

# Appendix A

## OBB80/80A/80B MCA Matrix

Comparison Criteria Legend	
Significant comparative advantage over other options	
Some comparative advantage over other options	
Comparable to other options / neutral	
Some comparative disadvantage over other options	
Significant comparative disadvantage over other options	

				Economy							
Works Description	Summary of requirements	Option Number	Description	Capital Expenditure (CAPEX): Construction, land acquisition, temporary works		OPEX:operational costs (IÉ or other entities), Technology advancements and future proofing / obsolescence		Train Operations Functionality/Economic Benefit		Traffic functionality and associated economic activities and opportunities	
				Qualitative appraisal of potential infrastructure costs of proposed options	Rationale	Qualitative appraisal of potential ongoing infrastructure maintenance costs of proposed options	Rationale	Qualitative appraisal of potential ongoing operational costs of proposed options	Rationale	Qualitative appraisal of potential wider benefits of proposed options	Rationale
				Estimate high level cost of construction of option Extent and type of 3rd party lands required permanently Extent and type of 3rd party land required temporarily for temporary works during construction		To offer good value for money. Cost to maintain the infrastructure over the whole life. Effects of infrastructure maintenance to services. Provision of ways of undertaking routine inspections and maintenance activities while minimising the effect on service to customers.		Potential improvement or deterioration of the operation conditions of the line (reduction or increase of the risk of interruption of service) Rolling stock & staff utilisation		Potential benefit to vehicular traffic flows in the vicinity of the works during construction and associated economic activities and opportunities in the vicinity Consideration of duration of traffic disruption and length of diversions To minimise the impacts on traffic and transportation during the construction and operational stages	
Electrification of Northern Line: Overbridge OBB80/80A/80B	Electrification of the line from the end of the current electrified section at Malahide to Drogheda with 1500V DC overhead.	1	New bridge in existing location		This option requires a temporary access road to be constructed to tie in with the access road for the proposed development (connecting it to the R150). It is assumed that the access road which forms part of the approved development proposal is not included in the cost of this option.		Maintenance costs for this option are assessed to be similar to other options.		Impacts to the train operations during bridge demolition/construction - could be limited to weekends		Disruption during construction to access 2 residential properties. Length of diversion to access temporary access road during construction.
		5	Pedestrian/cycle bridge with alternative access road from north		The construction of a pedestrian bridge is expected to be less costly compared to a new road bridge. However, the overall cost for this option includes demolition of the existing bridges and construction of a new tie-in road to the north.		Maintenance costs for this option are assessed to be similar to other options.		Impacts to the train operations during bridge demolition/construction - could be limited to weekends		Disruption during construction to access 2 residential properties. Length of diversion to access temporary access road during construction.
		6	Track Lowering		The extent of track lowering required (~0.5 m) at the bridge location has a significant impact on the extent of track either side of the bridges. The effect is particularly felt on the Down side which has the following impacts: - demolition and lowering of slab track through the refuelling area. - demolition and reconstruction of platforms to suit lowered track levels. - lifting and regrading of switches. - demolition and reconstruction of sub-track infrastructure associated with the approach to the depot building. The knock-on infrastructure works associated with this option are assessed to be substantially more costly compared to the other options proposed.		Maintenance costs for this option are assessed to be similar to other options.		Major impacts to the operations of Drogheda Station during construction, Will require prolonged shut down of the station whilst works are undertaken		Low impact during construction

Comparison Criteria Legend
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Some comparative advantage over other options
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Safety							
Works Description	Summary of requirements	Option Number	Description	Employer's Safety		Public safety	
				Qualitative appraisal on the safety impacts on IE or railway staff	Rationale	Qualitative appraisal on the safety impacts on the public (road/rail/cycle/pedestrian)	Rationale
				To reduce safety risks associated with construction maintenance and operations. To reduce the potential for incidents or near-misses for IE/construction staff.		To reduce safety risks associated with passengers at platforms, public adjacent to the railway and road, pedestrian and cycle users at level crossings. To reduce the potential for accidents for members of the public/passengers on railway infrastructure. To reduce the potential for conflict between rail and road users.	
Electrification of Northern Line: Overbridge OBB80/80A/80B	Electrification of the line from the end of the current electrified section at Malahide to Drogheda with 1500V DC overhead.	1	New bridge in existing location	Significant comparative advantage over other options	All options involve working in the railway corridor and imposes a risk during construction and for maintenance.	Some comparative advantage over other options	Footpath width is increased to improve safety for pedestrians.
		5	Pedestrian/cycle bridge with alternative access road from north	Significant comparative advantage over other options	All options involve working in the railway corridor and imposes a risk during construction and for maintenance.	Some comparative advantage over other options	The removal of vehicles from using the bridge removes the risk of vehicle and pedestrian/cyclists interactions
		6	Track Lowering	Significant comparative advantage over other options	All options involve working in the railway corridor and imposes a risk during construction and for maintenance.	Some comparative disadvantage over other options	Risk of vehicle and pedestrian/cyclists interaction with no improvements made to improve safety for all users.

Comparison Criteria Legend
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Some comparative advantage over other options
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Some comparative disadvantage over other options
Significant comparative disadvantage over other options

Environment																			
Works Description	Summary of requirements	Option Number	Description	Landscape and Visual Qualitative		Biodiversity		Noise and Vibration		Water resources		Archaeology, Architectural and Cultural Heritage		Geology & Soils		Agricultural and non-agricultural		Air Quality & Climate Change	
				Appraisal of landscape and visual impacts of options based on the sensitive viewpoints	Rationale	Qualitative appraisal on the impact on biodiversity	Rationale	Qualitative appraisal of the potential noise and vibration impact	Rationale	Qualitative appraisal on the potential impacts to surface ground or coastal waters	Rationale	Qualitative appraisal of the potential impacts of proposed options on potential sub surface archaeology and impact on foundations and above ground elements of architectural heritage	Rationale	Qualitative appraisal of the proposed options on waste and material resources including the reuse of site won materials.	Rationale	Qualitative appraisal of impacts on valued resources either from a human or natural origin with value arising from economic or cultural reasons. These assets can be existing utilities or non-renewable resources	Rationale	Qualitative appraisal of air quality and climate impacts both on the operational and construction phases	Rationale
				<ul style="list-style-type: none"> <li>To avoid / minimise impact on designated amenities, landscapes, protected trees or views.</li> <li>To avoid / minimise visual impact on properties &amp; amenities.</li> <li>To avoid / minimise removal of trees / hedgerows.</li> <li>To avoid / minimise impact from light pollution.</li> <li>To provide opportunities to enhance the local amenity and green infrastructure.</li> </ul>		<ul style="list-style-type: none"> <li>To ensure that the solution provided minimises the effects on biodiversity of the area and/or provides opportunities to enhance it.</li> </ul>		<ul style="list-style-type: none"> <li>To provide a solution which ensures minimum levels of noise and vibration</li> </ul>		<ul style="list-style-type: none"> <li>To minimise the impact or provide opportunities to enhance the quality of surface waters and associated floodplains, ground waters and coastal waters.</li> </ul>		<ul style="list-style-type: none"> <li>To minimise the impact on cultural heritage such as on below ground archaeological remains, historic buildings (individual and areas), and historic landscapes and parks.</li> </ul>		<ul style="list-style-type: none"> <li>To provide a solution which minimises total capital carbon.</li> <li>To minimise waste.</li> </ul>		<ul style="list-style-type: none"> <li>To provide a solution which minimises total capital carbon.</li> </ul>		<ul style="list-style-type: none"> <li>To provide a solution which comprises a reduction in greenhouse gas emissions.</li> <li>To ensure that the chosen solution preserves or enhances the local air quality</li> </ul>	
Electrification of Northern Line: Overbridge O880/80A/80B	Electrification of the line from the end of the current electrified section at Malahide to Drogheda with 1500V DC overhead.	1	New bridge in existing location	Green	New bridge maintains historic bridge connection. More elevated structure with some re-alignment of approach roads will increase visual presence of structure and, and impact on roadside hedgerows / planting on McGrath's Lane.	Yellow	Comparable to other options. Indirect impacts on nearby designated sites (e.g. potential for surface water quality impacts or disturbance to birds) and new lighting which could impact on birds. The construction of the temporary road will require vegetation removal which may impact nesting birds, small mammals, and bats. Potential habitat loss along track which may have rare/interesting plant species. The removal and reconstruction of the bridge may impact roosting bats within, this bridge has bat roosting potential but still to be determined if bats roosting.	Green	Construction and operational noise and vibration will be limited to the vicinity of the bridge	Yellow	Options are comparable for water resource and flooding impact.	Yellow	Though not a protected structure in its own right, the bridge is of an industrial heritage interest associated with Drogheda Railway Station which is protected. On the first edition 6 inch OS (1837-42), this area is shown as fields prior to the development of the railway. It is named as 'Newtown Bridge' on the 25 inch revised OS. The demolition of the structure will result in a significant negative impact to the character and setting of the protected railway station.	Green	Demolition of existing bridge will generate earthworks. Potential widening of existing roads, a northern and southern tie-in and temporary access for residential properties will further generate earthworks. There is potential for excavation of made ground or contaminated land. It is assumed that much of the temporary access road required will be constructed as part of the housing development to the south of Drogheda Wastewater Treatment Plant (Planning application No. 17/387) The construction of the tie-in road to link the bridge to the adjacent housing development road may require the acquisition of land and will cause potential loss of growing/topsoil.	Yellow	Small areas of permanent and temporary land acquisition resulting in an impact which is not significant	Yellow	Significant construction and demolition is required for this option which has the effect of generating air quality impacts on nearby properties. However, the impacts will be temporary in nature.
		5	Pedestrian/cycle bridge with alternative access road from north	Green	Pedestrian / cycle bridge maintains historic connection. Lighter bridging structure will avoid increasing the overall height / visual presence of the bridge and reduce the need for impact on roadside hedgerows / planting on McGrath's Lane. New road connects into proposed road serving new residential development (under construction)	Yellow	Comparable to other options. Indirect impacts on nearby designated sites (e.g. potential for surface water quality impacts or disturbance to birds) and new lighting which could impact on birds. The construction of the northern tie-in will require vegetation removal which may impact nesting birds, small mammals, and bats. Potential habitat loss along track which may have rare/interesting plant species. The removal of the bridge may impact roosting bats within, this bridge has bat roosting potential but still to be determined if bats roosting.	Green	Construction and operational noise and vibration will be limited to the vicinity of the bridge	Yellow	Options are comparable for water resource and flooding impact.	Yellow	Though not a protected structure in its own right, the bridge is of an industrial heritage interest associated with Drogheda Railway Station which is protected. On the first edition 6 inch OS (1837-42), this area is shown as fields prior to the development of the railway. It is named as 'Newtown Bridge' on the 25 inch revised OS. The demolition of the structure will result in a significant negative impact to the character and setting of the protected railway station. The building of an adjacent pedestrian/cycle may impact other structures associated with the development of the railway at Drogheda Station. The construction of an access road to the east of the existing bridge will require excavation works and the potential to uncover previously unknown archaeological remains. The site of a 'well' is shown on the revised 25 inch OS map to the north of the railway track in the line of the proposed access road.	Green	Demolition of existing bridge will generate earthworks. Potential widening of existing roads, a northern and southern tie-in and temporary access for residential properties will further generate earthworks. There is potential for excavation of made ground or contaminated land. It is assumed that much of the permanent access road required will be constructed as part of the housing development to the south of Drogheda Wastewater Treatment Plant (Planning application No. 17/387) The construction of the tie-in road to link the bridge to the adjacent housing development road may require the acquisition of land and will cause potential loss of growing/topsoil.	Yellow	Small areas of permanent and temporary land acquisition resulting in an impact which is not significant.	Yellow	Significant construction and demolition is required for this option which has the effect of generating air quality impacts on nearby properties. However, the impacts will be temporary in nature.
		6	Track Lowering	Orange	Construction works will result in disturbance to the visual and physical setting of protected structures in the railway station and alteration to the platform interfaces with the protected structures	Yellow	Comparable to other options. Indirect impacts on nearby designated sites (e.g. potential for surface water quality impacts or disturbance to birds) and new lighting which could impact on birds. The lowering of the tracks may affect the groundwater regime, and therefore have an indirect impact on groundwater dependent habitats within nearby designated sites. This option will require the least amount of vegetation removal. Potential habitat loss along track which may have rare/interesting plant species. The lowering of the track beneath the bridges could disturb and/or displace roosting bats within, this bridge has bat roosting potential but still to be determined if bats roosting.	Orange	Construction noise and vibration will be more extensive due to the extent of works at Drogheda station and to the tracks to achieve an acceptable gradient.	Yellow	Options are comparable for water resource and flooding impact.	Yellow	This option will retain the bridge in situ. However, the lowering of the track may impact the bridge foundations and will impact other structures/ features associated with the development of the railway at Drogheda Station and will affect the setting and character of Drogheda Station, a protected structure. A careful conservation led approach to the proposed design and engineering proposals may assist in the protection of key industrial heritage features and minimising this impact.	Orange	Proposed works will generate comparatively significant earthworks consisting of lowering the actual site level by a minimum of 500mm over a widespread area of approximately 25,000 m2. There is potential for excavation of contaminated ballast and materials. This will require off site recovery, treatment and/or appropriate disposal, hence is less sustainable, will incur large disposal costs and the excavation will require increase the site traffic compared to the other options.	Yellow	Small areas of permanent and temporary land acquisition resulting in an impact which is not significant.	Yellow	Significant construction and demolition is required for this option which has the effect of generating air quality impacts on nearby properties. However, the impacts will be temporary in nature.

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				Accessibility & Social Inclusion			
Works Description	Summary of requirements	Option Number	Description	Accessibility		Social Inclusion	
				Qualitative appraisal of capacity of options to facilitate the movement of people (either within, on to or across the rail system)	Rationale	Qualitative appraisal of capacity of options to provide ease of access for the mobility and visually impaired	Rationale
				Capacity of options to facilitate the movement of people (either within, on to or across the rail system) Impact on the wellbeing of the passenger and public. Positive impact on passenger and public experience. Improve accessibility to key facilities, such as employment, education, transport and healthcare to satisfy transport demand for all trip types.		Positive impact towards vulnerable groups Improvement of accessibility to public transport facilities, in particular from deprived geographic areas.	
Electrification of Northern Line: Overbridge OBB80/80A/80B	Electrification of the line from the end of the current electrified section at Malahide to Drogheda with 1500V DC overhead.	1	New bridge in existing location		Vehicles, pedestrians and cyclists are able to use the bridge to cross the railway		The bridge provides step free access to cross the railway and provide a more direct route to Drogheda Station from the north
		5	Pedestrian/cycle bridge with alternative access road from north		Vehicles are unable to use the new bridge and will need use the new road north of the railway corridor as an alternative. This will increase travel time for the limited number of properties affected.		The bridge provides step free access to cross the railway and provide a more direct route to Drogheda Station from the north
		6	Track Lowering		Vehicles, pedestrians and cyclists are able to use the bridge to cross the railway		The bridge provides step free access to cross the railway and provide a more direct route to Drogheda Station from the north

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				Integration								Physical Activity			
Works Description	Summary of requirements	Option Number	Description	Adaptability in the future		Transport Integration		Land use integration		Geographical Integration		Government policy Integration		Walking / cycling opportunities	
				Qualitative appraisal of capacity of options to cater for future projects or aspirations	Rationale	Qualitative appraisal of the options and their impact on integration with other transport modes	Rationale	Qualitative appraisal of the options and their impact on integration with land use policies	Rationale	Qualitative appraisal of the options and their impact on integration with geographical policies	Rationale	Qualitative appraisal of the options and their impact on integration with geographical and government policies	Rationale	Qualitative appraisal of the options and their impact to enable walking and cycling opportunities in a safer environment for the communities along the route	Rationale
				Ability to continue to function successfully despite future changes in circumstances		Scope for and ease of interchange between modes New interchange nodes and facilities Reduce waking and wait times associated with interchanges Integration with the cycle networks Modal shifts figures during construction and operations Changes to journey times to transport nodes Impact on the operation of the other transport services both during construction and in operation stage		Consistency with land use strategies, regional and local plans		Potential to impact on external links during construction Potential to impact on external links during operations Consideration for any community severance impacts		Integration with national and international plans and policies		To enable walking and cycling opportunities in a safer environment in the communities along the route To create a healthy environment conducive to active travel Connectivity to adjoining cycling and pedestrian facilities Enhanced connectivity between key attractions/trip generators related to active modes Diversions, duration and impact on journey times and potential to create a negative modal shift (e.g. people opt to drive instead of walk or cycle)	
Electrification of Northern Line: Overbridge OBB80/80A/80B	Electrification of the line from the end of the current electrified section at Malahide to Drogheda with 1500V DC overhead.	1	New bridge in existing location		All options are comparable with regards to adaptability in the future		During Construction: increased journey times along temporary access road which negatively impacts 2 residential properties. During Operation: Improved pedestrian facilities along the new bridge (1.8m footway) benefitting 2 residential properties and maintain vehicle access.		The bridge option is consistent with the zoning objective in the Development Plan		All options relate to works on the bridges themselves, the tracks or lands immediately adjoining the bridges. As such they do not interfere with or contribute to community severance more than possible temporary impacts.		All international, national, regional and local policies encourage improvements in relation to the efficiency of public transport. All options will facilitate the achievement of greater efficiency in public transportation along part of the east coast of the country and therefore comply with government policy.		Improved pedestrian facilities along the new bridge (1.8m footway)
		5	Pedestrian/cycle bridge with alternative access road from north		All options are comparable with regards to adaptability in the future		During Construction and Operation: increased journey times along new access road which negatively impacts 2 residential properties. During Operation: Improved pedestrian facilities along the new pedestrian / cyclist bridge benefitting 300+ residential properties via the new access road that includes 2 x 2m footpaths and a 2.5m cycle track.		The bridge option is consistent with the zoning objective in the Development Plan		All options relate to works on the bridges themselves, the tracks or lands immediately adjoining the bridges. As such they do not interfere with or contribute to community severance more than possible temporary impacts.		All international, national, regional and local policies encourage improvements in relation to the efficiency of public transport. All options will facilitate the achievement of greater efficiency in public transportation along part of the east coast of the country and therefore comply with government policy.		Improved pedestrian facilities along the new pedestrian / cyclist bridge benefitting 300+ residential properties via the new access road that includes 2 x 2m footpaths and a 2.5m cycle track.
		6	Track Lowering		All options are comparable with regards to adaptability in the future		Low impact during construction		The bridge option is consistent with the zoning objective in the Development Plan		All options relate to works on the bridges themselves, the tracks or lands immediately adjoining the bridges. As such they do not interfere with or contribute to community severance more than possible temporary impacts.		All international, national, regional and local policies encourage improvements in relation to the efficiency of public transport. All options will facilitate the achievement of greater efficiency in public transportation along part of the east coast of the country and therefore comply with government policy.		No improvement