

Appendix A

Detailed MCA table

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

				Economy							
Works Description	Summary of requirements	Option Number	Description of Option	Capital Expenditure (CAPEX): Construction, land acquisition, temporary works		OPEX: Operational costs (IE 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 lands required temporarily for temporary works during construction		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 operational conditions of the line (reduction or increase of the risk of interruption of service) Increased DART service improving connectivity and economy (leading to increased competition in economy, increased output of firms, increased tax revenue).		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	
Works Around Howth Junction & Donaghmede Station	Provide turnback infrastructure at Howth Junction and Donaghmede Station which will meet the Train Service Specification. Ensure the Option of Through Running from the Northern Line to the Howth Branch Lines is maintained on both lines.	1	Platform 1 via new crossover on straight	Significant comparative advantage over other options	There is no proposed impact on bridge or civil structures for any of the options presented. Single low speed cross over to be installed. This option impacts on few existing OHLE masts in Up and Down tracks of Howth Junction which will need to be relocated according to the new crossover proposed. New OHLE wires for the crossover will be also required. New signalling to be installed due to new crossover. Options 1-2 foresee trains terminating in platform 1. However, if a train terminates in platform 2 a block (red aspect) is required on the mainline because terminating in platform 2 does not offer a safe overlap length.	Some comparative advantage over other	Single cross over to be installed on a straight. LCC- 1 standard switch unit. All options would require the same level of staffing and rolling stock provision. All options are considered comparable. Variation between the options is not considered significant enough to be a deciding factor.	Some comparative advantage over other	Option 1 is inferior to all other options, as it requires that trains either use only 1 platform in Platform 1, limiting robustness and timetable recovery, or also use Platform 2, which will block the main Up line, greatly decreasing timetable robustness, reliability and flexibility. Using Platform 2 will result in red aspects being shown on the mainline. As such, using Platform 2 negates some of the benefit of segregating the Howth Branch operations by allowing the branch to affect the more numerous Drogheda to Dublin services. As well, the new crossover enabling access to Platform 1 is further out than in Option 2, slightly increasing journey time on bi-directional track, therefore slightly decreasing timetable performance.	Some comparative advantage over other	Minimum works or impact, use of existing infrastructure
		2	Platform 1 via new crossover on curve	Some comparative advantage over other	There is no proposed impact on bridge or civil structures for any of the options presented. Bespoke cross over to be installed, lead times and spares may be an issue if not kept in stores. Impact on few existing OHLE structures in Up and Down tracks of Howth junction & Donaghmede Station and new OHLE wires for new proposed crossover. New signalling to be installed due to new crossover. Options 1-2 foresee trains terminating in platform 1. However, if a train terminates in platform 2 a block (red aspect) is required on the mainline because terminating in platform 2 does not offer a safely overlap length.	Some comparative advantage over other	Bespoke cross over to be installed, lead times and spares may be an issue if not kept in stores. However, keeping a spare in stores mitigates both of these issues and has been allowed for in the CAPEX assessment. Therefore this does not cause a disadvantage for the OPEX assessment. LCC- 1 bespoke switch Unit, 1 set of spare parts required which is to be considered under capital investment All options would require the same level of staffing and rolling stock provision All options are considered comparable. Variation between the options is not considered significant enough to be a deciding factor.	Some comparative advantage over other	Option is inferior to Option 7a and Option 5 but superior to Option 1, as it requires that trains either use only 1 platform in Platform 1, limiting robustness and timetable recovery, or also use Platform 2, which will block the main Up line, greatly decreasing timetable robustness, reliability and flexibility. Using Platform 2 will result in red aspects being shown on the mainline. As such, using Platform 2 negates some of the benefit of segregating the Howth Branch operations by allowing the branch to affect the more numerous Drogheda to Dublin services. Option 2 is superior to Option 1 in that the crossover enabling access to Platform 1 is closer to the platform, slightly decreasing journey time on bi-directional track, therefore slightly increasing timetable performance.	Some comparative advantage over other	Minimum works or impact, use of existing infrastructure
		5	Signalling Overlap on Platform 2	Some comparative advantage over other	There is no proposed impact on bridge or civil structures for any of the options presented. More track work is needed compared to Options 1 and 2 including a single switch and additional plain line to be installed, with buffers and a new crossover. This option impacts on two existing OHLE structures (less than Options 1, 2 and 7a) in Down track of Howth junction & Donaghmede Station line, which need to be replaced because they interfere with the proposed platform.	Some comparative advantage over other	Single cross over to be installed on a straight. Additional maintenance cost of platform extension and lighting. LCC- 1 standard switch unit. All options would require the same level of staffing and rolling stock provision. All options are considered comparable. Any variation between the options is not considered significant enough to be a deciding factor.	Some comparative advantage over other	Option 5 has advantage over Options 1 and 2 as it prevents delays being imported to the more numerous Drogheda to Dublin services. It has disadvantage when compared to Option 7a as it has one less platform face for flexibility and robustness in periods of perturbed or non-standard operations (e.g., exit from service).	Some comparative advantage over other	Some construction work related to the new platform. Additional construction work may be required related to the redundant platform.
		7a	New platform behind platform 2	Significant comparative advantage over other options	There is no proposed impact on bridge or civil structures for any of the options presented. More track work is needed compared to Options 1 and 2 including a single switch and additional plain line to be installed, with buffers. This option will impact in few existing OHLE structures located in Down track which need to be replaced because of the installation of the new siding track and the new platform. Additionally new OHLE structures and wires will be required for the new siding track. New signalling has to be installed to accommodate the new platform. A new crossover to access the new platform is required. Options 5-7a regarding other options, do not interface with the mainline. Between 5 and 7a, option 5 offers better delivery cost as it does not install any new crossover and only needs to relocate a few signals.	Some comparative advantage over other	Single switch, additional plain line to be install, with buffers. Additional maintenance will be required in platform area to ensure alignment remains true. Additional servicing cost dependant upon buffer stop type installed. LCC- 1 standard switch Unit All options would require the same level of staffing and rolling stock provision. All options are considered comparable. Variation between the options is not considered significant enough to be a deciding factor.	Significant comparative advantage over other options	Option is superior to all other options, with 2 platforms providing substantial redundancy that enable increased timetable robustness in periods of perturbed operations and overall increased timetable flexibility. This is accomplished while maintaining service segregation between the Howth Branch and the more numerous Drogheda to Dublin services.	Some comparative advantage over other	Some construction work related to the new platform. Additional construction work may be required related to the signalling room.

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

				Safety			
Works Description	Summary of requirements	Option Number	Description of Option	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.	
Works Around Howth Junction & Donaghmede Station	Provide turnback infrastructure at Howth Junction and Donaghmede Station which will meet the Train Service Specification. Ensure the Option of Through Running from the Northern Line to the Howth Branch Lines is maintained on both lines.	1	Platform 1 via new crossover on straight		Only one component to be installed on standard straight track. Existing positions of safety and walkways already present.		Curved platform, greater risk of falling when boarding or alighting Passengers have to cross footbridge in morning peak to catch connecting train. Greater risk of falling on stairs The track installation proposed is beyond the public realm so is advantageous from the perspective of public safety. There will be a greater number of passengers on with no additional platform space.
		2	Platform 1 via new crossover on curve		Only one component to be installed on standard straight track. Existing positions of safety and walkways already present.		Curved platform, greater risk of falling when boarding or alighting Passengers have to cross footbridge in morning peak to catch connecting train. Greater risk of falling on stairs The track installation proposed is beyond the public realm so is advantageous from the perspective of public safety. There will be a greater number of passengers on with no additional platform space.
		5	Signalling Overlap on Platform 2		Increased construction work required		Curved platform, greater risk of falling when boarding or alighting Installation in vicinity of passengers on platform. Some additional platform space provided to accommodate additional passengers. Less crowding.
		7a	New platform behind platform 2		Increased construction work required		Installation in vicinity of passengers on platform. Significant additional platform space provided to accommodate additional passengers. Less crowding.

Comparison Criteria Legend	
Significant comparative advantage over other options	Green
Some comparative advantage over other	Light Green
Comparable to other options / neutral	Yellow
Some comparative disadvantage over other	Light Orange
Significant comparative disadvantage over other	Orange

Environment																			
Works Description	Summary of requirements	Option Number	Description of Option	Landscape and Visual Quality		Biodiversity (Flora and Fauna)		Noise and Vibration		Water resources		Archaeology, Architectural and Cultural Heritage		Geology & Soils (includes Waste)		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 options on potential sub surface archaeology and on foundations and above ground elements of architectural heritage	Rationale	Qualitative appraisal of the potential of the proposed options on waste and material resources including the reuse of site won materials.	Rationale	Qualitative appraisal of impacts on valued resources from a human/natural origin with value arising for economic/cultural reasons. 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
				To provide opportunities to enhance the local amenity, heritage value of the area and the surrounding landscape To minimise any impacts of light pollution and the impact on dark skies		To ensure that the solution provided minimises the effects on biodiversity of the area and/or provides opportunities to enhance it.		To provide a solution which ensures minimum levels of noise and vibration		To minimise the impact or provide opportunities to enhance the quality of surface waters and associated floodplains, ground waters and coastal waters.		To minimise the impact on cultural heritage such as on below ground archaeological remains, historic buildings (individual and areas), and historic landscapes and parks.		To provide a solution which minimises total capital carbon. To minimise waste.		To provide a solution which minimises total capital carbon.		To provide a solution which comprises a reduction in greenhouse gas emissions. To ensure that the chosen solution preserves or enhances the local air quality	
Works Around Howth Junction & Donaghmede Station	Provide turnback infrastructure at Howth Junction and Donaghmede Station which will meet the Train Service Specification. Ensure the Option of Through Running from the Northern Line to the Howth Branch Lines is maintained on both lines.	1	Platform 1 via new crossover on straight	Works within existing railway corridor. No change to existing landscape / visual character. No / minimal loss of trees, hedgerows. Options 1, 2 and 5 are comparable and have some comparative advantage over Option 7a.	No significant biodiversity constraints for this option.	Construction: minimal works and therefore minimal noise/vibration impacts to receptors Operation: Increased noise and vibration from additional switching and crossing	Minimal work which may impact on water resources	There are no recorded archaeological monuments in the vicinity of the proposed works. The Dublin and Drogheda Railway began operating in 1844 and the branch line to Howth opened in 1846. No historic structures or features are identified at this stage, which would be impacted by this proposal, meaning that there is no significant difference identified. However the information available is VERY limited at this stage and this will need to be confirmed by a site visit.	No impact on underlying land and soils as no excavations or earthworks required	No agricultural land affected by each of the options.	Works located in proximity to sensitive receptors. Beneficial from a climate perspective due to more efficient rail services.								
		2	Platform 1 via new crossover on curve	Works within existing railway corridor. No change to existing landscape / visual character. No / minimal loss of trees, hedgerows. Options 1, 2 and 5 are comparable and have some comparative advantage over minor Option 7a.	No significant biodiversity constraints for this option.	Construction: minimal works and therefore minimal noise/vibration impacts to receptors Operation: Increased noise and vibration from switching and crossing, and additional noise/vibration from additional switch and cross on corner	Minimal work which may impact on water resources	There are no recorded archaeological monuments in the vicinity of the proposed works. The Dublin and Drogheda Railway began operating in 1844 and the branch line to Howth opened in 1846. No historic structures or features are identified at this stage, which would be impacted by this proposal, meaning that there is no significant difference identified. However the information available is VERY limited at this stage and this will need to be confirmed by a site visit.	No impact on underlying land and soils as no excavations or earthworks required	No agricultural land affected by each of the options.	Works located away from sensitive receptors. Beneficial from a climate perspective due to more efficient rail services.								
		5	Signalling Overlap on Platform 2	Works within existing railway corridor. No change to existing landscape / visual character. No / minimal loss of trees, hedgerows. Options 1, 2 and 5 are comparable and have some minor comparative advantage over Option 7a.	No significant biodiversity constraints for this option. May require small amount of vegetation removal.	Construction: works to extend platform have potential to impact nearby receptors Operation: no additional switches/crosses, so no change from existing	Minimal work which may impact on water resources	There are no recorded archaeological monuments in the vicinity of the proposed works. The Dublin and Drogheda Railway began operating in 1844 and the branch line to Howth opened in 1846. No historic structures or features are identified at this stage, which would be impacted by this proposal, meaning that there is no significant difference identified. However the information available is VERY limited at this stage and this will need to be confirmed by a site visit.	Localised earthworks and potential for handling contaminated land associated with platform extension - potential to encounter contaminated land during earthworks	No agricultural land affected by each of the options.	Works located away from sensitive receptors. Beneficial from a climate perspective due to more efficient rail services.								
		7a	New platform behind platform 2	Works extend north of the existing railway corridor. Minor change to existing landscape / visual character. Potential loss of trees / hedgerow. Options 1, 2 and 5 are comparable and have minor comparative advantage over Option 7a.	No significant biodiversity constraints for this option. May require some vegetation removal. Option 7 involves removal of buildings however these appear to have low potential to support bats.	Construction: works to construct new platform have potential to impact nearby receptors on a larger scale than Option 5 Operation: no additional switches/crosses, so no change from existing	Construction of the platform may require excavation of foundation which may present a potential impact to groundwater flow regime and groundwater and surface water quality.	There are no recorded archaeological monuments in the vicinity of the proposed works. The Dublin and Drogheda Railway began operating in 1844 and the branch line to Howth opened in 1846. No historic structures or features are identified at this stage, which would be impacted by this proposal, meaning that there is no significant difference identified. However the information available is VERY limited at this stage and this will need to be confirmed by a site visit.	Localised earthworks and potential for handling contaminated land associated with platform extension - potential to encounter contaminated land during earthworks	No agricultural land affected by each of the options.	Works located away from sensitive receptors. Beneficial from a climate perspective due to more efficient rail services.								

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

Accessibility & Social Inclusion							
Works Description	Summary of requirements	Option Number	Description of Option	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 Positive impact to deprived geographic areas. Improvement of accessibility to public transport facilities, in particular from deprived geographic areas.	
Works Around Howth Junction & Donaghmede Station	Provide turnback infrastructure at Howth Junction and Donaghmede Station which will meet the Train Service Specification. Ensure the Option of Through Running from the Northern Line to the Howth Branch Lines is maintained on both lines.	1	Platform 1 via new crossover on straight		Greater number of passengers on with no additional platform space.		Greater number of passengers on with no additional platform space.
		2	Platform 1 via new crossover on curve		Passengers required to cross bridge for connecting services in morning. – Greater Impact on mobility impaired, pushchairs who have to use the lift etc		Passengers required to cross bridge for connecting services in morning. – Greater Impact on mobility impaired, pushchairs who have to use the lift etc
		5	Signalling Overlap on Platform 2		Passengers required to cross bridge for connecting services in morning. – Greater Impact on mobility impaired, pushchairs who have to use the lift etc		Passengers required to cross bridge for connecting services in morning. – Greater Impact on mobility impaired, pushchairs who have to use the lift etc
		7a	New platform behind platform 2		Majority of services can use platform 2 avoiding footbridge in morning peak. Wider space on platform to allow improved flow and movement between platforms. Shorter length of platform requiring shorter travel distance.		Majority of services can use platform 2 avoiding footbridge in morning peak. Wider space on platform to allow improved flow and movement between platforms. Shorter length of platform requiring shorter travel distance.

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

Integration													
Works Description	Summary of requirements	Option Number	Description of Option	Adaptability in the future		Transport Integration		Land use integration		Geographical Integration		Government policy Integration	
				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
				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 walking 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	
Works Around Howth Junction & Donaghmede Station	Provide turnback infrastructure at Howth Junction and Donaghmede Station which will meet the Train Service Specification. Ensure the Option of Through Running from the Northern Line to the Howth Branch Lines is maintained on both lines.	1	Platform 1 via new crossover on straight		The option does not limit or improve future internal transport links compared to other options.		Minimum works expected and therefore the option does not significantly impact other existing transport systems.		The proposal complies with regional and local policies to improve public transport services including DART services, encouraging modal shift and allowing for increased density of development in certain areas. The development is contained within the existing envelope of the rail line. There is no impact on existing land uses.		All international, national, regional and local policies encourage improvements in relation to the efficiency of public transport. All the proposed options will facilitate this.		All international, national, regional and local policies encourage improvements in relation to the efficiency of public transport. All the proposed options will facilitate this.
		2	Platform 1 via new crossover on curve		The option does not limit or improve future internal transport links compared to other options.		Minimum works expected and therefore the option does not significantly impact other existing transport systems.		The proposal complies with regional and local policies to improve public transport services including DART services, encouraging modal shift and allowing for increased density of development in certain areas. There is no impact on existing land uses		All international, national, regional and local policies encourage improvements in relation to the efficiency of public transport. All the proposed options will facilitate this.		All international, national, regional and local policies encourage improvements in relation to the efficiency of public transport. All the proposed options will facilitate this.
		5	Signalling Overlap on Platform 2		The option does not limit or improve future internal transport links compared to other options.		Some construction work expected and therefore the option has a temporary impact on the existing access roads to the railway station.		The proposal complies with regional and local policies to improve public transport services including DART services, encouraging modal shift and allowing for increased density of development in certain areas. The development is contained within the existing envelope of the rail line. There is no impact on existing land uses.		All international, national, regional and local policies encourage improvements in relation to the efficiency of public transport. All the proposed options will facilitate this.		All international, national, regional and local policies encourage improvements in relation to the efficiency of public transport. All the proposed options will facilitate this.
		7a	New platform behind platform 2		The option does not limit or improve future internal transport links compared to other options.		Some construction work expected and therefore the option has a temporary impact on the existing access roads to the railway station.		The proposal complies with regional and local policies to improve public transport services including DART services, encouraging modal shift and allowing for increased density of development in certain areas. The development is contained within the existing envelope of the rail line. There is no impact on existing land uses.		All international, national, regional and local policies encourage improvements in relation to the efficiency of public transport. All the proposed options will facilitate this.		All international, national, regional and local policies encourage improvements in relation to the efficiency of public transport. All the proposed options will facilitate this.

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

				Physical Activity	
Works Description	Summary of requirements	Option Number	Description of Option	Walking / cycling opportunities	
				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
				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 Diversion, 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)	
Works Around Howth Junction & Donaghmede Station	Provide turnback infrastructure at Howth Junction and Donaghmede Station which will meet the Train Service Specification. Ensure the Option of Through Running from the Northern Line to the Howth Branch Lines is maintained on both lines.	1	Platform 1 via new crossover on straight		Minimum works expected and therefore the option does not significantly impact other existing transport systems.
		2	Platform 1 via new crossover on curve		Minimum works expected and therefore the option does not significantly impact other existing transport systems.
		5	Signalling Overlap on Platform 2		Some construction work expected and therefore the option has a temporary impact on the existing walking and cycling access to the railway station.
		7a	New platform behind platform 2		Some construction work expected and therefore the option has a temporary impact on the existing walking and cycling access to the railway station.