140	4+518.140	27	
Retained cut	4+518.140	4+552.998	34,86	
Retained cut	4+552.998	4+581.721	28,72	
Retained cut	4+581.721	4+608.908	27,19	
Retained cut	4+608.908	4+666.846	57,94	
C&C 13	4+666.846	4+707.372	40,53	
C&C 13	4+707.372	4+736.187	28,81	
C&C 14	4+831.619	4+891.940	60,32	
Retained cut	4+891.940	4+913.077	21,14	
Retained cut	4+913.077	4+940.725	27,65	
Retained cut	4+940.725	4+967.971	27,25	
Retained cut	4+967.971	4+977.038	9,07	
Retained cut	4+977.038	4+982.780	5,74	
Retained cut	4+982.780	4+993.226	10,45	
C&C 15	4+993.226	5+030.015	36,79	

Structure	Chainage Start	Chainage End	Length (m)	Protection Zone (m)
Retained cut	5+030.015	5+071.977	41,96	12
Retained cut	5+071.977	5+100.622	28,65	
C&C 16	5+100.622	5+183.710	83,09	
Retained cut	5+183.710	5+229.948	46,24	
Retained cut	5+229.948	5+381.786	131,82	
U Section	5+381.786	5+404.174	42,41	
U Section	5+404.174	5+488.291	82,12	
U Section	5+488.291	5+551.874	65,58	
U Section	5+551.874	5+588.906	37,03	
Retained cut	5994.44200	6+014.382	19,94	
Retained cut	6+014.382	6+022.036	7,65	
C&C 17	6+022.036	6+085.517	43,48	
C&C 18	8+476.042	8+541.246	65,2	
C&C 18	8+541.246	8+610.680	69,43	
C&C 18	8+610.680	8+648.391	37,71	
U Section - C&C	8+648.391	8+752.980	104,59	18
U Section	8+752.980	8+810.000	57,02	
U Section	8+810.000	9+021.907	211,91	
C&C 19	9+128.223	9+191.188	62,94	
C&C 19	9+191.188	9+217.990	26,82	
C&C 19	9+217.990	9+302.963	84,97	
C&C 19	9+302.963	9+375.000	72,04	12
U Section	9+375.000	9+395.011	20,01	
U Section	9+395.011	9+443.954	48,94	
U Section	9+443.954	9+488.386	42,41	
U Section	9+488.386	9+567.000	80,63	
Retained cut	9+992.000	10+057.431	65,43	
Retained cut	10+057.431	10+083.337	25,91	18
C&C 20	10+083.337	10+119.541	36,2	
C&C 20	10+119.541	10+152.164	32,62	
C&C 20	10+152.164	10+188.602	36,44	
C&C 20	10+188.602	10+251.148	62,55	

Depot side track 1

Structure	Chainage Start	Chainage End	Length (m)	Protection Zone (m)
U Section - C&C	+0.000	+104.470	104,47	18
U Section	+104.470	+161.490	57,02	
U Section	+161.490	+373.399	211,91	
C&C 19	+543.095	+562.172	19,08	
C&C 19	+562.172	+577.850	15,68	
C&C 19	+577.850	+733.085	155,24	
C&C 19	+733.085	+774.869	41,78	
C&C 19	+774.869	+855.172	80,3	
U Section	+855.172	+926.953	71,78	
U Section	+926.953	+996.479	69,53	
C&C	+996.479	Depot		

Depot side track 2.B

Structure	Chainage Start	Chainage End	Length (m)	Protection Zone (m)
C&C 19	+83.753	+112.391	28,64	24
C&C 19	+112.391	+144.643	32,25	
C&C 19	+144.643	+376.917	232,27	
C&C 19	+376.917	+457.344	80,43	
U Section	+457.344	+547.939	90,6	
U Section	+547.939	+630.000	82,06	
C&C	+630.000	Depot		