Appendix L. Phase 2 – Option Selection Report - Stage 2 – Overall Project Assessment Matrix

	MCA Criteria	Owner	Preliminary Assessment of Option : *Purple*		
			Quantitative Assessment	**Qualitative Assessment**	**Score**
ENVIRONMENTAL	**Air Quality**	Atkins	The calculated Index of Overall Change in Exposure for this route has been determined: NO_x Exposure Index: -18,255 PM_{10} Exposure Index: -1,434 There are no sensitive receptors within 50m of this route. There is a benefical impact as traffic is diverted away from properties along the existing N25. All routes cross a section of the River Nore & River Barrow SAC therefore no preference is considered in terms of air quality impacts on sensitive ecosystems.	Predicted baseline levels of NO_2 and PM_{10} are based on data from representative EPA monitoring sites. A background concentration of 5 µg/m^3 for NO_2 and 10 µg/m^3 for PM_{10} are predicted in the region of the proposed route options. The existing N25 route is the least preferred option as it impacts the greatest number of receptors and thus has the greatest NO_x and PM_{10} exposure index. Each of the revised routes will improve local air quality along the existing alignment. As there are no new receptors impacted by the proposed route there is an overall positive impact from the new alignment as traffic is diverted away from properties along the existing N25.	5
	Climate	Atkins	The CO_2 emissions associated with operational traffic along the route has been calculated: CO_2 Emissions: 11,554 tonnes/yr	CO_2 emissions are considered at a national scale rather than at a local level. Data from the EPA indicates that Ireland is likely to exceed its climate emissions targets in future years and therefore reduction measures are required in all areas. However, there are no sector specific GHG targets at present and a scheme in isolation will not cause a breach of the national targets. There is minimal difference in the route options in terms of climate impacts, all routes result in a slight negative impact to climate.	3
	Noise	Atkins	PIR = 98, with 59 NSLs within 300m of the new road (Purple). None of these properties are within 50m and 8no. residential properties are within 100m. Likely NSLs above 60dB L_{den} is 51no. and above 70dB L_{den} is 1no. Likely NSLs to experience a moderate negative (increase) in noise traffic levels is 39no. and a major negative impact is 53no. No positive (reduction) in noise traffic levels are likely and no noise mitigation is required.	Diverts west at New Ross bypass through rural areas with no alignment along the existing route. Expected noise climate to be a quiet in the rural area and the introduction of a 100km road would significantly change the noise environment at the small number of properties along this route. Least number of properties along this route compared to all other routes, however the 60dB L_{den} is exceeded at 51no. NSLs. Review of traffic data indicates that this route would not divert significant traffic from the existing N25, resulting in new road traffic noise being introduced to a rural area, while the existing N25 remains the heavier trafficked route. It is the least preferable proposed route with the exception of the Do Nothing route, and is the only route that has no moderate or major positive change (reduction) in noise traffic levels.	2
	Landscape and Visual (including light)	Atkins	Visual Effects The number of receptors judged to have significant adverse effects (i.e. those categorised between the range of Moderate to Very Large) is 22.	Landscape Character Area E: South Eastern Uplands: The proposed route travels through greenfield land for circa. 7.1km through this character area. Horizontal alignment of carriageways travels in close proximity to narrow stream valleys west of Glenmore. The straight alignment at odds with the pattern of these valleys. Some field pattern severance. Vertical alignment cutting and embankment slopes would lead some disruption to existing landform. The route travels in close proximity to the lower slopes and wooded vegetation of the system of narrow stream valleys north and west of Glenmore (travels close to this intimate valley system especially at Mullennahone). Significant adverse effects on landscape character of this valley system. From south of Ardbeg towards Grogan and Nicholastown the route travels across/ sidelong on the steep side slopes of a locally prominent ridge of higher ground (a Principal Ridgeline, Refer to Figure 8.3 Landscape Sensitivities, Kilkenny County Development Plan). The side slopes are integral to the ridge and provide large scale views over the surrounding countryside. The side slopes of this ridge are visible from a wide surrounding area extending far to the west, and the route in this location may be widely visible. Will lead to adverse effects on the tranquillity of land and wooded stream valleys currently located to the west of the existing N25 road and other lands located far to the west of the existing N25. Loss of some areas of woodland, hedgerows and hedgerow trees and loss of agricultural land. Landscape Character Area C: South Western Uplands: The proposed route travels through greenfield land for circa. 4km through this character area. Long straight sections of route alignment are at odds with the curved landscape pattern. Some field pattern severance. Vertical alignment cutting and embankment slopes would lead to some limited disruption to existing landform. Immediately east of Ardbeg this route travels close to a prominent hill of high ground at Ballinclare. From south of Ardbeg towards Grogan and Nicholastown the route travels across/ sidelong on the steep side slopes of a locally prominent ridge of higher ground (a Principal Ridgeline, Refer to Figure 8.3 Landscape Sensitivities, Kilkenny County Development Plan). The side slopes are integral to the ridge and provide large scale views over the surrounding countryside. The side slopes of this ridge are visible from a wide surrounding area extending far to the west, and the route in this location may be widely visible. Significant adverse effects on side slopes of ridge of high ground from Ardbeg to Grogan and Nicholstown. Will lead to adverse effects on the tranquillity of land currently located to the west of the existing N25 road. Loss of some areas of woodland, hedgerows and hedgerow trees and loss of agricultural land. Landscape Character Area C2: South Hills Transition Area, South The proposed route travels through greenfield land for circa. 400m through this character area. Route travels across/ sidelong on the steep side slopes of a locally prominent ridge of higher ground (a Principal Ridgeline, Refer to Figure 8.3 Landscape Sensitivities, Kilkenny County Development Plan). The side slopes are integral to the ridge and	1
	Biodiversity-Flora and Fauna	Atkins	The Purple route would impact upon 6 no. Ecologically Sensitive Areas (ESAs); of these 1 is of County Importance; 3 are of High Local importance and 2 are of Low Local importance. ESA 1, Ballybrahy, is of County importance and includes an area of wet woodland (WN6); the potential for equivalence with the Annex I habitat - alluvial woodland 91A0 - is a consideration. ESA 4 and 19 are of higher local importance and comprise habitats including riparian woodland, wet woodland and wet grassland, of potential local importance to bird and mammal species.	The Purple route is the longest route at 11.5km. It is the most westerly of all proposed routes. As with all other routes, drainage is likely either to the River Barrow & River Nore SAC (002162) to the east (via the Glenmore River); or the Lower River Suir SAC (002137) to the south (via the Nicholastown/Lough Cullin/Smartcastle Stream) (drainage to be finalised at detailed design). The route would cross the Glenmore River or its tributaries at up to 3 no. locations. The Purple route differs in its interaction with the River Barrow & River Nore SAC to all other routes - as it swings to the north of Glenmore. It would cross a tributary of the Glenmore River in a small river valley in the townland of Ballybraghy. The SAC is also located within the route corridor to the west in Mullennahone as well as where the route intercepts the existing N25 to the northeast of Glenmore (at the roundabout built as part of the New Ross Bypass scheme). There are no direct impacts to SPAs or to Natural Heritage Areas. The Purple route is the closest route to Lough Cullin pNHA located to the west. Depending upon final design, the Purple route could drain to Lough Cullin pNHA via the Nicholastown Stream. Lough Cullin is a site of importance to birds. Preliminary bird survey work suggests that there no field-feeding sites present along the Purple route that could result in indirect impacts upon bird populations of Lough Cullin. The Barrow River Estuary pNHA largely overlaps with the River Barrow & River Nore SAC. The Purple route, being the longest, has the greatest potential for negative impacts on linear features such as hedgerows. Based on expert judgement of a contracted bat-specialist, the Purple route poses the worst risk to bats and their potential roosting and feeding sites.	1
	Waste	Atkins	Estimated Excavation & Disposal of Surplus Suitable and Unacceptable Material (U1) (m3) = 312,029 Estimated Excavation & Disposal of Hazardous Unacceptable Material (U2) (m3) = 16,423	N/A	2
	Soils and Geology	Atkins	3no. moderate negatives for: Moderately High Landslide Susceptibility; Well Drained soils; and Potential Soft / Compressible soils identified from historical OS maps; 2no. minor negatives for proximity to a Potential Historic Quarry; and Potential Soft / Compressible soils identified from published Quaternary mapping (alluvial deposits); 1no. neutral for Potential Soft / Compressible soils identified from published Quaternary mapping (lacustrine deposits).	The purple route corridor is underlain by quaternary sediments, predominantly till derived from Lower Palaeozoic shales, with small sections of alluvium, lacustrine sediments and, locally within the south till derived from Devonian sandstones. Bedrock is mapped outcropping throughout the route corridor. Bedrock below the route corridor consists of green and red-purple buff slate and siltstone of the Oaklands formation in the north and travelling south it moves through sections of green and grey slate with thin siltstone of Ballylane formation, red-brown conglomerate and sandstone of Carrigmaclea formation and yellow and red sandstone and green mudstone of the Kiltorcan Formation. Three isolated pockets of alluvium are intersected by the route in the north which could give rise to potential soft ground requiring excavation. The route terminates in the south within an area of Lacustrine sediments which may also contain soft, compressible sediments. Additional potential soft ground areas have also been identified from a review of historical OS maps.	3

	MCA Criteria	Owner	Preliminary Assessment of Option : *Purple*		
			Quantitative Assessment	**Qualitative Assessment**	**Score**
ENVIRONMENTAL	**Hydrology**	Atkins	The route will have moderate negative impact via temporary direct impact to surface water quality (on small proportion of attribute) at River Barrow and River Nore SAC. The route will have minor negative impacts via temporary direct impact to surface water quality (on small proportion of attribute) at Barrow River Estuary pNHA and Oakland River. The route will have minor negative impact via temporary indirect impacts to surface water quality (on small proportion of attribute) at Waterford Harbour Shellfish Area and Lower River Suir SAC.	This route corridor intersects the catchments, Nore and Suir and sub catchments Nore_SC_140 and Blackwater_SC_010. The purple route corridor is crossed by the Oakland River (IE_SE_14O130860) to the northern extent and therefore has the potential to impact water quality due to re-alignment works and the discharge of surface water run-off. It is important to note hydrological connections as the Oaklands River flows into the River Barrow which then flows south into the River Suir.	4
	Hydrogeology	Atkins	The route will have a minor negative impact via. potential permanent impacts to 52no. private well supplies and 6no. GSI wells (on significant portion of attribute). The route will have a moderate negative impact via temporary indirect impact to the surface water quality (small proportion of attribute) at River Barrow and River Nore SAC & Lower River Suir SAC via. groundwater pathway. The route will have a minor negative impact via. permanent impact to locally important aquifer along the route (small portion of attribute). The route will have a moderate negative impact via. permanent impact to regionally important aquifer along the route (small portion of attribute). The route will have a minor negative impact via. permanent impact to the groundwater quality of the bedrock aquifer in areas of cut (4.3km length of cut)	The purple route corridor is underlain by a locally important bedrock aquifer with sections of poorly productive bedrock aquifer and regionally important bedrock aquifer. Groundwater flow paths in the area of the Mullinavat Groundwater Bodies (GWB) are considered to be short because the bedrock is not considered to constitute a major aquifer. Therefore, it is likely that most groundwater flow circulates in the upper tens of meters, recharging and discharging in local zones. The groundwater flow in this area may be quite fast since the hydraulic gradient, a reflection of the mountainous topography, will be high. There are no Group Water Scheme Abstraction Points or Group Scheme Preliminary Source Protection Areas within the route corridor. A search of the GSI groundwater well database has identified 6no. registered wells within the route corridor. Based on a review of available GSI (2020) and historic OSI (2020) mapping there are no springs or holy wells reported within the route corridor.	2
	Architectural Heritage	Atkins	The route may have a direct impact on the designed landscape associated with Frazer's Hall demesne.The corridor crosses 18 townlands.	The purple route option runs to the west of the study area and is the longest and most westerly of the six route options under consideration. It is also the most elevated, traversing the hilly country that borders the western side of the study area. This route passes several vernacular features identified on historic mapping but will not impact any protected structures.	4
	Archaeological and Cultural Heritage	Atkins	This route, although the longest option, has a potentially slight to moderate adverse impact on the setting of two archaeological monuments, a univallate ringfort in Nicholastown and another at Grogan. The route may have a direct impact on two possible archaeological sites.	The purple route option runs to the west of the study area and is the longest and most westerly of the six route options under consideration. It is also the most elevated, traversing the hilly country that borders the western side of the study area. The route corridor crosses the zone of notification of two recorded archaeological monuments and two potential sites identified by the authors (a curvilinear field boundary and enclosure).	2
	Non-agricultural properties	Atkins	60 non-agricultural properites within 300m of route centre line.	Non-Agricultural properties include Residential, Commercial, Community, Health and Recreational.	2
	Agriculture	Atkins	It impacts on 58 farm holdings. There will be in Major severance on 15 holdings, and Moderate severance on 16 holdings.	Good quality agricultural land. Majority of land impacted by the route is in grassland. 76% grassland, 14% dairy, 7% tillage and 3% forestry. The route will result in significant severance due to the offline nature of the route.	1

	MCA Criteria	Owner	Preliminary Assessment of Option : *Purple*		
			Quantitative Assessment	**Qualitative Assessment**	**Score**
ENVIRONMENTAL	**Human Beings**	Atkins	There is 2 no. monuments included in the Record of Monuments and Places and 2 no. live planning permission along the subject route. In addition, the route traverses existing access roads to an agricultural holding and a dwelling. There are no dwellings within 50m of the route centreline, and there are 8 no. dwellings within 100m of the route centreline. The proposed route traverses the River Barrow and River Nore SAC.	The proposed route is located outside the area designated to be kept free from development for the provision of the realigned N25 as per Figure 11.1 of the County Development Plan 2014-2020. However, there is not a specific policy/objective outlined in the County Development Plan which states that routes will need to be within this defined corridor. Of note, is that there is 2 no. monumnets included within the Record of Monuments and Places (Ref. KK043-039 and KK043-005) along the subject route. As per Section 8.3 of the Kilkenny County Development Plan, in terms of Development Management and recorded monuments, the Council will endeavour to preserve in situ all archaeological monuments, whether on land or underwater, listed in the Record of Monuments and Places (RMP), and any newly discovered archaeological sites, features, or objects by requiring that archaeological remains are identified and fully considered at the very earliest stages of the development process and that schemes are designed to avoid impacting on the archaeological heritage. In addition, Objective 8I of the Plan seeks to protect monuments, and is set out in full as follows; "Protect archaeological sites and monuments (including their setting), underwater archaeology, and archaeological objects, including those that are listed in the Record of Monuments and Places, and in the Urban Archaeological Survey of County Kilkenny or newly discovered sub-surface and underwater archaeological remains". In addition, and in terms of human impact, it is noted that the subject route traverses a site with live planning permission for a dwelling under Application Register Reference 18/689. This application was granted permission on 10th July 2019 and does not expire until 9th July 2024. in addition, the proposed corridor traverses a site where planning permisison for a dwelling house was granted under 16/861. It is noted that the planning permission for this development does not expire until 23/03/2022. in addition, the proposed route traverses an access road serving 1 no. agricultural holding and a dwelling. Furthermore, there are stated to be 8 no. dwellings within 100m of the proposed route centreline. This is a relatively low number of dwellings in close proximity to the proposed route centre line in comparison to the other proposed routes. This could indicate that there would be relatively fewer impacts on human beings compared to other route options.The proposed route also traverses the River Barrow and River Nore SAC. Such sites have significant protection under both EU and National Law. (Please refer to Section 2.5 of this report to find additional information in relation to Flora/Fauna). This is outlined in Objective 8B and 8C of the Kilkenny County Development Plan, and these objectives are outlined respectively as follows; “To protect and, where possible, enhance the natural heritage sites designated under EU Legislation and National Legislation (Habitats Directive, Birds Directive, European Communities (Birds and Natural Habitats) Regulations 2011 and Wildlife Acts). This protection will extend to any additions or alterations to sites that may arise during the lifetime of this plan” “To protect and, where possible, enhance the plant and animal species and their habitats that have been identified under European legislation (Habitats and Birds Directive) and protected under national Legislation (European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011), Wildlife Acts 1976-2010 and the Flora Protection Order (SI94 of 1999).” Having regard to the potential adverse impact of the route on the SAC which cannot be ruled out at this stage, this route is considered to be highly negative, however, this is assessed in more detail in the biodiversity section . Overall and considering the above, and notwithstanding the built and natural heritage designations which are been assessed in separate sections, it is considered that this route which traverses 2 no. sites with live planning permission in place, as well as being located within 100m of 8 no. dwellings, will likley have less impacts on human beings than other routes which will impact on significantly more dwellings. In this regard, it is considered to be slightly negative from a human beings perspective.	3
	Human Health	Atkins	**Recreational Areas** No recreational areas have been identified as being within the route study area. **Community, Health and Educational Facilities** No community, health or educational facilities have been identified as being within the route study area **Transport Infrastructure** The route study area is intersected by over 10 minor roads/lanes. No cycle routes or walking trails have been identified as within or intersecting this route study area. **Road Safety** Collision statistics have been collated for the wider Kilkenny area however no distinction has been made between route options at this stage. No fire stations have been identified within the route study area. **Air Quality, Noise and Climate** See respective Air Quality and Noise Assessments for consideration of these parameters. Note that with the exception of the number and nature of intersecting watercourses no distinction can be made with respect to climate impacts. Please see hydrology chapter for futher information.	There are a number of residential properties within the route study area. These are dispersed throughout the route study area and accessed by minor roads/private lanes and may be difficult to avoid with a new route carriageway. There are also a number of commercial and agricultural premises including Glanbia Ireland Slieverue Depot and Rockett Engineering Ltd. A search of OSI Discovery Series mapping suggests no walking trails are within or intersect this route study area. No cycle routes have been identified as within or intersecting this route study area. The closest walking trail is approximately 3km west at Tory Hill. The closest cycle route is the East Kilkenny Cycle Route which is over 10km north. No other leisure/amenity facilities including parks and gardens, etc within or in close proximity (300m) of the route study area. A small section at each end of the route is intersected by the noise zone around the existing N25	3
Safety	**Collision Reduction**	Systra	Additional 3.9 collisions resulting from scheme	The purple route results in an increased number of accidents. As a result of both a longer route and the fact many vehicles stay on the existing N25 which is assumed to be declassified.	1
	Security	Atkins	Proposed option has no accesses or junctions but may cause side roads to be changed to cul-de-sacs.	This option has no inter-connectivity to the surrounding area and little impact on security.	4
Physical Activity	**Ambience**	Atkins	Has the least transfer of traffic from the existing N25.	The highest % of traffic travels north south and this option removes less than half of that traffic from the existing N25 but will provide an improved ambience for that small % of north south traffic on the proposed road with a significantly improved alignment and right turn movements removed. This will improve the ambience of the existing N25 slightly for pedestrians and cyclsits.	2
	Absenteeism	Atkins	There are no locations of dense population or traffic congestion identified within the route corridor.	Given the length and nature of the scheme this criteria is considered neutral for all as we are not removing traffic from a town or providing cycle/walking facilities as part of the scheme. However we are removing traffic from the existing N25 which might promote walking and cycling but this is considered marginal on the health of the workforce.	4
	Reduced Health Risk	Atkins	Has the least transfer of traffic from the existing N25.	The assessment is considered neutral given the scheme does not include additional facilities for cyclists and pedestrians on the existing or proposed routes.	4

	MCA Criteria	Owner	Preliminary Assessment of Option : *Purple*		
			Quantitative Assessment	**Qualitative Assessment**	**Score**
Accessibility & Inclusion	**Deprived Geographical Areas**	Atkins	Western side of the existing N25 which is entirely within a marginally higher area for the Pobal HP Index 2016	This route could have an impact on the marginally higher area it passes through but it is unlikely based on the factors used to calculate this indice.	4
	Vulnerable Groups	Atkins	N/A	Given the rural nature of the study area there is no substantial difference in Social Inclusion which is measured in terms of accessibility for communities, particularly for vulnerable groups.	4
Integration	**Transport Integration**	Atkins	Longest route with 43% transfer of traffic Average journey time saving of 7 seconds. The purple route has a negative PVB of -€6.9m and a negative BCR -0.08 Additional 3.9 collisions resulting from scheme	The proposed Route will not improve connectivity between existing transport modes being the longest route with a small transfer of traffic. With little mproved journey time reliability it brings a negstive benefit to those using it as a means of interconnecting with public transport facilities. Sustainable transport modes (i.e. public transport, cycling and walking) will be improved by the reduction of traffic on the existing N25.	1
	Land Use	Atkins	N/A	The proposed route provide a strategic corridor through predominantly rural areas, with relatively short links to existing local roads and are compatible with national, regional and local plans.	5
	Geographical Integration	Atkins	N/A	The proposed route provides improved geographical integration and will support the Trans European Transport (TEN-T) network	7
	Other Government Policy	Atkins	N/A	The propose route supports the rural development objective of the National Planning Framework and the development of the Trans European Transport (TEN-T) network	7
Economy	**Efficiency and Effectiveness**	Systra	BCR = -0.08	The purple route has negative present value benefits of -€6.9m over the 60 year appraisal period which results in negative BCR. This is due to the longer route length and increased journey times partcularly during the Inter Peak and for HGV in all peaks. The BCRs have been ranked from 1-7 based on the impact of the BCR value.	1
	Transport Quality & Reliability	Systra	Average journey time saving of 7 seconds.	The purple route has the worst average journey times savings of all options. The journey time savings have been ranked from 1-7 based on the journey time saving imnpact.	4
	Wider economic impacts	Systra	Competition in the Market (Neutral): Agglomeration (Neutral); Inward Investment (Neutral); Labour Supply (Neutral); Urban Regeneration (Neutral);	All routes options provide an improved connection to Port of Waterford and Waterford City which may accrue wider economic benefits. However, as discussed in PAG Unit 6.9 these benefits are difficult to quantify and significant amounts of bespoke data analysis is needed to determine whether any wider economic benefits should be appraised. Given the relatively short length of the route options and the existing connection it is not expected that any route would result in significant wider economic impacts. However, even if there were wider economic benefits it is not envisaged that any route would perform significantly better given their similarity in terms of improved accessibility.	4
	Funding Impacts	Systra	No non-exchequer funding available.	All routes are comparatively neutral as they have the same funding sources.	4

	MCA Criteria	Owner	Preliminary Assessment of Option : *Magenta*		
			Quantitative Assessment	**Qualitative Assessment**	**Score**
ENVIRONMENTAL	**Air Quality**	Atkins	The calculated Index of Overall Change in Exposure for this route has been determined: NO_x Exposure Index: -1,138 PM_{10} Exposure Index: -28 There are 26 sensitive receptors within 50m of this route. All routes cross a section of the River Nore & River Barrow SAC therefore no preference is considered in terms of air quality impacts on sensitive ecosystems.	Predicted baseline levels of NO_2 and PM_{10} are based on data from representative EPA monitoring sites. A background concentration of 5 µg/m^3 for NO_2 and 10 µg/m^3 for PM_{10} are predicted in the region of the proposed route options. The magenta route option is considered neutral in terms of air quality impacts. It is the most online option and therefore has the highest number of receptors within 50m of the route carriageway, however, as these receptors are already impacted by the existing traffic along the N25 the change in NO_X and PM_{10} concentrations is lessened. The resultant NO_X and PM_{10} scores are slightly positive but the overall change in emission compared with the other route options is minimal and overall results in a neutral score.	4
	Climate	Atkins	The CO_2 emissions associated with operational traffic along the route has been calculated: CO_2 Emissions: 12,124 tonnes/yr	CO_2 emissions are considered at a national scale rather than at a local level. Data from the EPA indicates that Ireland is likely to exceed its climate emissions targets in future years and therefore reduction measures are required in all areas. However, there are no sector specific GHG targets at present and a scheme in isolation will not cause a breach of the national targets. There is minimal difference in the route options in terms of climate impacts, all routes result in a slight negative impact to climate.	3
	Noise	Atkins	PIR = 360, with 154no. NSLs within 300m of the new roads (Magenta). 26no. NSLs are within 50m and 31no. NSLs are within 50-100m. 59 NSLs are above 60dB L_{den} and 5no. NSLs are above 70dB L_{den}. There are no negative (increase) in noise traffic levels at NSLs, and there are 11no. NSLs experiencing a moderate positive (reduction) in noise traffic levels and 2no. NSLs experiencing a major positive (reduction) in noise traffic levels. Noise mitigation required at 13no. NSLs.	Closest alignment to the existing route (S.1-S.10). Heavily trafficked route (S.8 = 16,815 AADT), comparable to Do Nothing route AADT. While the PIR is high with a number of properties affected, the existing noise environment will be improved due to realignment of the existing route i.e. Magenta route (S.7) at a greater distance to properties along existing route at Gaulstown. Towards southern end of the route (S.9 Curraghmore and S.10 Luffany) Magenta route moves to rear of NSLs affected by existing route (comparable distance). Magenta route is the only route with no negative (increase) in noise traffic levels. Reduction in current noise environment at 13no. NSLs as route moves further from properties, with earthworks providing physical screening at properties. Similar to Navy route, the PIR is higher than Teal, Red and Lime Green routes. The number of properties likely to experience a moderate to major positive change (reduction) in traffic noise levels is, however, lower compared to the above mentioned routes (which is also true for the Purple route). Ranked higher than Navy route due to the improvement in existing noise environment for those along the existing route, in comparison to the Navy route that introduces road traffic noise as dominant source to some rural areas along S.11 of the Navy route.	3
	Landscape and Visual (including light)	Atkins	Visual Effects: The number of receptors judged to have significant adverse effects (i.e. those categorised between the range of Moderate to Very Large) is 27.	Landscape Character Area E: South Eastern Uplands: The proposed route travels for circa. 9.3km through this character area of which circa. 4.1km of carriageway will cross through greenfield land and circa. 5.2km online. Generally, the route follows the existing N25 alignment towards Ballyrownagh. Thus, avoiding effects on; Glenmore, narrow stream valleys and ridges of surrounding higher ground either side of the existing N25 Road. The route diverts west from the existing N25 towards Carriganurra. At Carriganurra the route travels close to a local rock outcrop (with cross on top) which is a prominent local landmark. With mitigation this landmark may be successfully integrated. Limited effects to no change on tranquillity. The route travels through areas already on/ adjacent to the existing N25 road corridor. The traffic on the existing N25 road already affects tranquillity. Loss of some areas of woodland, hedgerows and hedgerow trees and loss of agricultural land.	3
	Biodiversity-Flora and Fauna	Atkins	The Magenta route would not impact upon any ESAs of County Importance. It could potentially impact on 5 ESAs of High Local importance and 6 ESAs of Low Local importance. The only ESA where direct impacts would be unavoidable is ESA 11, which is of higher local importance and comprises scrub, broadleaved woodland, wet woodland and wet grassland which could be of local importance to mammal and field-feeding bird species. The Magenta Route impacts 3 of the same sites of high local importance to the Navy route; as well as 5 of the same sites of local importance.	The Magenta route is one of a number of routes which run more centrally through the study area with a length of 9.3km. As with the Navy route, it approaches Glenmore from the southeast and merges back onto the alignment of the existing N25. Again, drainage is likely either to the River Barrow & River Nore SAC (002162) to the east (via the Glenmore River); or the Lower River Suir SAC (002137) to the south (the Luffany Stream). There are no direct impacts to SPAs or to Natural Heritage Areas - the nearest such site is Lough Cullin pNHA located to the west and largely outside the study area. The proposed corridor would not drain to Lough Cullin pNHA. The Barrow River Estuary pNHA largely overlaps with the River Barrow & River Nore SAC. The Magenta route is 9.3km, with less potential for negative impacts on linear features such as hedgerows than the Purple route; similar to the Navy route. Existing habitats provided by landscape planting along the N25 would, however, be lost. Based on expert judgement of a contracted bat-specialist, the Magenta route poses the joined-second worst risk to bats and their potential roosting sites, with the Navy route.	1
	Waste	Atkins	Estimated Excavation & Disposal of Surplus Suitable and Unacceptable Material (U1) (m3) = 95,077 Estimated Excavation & Disposal of Hazardous Unacceptable Material (U2) (m3) = 5,004	N/A	3
	Soils and Geology	Atkins	1no. major negative for High Landslide Susceptibility; 5no. moderate negatives for: proximity to a Historic Quarry; Moderately High Landslide Susceptibility; Well Drained soils; and Soft / Compressible soils identified from published Quaternary mapping (alluvial deposits) and historic OS maps. 2no. minor negatives for proximity to a Potential Historic Quarry; Soft / Compressible soils identified from published Quaternary mapping (lacustrine deposits).	The magenta route corridor is predominantly underlain by quaternary sediments, predominantly till derived from Lower Palaeozoic shales, with small sections of alluvium, lacustrine sediments and till derived from cherts. Bedrock is mapped outcropping throughout the route corridor. Bedrock below the route corridor consists of green and red-purple buff slate and siltstone of the Oaklands formation within the north and mid-section of the route, and green and grey slate with thin siltstone of Ballylane formation along the centre and southern section. The route locally intersects the red- brown conglomerate & sandstone of the Carrigmaclea formation in the south. The route intersects a linear deposit of alluvium in the central Glenmore region along with 3no. localised deposits in the north and south which could give rise to potential soft ground requiring excavation. The route terminates in the south within an area of Lacustrine sediments which may also contain soft, compressible sediments. Additional potential soft ground areas have also been identified from a review of historical OS maps.	1

	MCA Criteria	Owner	Preliminary Assessment of Option : *Magenta*		
			Quantitative Assessment	**Qualitative Assessment**	**Score**
ENVIRONMENTAL	**Hydrology**	Atkins	The route will have moderate negative impact via temporary direct impact to surface water quality (on small proportion of attribute) at River Barrow and River Nore SAC & Lower River Suir SAC. The route will have minor negative impacts via temporary direct impact to surface water quality (on small proportion of attribute) at Barrow River Estuary pNHA, Oakland River and Luffany River. The route will have minor negative impact via temporary indirect impact to surface water quality (on small proportion of attribute) at Waterford Harbour Shellfish Area.	This route corridor intersects the catchments Nore and Suir and sub catchments Nore_SC_140 and Blackwater_SC_010. The magenta route corridor is crossed by the Oakland River (IE_SE_14O130860) to its northern extent and the Luffany River (IE_SE_16L680750) at the mid-section of this proposed route corridor therefore having the potential to impact water quality due to re-alignment works and the discharge of surface water run-off. It is important to note hydrological connections as the Oaklands River flows into the River Barrow and the Luffany River flows into the River Suir.	3
	Hydrogeology	Atkins	The route will have a moderate negative impact via temporary indirect impact to the surface water quality (small proportion of attribute) at River Barrow and River Nore SAC & Lower River Suir SAC via. groundwater pathway. The route will have a minor negative impact via. permanent impact to locally important aquifer along the route (small portion of attribute). The route will have a minor negative impact via. permanent impact to the groundwater quality of the bedrock aquifer in areas of cut (4.3km length of cut) The route will have a minor negative impact via. potential permanent impacts to 185no. private well supplies and 5no. GSI wells (on significant portion of attribute).	The magenta route corridor is underlain by locally important bedrock aquifer with sections of poorly productive bedrock aquifer. Groundwater flow paths in the area of the Mullinavat GWB are considered to be short because the bedrock is not considered to constitute a major aquifer. Therefore, it is likely that most groundwater flow circulates in the upper tens of meters, recharging and discharging in local zones. The groundwater flow in this area may be quite fast since the hydraulic gradient, a reflection of the mountainous topography, will be high. There are no Public Supply Source Protection Area, Group Water Scheme Abstraction Points or Group Scheme Preliminary Source Protection Areas within the route corridor. A search of the GSI groundwater well database has identified 5no. registered wells within the route corridor. Based on a review of available GSI (2020) mapping no springs were identified within the route corridor but historic OSI (2020) mapping reported a spring within the route corridor.	3
	Architectural Heritage	Atkins	This route will have a large adverse impact on the setting of O'Donovan's Mill. The corridor crosses 20 townland boundaries and will have a moderate adverse impact on Carriganurra Hill and the associated cross (not a recorded archaeological site but a prominent landmark with local cultural importance).	As well as modern and standing historical structures, the route intersects with numerous former buildings and features which are no longer standing or intact and are identified from historical mapping. There are no recorded architectural (RPS) sites within the magenta route corridor, although it passes close to the southeast of seven structures in Glenmore village which are on the NIAH and also passes close to two RPS features: O'Donovan's Corn Mill (C845). The magenta route corridor passes across or beside several vernacular features and potential archaeological sites identified from historical maps, aerial photography and LiDAR survey which are not included on any statutory listing. These include a lime kiln in Ballyrahan (CHS_PNT_061) and numerous historical built features depicted on historical maps – to the north in Jamestown and Graiguenakill, where there are a cornmill and millrace, a lime kiln, several buildings and benchmarks; and settlement features in the centre within Gaulstown and Ballynaraha.	3
	Archaeological and Cultural Heritage	Atkins	The magenta route corridor intersects with nine archaeological monuments. The route will have a potential slight to moderate direct impact on six of these sites. In addition to the monuments within the corridor, the route has a potentially moderate adverse impact on the setting of the standing stone in Robinstown (KK041-055).	The magenta route option runs through the centre of the study area and is the option that most closely follows the existing N25 alignment. The magenta route corridor also passes near other archaeological monuments, though these have either no above-ground aspect or are not visible from the route.	2
	Non-agricultural properties	Atkins	145 non-agricultural properites within 300m of route centre line.	Non-Agricultural properties include Residential, Commercial, Community, Health and Recreational.	1
	Agriculture	Atkins	The route will impact on 48 farm holdings. The route will not pass in close proximity to any farm buildings. Not significant severance on 39 holdings, Minor severance on 6 holdings and Moderate severance on 3 holdings.	Good quality agricultural land. Majority of land impacted by the route is in grassland. 92% grassland and 8% dairy. The route will not result in a high level of significant severance due to the online nature of the route.	2

	MCA Criteria	Owner	Preliminary Assessment of Option : *Magenta*		
			Quantitative Assessment	**Qualitative Assessment**	**Score**
ENVIRONMENTAL	**Human Beings**	Atkins	There are 9 no. monuments included in the Record of Monuments and Places located along the proposed route corridor. The route also traverses the River Barrow and River Nore SAC. There are 26 no. dwellings located within 50m of the route centre line, with a further 31 dwellings located within 100m of the route centreline.	The proposed route is largely within the area designated to be kept from development for the provision of the realigned N25 as per Figure 11.1 of the County Development Plan 2014-2020. However, there is not a specific policy/objective outlined in the County Development Plan which states that routes will need to be within this defined corridor. The proposed route corridor intersects with 9 no. monuments (Ref. KK041-021, KK041-023, KK041-025, KK041-055, KK043-021, KK044-004, KK044-005001, KK044-05002 and KK044-023) which are included in the Record of Monuments and Places. As per Section 8.3 of the Kilkenny County Development Plan, in terms of Development Management and recorded monuments, the Council will endeavour to preserve in situ all archaeological monuments, whether on land or underwater, listed in the Record of Monuments and Places (RMP), and any newly discovered archaeological sites, features, or objects by requiring that archaeological remains are identified and fully considered at the very earliest stages of the development process and that schemes are designed to avoid impacting on the archaeological heritage. In addition, Objective 8I of the Plan seeks to protect national monuments, and is set out in full as follows; "Protect archaeological sites and monuments (including their setting), underwater archaeology, and archaeological objects, including those that are listed in the Record of Monuments and Places, and in the Urban Archaeological Survey of County Kilkenny or newly discovered sub-surface and underwater archaeological remains". Please refer to Section 2.11 of the Route Options report for further informtaion in terms of monuments. It is noted that the proposed route traverses land on which there is a live planning permission in place (Application Register Reference 18573). This permission relates to the upgrading of overhead cables, which may be negatively impacted by the proposed development. In addition, the proposed route traverses the a site with planning permisison granted for a dwelling house under Application Register Reference 18191, which does not expire until 03/12/2023. In terms of dwellings in the vicinity, it is stated that there are 26 no. dwellings within 50m of the route centre line, with a further 31 no. dwellings within c. 100m of the route centreline. However, this route is close to the existing N25 alignment, so any impacts would, in general, be similar to the current situation. It is considered that having regrad to the high number of dwellings comparitively on this route, that the potential impact on human beings could be highly negative. Please refer to Noise (Section 2.3) and Air Quality (Section 2.1) sections of this report, and the Traffic Section of Phase 2 report for further information on potential impacts to those living in close proximity to the proposed route option. The proposed route also traverses the River Barrow and River Nore SAC. (Please refer to Section 2.5 of this report to find additional information in relation to Flora/Fauna). Such sites have significant protection under both EU and National Law. This is outlined in Objective 8B and 8C of the Kilkenny County Development Plan, and these objectives are outlined respectively as follows; “To protect and, where possible, enhance the natural heritage sites designated under EU Legislation and National Legislation (Habitats Directive, Birds Directive, European Communities (Birds and Natural Habitats) Regulations 2011 and Wildlife Acts). This protection will extend to any additions or alterations to sites that may arise during the lifetime of this plan” “To protect and, where possible, enhance the plant and animal species and their habitats that have been identified under European legislation (Habitats and Birds Directive) and protected under national Legislation (European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011), Wildlife Acts 1976-2010 and the Flora Protection Order (SI94 of 1999).” Notwithstanding the potential impacts in terms of built and natural heritage which are assessed in detail in the biodiversity and heritage sections, having regard to the high number of dwellings within 100m of the subject site, this route is consdierd to be highly negative from a human being perspective	1
	Human Health	Atkins	**Recreational Areas** No recreational areas have been identified as being within the route study area. **Community, Health and Educational Facilities** Glenmore National School, Community Hall, Garda Station and St James Church are each within the route study area **Transport Infrastructure** The route study area is intersected by over 15 minor roads/lanes. No cycle routes or walking trails have been identified as within or intersecting this route study area. Route study area falls partially wtihin proposed South-east Greenway **Road Safety** Collision statistics have been collated for the wider Kilkenny area however no distinction has been made between route options at this stage. No fire stations have been identified within the route study area. **Air Quality, Noise and Climate** See respective Air Quality and Noise Assessments for consideration of these parameters. Note that with the exception of the number and nature of intersecting watercourses no distinction can be made with respect to climate impacts. Please see hydrology assessment for futher consideration.	There are a number of residential properties within the route study area. These are dispersed throughout the route study area and accessed by a mix of minor roads/private lanes which may be difficult to avoid with a new carriageway. There are also a number of commercial and agricultural premises in close proximity including Murphys Motors, Duggan Brothers, Jacques Nurseries and Glanbia Agribusiness A search of OSI Discovery Series mapping suggests no walking trails are within or intersect this route study area. No cycle routes have been identified as within or intersecting this route study area. The closest walking trail identified is approximately 4.6km west at Tory Hill. The closest cycle route identified is the East Kilkenny Cycle Route, situated over 10km north. Route study area falls partially wtihin proposed South-east Greenway Glenmore National School, Glenmore Community Hall, Garda Station and St James Church are all within close proximity (within 300m) of the route, towards the north. No other leisure/amenity facilities including parks and gardens have been identified as being within or in close proximity (200m) of the route study area. The entirety of the routes length is intersected by the noise zone around the existing N25 .	3
Safety	**Collision Reduction**	Systra	A reduction of 2.3 collisions.	The magenta route is the 2nd worst performing route in terms of collision reduction. The reduction in collisions has been scaled comparatively between the routes and applied to the 1-7 scoring system.	5
Safety	**Security**	Atkins	Proposed option is mainly on-line (65%) with accesses and a number of junction retained. Similar to the existing situation and may cause some side roads to be changed to cul-de-sacs.	This option retains the existing scenario with little or no improvement on security as there is easy access to the surrounding area.	4
Physical Activity	**Ambience**	Atkins	This route uses the greatest amount of the existing N25.	The highest % of traffic travels north south and this option will provide a slightly improved ambience for the north south traffic with the improved alignment and right turn movements removed but there will be disruption from the multiple existing junctions and access that will remain. This will not improve the ambience of the existing N25 for pedestrians and cyclsitsbut or connectivity to the townland of Glenmore..	2
Physical Activity	**Absenteeism**	Atkins	There are no locations of dense population or traffic congestion identified within the route corridor.	Given the length and nature of the scheme this criteria is considered neutral for all as we are not removing traffic from a town or providing cycle/walking facilities as part of the scheme. However we are removing traffic from the existing N25 which might promote walking and cycling but this is considered marginal on the health of the workforce.	4
Physical Activity	**Reduced Health Risk**	Atkins	This route uses the greatest amount of the existing N25.	The assessment is considered neutral given the scheme does not include additional facilities for cyclists and pedestrians on the existing or proposed routes.	4

	MCA Criteria	Owner	Preliminary Assessment of Option : *Magenta*		
			Quantitative Assessment	**Qualitative Assessment**	**Score**
Accessibility & Inclusion	**Deprived Geographical Areas**	Atkins	Mainly on-line option and based on the Pobal mapping goes through marginally higher (HP Index 2016) to the south and splits the areas of marginally higher to the west and marginally lower to the east to an area south of Glenmore in the townland of Kilmakevoge, and splits the two higher and lower areas over the remaining section of the N25	This route could have an impact on the marginally higher and lower areas it passes through but it is unlikely based on the factors used to calculate this indice.	4
	Vulnerable Groups	Atkins	N/A	Given the rural nature of the study area there is no substantial difference in Social Inclusion which is measured in terms of accessibility for communities, particularly for vulnerable groups.	4
Integration	**Transport Integration**	Atkins	Medium Route length with no improvement to the existing N25 Average journey time saving of 1 minute 17 seconds. The magenta route has a PVB of €62.1m and results in a BCR of less than 1, 0.82 A reduction of 2.3 collisions.	The proposed Route will slightly improve connectivity between existing transport modes. Improved journey time reliability will bring benefits to those using private transport as a means of interconnecting with public transport facilities. Sustainable transport modes (i.e. public transport, cycling and walking) will not be improved as the proposed route is along the existing N25.	3
	Land Use	Atkins	N/A	The proposed route provide a strategic corridor through predominantly rural areas, with relatively short links to existing local roads and are compatible with national, regional and local plans.	5
	Geographical Integration	Atkins	N/A	The proposed route provides improved geographical integration and will support the Trans European Transport (TEN-T) network	7
	Other Government Policy	Atkins	N/A	The propose route supports the rural development objective of the National Planning Framework and the development of the Trans European Transport (TEN-T) network	7
Economy	**Efficiency and Effectiveness**	Systra	BCR = 0.82	The magenta route is the 4th best performing route with PVB of €62.1m, due to the higher cost of this route the BCR is less than 1 at 0.82. The BCRs have been ranked from 1-7 based on the impact of the BCR value.	3
	Transport Quality & Reliability	Systra	Average journey time saving of 1 minute 17 seconds.	The magenta route has the 4th highest journey times savings of all options. The journey time savings have been ranked from 1-7 based on the journey time saving imnpact.	5
	Wider economic impacts	Systra	Competition in the Market (Neutral): Agglomeration (Neutral); Inward Investment (Neutral); Labour Supply (Neutral); Urban Regeneration (Neutral);	All routes options provide an improved connection to Port of Waterford and Waterford City which may accrue wider economic benefits. However, as discussed in PAG Unit 6.9 these benefits are difficult to quantify and significant amounts of bespoke data analysis is needed to determine whether any wider economic benefits should be appraised. Given the relatively short length of the route options and the existing connection it is not expected that any route would result in significant wider economic impacts. However, even if there were wider economic benefits it is not envisaged that any route would perform significantly better given their similarity in terms of improved accessibility.	4
	Funding Impacts	Systra	No non-exchequer funding available.	All routes are comparatively neutral as they have the same funding sources.	4
					101

	MCA Criteria	Owner	Preliminary Assessment of Option : *Red*		
			Quantitative Assessment	**Qualitative Assessment**	**Score**
ENVIRONMENTAL	**Air Quality**	Atkins	The calculated Index of Overall Change in Exposure for this route has been determined: NO_x Exposure Index: -78,047 PM_{10} Exposure Index: -2,497 There are 3 sensitive receptors within 50m of this route. All routes cross a section of the River Nore &River Barrow SAC therefore no preference is considered in terms of air quality impacts on sensitive ecosystems.	Predicted baseline levels of NO_2 and PM_{10} are based on data from representative EPA monitoring sites. A background concentration of 5 µg/m^3 for NO_2 and 10 µg/m^3 for PM_{10} are predicted in the region of the proposed route options. The existing N25 route is the least preferred option as it impacts the greatest number of receptors and thus has the greatest NO_x and PM_{10} exposure index. Each of the revised routes will improve local air quality along the existing alignment. However, minor increases in background concentrations of NO_x and PM_{10} at receptors along the proposed route are likely as a result of the Red Route. However, there is an overall positive impact from the new alignment as traffic is diverted away from properties along the existing N25.	6
	Climate	Atkins	The CO_2 emissions associated with operational traffic along the route has been calculated: CO_2 Emissions: 11,694 tonnes/yr	CO_2 emissions are considered at a national scale rather than at a local level. Data from the EPA indicates that Ireland is likely to exceed its climate emissions targets in future years and therefore reduction measures are required in all areas. However, there are no sector specific GHG targets at present and a scheme in isolation will not cause a breach of the national targets. There is minimal difference in the route options in terms of climate impacts, all routes result in a slight negative impact to climate.	3
	Noise	Atkins	PIR = 155, with 76no. NSLs within 300m of the new roads (Red). 3*no* . NSLs are within 50m and 20no. NSLs are within 100m. 29no. NSLs are above 60dB L_{den}, none exceed 70dB L_{den}. There are 13no. NSLs that experience a moderate negative (increase) in noise traffic levels and 33no. NSLs calculated with a likely major negative (increase) in noise traffic levels. There are 38no. NSLs that experience a moderate positive (reduction) in noise traffic levels and 172no. NSLs experience a major positive (reduction) in noise traffic levels. Noise mitigation required at 18no. NSLs.	Route starts along the existing route from New Ross bypass to Graiguenakill (S.1) then diverts furthest east through clusters of properties between Carrickcloney and Redgap (S.11), with screening due to earthworks. Minimal screening towards southern section of route from Curraghmore to Luffany. Rural noise environment with route passing close to many small clusters of properties in the 0-100m bands (23no.), a greater number of properties in comparison to Teal route, also located to east of the Do Nothing route. Comparable traffic to Teal route, with S.11 at 14,575 AADT, lower AADT diversion from existing route compared to Navy and Lime Green routes. Twice the AADT than Purple route. Route with the highest number of NSLs requiring mitigation. However it also is the route that provides the highest number of Major positive (reduction) in noise traffic levels (172no.) with Teal route second highest at 141no. NSLs. Ranked below Navy due to the number of mitigation clusters required. The Teal route has lower PIR with less mitigation and comparable positive (reduction) in noise traffic levels calculated overall.	3
	Landscape and Visual (including light)	Atkins	Visual Effects: The number of receptors judged to have significant adverse effects (i.e. those categorised between the range of Moderate to Very Large) is 29.	Landscape Character Area E: South Eastern Uplands The proposed route travels for circa. 8.9km through this character area of which circa. 8.65km of carriageway will cross through greenfield land. Most of the route within this character area travels in lands to the east of the existing N25 Road (up to 2.8km distance to the east of the existing N25 Road in places). Horizontal alignment of carriageways would be in keeping with existing route patterns. However vertical alignment cutting, and embankment slopes would disrupt existing landform. In particular; where the route travels up a steep hillside and over a stream valley from Craiguenakil to Carrickcloney, there would be significant adverse effects on the landscape character from fill embankments within this sloping land which also connects visually with the River Barrow valley. Where the route cuts through the side of a ridge of high ground at Aylwardstown and south to Rathinure, there would be significant adverse effects on this ridge of high ground and to the character of the wider River Barrow valley landscape. Where the route travels through a local valley on embankments between Rathinure and Redgap and sidelong of a hill in a cutting at Redgap there is likely to be significant adverse effects on the hill at Redgap and also on views through this local valley and on landscape character of the wider river Barrow valley. There would be adverse effects rural tranquillity as the route travels in existing tranquil land to the east of the existing N25 road and close to the River Barrow. Loss of some areas of woodland, hedgerows and hedgerow trees and loss of agricultural land.	1
	Biodiversity-Flora and Fauna	Atkins	The Red route would not impact upon any ESAs of County Importance. It would impact on 2 ESAs of High Local importance and 4 ESAs of Low Local importance. ESA 3 comprises a tributary of the Glenmore River, and associated bankside scrub, over which a water crossing would be required. This ESA may be of local importance to mammal and aquatic species, while also being hydrologically connected to the SAC.	The Red route is the most easterly of the proposed routes; located closest to the valley of the River Barrow. It is 8.9km long. Drainage is likely either to the River Barrow & River Nore SAC (002162) to the east (via the Glenmore River); or the Lower River Suir SAC (002137) to the south (via the Luffany Stream). The corridor intersects the SAC at two points. The Red route merges onto the alignment of the existing N25 as it approaches the northern terminus from the south through Graiguenakill. At this point the route may utilise structures already built as part of the New Ross Bypass, avoiding additional impact to the SAC at the northern intersection. There are no direct impacts to SPAs or to Natural Heritage Areas - the nearest such site is Lough Cullin pNHA located to the west and largely outside the study area. The proposed corridor would not drain to Lough Cullin pNHA. Any impact to the Barrow River Estuary pNHA will be dependent upon the final design and the level of interaction with wetland habitats along the river at Graiguenakill following detailed design. The Red route is 8.9km, with less potential for negative impacts on linear features such as hedgerows than longer routes, such as Purple. Based on expert judgement of a contracted bat-specialist, the Red route poses least risk to bats and their potential roosting sites. The Red route is located closest to the Barrow Estuary which supports important populations of roosting and feeding birds. Further surveys of the route would be required to determine if there is habitat that would be impacted that may be of importance to field-feeding birds associated with the Barrow Estuary.	1
	Waste	Atkins	Estimated Excavation & Disposal of Surplus Suitable and Unacceptable Material (U1) (m3) = 488,362 Estimated Excavation & Disposal of Hazardous Unacceptable Material (U2) (m3) = 25,703	N/A	1
	Soils and Geology	Atkins	2no. moderate negatives for Moderately High Landslide Susceptibility, and Well Drained Soils; 3no. minor negatives for Potential Soft / Compressible soils).	The red route corridor is predominately underlain by quaternary sediments, predominantly till derived from Lower Palaeozoic shales, with small sections of alluvium, and lacustrine sediments. Bedrock is also mapped to be outcropping regularly throughout sections of route corridor. Bedrock below the route corridor consists of green and red-purple buff slate and siltstone of the Oaklands formation within the north, and predominantly green and grey slate with thin siltstone of Ballylane formation along the north, centre and south of the route. The route locally intersects the red- brown conglomerate & sandstone of the Carrigmaclea formation in the south. Four isolated pockets of alluvium are intersected by this route. 2no in the central region and 2no. in the north which could give rise to potential soft ground requiring excavation. The route terminates in the south within an area of Lacustrine sediments which may also contain soft, compressible sediments. Additional potential soft ground areas have also been identified from a review of historical OS maps.	3

	MCA Criteria	Owner	Preliminary Assessment of Option : *Red*		
			Quantitative Assessment	**Qualitative Assessment**	**Score**
ENVIRONMENTAL	**Hydrology**	Atkins	The route will have moderate negative impact via temporary direct impact to surface water quality (on small proportion of attribute) at River Barrow and River Nore SAC & Lower River Suir SAC. The route will have minor negative impacts via temporary direct impact to surface water quality (on small proportion of attribute) at Barrow River Estuary pNHA, Oakland River and Luffany River. The route will have a minor negative impact via temporary indirect impact to surface water quality (on small proportion of attribute) at Waterford Harbour Shellfish Area.	This route corridor intersects the catchments Nore and Suir and sub catchments Nore_SC_140 and Blackwater_SC_010. The red route corridor is crossed by the Oakland River (IE_SE_14O130860) to its northern extent and the Luffany River (IE_SE_16L680750) to the southern extent of this route corridor therefore having the potential to impact water quality due to re-alignment works and the discharge of surface water run-off. It is important to note hydrological connections as the Oaklands River flows into the River Barrow and the Luffany River flows into the River Suir.	3
	Hydrogeology	Atkins	The route will have a moderate negative impact via temporary indirect impact to the surface water quality (small proportion of attribute) at River Barrow and River Nore SAC & Lower River Suir SAC via. groundwater pathway. The route will have a minor negative impact via permanent impact to locally important aquifer along the route (small portion of attribute). The route will have a minor negative impact via permanent impact to the groundwater quality of the bedrock aquifer in areas of cut (3.2km length of cut) The route will have a minor negative impact via. potential permanent impacts to 83no. private well supplies and 3no. GSI wells (on significant portion of attribute).	The red route corridor is underlain by a poorly productive bedrock aquifer with sections of locally important bedrock aquifer generally towards the north and south and a very small area of regionally important bedrock aquifer in the south. Groundwater flow paths in the area of the Mullinavat GWB are considered to be short because the bedrock is not considered to constitute a major aquifer. Therefore, it is likely that most groundwater flow circulates in the upper tens of meters, recharging and discharging in local zones. The groundwater flow in this area may be quite fast since the hydraulic gradient, a reflection of the mountainous topography, will be high. There are no Public Supply Source Protection Area, Group Water Scheme Abstraction Points or Group Scheme Preliminary Source Protection Areas within the route corridor. A search of the GSI groundwater well database has identified 3no. registered wells within the route corridor. Based on a review of available GSI (2020) mapping no springs were identified within the route corridor but historic OSI (2020) mapping reported a spring within the route corridor.	4
	Architectural Heritage	Atkins	Significant architectural heritage features near the corridor include the eastern part of Aylwardstown Demesne and a Skew Arch Railway Bridge in Rathinure (RPS D126). This route option will have a potential moderate direct impact on a clachán in Luffany. The potential impact of the route on the setting of Aylwardstown House with its unimpeded easterly aspect will be very large adverse with a potential moderate direct impact on the designed landscape associated with Aylwardstown House. Bearstown Bridge may experience a moderate direct physical impact.	The local infrastructure is made of winding third class roads characterised by narrow lanes with grass verges bounded by hedge lined earthen banks. The now disused Waterford to New Ross railway, constructed in 1904, which runs through the subject area features embankments and cuttings with associated bridges, level crossings, gate houses. The red line route intersects with the railway line at two points at Rathinure and Luffany.	3
	Archaeological and Cultural Heritage	Atkins	This route would have a potential moderate direct impact on a possible enclosure at Rochestown	The Red option, is along with the Lime Green option, the second shortest of the routes submitted for consideration and runs along the eastern edge of the subject area with Baile an Aighleartaigh hill to its west and the River Barrow to its east. Four recorded monuments are located either within or partially within this route corridor. One, a wayside cross in Luffany (SMR KK044-022, RPS C846) is also classified as a Protected Structure. This cross, carved by Darby O' Brien in 1736 in memory of his ancestors, was re-sited to its present location in recent years. In the same townland to the west of the N25 is an excavated Fulacht Fia SMR KK044-023. This site is not scheduled for inclusion in the next revision of the RMP. A Castle - tower house (SMR KK041-032) is in Carrickcloney townland and there is a fulacht fia in Rathpatrick townland (SMR KK044-024----). A curvilinear feature, possibly the remains of an enclosure (CHS_PLY_143) was identified in Rochestown.	2
	Non-agricultural properties	Atkins	60 non-agricultural properites within 300m of route centre line.	Non-Agricultural properties include Residential, Commercial, Community, Health and Recreational.	2
	Agriculture	Atkins	The route will impact on 44 farm holdings. The route will pass in close proximity to 5 farm buildings. Not significant severance on 10 holdings, Minor severance on 17 holdings, Moderate severance on 6 holdings, Major severance on 11 holdings.	Good quality agricultural land. Majority of land impacted by the route is in grassland. 75% grassland, 16% dairy, 7% tillage and 2% equine. The route will result in significant severance due to the offline nature of the route. The route will impact on an intensive equine enterprise.	1

	MCA Criteria	Owner	Preliminary Assessment of Option : *Red*		
			Quantitative Assessment	**Qualitative Assessment**	**Score**
ENVIRONMENTAL	**Human Beings**	Atkins	There are 4 no. monuments included in the Record of Monuments and Places along the subject route corridor. The route also traverses the access road to Beacon Hill Equine Centre, as well as the River Barrow and River Nore SAC. The route centreline is within 50m of 3 no. dwellings, with a further 20 no. dwellings within 100m. The route crosses the disused railway line (south-east Greenway).	The proposed route is located outside the area designated to be kept free from development for the provision of the realigned N25 as per Figure 11.1 of the County Development Plan 2014-2020. However, there is not a specific policy/objective outlined in the County Development Plan which states that routes will need to be within this defined corridor.The proposed route corridor also traverses the site of 4 no, monuments (Ref. KK041-032, KK044-022, KK044-023 and KK044-024) which are are included within the Record of Monuments and Places. As per Section 8.3 of the Kilkenny County Development Plan, in terms of Development Management and recorded monuments, the Council will endeavour to preserve in situ all archaeological monuments, whether on land or underwater, listed in the Record of Monuments and Places (RMP), and any newly discovered archaeological sites, features, or objects by requiring that archaeological remains are identified and fully considered at the very earliest stages of the development process and that schemes are designed to avoid impacting on the archaeological heritage. In addition, Objective 8I of the Plan seeks to protect national monuments, and is set out in full as follows; "Protect archaeological sites and monuments (including their setting), underwater archaeology, and archaeological objects, including those that are listed in the Record of Monuments and Places, and in the Urban Archaeological Survey of County Kilkenny or newly discovered sub-surface and underwater archaeological remains". Please refer to Section 2.11 of the Route Options report for further informtaion in terms of monuments. It is noted that the proposed route traverses land on which there is a live planning permission in place (application register reference 18573). However, this permission relates to the upgrading of overhead cables and which may be negatively impacted by the proposed development. In addition, the proposed route traverse a site where planning permision for a dwelling house has been granted under Application Register Reference 18577, which does not expire until 11/11/2023. It is considered that the proposed development could negatively impact the dwelling. Of note in relation to this route is that it traverses the access road to Beacon Hill Equine centre. On this basis, it is considered that there is a high likelihood of an objection to the development on the grounds of adverse impact to horses and to the operation of the equine centre from an economic perspective. There are 3 no. dwellings located within 50m of the route centreline, with a further 20 no. within 100m of the route centreline. This is a high volume of dwellings in close proximity of route centre line relative to the other route options, and therefore it is considered that there may be moderately negative impact in terms of human beings. Please refer to Noise (Section 2.3) and Air Quality (Section 2.1) sections of this report, and the Traffic Section of Phase 2 report for further information on potential impacts to those living in close proximity to the proposed route option. The route crosses a disused railway line (South-east Greenway) and therefore the impacted councils will need to be consulted. The proposed route also traverses the River Barrow and River Nore SAC. Such sites have significant protection under both EU and National Law. (Please refer to Section 2.5 of this report to find additional information in relation to Flora/Fauna) This is outlined in Objective 8B and 8C of the Kilkenny County Development Plan, and these objectives are outlined respectively as follows; “To protect and, where possible, enhance the natural heritage sites designated under EU Legislation and National Legislation (Habitats Directive, Birds Directive, European Communities (Birds and Natural Habitats) Regulations 2011 and Wildlife Acts). This protection will extend to any additions or alterations to sites that may arise during the lifetime of this plan” “To protect and, where possible, enhance the plant and animal species and their habitats that have been identified under European legislation (Habitats and Birds Directive) and protected under national Legislation (European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011), Wildlife Acts 1976-2010 and the Flora Protection Order (SI94 of 1999).” Having regard to the potential negative impact on the Beacon Hill Equine Centre, the presence of a high number of dwellings within 100m of the route, the impact on the existing railway line and the potential impact on an RMP, this route is considered to be negative from a planning perspective. Having regard to the potential adverse impact of the route on the SAC which cannot be ruled out at this stage, this route is considered to be highly negative, however this is assessed in detail under the biodiversity section. Therefore, and having regard to the comparitiive number of dwellings within 100m of the subject site, this route is consdiered to be	2
	Human Health	Atkins	**Recreational Areas** Beacon Hill Equine Centre has been identified as being within the route study area. **Community, Health and Educational Facilities** No community, health or educational facilities have been identified as being within the route study area **Transport Infrastructure** The route study area is intersected by over 15 minor roads/lanes. No cycle routes or walking trails have been identified as within or intersecting this route study area. Route crosses the proposed South-east Greenway at two locations. **Road Safety** Collision statistics have been collated for the wider Kilkenny area however no distinction has been made between route options at this stage. No fire stations have been identified within the route study area. **Air Quality, Noise and Climate** See respective Air Quality and Noise Assessments for consideration of these parameters. Note that with the exception of the number and nature of intersecting watercourses no distinction can be made with respect to climate impacts. Please see hydrology assessment for futher consideration.	There are a number of residential properties within the route study area. These are dispersed throughout the route corridor and accessed by a mix of minor roads/private lanes which may be difficult to avoid with a new carriageway. There are also a number of commercial and agricultural premises including the Surehaul and Rhu Glen Hotel. A search of OSI Discovery Series mapping suggests no walking trails are within or intersect this route study area. No cycle routes have been identified as within or intersecting this route study area. The closest walking trail is the Waterford Greenway which is approximately 5km south west. The closest cycle route is the East Kilkenny Cycle Route which is over 10km north. Route crosses proposed South-east Greenway at two locations. Beacon Hill Equine Centre is within close proximity (within 50m) of the route, towards the east. No other leisure/amenity facilities including parks and gardens have been identified as being within this route study area. Approximately one quarter of the route length is intersected by the noise zone around the existing N25	3
Safety	**Collision Reduction**	Systra	A reduction of 11.1 collisions.	The red route is the 2nd best performing route in terms of collision reduction. The reduction in collisions has been scaled comparatively between the routes and applied to the 1-7 scoring system.	7
	Security	Atkins	Proposed option has no accesses or junctions but may cause side roads to be changed to cul-de-sacs.	This option has little or not inter-connectivity to the surrounding area and little impact on security.	4
Physical Activity	**Ambience**	Atkins	Has the second least transfer of traffic from the existing N25 similar to the Teal option.	The highest % of traffic travels north south and this option removes a moderate amount of that traffic from the existing N25 but will provide an improved ambience for that moderate % of north south traffic on the proposed road with a significantly improved alignment and right turn movements removed. This will improve the ambience of the existing N25 moderately for pedestrians and cyclsitsbut does not improve connectivity to the townland of Glenmore..	5
	Absenteeism	Atkins	There are no locations of dense population or traffic congestion identified within the route corridor.	Given the length and nature of the scheme this criteria is considered neutral for all as we are not removing traffic from a town or providing cycle/walking facilities as part of the scheme. However we are removing traffic from the existing N25 which might promote walking and cycling but this is considered marginal on the health of the workforce.	4
	Reduced Health Risk	Atkins	Has the second least transfer of traffic from the existing N25 similar to the Teal option.	The assessment is considered neutral given the scheme does not include additional facilities for cyclists and pedestrians on the existing or proposed routes.	4

	MCA Criteria	Owner	Preliminary Assessment of Option : *Red*		
			Quantitative Assessment	**Qualitative Assessment**	**Score**
Accessibility & Inclusion	**Deprived Geographical Areas**	Atkins	Eastern side of the existing N25 which is within a marginally lower area for the Pobal HP Index 2016	This route could have an impact on the marginally lower area it passes through but it is unlikely based on the factors used to calculate this indice.	4
	Vulnerable Groups	Atkins	N/A	Given the rural nature of the study area there is no substantial difference in Social Inclusion which is measured in terms of accessibility for communities, particularly for vulnerable groups.	4
Integration	**Transport Integration**	Atkins	Medium Route length with 91.3% Average journey time saving of 1 minute 35 seconds. The red route delivers a PVB of €82.0 and results in a BCR below 1, 0.74 . A reduction of 11.1 collisions.	The proposed Route will improve connectivity between existing transport modes. Improved journey time reliability will bring benefits to those using private transport as a means of interconnecting with public transport facilities. Sustainable transport modes (i.e. public transport, cycling and walking) will be improved by the reduction of traffic on the existing N25.	5
	Land Use	Atkins	N/A	The proposed route provide a strategic corridor through predominantly rural areas, with relatively short links to existing local roads and are compatible with national, regional and local plans.	5
	Geographical Integration	Atkins	N/A	The proposed route provides improved geographical integration and will support the Trans European Transport (TEN-T) network	7
	Other Government Policy	Atkins	N/A	The propose route supports the rural development objective of the National Planning Framework and the development of the Trans European Transport (TEN-T) network	7
Economy	**Efficiency and Effectiveness**	Systra	BCR=0.74	The red route is the 2nd worst performing route. Though it delivers €82.0 PVB this does not offset the higher cost of construction of this route and results in a BCR below 1 at 0.74 for the 60 year appraisal period. The BCRs have been ranked from 1-7 based on the impact of the BCR value.	2
	Transport Quality & Reliability	Systra	Average journey time saving of 1 minute 35 seconds.	The red route has the 3rd highest journey times savings of all options. The journey time savings have been ranked from 1-7 based on the journey time saving imnpact.	6
	Wider economic impacts	Systra	Competition in the Market (Neutral): Agglomeration (Neutral); Inward Investment (Neutral); Labour Supply (Neutral); Urban Regeneration (Neutral);	All routes options provide an improved connection to Port of Waterford and Waterford City which may accrue wider economic benefits. However, as discussed in PAG Unit 6.9 these benefits are difficult to quantify and significant amounts of bespoke data analysis is needed to determine whether any wider economic benefits should be appraised. Given the relatively short length of the route options and the existing connection it is not expected that any route would result in significant wider economic impacts. However, even if there were wider economic benefits it is not envisaged that any route would perform significantly better given their similarity in terms of improved accessibility.	4
	Funding Impacts	Systra	No non-exchequer funding available.	All routes are comparatively neutral as they have the same funding sources.	4
					110

	MCA Criteria	Owner	Preliminary Assessment of Option : *Lime Green*		
			Quantitative Assessment	**Qualitative Assessment**	**Score**
ENVIRONMENTAL	**Air Quality**	Atkins	The calculated Index of Overall Change in Exposure for this route has been determined: NO_x Exposure Index: -80,937 PM_{10} Exposure Index: -2,604 There are 4 sensitive receptors within 50m of this route. All routes cross a section of the River Nore &River Barrow SAC therefore no preference is considered in terms of air quality impacts on sensitive ecosystems.	Predicted baseline levels of NO_2 and PM_{10} are based on data from representative EPA monitoring sites. A background concentration of 5 µg/m^3 for NO_2 and 10 µg/m^3 for PM_{10} are predicted in the region of the proposed route options. The existing N25 route is the least preferred option as it impacts the greatest number of receptors and thus has the greatest NO_x and PM_{10} exposure index. Each of the revised routes will improve local air quality along the existing alignment. However, minor increases in background concentrations of NO_x and PM_{10} at receptors along the proposed route are likely as a result of the Lime Green Route. However, there is an overall positive impact from the new alignment as traffic is diverted away from properties along the existing N25.	6
	Climate	Atkins	The CO_2 emissions associated with operational traffic along the route has been calculated: CO_2 Emissions: 10,166 tonnes/yr	CO_2 emissions are considered at a national scale rather than at a local level. Data from the EPA indicates that Ireland is likely to exceed its climate emissions targets in future years and therefore reduction measures are required in all areas. However, there are no sector specific GHG targets at present and a scheme in isolation will not cause a breach of the national targets. There is minimal difference in the route options in terms of climate impacts, all routes result in a slight negative impact to climate. However, this is the preferred route in terms of climate as it results in slightly lower CO2 emissions compared with the other route options.	3
	Noise	Atkins	PIR = 299, with 150no. NSLs within 300m of the new roads (Lime Green). 4no. NSLs are within 50m and 25no. NSLs are within 100m. There are 24 no. NSLs are above 60dB L_{den}, none exceed 70dB L_{den}. There are 30no. NSLs that experience a moderate negative (increase) in noise traffic levels and 13no. NSLs calculated with a likely major negative (increase) in noise traffic levels. 51no. NSLs experience a moderate positive (reduction) in noise traffic levels and 24no. NSLs experience a major positive (reduction) in noise traffic levels. Noise mitigation required at 8no. NSLs.	Along existing route from New Ross bypass (S.1) to Kilmakevoge (S.3), then diverts east at a closer distance to existing route than Teal and Red routes. Close to a cluster of properties at Kilmakevoge and Ballyrahan (side facades), Scartnamo (rear facades) (S.11), earthworks provide screening at these properties to the north. Intersects existing route at Ballyrowragh (S.12) and heads west close to rear of properties along existing route at Curraghmore but at a further distance to Magenta route. Rural noise environment with a higher PIR than all other proposed routes with the exception of the Magenta route. Comparable combined number of properties with moderate to major positive (reduction) in noise traffic levels in comparison to the Navy route. Extensive diversion of traffic along this proposed Lime Green section (S.12 = 15,442 AADT), comparable to Navy and Magenta routes. Increase in noise environment in this rural environment but due to earthworks screening many clusters of properties experiencing a likely lower moderate to major negative (increase) in noise traffic levels than Teal route. Overall higher number of properties requiring mitigation in comparison to Teal and Navy routes.	3
	Landscape and Visual (including light)	Atkins	Visual Effects: The number of receptors judged to have significant adverse effects (i.e. those categorised between the range of Moderate to Very Large) is 32.	Landscape Character Area E: South Eastern Uplands The proposed route travels for circa. 8.9km through this character area of which circa. 6.8km of carriageway will cross through greenfield land and circa. 2km online. Most of the route within this character area travels in lands to the east of the existing N25 Road (up to 0.7km distance to the east of the existing N25 Road in places). 2.3km of the route travels to the west of the existing N25. Horizontal alignment of carriageways would be in keeping with existing route patterns. Some field pattern severance. Vertical alignment cutting and embankment slopes would disrupt existing landform. The route follows the existing N25 alignment to south of Glenmore, thus, avoiding effects on Glenmore and adjacent narrow stream valleys. From south of Glenmore, the route will cut though some of the highest contours of a ridge of high ground between Ballynamona and Aylwardstown and south to Gaulstown. Significant adverse effects on this ridge of high ground and the landscape character of this elevated area. Descends into local stream valley at Ballyrahan including an ecological sensitive area of land cover. Significant adverse effects on local stream valley at Ballyrahan. Crosses over the existing N25 towards Carriganurra. At Carriganurra the route goes through a local rock outcrop (with cross on top) which is a prominent local landmark. Significant adverse effects on this feature. Limited effects on tranquillity. The route travels through areas on/ near the existing N25 road corridor. The traffic on the existing N25 road already affects tranquillity. The most adverse effects will be experienced in the elevated lands furthest to the east from the existing N25 road (including Aylwardstown and Ballyhobuck). Loss of some areas of woodland, hedgerows and hedgerow trees and loss of agricultural land.	1
	Biodiversity-Flora and Fauna	Atkins	The Lime Green route would not impact upon any ESAs of County Importance. It would impact on 5 ESAs of High Local importance and 2 ESAs of Low Local importance, all of which are shared with the Magenta Route.	The Lime Green route runs centrally through the study area with a length of 8.9km. Again, drainage is likely either to the River Barrow & River Nore SAC (002162) to the east (via the Glenmore River); or the Lower River Suir SAC (002137) to the south (via the Luffany Stream). As with the Navy and Magenta routes, the Lime Green route approaches Glenmore from the southeast, merging with the alignment of the existing N25. There are no direct impacts to SPAs or Natural Heritage Areas - the nearest such site is Lough Cullin pNHA located to the west and largely outside the study area. The proposed corridor would not drain to Lough Cullin pNHA. Any impact to the Barrow River Estuary pNHA will be dependent upon further design and the level of interaction with wetland habitats along the river at Graiguenakill. The Lime Green route is 8.9km, with less potential for negative impacts on linear features such as hedgerows than longer routes, such as Purple. As noted, the Lime Green route merges back onto the alignment of the existing N25 as it approaches the northern terminus. Thus, existing habitats provided by landscape planting along the N25 would be lost. Based on expert judgement of a contracted bat-specialist, the Lime Green route ranked in the middle in terms of risk to bats and their potential roosting sites.	1
	Waste	Atkins	Estimated Excavation & Disposal of Surplus Suitable and Unacceptable Material (U1) (m3) = 227,502 Estimated Excavation & Disposal of Hazardous Unacceptable Material (U2) (m3) = 11,974	N/A	2
	Soils and Geology	Atkins	1no. major negative for High Landslide Susceptibility; 3no. moderate negatives for: proximity to a Historic Quarry, Moderately High Landslide Susceptibility; Well Drained soils; 3no. minor negatives for Soft / Compressible soils identified from published Quaternary and historic OS maps.	The lime green route corridor is predominately underlain by quaternary sediments, predominantly till derived from Lower Palaeozoic shales, with small sections of alluvium and lacustrine sediments. Bedrock is mapped outcropping regularly particularly in the north and south of the route corridor. Bedrock below the route corridor consists of green and red-purple buff slate and siltstone of the Oaklands formation in the north, and predominantly green and grey slate with thin siltstone of Ballylane formation along the north, centre and south of the route. The route also intersects the red- brown conglomerate & sandstone of the Carrigmaclea formation at 2no. locations in the south. Two isolated pockets of alluvium are intersected by the route in the north which could give rise to potential soft ground requiring excavation. The route terminates in the south within an area of Lacustrine sediments which may also contain soft, compressible sediments. Additional potential soft ground areas have also been identified from a review of historical OS maps.	2

	MCA Criteria	Owner	Preliminary Assessment of Option : *Lime Green*		
			Quantitative Assessment	**Qualitative Assessment**	**Score**
ENVIRONMENTAL	**Hydrology**	Atkins	The route will have moderate negative impact via temporary direct impact to surface water quality (on small proportion of attribute) at River Barrow and River Nore SAC & Lower River Suir SAC. The route will have minor negative impacts via temporary direct impact to surface water quality (on small proportion of attribute) at Barrow River Estuary pNHA, Oakland River and Luffany River. The route will have minor negative impact via temporary indirect impact to surface water quality (on small proportion of attribute) at Waterford Harbour Shellfish Area.	This route corridor intersects the catchments Nore and Suir and sub catchments Nore_SC_140 and Blackwater_SC_010. The lime green route corridor is crossed by the Oakland River (IE_SE_14O130860) to its northern extent and the Luffany River (IE_SE_16L680750) to the southern extent of this route corridor therefore having the potential to impact water quality due to re-alignment works and the discharge of surface water run-off. It is important to note hydrological connections as the Oaklands River flows into the River Barrow and the Luffany River flows into the River Suir.	3
	Hydrogeology	Atkins	The route will have a moderate negative impact via temporary indirect impact to the surface water quality (small proportion of attribute) at River Barrow and River Nore SAC & Lower River Suir SAC via. groundwater pathway. The route will have a minor negative impact via. permanent impact to locally important aquifer along the route (small portion of attribute). The route will have a minor negative impact via. permanent impact to the groundwater quality of the bedrock aquifer in areas of cut (5.9km length of cut) The route will have a minor negative impact via. potential permanent impacts to 163no. private well supplies and 2no. GSI wells (on significant portion of attribute).	The lime green route corridor is underlain by a poorly productive bedrock aquifer with sections of locally important bedrock aquifer located to the north central and south of the proposed route. Groundwater flow paths in the area of the Mullinavat GWB are considered to be short because the bedrock is not considered to constitute a major aquifer. Therefore, it is likely that most groundwater flow circulates in the upper tens of meters, recharging and discharging in local zones. The groundwater flow in this area may be quite fast since the hydraulic gradient, a reflection of the mountainous topography, will be high. There are no Public Supply Source Protection Area, Group Water Scheme Abstraction Points or Group Scheme Preliminary Source Protection Areas within the route corridor. A search of the GSI groundwater well database has identified 2no. registered wells within the route corridor. Based on a review of available GSI (2020) mapping no springs were identified within the route corridor but historic OSI (2020) mapping reported one spring within the route corridor.	3
	Architectural Heritage	Atkins	There will be a large adverse impact on the setting of O'Donovan's mill at Ballyrowragh. There will also be a slight to moderate direct physical impact on the mill race associated with O'Donovans Mill.	Along the length of the corridor are occasional remnants of features depicted on historic mapping including old farmsteads and relict field systems.Settlement is dispersed, found mostly along roads, the housing stock varying from vernacular farmhouses to more modern dwellings.	1
	Archaeological and Cultural Heritage	Atkins	The recorded cultural heritage sites impacted by the corridor include two raths - one extant example at Ballyhobuck (SMR KK044-002) and another in Ballyrahan (KK044-003). Both these sites would experience a moderate adverse impact on their settings. The Ballyrahan site may experience a direct significant physical impact. A mound in Luffany (CHS_PLY_117) may experience a direct moderate impact and a slight adverse impact on its setting. There is also the potential to encounter ancillary sub-surface archaeological remains within the vicinity of these sites.The corridor passes over a rock outcrop at Carriganurra, with a cross on its summit erected by locals for the Holy year in 1950. This site has no official designation but is a well-known landmark and has cultural value. There will be a potentially direct profound impact on the cross at Carriganurra.	The Lime Green Route at 8.9km is together with the Teal Route one of the shortest submitted for consideration. The area is rural in character with a mix of pasture and arable fields bounded by mature hedgerows on earthen banks and ditches.	1
	Non-agricultural properties	Atkins	139 non-agricultural properites within 300m of route centre line.	Non-Agricultural properties include Residential, Commercial, Community, Health and Recreational.	1
	Agriculture	Atkins	The route will impact on 39 farm holdings. The route will pass in close proximity to 2 farm buildings. Not significant severance on 14 holdings, Minor severance on 8 holdings, Moderate severance on 12 holdings, Major severance on 5 holdings.	Good quality agricultural land. Majority of land impacted by the route is in grassland. 79% grassland, 8% dairy, 10% tillage and 3% forestry. The route will result in significant severance due to the offline nature of the route.	2

	MCA Criteria	Owner	Preliminary Assessment of Option : *Lime Green*		
			Quantitative Assessment	**Qualitative Assessment**	**Score**
ENVIRONMENTAL	**Human Beings**	Atkins	There are 4 no. dwellings within 50m of the centre line of the subject route, with a further 25 no. dwellings within 50-100m of the centre line. The proposed route also traverses the SAC.	The proposed route is located outside the area designated to be kept free from development for the provision of the realigned N25 as per Figure 11.1 of the County Development Plan 2014-2020. However, there is not a specific policy/objective outlined in the County Development Plan which states that routes will need to be within this defined corridor. It is noted that the proposed route traverses land on which there is a live planning permission in place (application register reference 18573). However, this permission relates to the upgrading of overhead cables which may be negatively impacted by the proposed development. The proposed route traverses the a site with planning permisison granted for a dwelling house under Application Register Reference 18191, which does not expire until 03/12/2023. In addition, the proposed development traverses the site for another dwelling house under Application Register Reference 17/553, which does not expire until 17.01.23. The proposed route is likley to have a negative impact on these permitted dwellings. It is noted that there are 4 no. dwelling located within 50m of the centreline of the proposed route, with a further 25 no. dwellings located within 50-100m of the centre line. This is a comparatively high volume of dwellings in close proximity to the route centre line and therefore, it is considered that there will be amoderately negative impact on human beings relative to the other route options. Please refer to Noise (Section 2.3) and Air Quality (Section 2.1) sections of this report, and the Traffic Section of Phase 2 report for further information on potential impacts to those living in close proximity to the proposed route option. The proposed route also traverses the River Barrow and River Nore SAC (Please refer to Section 2.5 of this report to find additional information in relation to Flora/Fauna). Such sites have significant protection under both EU and National Law. This is outlined in Objective 8B and 8C of the Kilkenny County Development Plan, and these objectives are outlined respectively as follows; "To protect and, where possible, enhance the natural heritage sites designated under EU Legislation and National Legislation (Habitats Directive, Birds Directive, European Communities (Birds and Natural Habitats) Regulations 2011 and Wildlife Acts). This protection will extend to any additions or alterations to sites that may arise during the lifetime of this plan" "To protect and, where possible, enhance the plant and animal species and their habitats that have been identified under European legislation (Habitats and Birds Directive) and protected under national Legislation (European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011), Wildlife Acts 1976-2010 and the Flora Protection Order (SI94 of 1999)." Notwithstanding the fact this route does not traverse an RMP, and that there are only 5no. dwellings within 50m of the centreline of the proposed route, having regard to the potential adverse impact of the route on the SAC which cannot be ruled out at this stage, this route is considered to be highly negative, however, this is assessed in detail in the biodiversity section. Notwithstaning the built and natural heritage designations which are dealt with under seperate assessments, having regard to the number of dwellings within 100m of the route centreline, this route is considered to be moderately neagtive from a human being perspective.	2
	Human Health	Atkins	**Recreational Areas** No recreational areas have been identified as being within the route study area. **Community, Health and Educational Facilities** Glenmore National School, Glenmore Community Hall, Garda Station and St James Church are all within close proximity (300m) of the route, towards the north **Transport Infrastructure** The route study area is intersected by over 20 minor roads/lanes. No cycle routes or walking trails have been identified as within or the route study area. Route study area falls partially wtihin proposed South-east Greenway **Road Safety** Collision statistics have been collated for the wider Kilkenny area however no distinction has been made between route options at this stage. No fire stations have been identified within the route study area. **Air Quality, Noise and Climate** See respective Air Quality and Noise Assessments for consideration of these perameters. Note that with the exception of the number and nature of intersecting watercourses no distinction can be made with respect to climate impacts. Please see hydrology assessment for futher consideration.	There are a number of residential properties within the route study area. These are dispersed throughout the route study area and accessed by a mix of minor roads/private lanes which may be difficult to avoid with a new carriageway. There are also a number of commercial and agricultural premises including Glanbia Agribusiness, Jacques Nurseries, Surehaul and Duggan Brothers Ltd. A search of OSI Discovery Series mapping suggests no walking trails are within or intersect this route study area. No cycle routes have been identified as within or intersecting this route study area. The closest walking trail is the Waterford Greenway which is approximately 4.9km south west. The closest cycle route is the East Kilkenny Cycle Route which is over 10km north. Route study area falls partially wtihin proposed South-east Greenway Glenmore National School, Glenmore Community Hall, Garda Station and St James Church are all within close proximity (300m) of the route, towards the north. No other leisure/amenity facilities including parks and gardens have been identified as being within the route study area. Approximately two thirds of the routes length is intersected by the noise zone around the existing N25.	3
Safety	**Collision Reduction**	Systra	A reduction of 9.7 collisions.	The lime green route is the 3rd best performing route in terms of collision reduction. The reduction in collisions has been scaled comparatively between the routes and applied to the 1-7 scoring system.	6
	Security	Atkins	Proposed option has no accesses or junctions but may cause side roads to be changed to cul-de-sacs.	This option has little or not inter-connectivity to the surrounding area and little impact on security.	4
Physical Activity	**Ambience**	Atkins	Has the highest transfer of traffic from the existing N25.	The highest % of traffic travels north south and this option removes moderate to significant amount of that traffic from the existing N25 but will provide an improved ambience for that moderate to significant % of north south traffic on the proposed road with a significantly improved alignment and right turn movements removed. This will improve the ambience of the existing N25 signifiantly for pedestrians and cyclsits and the connectivity to the townland of Glenmore.	6
	Absenteeism	Atkins	There are no locations of dense population or traffic congestion identified within the route corridor.	Given the length and nature of the scheme this criteria is considered neutral for all as we are not removing traffic from a town or providing cycle/walking facilities as part of the scheme. However we are removing traffic from the existing N25 which might promote walking and cycling but this is considered marginal on the health of the workforce.	4
	Reduced Health Risk	Atkins	Has the highest transfer of traffic from the existing N25.	The assessment is considered neutral given the scheme does not include additional facilities for cyclists and pedestrians on the existing or proposed routes.	4

	MCA Criteria	Owner	Preliminary Assessment of Option : *Lime Green*		
			Quantitative Assessment	**Qualitative Assessment**	**Score**
Accessibility & Inclusion	**Deprived Geographical Areas**	Atkins	This route is close to the existing N25 over the southern section and crosses from the western side to the easternside and cuts through areas of lower and higher areas of the Pobal HP Index 2016 and from Ballyrowragh northwards is within a marginally lower area until it goes back on-line south of Glenmore where it is within a marginally highera in the townland of Kilmakevoge for a short length and then into an area of marginally lower HP Index up to Glenmore roundabout.	This route could have an impact on the marginally higher and lower areas it passes through but it is unlikely based on the factors used to calculate this indice.	4
	Vulnerable Groups	Atkins	N/A	Given the rural nature of the study area there is no substantial difference in Social Inclusion which is measured in terms of accessibility for communities, particularly for vulnerable groups.	4
Integration	**Transport Integration**	Atkins	Second shortest Route length with 96.3% transfer of traffic Average journey time saving of 1 minute 39 seconds. The lime green option is the best performing route delivering PVB of €88.6 and a BCR of 1.16. A reduction of 9.7 collisions.	The proposed Route will improve connectivity between existing transport modes. Improved journey time reliability will bring benefits to those using private transport as a means of interconnecting with public transport facilities. Sustainable transport modes (i.e. public transport, cycling and walking) will be improved by the reduction of traffic on the existing N25.	7
	Land Use	Atkins	N/A	The proposed route provide a strategic corridor through predominantly rural areas, with relatively short links to existing local roads and are compatible with national, regional and local plans.	5
	Geographical Integration	Atkins	N/A	The proposed route provides improved geographical integration and will support the Trans European Transport (TEN-T) network	7
	Other Government Policy	Atkins	N/A	The propose route supports the rural development objective of the National Planning Framework and the development of the Trans European Transport (TEN-T) network	7
Economy	**Efficiency and Effectiveness**	Systra	BCR= 1.16	The lime green option is the best performing route delivering PVB of €88.6 and a BCR of 1.16. This is due to its comparatively shorter length and lower construction costs. The BCRs have been ranked from 1-7 based on the impact of the BCR value.	5
	Transport Quality & Reliability	Systra	Average journey time saving of 1 minute 39 seconds.	The lime green route has the 2nd highest journey times savings of all options. The journey time savings have been ranked from 1-7 based on the journey time saving imnpact.	6
	Wider economic impacts	Systra	Competition in the Market (Neutral): Agglomeration (Neutral); Inward Investment (Neutral); Labour Supply (Neutral); Urban Regeneration (Neutral);	All routes options provide an improved connection to Port of Waterford and Waterford City which may accrue wider economic benefits. However, as discussed in PAG Unit 6.9 these benefits are difficult to quantify and significant amounts of bespoke data analysis is needed to determine whether any wider economic benefits should be appraised. Given the relatively short length of the route options and the existing connection it is not expected that any route would result in significant wider economic impacts. However, even if there were wider economic benefits it is not envisaged that any route would perform significantly better given their similarity in terms of improved accessibility.	4
	Funding Impacts	Systra	No non-exchequer funding available.	All routes are comparatively neutral as they have the same funding sources.	4

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	MCA Criteria	Owner	Preliminary Assessment of Option : *Navy*		
			Quantitative Assessment	**Qualitative Assessment**	**Scor**
ENVIRONMENTAL	**Air Quality**	Atkins	The calculated Index of Overall Change in Exposure for this route has been determined: NO_x Exposure Index: -85,138 PM_{10} Exposure Index: -2,736 There are 4 sensitive receptors within 50m of this route. All routes cross a section of the River Nore &River Barrow SAC therefore no preference is considered in terms of air quality impacts on sensitive ecosystems.	Predicted baseline levels of NO_2 and PM_{10} are based on data from representative EPA monitoring sites. A background concentration of 5 µg/m^3 for NO_2 and 10 µg/m^3 for PM_{10} are predicted in the region of the proposed route options. The existing N25 route is the least preferred option as it impacts the greatest number of receptors and thus has the greatest NO_x and PM_{10} exposure index. Each of the revised routes will improve local air quality along the existing alignment. However, minor increases in background concentrations of NO_x and PM_{10} at receptors along the proposed route are likely as a result of the Navy Route. However, there is an moderately positive impact from the new alignment as traffic is diverted away from properties along the existing N25.	6
	Climate	Atkins	The CO_2 emissions associated with operational traffic along the route has been calculated: CO_2 Emissions: 12,368 tonnes/yr	CO_2 emissions are considered at a national scale rather than at a local level. Data from the EPA indicates that Ireland is likely to exceed its climate emissions targets in future years and therefore reduction measures are required in all areas. However, there are no sector specific GHG targets at present and a scheme in isolation will not cause a breach of the national targets. There is minimal difference in the route options in terms of climate impacts, all routes result in a slight negative impact to climate. However, this is the least preferred route option as it results in the highest CO_2 emissions compared with the other route options.	3
	Noise	Atkins	PIR = 247, with 134no. NSLs within 300m of the new roads (Navy). 4no. NSLs are within 50m and 13no. NSLs are within 100m. 22no. NSLs are above 60dB L_{den} but no NSLs are above 70dB L_{den}. 71no. Likely moderate negative (increase) in noise traffic levels at 38no. NSLs, and 1no. likely major negative (increase) in noise traffic levels. 37no. NSLs experience a moderate positive (reduction) in noise traffic levels and 25no. NSLs experience a major positive (reduction) in noise traffic levels. Noise mitigation required at 2no. NSLs.	Along existing route from New Ross (S.1) bypass to Kilmakevoge (S.4) then diverts west. Rural noise climate expected with potential influence from the existing road in northern sections. Extensive diversion of traffic along this proposed Navy section (S.11 = 15,322 AADT), introducing road traffic noise as dominant noise source in rural area to west of the route (although this route has the second smallest number of properties in the major negative impact category, second only to the Magenta route). Similar noise environment for properties to the east of the route, which were previously affected by N25 to front of facades, now relocated to the rear, at a greater distance with earthworks screening. Earthworks providing screening at rear of properties at Ballynaraha, Grogan and between Davidstown and Luffany. Fewer likely moderate to major positive (reduction) in noise traffic levels than Teal, Red or Lime Green routes with a higher PIR than Teal and Red routes.	3
	Landscape and Visual (including light)	Atkins	Visual Effects: The number of receptors judged to have significant adverse effects (i.e. those categorised between the range of Moderate to Very Large) is 3.	Landscape Character Area E: South Eastern Uplands The proposed route travels for circa. 9.4km through this character area of which circa. 6.8km of carriageway will cross through greenfield land and circa. 2.6km online. Vertical alignment cutting and embankment slopes would lead to no significant disruption to existing landform. No significant areas of cut and fill except for one area of large fill between chainage; 5800 and 6280 (Max depth fill 14m). In general, the route follows existing contours/ levels very well. Follows the existing N25 road alignment south of Glenmore, thus avoiding effects on Glenmore and adjacent narrow stream valleys.From Ballinclare to south of Davidstown the route continues generally parallel to the existing N25 road corridor and travels along the lower side slopes of a ridge of high ground, avoiding the higher contours. Travels on higher contours of ridge of higher ground from Davidstown to Carriganurra, however vertical alignment follows existing contours well and cut and fill is generally not significant. Limited effects to no change on tranquillity. The route travels through areas already on/ adjacent to the existing N25 road corridor. The traffic on the existing N25 road already affects tranquillity. Loss of some areas of woodland, hedgerows and hedgerow trees and loss of agricultural land.	3
	Biodiversity-Flora and Fauna	Atkins	The Navy route would not impact upon any ESAs of County Importance. It could potentially impact on 4 ESAs of High Local importance and 6 ESAs of Low Local importance. ESAs 10, 11, 12, 15 and 17 are likely to be directly impacted by this route given their spatial distribution within the corridor; direct interaction with the remaining ESAs is likely to be avoided. ESAs 11 and 17 are of higher local importance and comprise areas of scrub, broadleaved woodland, wet woodland and wet grassland which may also be of local importance to mammal species.	The Navy route is one of a number of routes which run more centrally through the study area with a length of 9.4km. It approaches Glenmore from the southeast and merges back onto the alignment of the existing N25 as it approaches Glenmore. Again, drainage is likely either to the River Barrow & River Nore SAC (002162) to the east (via the Glenmore River); or the Lower River Suir SAC (002137) to the south (via the Luffany Stream). There are no direct impacts to SPAs or to Natural Heritage Areas - the nearest such site is Lough Cullin pNHA located to the west and largely outside the study area. The proposed corridor would not drain to Lough Cullin pNHA. The Barrow River Estuary pNHA largely overlaps with the River Barrow & River Nore SAC. The Navy route is 9.4km, with less potential for negative impacts on linear features such as hedgerows than the Purple route. Existing habitats provided by landscape planting along the N25 would, however, be lost. Based on expert judgement of a contracted bat-specialist, the Navy route poses the joined-second worst risk to bats and their potential roosting sites, with the Magenta route.	1
	Waste	Atkins	Estimated Excavation & Disposal of Surplus Suitable and Unacceptable Material (U1) (m3) = 140,604 Estimated Excavation & Disposal of Hazardous Unacceptable Material (U2) (m3) = 7,400	N/A	3
	Soils and Geology	Atkins	1no. major negative for High Landslide Susceptibility; 4no. moderate negatives for: proximity to a Historic Quarry; Well Drained soils; Potential Soft/ Compressible soils; and Soft / Compressible soils identified from published Quaternary mapping (alluvial deposits) and historic OS maps. 2no. minor negatives for Moderately High Landslide Susceptibility; Soft / Compressible soils identified from published Quaternary mapping (lacustrine deposits).	The navy route corridor is underlain by quaternary sediments, predominantly till derived from Lower Palaeozoic shales, with small sections of alluvium, lacustrine sediments and till derived from cherts. Bedrock is mapped outcropping throughout the route corridor, particularly in the north and south. Bedrock below the route corridor consists of green and red-purple buff slate and siltstone of the Oaklands formation towards the north. It also intersects sections of green and grey slate with thin siltstone of Ballylane formation and red- brown conglomerate & sandstone of Carrigmaclea formation. The route intersects a linear deposit of alluvium along the centre of the route along with 3no. localised deposits within the north and mid-section of the route which could give rise to potential soft ground requiring excavation. The route terminates in the south within an area of Lacustrine sediments which may also contain soft, compressible sediments. (GSI, 2020).	2

	MCA Criteria	Owner	Preliminary Assessment of Option : *Navy*		
			Quantitative Assessment	**Qualitative Assessment**	**Scor**
ENVIRONMENTAL	**Hydrology**	Atkins	The route will have moderate negative impact via temporary direct impact to surface water quality (on small proportion of attribute) at River Barrow and River Nore SAC & on Lower River Suir SAC. The route will have minor negative impacts via temporary direct impact to surface water quality (on small proportion of attribute) at Barrow River Estuary pNHA, Oakland River and Luffany River. The route will have minor negative impact via temporary indirect impact to surface water quality (on small proportion of attribute) at Waterford Harbour Shellfish Area.	This route corridor intersects the catchments Nore and Suir and sub catchments Nore_SC_140 and Blackwater_SC_010. The navy route corridor is crossed by the Oakland River (IE_SE_14O130860) and its tributaries in the northern extent and the Luffany River (IE_SE_16L680750) to the southern extent of this route corridor therefore having the potential to impact water quality due to re-alignment works and the discharge of surface water run-off. It is important to note hydrological connections as the Oaklands River flows into the River Barrow and the Luffany River flows into the River Suir.	3
	Hydrogeology	Atkins	The route will have a moderate negative impact via temporary indirect impact to the surface water quality (small proportion of attribute) at River Barrow and River Nore SAC & Lower River Suir SAC via. groundwater pathway. The route will have a minor negative impact via. permanent impact to locally important aquifer along the route (small portion of attribute). The route will have a minor negative impact via. permanent impact to the groundwater quality of the bedrock aquifer in areas of cut (4.5km length of cut) The route will have a minor negative impact via. potential permanent impacts to 149no. private well supplies and 3no. GSI wells (on significant portion of attribute).	The navy route corridor is underlain predominately by a locally important bedrock aquifer with sections of poorly productive bedrock aquifer. There are a number of historic wells located within the study area and adjacent to a number of the routes which have not been monitored as part of this investigation. Groundwater flow paths in the area of the Mullinavat GWB are considered to be short because the bedrock is not considered to constitute a major aquifer. Therefore, it is likely that most groundwater flow circulates in the upper tens of meters, recharging and discharging in local zones. The groundwater flow in this area may be quite fast since the hydraulic gradient, a reflection of the mountainous topography, will be high. There are no Public Supply Source Protection Area, Group Water Scheme Abstraction Points or Group Scheme Preliminary Source Protection Areas within the route corridor. A search of the GSI groundwater well database has identified 3no. registered wells within the route corridor. Based on a review of available GSI (2020) mapping no springs were identified within the route corridor but historic OSI (2020) mapping reported a spring within the route corridor.	3
	Architectural Heritage	Atkins	The navy route corridor intersects with a clachan as well as a number of vernacular historic features which appear on 19th-century maps. The corridor crosses 13 townland boundaries.	Settlements close to the navy route include Glenmore village and several farmsteads and hamlets including at Robinstown, Ballynaraha, Davidstown and Carriganurra. As well as modern and standing historical structures, the route intersects with numerous former buildings and features which are no longer extant and are identified from historical mapping. There are no recorded architectural (RPS) sites within the navy route corridor, although it passes close to the southeast of seven structures in Glenmore village which are on the NIAH.The navy route corridor passes across or beside several vernacular features and potential archaeological sites identified from historical maps, aerial photography and LiDAR survey which are not included on any statutory listing.	3
	Archaeological and Cultural Heritage	Atkins	The Navy Route would have large adverse impacts on the setting of two of a series of three inter-visible, recorded monuments set on a ridgeline in Davidstown. This area contains several potentially significant features identified from a review of LiDAR imagery and confirmed by a geophysical survey that have variously been interpreted as two enclosure ditches and settlement activity in the form of linear and pit responses. These sites would be directly impacted upon. The Navy Route would also impact the settings of six additional known or suspected archaeological sites.	There are six archaeological monuments within the navy route corridor, where the monument is either fully or partially within the corridor. These are (from north to south) a fulacht fia in Kilmakevoge (KK041-021), a standing stone in Robinstown (KK041-055) and a fulacht fia in Ballinclare (KK041-025). There is an area of high significance, in the townland of Davidstown where the route passes between two ringforts (SMR KK043-013---- / KK043-014----). There is also a ringfort-rath in Carriganurra (KK043-014).	1
	Non-agricultural properties	Atkins	147 non-agricultural properites within 300m of route centre line.	Non-Agricultural properties include Residential, Commercial, Community, Health and Recreational.	1
	Agriculture	Atkins	The route will impact on 46 farm holdings. The route will pass in close proximity to 3 farm buildings. Not significant severance on 18 holdings, Minor severance on 5 holdings, Moderate severance on 13 holdings, Major severance on 10 holdings.	Good quality agricultural land. Majority of land impacted by the route is in grassland. 85% grassland, 6% dairy and 9% tillage. The route will result in significant severance due to the offline nature of the route.	2

	MCA Criteria	Owner	Preliminary Assessment of Option : *Navy*		
			Quantitative Assessment	**Qualitative Assessment**	**Scor**
ENVIRONMENTAL	**Human Beings**	Atkins	There are 6 no. monuments which are included within the Record of Monuments and Places. There is 1 no. live planning permisison. The subject route also traverse the River Barrow and River Nore SAC. There are 4 no. dwellings located within 50m of the route centreline and a further 13 no. dwellings within 100m of the route centreline.	The proposed route is largely within the area designated to be kept from development for the provision of the realigned N25 as per Figure 11.1 of the County Development Plan 2014-2020. The proposed route also traverses 6 no. Monuments (Ref. KK 043-021, KK041-025, KK041-055, KK043-013, KK043-014 and KK043-021) which are included in the Record of Monuments and Places. As per Section 8.3 of the Kilkenny County Development Plan, in terms of Development Management and recorded monuments, the Council will endeavour to preserve in situ all archaeological monuments, whether on land or underwater, listed in the Record of Monuments and Places (RMP), and any newly discovered archaeological sites, features, or objects by requiring that archaeological remains are identified and fully considered at the very earliest stages of the development process and that schemes are designed to avoid impacting on the archaeological heritage. In addition, Objective 8I of the Plan seeks to protect national monuments, and is set out in full as follows; "Protect archaeological sites and monuments (including their setting), underwater archaeology, and archaeological objects, including those that are listed in the Record of Monuments and Places, and in the Urban Archaeological Survey of County Kilkenny or newly discovered sub-surface and underwater archaeological remains". Please refer to Section 2.11 of the Route Options report for further informtaion in terms of monuments. It is noted that the proposed route traverses land to which there is a live planning permission in place (application register reference 18573). However, this permission relates to the upgrading of overhead cables, which may be negatively impacted by the proposed development. There are stated to be 4 no. dwellings located within 50m of the route centreline, and a further 13 no. dwellings located within 100m of the proposed route centre line. In comparison to other routes, this is a relatively low number of dwellings in close proximity to the proposed route option.In this context, the impact on human beings from this route option would be minorly negative. Please refer to Noise (Section 2.3) and Air Quality (Section 2.1) sections of this report, and the Traffic Section of Phase 2 report for further information on potential impacts to those living in close proximity to the proposed route option. The proposed route also traverses the River Barrow and River Nore SAC. Such sites have significant protection under both EU and National Law. (Please refer to Section 2.5 of this report to find additional information in relation to Flora/Fauna). This is outlined in Objective 8B and 8C of the Kilkenny County Development Plan, and these objectives are outlined respectively as follows; “To protect and, where possible, enhance the natural heritage sites designated under EU Legislation and National Legislation (Habitats Directive, Birds Directive, European Communities (Birds and Natural Habitats) Regulations 2011 and Wildlife Acts). This protection will extend to any additions or alterations to sites that may arise during the lifetime of this plan” “To protect and, where possible, enhance the plant and animal species and their habitats that have been identified under European legislation (Habitats and Birds Directive) and protected under national Legislation (European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011), Wildlife Acts 1976-2010 and the Flora Protection Order (SI94 of 1999).” Having regard to the potential adverse impact of the route on the SAC which cannot be ruled out at this stage, and on 2 no. RMPs, this route is considered to be highly negativ, however, this is assessed in more detail in the biodiversity section . Overall and considering the above, and notwithstanding the built and natural heritage designations which are been assessed in separate sections, it is considered that this route which is located within 100m of 17 no. dwellings, will likley have less impacts on human beings than other routes which will imoact on significantly more dwellings. In this regard, it is considered to be slightly negative from a human beings perspective.	3
	Human Health	Atkins	**Recreational Areas** Glenmore GAA club has been identified as within the route study area. **Community, Health and Educational Facilities** Glenmore National School, Community Hall and St James Church are each within the route study area. Glenmore Garda Station is also within the study area. **Transport Infrastructure** The route study area is intersected by over 15 minor roads/lanes. No cycle routes or walking trails have been identified as within or intersecting this route study area. Route study area falls partially within proposed Kilkenny Greenway. **Road Safety** Collision statistics have been collated for the wider Kilkenny area however no distinction has be made between route options at this stage. No fire stations have been identified within the route study area. **Air Quality, Noise and Climate** See respective Air Quality and Noise Assessments for consideration of these parameters. Note that with the exception of the number and nature of intersecting watercourses no distinction can be made with respect to climate impacts. Please see hydrology assessment for futher consideration.	There are a number of residential properties within the route study area. These are located throughout the route study area with a slightly increased number towards the north. Properties within the route study area are accessed by a mix of minor roads/private lanes which may be difficult to avoid with a new carriageway. There are also a number of commercial and agricultural premises in close proximity including Murphys Motors, Duggan Brothers, Jacques Nurseries and Glanbia Agribusiness. A search of OSI Discovery Series mapping suggests no walking trails are within or intersect this route study area. No cycle routes have been identified as within or intersecting this route study area. The closest walking trail identified is approximately 4.5km west at Tory Hill. The closest cycle route identified is the East Kilkenny Cycle Route, situated over 10km north. Route study area falls partially wtihin proposed Kilkenny Greenway Glenmore GAA club, Glenmore National School, Garda Station, Glenmore Community Hall and St James Church are all within close proximity (300m) of the route, towards the north. No other leisure/amenity facilities including parks and gardens have been identified as being within the route study area. Approximately three quarters of the routes length is intersected by the noise zone around the existing N25.	3
Safety	**Collision Reduction**	Systra	A reduction of 6.2 collisions.	The navy route is the 4th best performing route in terms of collision reduction. The reduction in collisions has been scaled comparatively between the routes and applied to the 1-7 scoring system.	6
	Security	Atkins	Proposed option has no accesses or junctions but may cause side roads to be changed to cul-de-sacs.	This option has little or not inter-connectivity to the surrounding area and little impact on security.	4
Physical Activity	**Ambience**	Atkins	Has the second highest transfer of traffic from the existing N25.	The highest % of traffic travels north south and this option removes moderate to significant amount of that traffic from the existing N25 but will provide an improved ambience for that moderate to significant % of north south traffic on the proposed road with a significantly improved alignment and right turn movements removed. This will improve the ambience of the existing N25 signifiantly for pedestrians and cyclsitsand the connectivity to the townland of Glenmore..	6
	Absenteeism	Atkins	There are no locations of dense population or traffic congestion identified within the route corridor.	Given the length and nature of the scheme this criteria is considered neutral for all as we are not removing traffic from a town or providing cycle/walking facilities as part of the scheme. However we are removing traffic from the existing N25 which might promote walking and cycling but this is considered marginal on the health of the workforce.	4
	Reduced Health Risk	Atkins	Has the second highest transfer of traffic from the existing N25.	The assessment is considered neutral given the scheme does not include additional facilities for cyclists and pedestrians on the existing or proposed routes.	4

	MCA Criteria	Owner	Preliminary Assessment of Option : *Navy*		
			Quantitative Assessment	**Qualitative Assessment**	**Scor**
Accessibility & Inclusion	**Deprived Geographical Areas**	Atkins	Western side of the existing N25 which is mostly within a marginally higher area for the Pobal HP Index 2016 until it goes back on-line south of Glenmore where it is within a marginally lower area up to Glenmore roundabout.	This route could have an impact on the marginally higher and lower areas it passes through but it is unlikely based on the factors used to calculate this indice.	4
	Vulnerable Groups	Atkins	N/A	Given the rural nature of the study area there is no substantial difference in Social Inclusion which is measured in terms of accessibility for communities, particularly for vulnerable groups.	4
Integration	**Transport Integration**	Atkins	Medium Route length with 95.6% Average journey time saving of 1 minute 16 seconds. The navy option delivers PVB of €68.0 and a BCR of 1.02 A reduction of 6.2 collisions.	The proposed Route will improve connectivity between existing transport modes. Improved journey time reliability will bring benefits to those using private transport as a means of interconnecting with public transport facilities. Sustainable transport modes (i.e. public transport, cycling and walking) will be improved by the reduction of traffic on the existing N25.	7
	Land Use	Atkins	N/A	The proposed route provides a strategic corridor through predominantly rural areas, with relatively short links to existing local roads and are compatible with national, regional and local plans.	5
	Geographical Integration	Atkins	N/A	The proposed route provides improved geographical integration and will support the Trans European Transport (TEN-T) network	7
	Other Government Policy	Atkins	N/A	The propose route supports the rural development objective of the National Planning Framework and the development of the Trans European Transport (TEN-T) network	7
Economy	**Efficiency and Effectiveness**	Systra	BCR= 1.02	The navy option is the 2nd best performing route delivering PVB of €68.0 and a BCR of 1.02. It delivers lower PVB than some of the other routes it also has lower construction cost resulting in a higher BCR. T The BCRs have been ranked from 1-7 based on the impact of the BCR value.	5
	Transport Quality & Reliability	Systra	Average journey time saving of 1 minute 16 seconds.	The navy route has the 2nd worst journey times savings of all options.The journey time savings have been ranked from 1-7 based on the journey time saving imnpact.	5
	Wider economic impacts	Systra	Competition in the Market (Neutral): Agglomeration (Neutral); Inward Investment (Neutral); Labour Supply (Neutral); Urban Regeneration (Neutral);	All routes options provide an improved connection to Port of Waterford and Waterford City which may accrue wider economic benefits. However, as discussed in PAG Unit 6.9 these benefits are difficult to quantify and significant amounts of bespoke data analysis is needed to determine whether any wider economic benefits should be appraised. Given the relatively short length of the route options and the existing connection it is not expected that any route would result in significant wider economic impacts. However, even if there were wider economic benefits it is not envisaged that any route would perform significantly better given their similarity in terms of improved accessibility.	4
	Funding Impacts	Systra	No non-exchequer funding available.	All routes are comparatively neutral as they have the same funding sources.	4

	MCA Criteria	Owner	Preliminary Assessment of Option : *Teal*		
			Quantitative Assessment	**Qualitative Assessment**	**Score**
ENVIRONMENTAL	**Air Quality**	Atkins	The calculated Index of Overall Change in Exposure for this route has been determined: NO_x Exposure Index: -90,891 PM_{10} Exposure Index: -2,898 There are no sensitive receptors within 50m of this route. All routes cross a section of the River Nore &River Barrow SAC therefore no preference is considered in terms of air quality impacts on sensitive ecosystems.	Predicted baseline levels of NO_2 and PM_{10} are based on data from representative EPA monitoring sites. A background concentration of 5 µg/m^3 for NO_2 and 10 µg/m^3 for PM_{10} are predicted in the region of the proposed route options. The existing N25 route is the least preferred option as it impacts the greatest number of receptors and thus has the greatest NO_x and PM_{10} exposure index. Each of the revised routes will improve local air quality along the existing alignment. As there are no new receptors impacted by the proposed route there is an overall positive impact from the new alignment as traffic is diverted away from properties along the existing N25. This is the preferred route in terms of air quality.	7
	Climate	Atkins	The CO_2 emissions associated with operational traffic along the route has been calculated: CO_2 Emissions: 11,323 tonnes/yr	CO_2 emissions are considered at a national scale rather than at a local level. Data from the EPA indicates that Ireland is likely to exceed its climate emissions targets in future years and therefore reduction measures are required in all areas. However, there are no sector specific GHG targets at present and a scheme in isolation will not cause a breach of the national targets. There is minimal difference in the route options in terms of climate impacts, all routes result in a slight negative impact to climate.	3
	Noise	Atkins	PIR = 107, with 61no. NSLs within 300m of the new roads (Teal). No NSLs are within 50m and 12no. NSLs are within 100m. 13 no. NSLs are above 60dB L_{den} . None exceed 70dB L_{den}. There are 39no. NSLs that experience a moderate negative (increase) in noise traffic levels and 29no. NSLs calculated with a likely major negative (increase) in noise traffic levels. There are 55no. NSLs that experience a moderate positive (reduction) in noise traffic levels and 141no. NSLs experience a major positive (reduction) in noise traffic levels. Noise mitigation required at 6no. NSLs.	Along existing route from New Ross bypass to Graiguenakill (S.1) then diverts east, closer to existing route than Red route. Expected noise climate to be quiet rural area but route is a reasonable distance from many clusters of properties (second lowest PIR) until it passes to the rear of properties at Curraghmore, which are currently influenced to front facade by existing Do Nothing route. Follows similar line to Red route at Luffany, passing closer than Red route to properties currently influenced by existing route. Earthworks provide beneficial screening at northern section of the route near cluster of properties. Fewer property clusters than the Red route (12no.) in the 0-100m band. Comparable traffic to Red route, with S.11 at 14,575 AADT, lower AADT diversion from existing route compared to Navy and Lime Green routes. Twice the AADT than Purple route. Preferred route as it has the second highest number of likely Major positive (reduction) in noise traffic levels when compared to all other routes (Red highest) with at least 100+ more NSLs experiencing a positive (reduction) in noise traffic levels compared to other routes. Mitigation is at a low number of properties (6no.) to southern section of route.	3
	Landscape and Visual (including light)	Atkins	Visual Effects: The number of receptors judged to have significant adverse effects (i.e. those categorised between the range of Moderate to Very Large) is 10.	Landscape Character Area E: South Eastern Uplands The proposed route travels for circa. 8.7km through this character area of which circa. 8.3km of carriageway will cross through greenfield land. Most of the route within this character area travels in lands to the east of the existing N25 Road (up to 1.8km distance to the east of the existing N25 Road in places). Horizontal alignment of carriageways would be in keeping with existing route patterns. However vertical alignment cutting, and embankment slopes would significantly disrupt existing landform. In particular; where the route travels up a steep hillside and over a stream valley from Craiguenakil to Carrickcloney (in a combination of fill embankments and cutting) there would significant adverse effects on landscape character of this sloping land which connects with the River Barrow valley. The route forms a large cutting though some the highest contours of a ridge of high ground at Aylwardstown and south to Rathinure: A Principal Ridgeline (Refer to Figure 8.3 Landscape Sensitivities, Kilkenny County Development Plan). There would be significant adverse effects on this ridge of high ground. Travels through a local valley (mostly on fill embankments) between Rathinure and Redgap, which is visually connected with the River Barrow valley corridor and views from along this corridor. Thus, potential significant adverse effects on views through this valley and on the landscape character of the wider River Barrow valley. From Ballyrownagh to Slieveroe roundabout the route (mostly on fill embankments) follows a local stream valley parallel to the existing N25. Following these areas of lower ground will help reduce potential wider visibility of this section of the route. However, it will affect the setting of this stream valley itself and associated wetland vegetation. There would be adverse effects rural tranquillity as the route travels in existing tranquil land to the east of the existing N25 road. Loss of some areas of woodland, hedgerows and hedgerow trees and loss of agricultural land.	1
	Biodiversity-Flora and Fauna	Atkins	The Teal route would not impact upon any ESAs of County Importance. It would impact on 2 ESAs of High Local importance (same two as the Red option) and 4 ESAs of Low Local importance (same four as the Red option); though the Teal route is likely to intersect more of these than the Red route. ESA 3 comprises a tributary of the Glenmore River, and associated bankside scrub, over which a water crossing would be required. This ESA may be of local importance to mammal and aquatic species, while also being hydrologically connected to the SAC. ESA 16 comprises broadleaved and wet woodland, wet grassland and scrub, which may be of local importance to mammals and field-feeding birds.	The Teal route is one of a number of routes which run more centrally through the study area with a length of 8.7km. Drainage is likely either to the River Barrow & River Nore SAC (002162) to the east (via the Glenmore River); or the Lower River Suir SAC (002137) to the south (via the Luffany Stream). The Teal route approaches Glenmore from the southeast (between the Navy / Magenta / Lime Green and the Red Route) crossing a tributary of the Glenmore River before re-joining the existing N25. There are no direct impacts to SPAs or to Natural Heritage Areas - the nearest such site is Lough Cullin pNHA located to the west and largely outside the study area. The proposed corridor would not drain to Lough Cullin pNHA. Any impact to the Barrow River Estuary pNHA will be dependent upon further design and the level of interaction with wetland habitats along the river at Graiguenakill. The Teal route is 8.7km, with less potential for negative impacts on linear features such as hedgerows than longer routes, such as Purple. As noted, the Teal route merges back onto the alignment of the existing N25 as it approaches the northern terminus. Thus, existing habitats provided by landscape planting along the N25 would be lost. Based on expert judgement of a contracted bat-specialist, the Teal route poses the second least risk to bats and their potential roosting sites.	1
	Waste	Atkins	Estimated Excavation & Disposal of Surplus Suitable and Unacceptable Material (U1) (m3) = 712,095 Estimated Excavation & Disposal of Hazardous Unacceptable Material (U2) (m3) = 37,479	N/A	1
	Soils and Geology	Atkins	2no. moderate negatives for: Well Drained soils, and for Potential Soft / Compressible soils identified from historical OS maps; 4no. minor negatives for proximity to a Potential Historic Quarry, Moderately High Landslide Susceptibility, and Soft / Compressible soils (published Quaternary mapping).	The teal route corridor is predominately underlain by quaternary sediments, predominantly till derived from Lower Palaeozoic shales, with small sections of alluvium, lacustrine sediments and till derived from cherts. Bedrock is mapped outcropping throughout the route corridor. Bedrock below the route corridor consists of green and red-purple buff slate and siltstone of the Oaklands formation at 2no. locations in the north, and predominantly green and grey slate with thin siltstone of Ballylane formation along the north, centre and south of the route. The route locally intersects the red- brown conglomerate & sandstone of the Carrigmaclea formation in the south. Four isolated pockets of alluvium are intersected by the route, 1no. in the southern region, 2no. in the central region and 1no. in the north which could give rise to potential soft ground requiring excavation. The route terminates in the south within an area of Lacustrine sediments which may also contain soft, compressible sediments.	3

	MCA Criteria	Owner	Preliminary Assessment of Option : *Teal*		
			Quantitative Assessment	**Qualitative Assessment**	**Score**
ENVIRONMENTAL	**Hydrology**	Atkins	The route will have moderate negative impact via temporary direct impact to surface water quality (on small proportion of attribute) at River Barrow and River Nore SAC & Lower River Suir SAC. The route will have minor negative impacts via temporary direct impact to surface water quality (on small proportion of attribute) at Barrow River Estuary pNHA, Oakland River and Luffany River. The route will have minor negative impact via temporary indirect impact to surface water quality (on small proportion of attribute) at Waterford Harbour Shellfish Area.	This route corridor intersects the catchments Nore and Suir and sub catchments Nore_SC_140 and Blackwater_SC_010. The teal route corridor is crossed by the Oakland River (IE_SE_14O130860) to its northern extent and the Luffany River (IE_SE_16L680750) to the southern extent of this route corridor therefore having the potential to impact water quality due to re-alignment works and the discharge of surface water run-off. It is important to note hydrological connections as the Oaklands River flows into the River Barrow and the Luffany River flows into the River Suir.	3
	Hydrogeology	Atkins	The route will have a moderate negative impact via temporary indirect impact to the surface water quality (small proportion of attribute) at River Barrow and River Nore SAC & Lower River Suir SAC via. groundwater pathway. The route will have a minor negative impact via. permanent impact to locally important aquifer along the route (small portion of attribute). The route will have a minor negative impact via. permanent impact to the groundwater quality of the bedrock aquifer in areas of cut (3.5km length of cut) The route will have a minor negative impact via. potential permanent impacts to 63no. private well supplies and 5no. GSI wells (on significant portion of attribute).	The teal route corridor is underlain by locally important bedrock aquifer with sections of poorly productive bedrock aquifer and regionally important bedrock aquifer. Groundwater flow paths in the area of the Mullinavat GWB are considered to be short because the bedrock is not considered to constitute a major aquifer. Therefore, it is likely that most groundwater flow circulates in the upper tens of meters, recharging and discharging in local zones. The groundwater flow in this area may be quite fast since the hydraulic gradient, a reflection of the mountainous topography, will be high. There are no Public Supply Source Protection Area, Group Water Scheme Abstraction Points or Group Scheme Preliminary Source Protection Areas within the route corridor. A search of the GSI groundwater well database has identified 5no. registered wells within the route corridor. Based on a review of available GSI (2020) mapping no springs were identified within the route corridor but historic OSI (2020) mapping reported two springs within the route corridor.	4
	Architectural Heritage	Atkins	The Teal Route would run behind Aylwardstown House east through the demesne lands and would have a moderate adverse impact on its setting as well as a potentially moderate direct impact on the designed landscape associated with the demesne. The route would have a potentially direct moderate impact on a clachán in Luffany townland.	Along the length of the corridor are occasional remnants of features depicted on historic mapping including old farmsteads, buildings, wells, and relict field systems. South from Rathinure the route runs to the east of the now disused Waterford to New Ross railway. This railway line ceased to operate in the mid-nineties. The Teal line intersects with the railway line at two points at Rathinure and Luffany.	2
	Archaeological and Cultural Heritage	Atkins	The route passes within close proximity to a number of monuments associated with Kilcolumb Church including a graveyard, a bullaun stone and a nearby well and rath (SMRs KK044-007001-3, KK044-008 and KK044-009 respectively). The route will not directly impact the site, but the impact on its setting would be large adverse. There will be a potentially direct significant impact on a circular feature in Ballyrowragh identified on LiDAR visualisations and a moderate adverse impact on its setting.	The Teal option largely runs to the east of the L3429 Rathinure Local Access road and is the shortest of the options under consideration passing through ten townlands. Towards the south the corridor passes within the zone of notification (ZoN) of four recorded monuments - an ex situ wayside cross in Luffany (SMR KK044-022, RPS C846) dated 1736, an excavated fulacht fia (SMR KK044-023) which is not scheduled for inclusion in the next revision of the RMP, a fulacht fia in Rathpatrick (SMR KK044-024) and a ringfort – rath (SMR KK041-030----) in Carrickcloney.	2
	Non-agricultural properties	Atkins	41 non-agricultural properites within 300m of route centre line.	Non-Agricultural properties include Residential, Commercial, Community, Health and Recreational.	3
	Agriculture	Atkins	The route will impact on 37 farm holdings. The route will pass in close proximity to 3 farm buildings. Not significant severance on 7 holdings, Minor severance on 12 holdings, Moderate severance on 9 holdings, Major severance on 9 holdings.	Good quality agricultural land. Majority of land impacted by the route is in grassland. 76% grassland, 5% dairy, 11% tillage and 8% forestry. The route will result in significant severance due to the offline nature of the route.	2

	MCA Criteria	Owner	Preliminary Assessment of Option : *Teal*		
			Quantitative Assessment	**Qualitative Assessment**	**Score**
ENVIRONMENTAL	**Human Beings**	Atkins	Route Corridor traverses the Zone of Notification of 4 no. monuments included in the Record of Monuments and Places. The route crosses the disused railway line (South-east Greenway). The proposed route crosses the River Barrow and River Nore SAC. There are no dwellings within 50m and 12 no. dwellings within 100m of the route centre line.	The proposed route is located outside the area designated to be kept free from development for the provision of the realigned N25 as per Figure 11.1 of the County Development Plan 2014-2020. However, there is not a specific policy/objective outlined in the County Development Plan which states that routes will need to be within this defined corridor. The proposed route corridor passes through the Zone of Notification of 4 no. monuments included in the Record of Monuments and Places (Ref. KK044-022, KK044-023, KK044-024, KK041-030). As per Section 8.3 of the Kilkenny County Development Plan, in terms of Development Management and recorded monuments, the Council will endeavour to preserve in situ all archaeological monuments, whether on land or underwater, listed in the Record of Monuments and Places (RMP), and any newly discovered archaeological sites, features, or objects by requiring that archaeological remains are identified and fully considered at the very earliest stages of the development process and that schemes are designed to avoid impacting on the archaeological heritage. In addition, Objective 8I of the Plan seeks to protect national monuments, and is set out in full as follows; "Protect archaeological sites and monuments (including their setting), underwater archaeology, and archaeological objects, including those that are listed in the Record of Monuments and Places, and in the Urban Archaeological Survey of County Kilkenny or newly discovered sub-surface and underwater archaeological remains". Please refer to Section 2.11 of the Route Options report for further informtaion in terms of monuments. It is noted that the proposed route traverses land on which there is a live planning permission in place (application register reference 18573). However, this permission relates to the upgrading of overhead cables, which may be negatively impacted by the proposed development. This route has the least number of dwellings in close proximity to the route centre line. There are not any dwellings within 50m of the route centre line, and there are 12 no. dwellings located within 100m of the route centreline. This is a comparitively low number of dwellings in close proximity to the route centre line and therfore is considered to be slightly positive in terms of impact on human beings relative to the other route options. Please refer to Noise (Section 2.3) and Air Quality (Section 2.1) sections of this report, and the Traffic Section of Phase 2 report for further information on potential impacts to those living in close proximity to the proposed route option. The route crosses a disused railway line (south-east Greenway) and impacted councils will need to be consulted. The proposed route also traverses the River Barrow and River Nore SAC. (Please refer to Section 2.5 of this report to find additional information in relation to Flora/Fauna). Such sites have significant protection under both EU and National Law. This is outlined in Objective 8B and 8C of the Kilkenny County Development Plan, and these objectives are outlined respectively as follows; "To protect and, where possible, enhance the natural heritage sites designated under EU Legislation and National Legislation (Habitats Directive, Birds Directive, European Communities (Birds and Natural Habitats) Regulations 2011 and Wildlife Acts). This protection will extend to any additions or alterations to sites that may arise during the lifetime of this plan" "To protect and, where possible, enhance the plant and animal species and their habitats that have been identified under European legislation (Habitats and Birds Directive) and protected under national Legislation (European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011), Wildlife Acts 1976-2010 and the Flora Protection Order (SI94 of 1999)." Notwithstanding the fact this route impacts the least number of dwellings within 100m of its centre line, having regard to the potential adverse impact of the route on the SAC which cannot be ruled out at this stage, this route is considered to be highly negative, however, it is noted that this is assessed in detail in the biodiversity section. Having reagrd to the relatively low number of dwellings within 100m of this route in comparision to other proposed routes, this route is considered to be slightly negative from a human being perspective.	3
	Human Health	Atkins	**Recreational Areas** No recreational areas have been identified as being within the route study area. **Community, Health and Educational Facilities** With the exception of Rathinure Old Graveyard, no community, health or educational facilities have been identified as being within the route study area **Transport Infrastructure** The route study area is intersected by over 10 minor roads/lanes. No cycle routes or walking trails have been identified as within or the route study area. Route crosses the proposed South-east Greenway at two locations. **Road Safety** Collision statistics have been collated for the wider Kilkenny area however no distinction has been made between route options at this stage. No fire stations have been identified within the route study area. **Air Quality, Noise and Climate** See respective Air Quality and Noise Assessments for consideration of these parameters. Note that with the exception of the number and nature of intersecting watercourses no distinction can be made with respect to climate impacts. Please see hydrology assessment for futher consideration.	There are a number of residential properties within the route study area. These are located throughout the route study area with a slightly increased number towards the south. These are accessed by a mix of minor roads/private lanes which may be difficult to avoid with a new carriageway. There are also a number of commercial and agricultural premises including the Rhu Glenn Hotel, Maguire Haulage and Surehaul. A search of OSI Discovery Series mapping suggests no walking trails are within or intersect this route study area. No cycle routes have been identified as within or intersecting this route study area. The closest walking trail is the Waterford Greenway which is approximately 5km south west. The closest cycle route is the East Kilkenny Cycle Route which is over 10km north. Rathinure Old Graveyard is within the route study area. No other leisure/amenity facilities including parks and gardens have been identified as being within the route study area. Route crosses proposed South-east Greenway at two locations. Approximately one quarter of the routes length is intersected by the noise zone around the existing N25.	3
Safety	**Collision Reduction**	Systra	A reduction of 14.2 collisions.	The teal route is the best performing route in terms of collision reduction. The reduction in collisions has been scaled comparatively between the routes and applied to the 1-7 scoring system.	7
	Security	Atkins	Proposed option has no accesses or junctions but may cause side roads to be changed to cul-de-sacs.	This option has little or not inter-connectivity to the surrounding area and little impact on security.	4
Physical Activity	**Ambience**	Atkins	Has the second least transfer of traffic from the existing N25 similar to the Red option.	The highest % of traffic travels north south and this option removes moderat amount of that traffic from the existing N25 but will provide an improved ambience for that moderate % of north south traffic on the proposed road with a significantly improved alignment and right turn movements removed. This will improve the ambience of the existing N25 moderately for pedestrians and cyclsits but does not improve connectivity to the townland of Glenmore..	5
	Absenteeism	Atkins	There are no locations of dense population or traffic congestion identified within the route corridor.	Given the length and nature of the scheme this criteria is considered neutral for all as we are not removing traffic from a town or providing cycle/walking facilities as part of the scheme. However we are removing traffic from the existing N25 which might promote walking and cycling but this is considered marginal on the health of the workforce.	4
	Reduced Health Risk	Atkins	Has the second least transfer of traffic from the existing N25 similar to the Red option.	The assessment is considered neutral given the scheme does not include additional facilities for cyclists and pedestrians on the existing or proposed routes.	4

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			Quantitative Assessment	**Qualitative Assessment**	**Score**
Accessibility & Inclusion	**Deprived Geographical Areas**	Atkins	Eastern side of the existing N25 which is within a marginally lower area for the Pobal HP Index 2016.	This route could have an impact on the marginally lower area it passes through but it is unlikely based on the factors used to calculate this indice.	4
	Vulnerable Groups	Atkins	N/A	Given the rural nature of the study area there is no substantial difference in Social Inclusion which is measured in terms of accessibility for communities, particularly for vulnerable groups.	4
Integration	**Transport Integration**	Atkins	Shortest Route length with 91.3% Average journey time saving of 1 minute 48 seconds. The Teal option delivers PVB of €93.1 and results in a BCR of less than 1, 0.91 A reduction of 14.2 collisions.	The proposed Route will improve connectivity between existing transport modes. Improved journey time reliability will bring benefits to those using private transport as a means of interconnecting with public transport facilities. Sustainable transport modes (i.e. public transport, cycling and walking) will be improved by the reduction of traffic on the existing N25.	5
	Land Use	Atkins	N/A	The proposed route provide a strategic corridor through predominantly rural areas, with relatively short links to existing local roads and are compatible with national, regional and local plans.	5
	Geographical Integration	Atkins	N/A	The proposed route provides improved geographical integration and will support the Trans European Transport (TEN-T) network	7
	Other Government Policy	Atkins	N/A	The propose route supports the rural development objective of the National Planning Framework and the development of the Trans European Transport (TEN-T) network	7
Economy	**Efficiency and Effectiveness**	Systra	BCR=0.91	The Teal option is the 3rd best performing route. It has PVB of €93.1m, the highest of any route, however the higher cost of construction results in a BCR of less than 1 at 0.91. The BCRs have been ranked from 1-7 based on the impact of the BCR value.	3
	Transport Quality & Reliability	Systra	Average journey time saving of 1 minute 48 seconds.	The teal route has the highest journey times savings of all options. The journey time savings have been ranked from 1-7 based on the journey time saving imnpact.	6
	Wider economic impacts	Systra	Competition in the Market (Neutral): Agglomeration (Neutral); Inward Investment (Neutral); Labour Supply (Neutral); Urban Regeneration (Neutral);	All routes options provide an improved connection to Port of Waterford and Waterford City which may accrue wider economic benefits. However, as discussed in PAG Unit 6.9 these benefits are difficult to quantify and significant amounts of bespoke data analysis is needed to determine whether any wider economic benefits should be appraised. Given the relatively short length of the route options and the existing connection it is not expected that any route would result in significant wider economic impacts. However, even if there were wider economic benefits it is not envisaged that any route would perform significantly better given their similarity in terms of improved accessibility.	4
	Funding Impacts	Systra	No non-exchequer funding available.	All routes are comparatively neutral as they have the same funding sources.	4
			#VALUE!	#VALUE!	114